

Quick Analysis of Antimicrobial Patterns and Trends (QAAPT)

Transforming AMR Data into Actionable Insights for the Future

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CAPTURA II – Fleming Fund Regional Grant Phase II

GOAL



Improving AMR/U/C data quality and quantity, analysis and dissemination for use in **HUMAN HEALTH SECTOR** across **ASIA**.

AREA OF WORK



CAPTURA will cover FF South Asia and Southeast Asia regions till Dec 2025

OBJECTIVES



- Improve data quality and quantity, analysis, interpretation and dissemination at the country level and regionally.
- Assist in improving awareness, advocacy and policy to address the problem of AMR, AMC and AMU at the country and regional level.
- Establish working relationships with other organizations that work on specific aspects of work under the Private Sector strategic shift.



1. QAAPT Introduction

Publications

Usability of QAAPT?



EXPLORE

Why Should I use QAAPT?



A free of charge tool

QAAPT is completely free to use. You don't need to pay any fees or have IT knowledge to get started with it.



No hardware or server

QAAPT is a cloud-based platform, so there's no need to purchase additional hardware or maintain servers.



No Technical Expertise Required

Easily import, process, and curate raw data without needing any technical expertise.



Available Resources

QAAPT offers a range of step-by-step learning materials to help you get started, no matter your experience level. Feel free to explore documentations.



Data Security

We use industry-standard measures to protect your data from unauthorized access, misuse, or disclosure, ensuring top-tier security.



Data Sharing

QAAPT ensures strict data sharing and privacy, preventing users from viewing data or information from others or different facilities.



Data Retention

We offer a permanent data deletion option that removes any dataset from the platform. Once deleted, the data is gone forever.



User Rights

You have full control over your data. This includes rights to access, modify, delete, and withdraw consent for any data processing at any time.


38190
Breakpoints from 2012


560
Antibiotics


2947
Organisms

How QAAPT Simplifies AMR Data Management [1]



EXPLORE

Core Functionalities



Manage Multiple Projects & Datasets

Upload and manage multiple datasets, including WHONET and LIS exports, all within QAAPT.



Import WHONET Dataset

Upload WHONET datasets in SQLite or CSV format, with easy export options via SQLite Browser.



Import Any LIS Dataset

Convert and upload raw LIS data in Excel or CSV format for seamless integration.



Live System Integration

Easily connect LIS/HIS/EMR systems with QAAPT through its powerful API.



Single-Window Dashboard

Generate dashboards with advanced filters for quick, insightful data analysis.



Automated Clinical Categories

Determine R/I/S categories and inhibition zone diameters automatically.



Advanced Filtering Options

Search and filter data based on organisms, specimens, and other criteria.



Export Reports in Multiple Formats

Download reports as PNG, JPG, EXCEL, CSV, PDF, or tables as needed.

How QAAPT Simplifies AMR Data Management [2]



Track Resistance Trends

Visualize resistance patterns over time for more informed decision-making.



Monitor Susceptibility Trends

Observe susceptibility changes in multiple organisms over specific periods.



One-Click Antibigram

Create hospital antibiograms instantly to track antibiotic effectiveness.



Facility Comparison Map

Compare facility data globally, including organism prevalence and statistics.



AI-Powered Query Generation

Use Generative AI and NLP to generate queries from natural language inputs.



Predictive Resistance Modeling

Leverage machine learning to forecast antibiotic resistance patterns.



EXPLORE

NEQTrack

supports microbiology laboratories in registering their facilities, enrolling users, submitting proficiency test results, and generating a scoring dashboard.



Antibiotic Panel Preparation



Laboratory Registration



Laboratory User Enrollment



Bacterial and Reference Strains



New Test Management



Expected Interpretation Mgt.



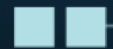
Data Collection by Strain ID



Dashboard Reporting and Scoring



Combating antimicrobial resistance is not a choice—it's a responsibility. Strong data, smart surveillance, and global collaboration are our best defenses.



www.qaapt.com



MOTIVATIONS

Why We Developed QAAPT

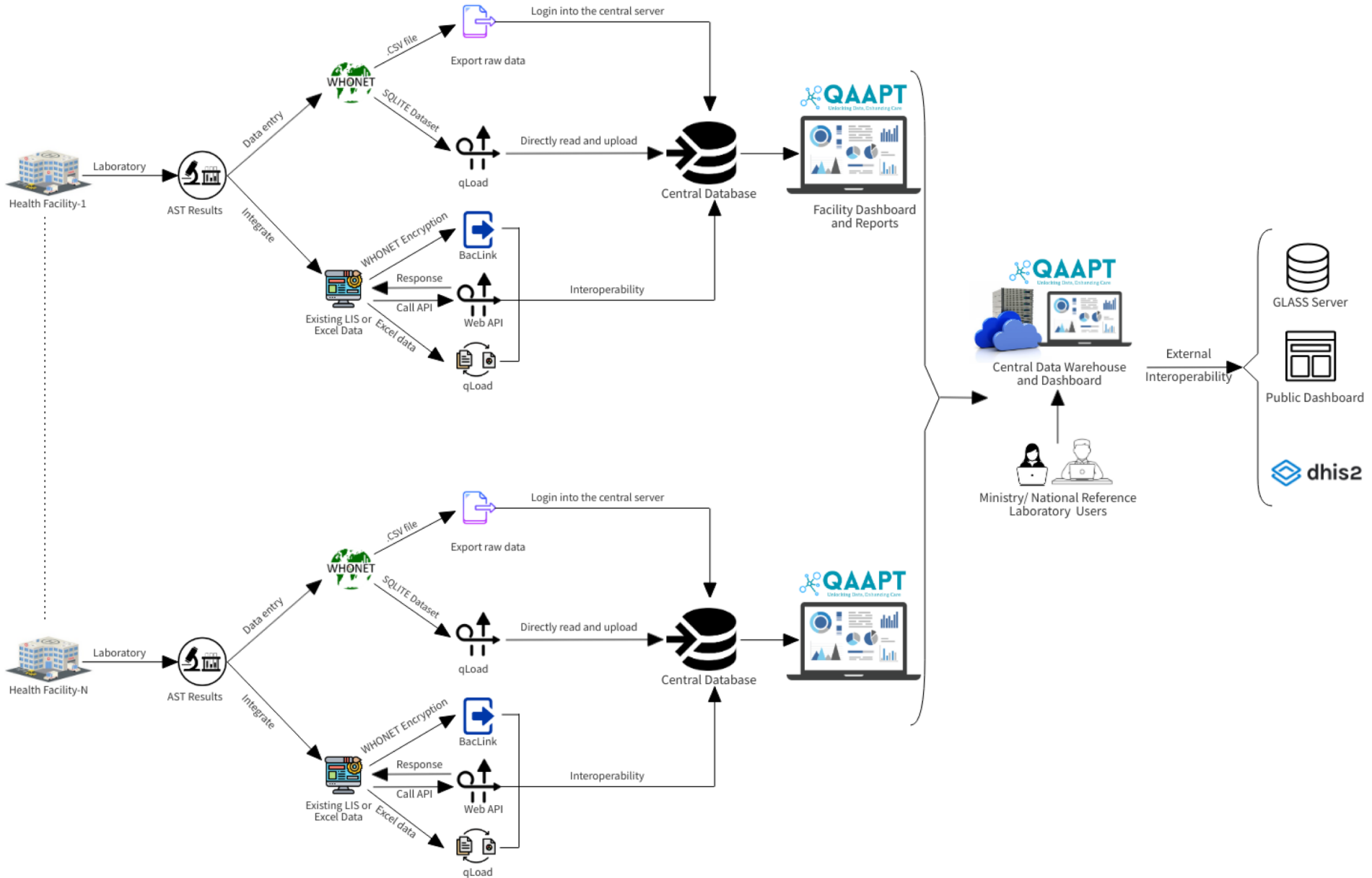
From 2019 to 2023, during CAPTURA Phase I, we analyzed 2.37 million records from seven countries using QAAPT and WHONET. This work exposed major gaps in how antimicrobial resistance (AMR) data is collected, managed, and visualized.

- ✓ AMR data comes from different sources and formats, making it hard to manage.
- ✓ Privately owned LIS and HIS systems create integration challenges.
- ✓ No dedicated tool existed for powerful AMR data visualization.
- ✓ Microbiology and IT must work together, but often lack a common platform.
- ✓ Stronger AMR surveillance systems are needed for better global health insights.

Interested in QAAPT? Connect with us via Live Support

2. Data Process Flow

High Level Architecture



3. AI & ML in QAAPT



- **Natural Language Processing (NLP):** Translates user queries into data insights.
- **Machine Learning Models:** Predict resistance trends, high-risk pathogens, and AMR patterns.
- **Automated Data Validation:** AI ensures query accuracy and detects inconsistencies (under development).

Example: NLP, Generative and Agentic AI



Dashboard results

Geospatial Analysis

Generative AI (Natural Language Processing and Agentic AI Tool)

SPEC_TYPE

Calculate the percentage of each distinct value relative to the total number of rows in the table, bar chart and interpret

Search

Query Result

spec_type	total_count	percentage
Blood	202	0.0673
Genital	17	0.0057
Other	3	0.0010
Respiratory	172	0.0573
Soft tissue & BF	1047	0.3490
Stool	13	0.0043
Urine	1546	0.5153

Count

Based on the analysis of the data, the following interpretation is derived: For 'Blood', no count data available. For 'Genital', no count data available. For 'Other', no count data available. For 'Respiratory', no count data available. For 'Soft tissue & BF', no count data available. For 'Stool', no count data available. For 'Urine', no count data available.

Dashboard results

Geospatial Analysis

Generative AI (Natural Language Processing and Agentic AI Tool)

DEPARTMENT

Can you calculate total, percentage, pie chart and interpretation of different departments?

Search

Query Result - Tabular

department	total	percentage
burn	50	1.67
eme	1	0.03
icu	38	1.27
med	194	6.47
nephro	8	0.27
obg	547	18.23
ortho	98	3.27
oth	1580	52.67
ped	160	5.33
sur	141	4.70
uro	183	6.10

Chart

Result Interpretation

Based on the given dataset, here are some interpretations and observations: 1. The variable 'burn' has the least count of 50, which could indicate a relatively small number of patients with burn-related cases. 2. Conversely, the variable 'obg' has the highest count of 547, suggesting a high number of obstetric cases. 3. The variable 'icu' has a count of 38, which could suggest a significant number of patients requiring intensive care. 4. The variable 'med' has a count of 194, indicating a moderate number of medical cases. 5. The variables 'nephro', 'ortho', 'ped', 'uro', and 'sur' have counts ranging from 8 to 183. These counts provide some insights into the occurrence of these specific medical conditions, but without more context, it's difficult to draw definitive conclusions. For example, 'nephro' could indicate nephrology cases, while 'uro' could suggest urology cases. 6. The variable 'oth' has a count of 1580. Given that 'oth' is an abbreviation for 'other', it could signify a category that encompasses a broad range of cases not specifically classified under the other categories. In terms of comparative and trend analysis, without

Copy to Clipboard

4. QAAPT in Action

Example 1: Predicting AMR trends using ML models [1]



Dashboard results

Geospatial Analysis

Generative AI (Natural Language Processing and Agentic AI Tool)

Hide default dashboard

Interpretation

Expand

Prediction for Ciprofloxacin (Model Accuracy: 17%)

Percentage (%)

Year

Resistant (R)

Sensitive (S)

Intermediate (I)

Year	Resistant (R)	Sensitive (S)	Intermediate (I)
2017	40	55	5
2018	45	50	5
2019	35	60	5
2020	35	60	5
2021	35	62	5
2022	32	65	5
2023	30	68	5
2024	28	70	5
2025	25	72	5
2026	22	74	5
2027	20	75	5
2028	18	76	5
2029	15	78	5

Prediction for Nitrofurantoin (Model Accuracy: 95%)

Percentage (%)

Year

Resistant (R)

Sensitive (S)

Intermediate (I)

Year	Resistant (R)	Sensitive (S)	Intermediate (I)
2017	20	70	10
2018	25	72	5
2019	28	70	5
2020	32	70	-5
2021	35	70	-10
2022	40	70	-15
2023	45	70	-20
2024	50	70	-25
2025	55	70	-30
2026	58	70	-35
2027	60	70	-40
2028	65	70	-45
2029	70	70	-50

Basic parameters

Human

Animal

OH

Select Dataset

QAAPT Demo Dataset

Select Report (s)

6. AMR trend

7. Antibigram

8. MDR Prevalence

9. GLASS indicators

10. AMR Prediction

No. of Isolates

20

Microorganism

Escherichia coli (365)

Antibiotic (Multiple selection)

Ciprofloxacin

Nitrofurantoin

Select pattern

RIS statistics

Isolate type

First Isolates

Sex

ALL

Age group

ALL

Specimen

ALL

Department

ALL

Records from

21/03/2017

Records to

28/07/2019

Culture result

ALL

Display results

Refresh window

Clear filter

Annual/Biannual Trend Analysis [2]



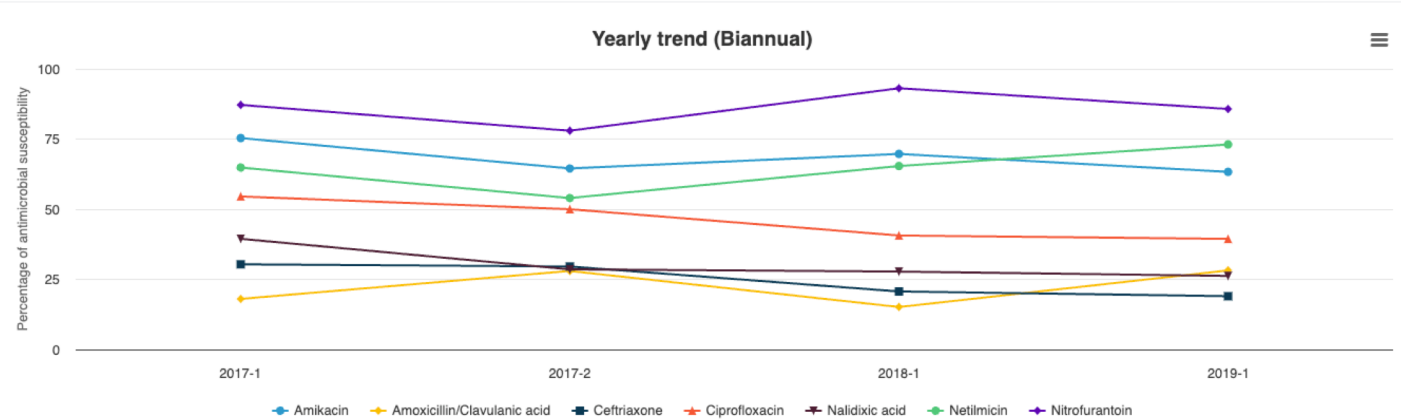
Dashboard results

☒ Hide default dashboard Interpretation Expand

Geospatial Analysis

Generative AI (Natural Language Processing and Agentic AI Tool)

Antimicrobial Susceptibility trend result



Copy Excel CSV PDF

Antibiotics	2017-1	2017-2	2018-1	2019-1	2019-2
Amikacin	52/69 (75.36%)	60/93 (64.52%)	23/33 (69.7%)	69/109 (63.3%)	0/0 (0%)
Amoxicillin/Clavulanic acid	11/61 (18.03%)	28/100 (28%)	5/33 (15.15%)	11/39 (28.21%)	0/0 (0%)
Ceftriaxone	17/56 (30.36%)	21/71 (29.58%)	6/29 (20.69%)	19/100 (19%)	0/0 (0%)
Ciprofloxacin	24/44 (54.55%)	47/94 (50%)	13/32 (40.63%)	41/104 (39.42%)	0/0 (0%)
Nalidixic acid	15/38 (39.47%)	18/63 (28.57%)	5/18 (27.78%)	16/61 (26.23%)	0/0 (0%)
Netilmicin	48/74 (64.86%)	34/63 (53.97%)	17/26 (65.38%)	19/26 (73.08%)	0/0 (0%)
Nitrofurantoin	34/39 (87.18%)	46/59 (77.97%)	27/29 (93.1%)	60/70 (85.71%)	0/0 (0%)

Showing 1 to 7 of 7 entries

Basic parameters

☒ Human ☐ Animal ☐ OH

Select Dataset

QAAPT Demo Dataset

Select Report (s)

- ☐ 3. Specimen type
- ☐ 4. Microorganism distribution
- ☐ 5. AMR pattern
- ☒ 6. AMR trend
- ☐ 7. Antibigram
- ☐ 8. MDR Prevalence

No. of Isolates 20

Microorganism

Escherichia coli (365)

Antibiotic (Multiple selection)

- ☒ Amikacin
- ☒ Amoxicillin/Clavulanic acid
- ☒ Ampicillin
- ☒ Cefepime
- ☒ Ceftriaxone
- ☒ Ciprofloxacin
- ☒ Doripenem
- ☒ Meropenem
- ☒ Nalidixic acid
- ☒ Netilmicin
- ☒ Nitrofurantoin
- ☒ Tetracycline
- ☒ Select All

Isolate type First Isolates

AST result S

Sex ALL

Age group ALL

Specimen ALL

Department ALL

Records from 21/03/2017 Records to 28/07/2019

Culture result ALL

Display results Refresh window

Clear filter

Example 2: Cumulative Antibigram Development [1]



Dashboard qLoad Support Documentation

Cumulative Antibigram - Percentage of susceptibility

Download Preview

Copy Excel CSV PDF Print

Antibiotic/Microorganism	Vancomycin	Nitrofurantoin	Gentamicin	Doxycycline	Clindamycin	Ciprofloxacin	Azithromycin	Trimethoprim/Sulf
Acinetobacter sp.		67%	17%	57%		38%	25%	40%
Enterobacter sp.		100%				40%	50%	100%
Escherichia coli		85%	52%	35%	40%	46%	39%	36%
Klebsiella sp.	100%	68%	52%	43%		62%	40%	34%
Proteus sp.		67%	41%			26%	19%	
Pseudomonas sp.	100%	34%	53%	22%		65%	53%	26%
Salmonella sp.			100%			75%	50%	50%

- ☒ QAAPT Demo Dataset
- ☐ BD_BITID
- ☐ NP_BHERI
- ☐ Sample_LIS_Dataset_Nepal

Reports

- ☐ 3. Specimen type
- ☐ 4. Microorganism distribution
- ☐ 5. AMR pattern
- ☐ 6. AMR trend
- ☒ 7. Antibigram
- ☐ 8. Dataset preview and download

Choose template Cumulative antibiogram

AST result S

Sex ALL

Age group ALL

Specimen ALL

Records from

03/21/2017

Records to

07/28/2019

Culture result ALL

AST method Disk Diffusion - DD (CLSI)

Antibiogram by Class [2]



Dashboard results

Enable default dashboard and save setting Interpretation Expand

Laboratories on Map

Ask a question...

Search

Antibiogram by Class

Gram Negative Organisms

CSV Excel PDF Print

Organism	Total Isolates	Aminoglycosides			Beta-lactam+Inhibitors		Cephems			
		Amikacin	Gentamicin	Netilmicin	Amoxicillin/Clavulanic acid	Piperacillin/Tazobactam	Cefepime	Cefotaxime	Ceftazidime	Ceftriaxone
Escherichia coli	365	100% (305/305)	94.5% (222/235)	91.5% (173/189)	100% (233/233)	78.9% (56/71)	0%	97.2% (106/109)	95.7% (177/185)	94.6% (243/257)
Klebsiella sp.	349	100% (300/300)	94.3% (217/230)	94.7% (143/151)	100% (207/207)	78% (64/82)	0%	97.6% (122/125)	94.8% (184/194)	97.2% (242/249)

Showing 1 to 2 of 2 entries

Previous 1 Next

Legend: ≥90% 70-89% 1-69% N/A or ≤0%

Gram Positive Organisms

CSV Excel PDF Print

Organism	Total Isolates	Aminoglycosides			Beta-lactam+Inhibitors		Cephems			
		Amikacin	Gentamicin	Netilmicin	Amoxicillin/Clavulanic acid	Piperacillin/Tazobactam	Cefepime	Cefotaxime	Ceftazidime	Ceftriaxone
Staphylococcus aureus ss. aureus	148	87.6% (120/137)	78.4% (80/102)	97.4% (37/38)	82.3% (65/79)	0%	0%	57.1% (24/42)	100% (85/85)	93.4% (99/106)

Showing 1 to 1 of 1 entries

Previous 1 Next

Legend: ≥90% 70-89% 1-69% N/A or ≤0%

Basic parameters

Human Animal OH

Select Dataset

QAAPT Demo Dataset

Select Report (s)

- ☐ 5. AMR pattern
☐ 6. AMR trend
☒ 7. Antibiogram
☐ 8. MDR Prevalence
☐ 9. GLASS indicators
☐ 10. AMR Prediction

No. of Isolates

20

Template*

Antibiogram by Class

Organism type*

Both

Microorganism (Multiple selection)

Escherichia coli (365)

Klebsiella sp. (349)

Staphylococcus aureus ss. aureus (148)

Antibiotic Class (Multiple selection)

Aminoglycosides

Beta-lactam+inhibitors

Cephems

Cephems-Oral

Isolate type

First Isolates

AST result

S

Sex

ALL

Age group

ALL

Specimen

ALL

Records from

21/03/2017

Records to

28/07/2019

Culture result

ALL

Display results

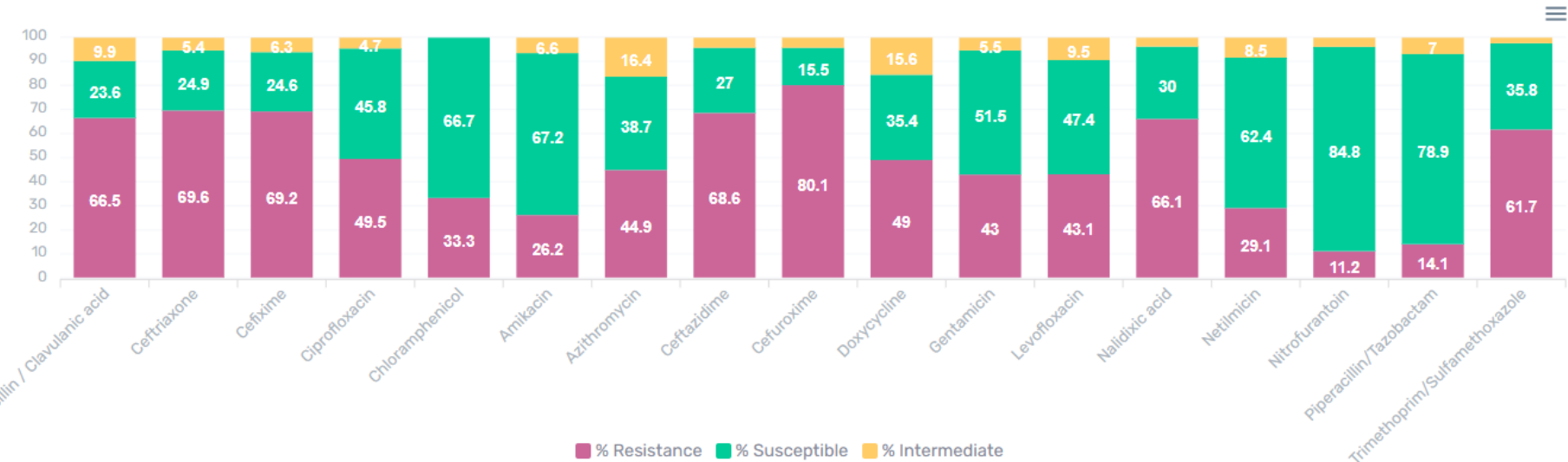
Refresh window

Clear filter

Example 3: Real-time resistance pattern visualization.



Antimicrobial Susceptibility Test (AST) result



☒ QAAPT Demo Dataset

☐ BD_BITID

☐ NP_BHERI

☐ Sample_LIS_Dataset_Nepal

Reports

☐ 1. QAAPT standard report

☐ 2. Clinical/ demographic distribution

☐ 3. Specimen type

☐ 4. Microorganism distribution

☒ 5. AMR pattern

Microorganism

Escherichia coli

Antibiotic (Multiple selection)

✕ Amoxicillin / Clavulanic acid

✕ Ampicillin ✕

✕ Ceftriaxone

✕ Cefixime

✕ Ciprofloxacin

✕ Chloramphenicol

✕ Amikacin

✕ Azithromycin

✕ Ceftazidime

✕ Cefuroxime

✕ Colistin

✕ Doxycycline

✕ Gentamicin

✕ Imipenem

✕ Levofloxacin

✕ Meropenem

✕ Nalidixic acid

✕ Netilmicin

✕ Nitrofurantoin

✕ Piperacillin/Tazobactam

✕ Tetracycline

✕ Tigecycline

✕ Trimethoprim/Sulfamethoxazole

✕ Select All

Antimicrobial Susceptibility Test (AST) result

Copy Excel CSV PDF Showing 1 to 17 of 17 entries

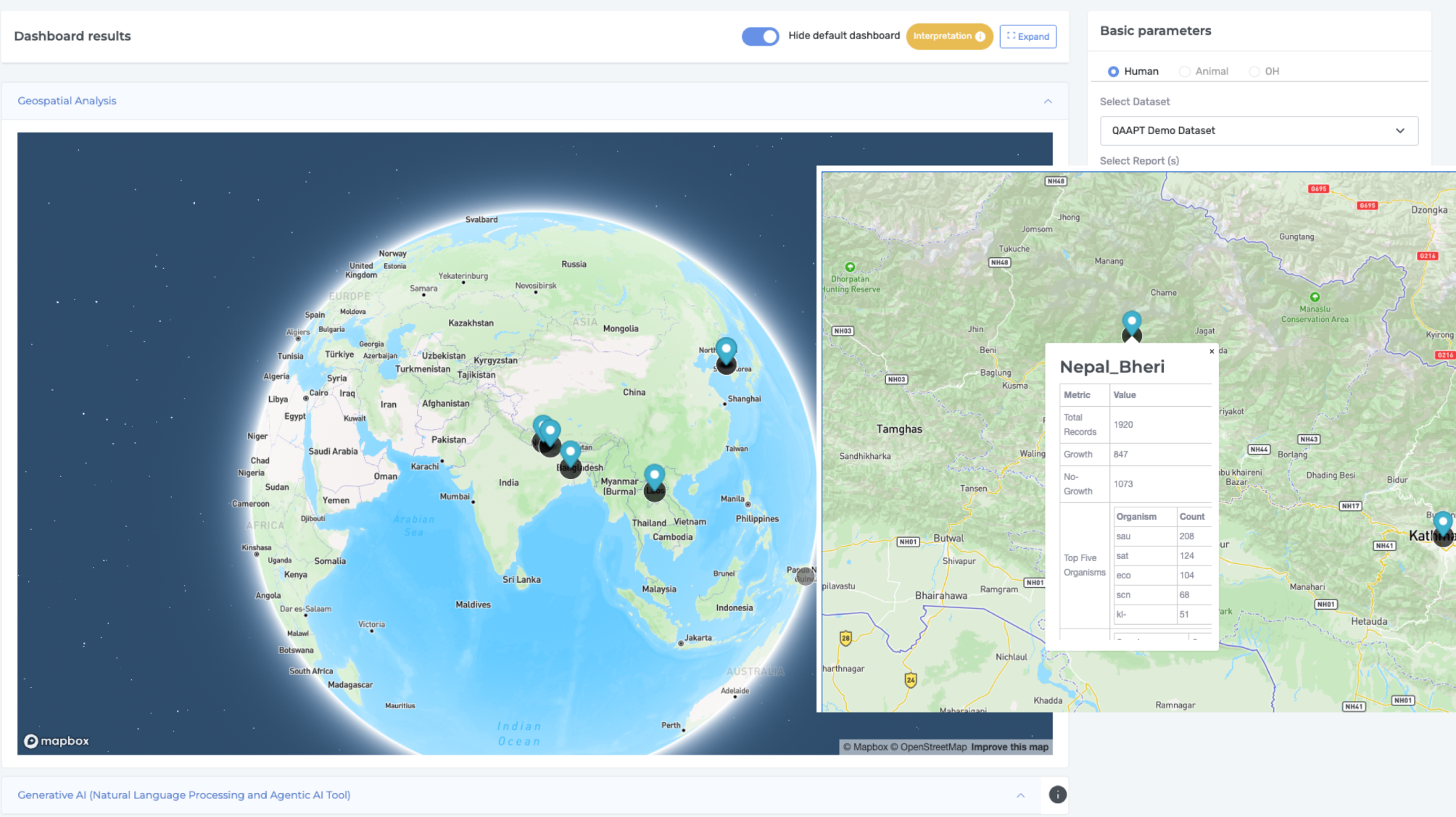
Previous

1

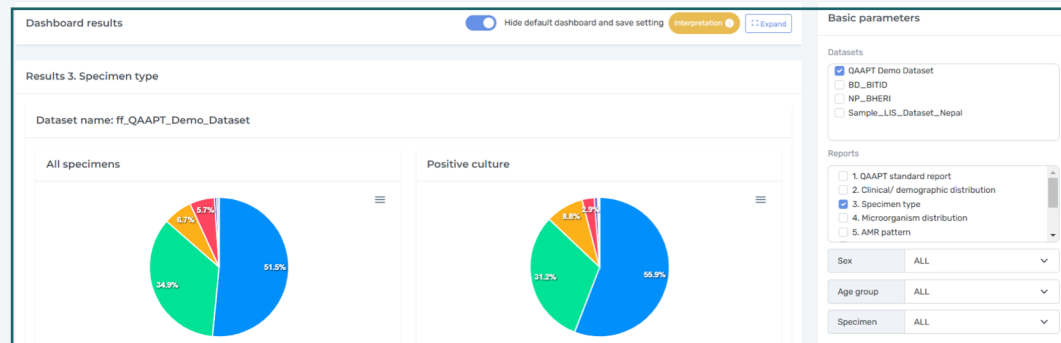
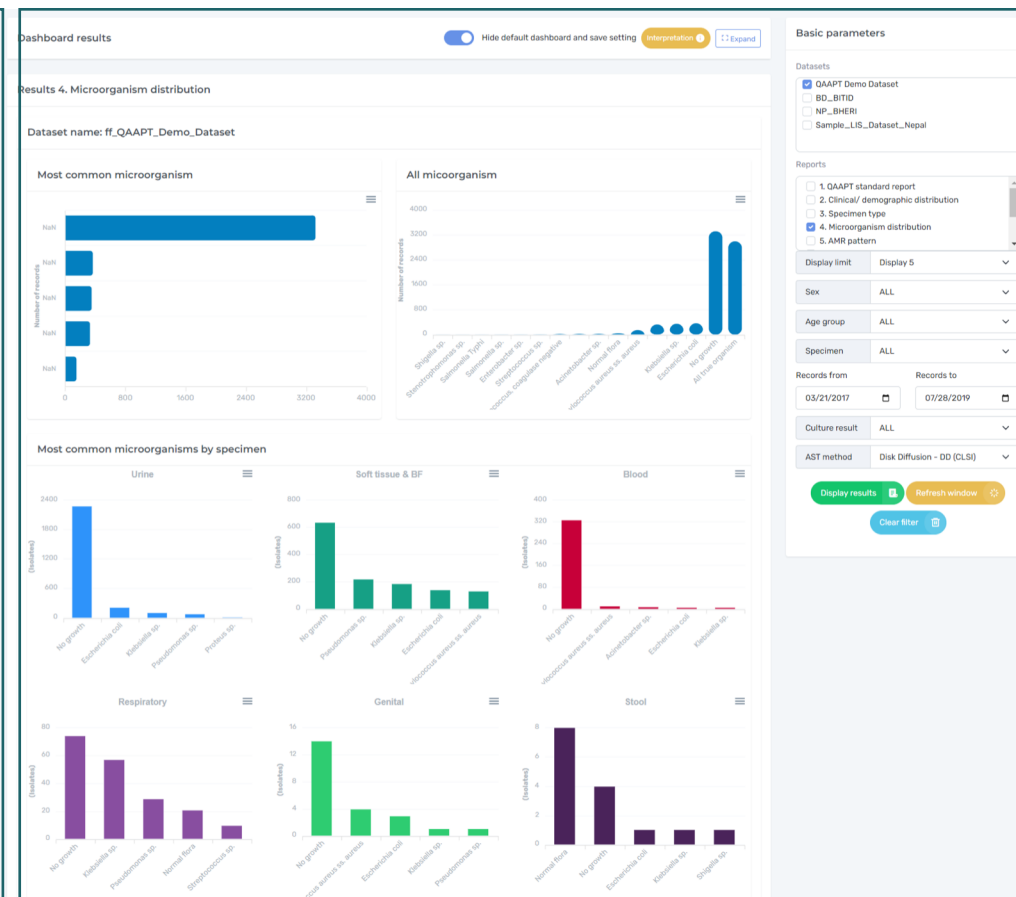
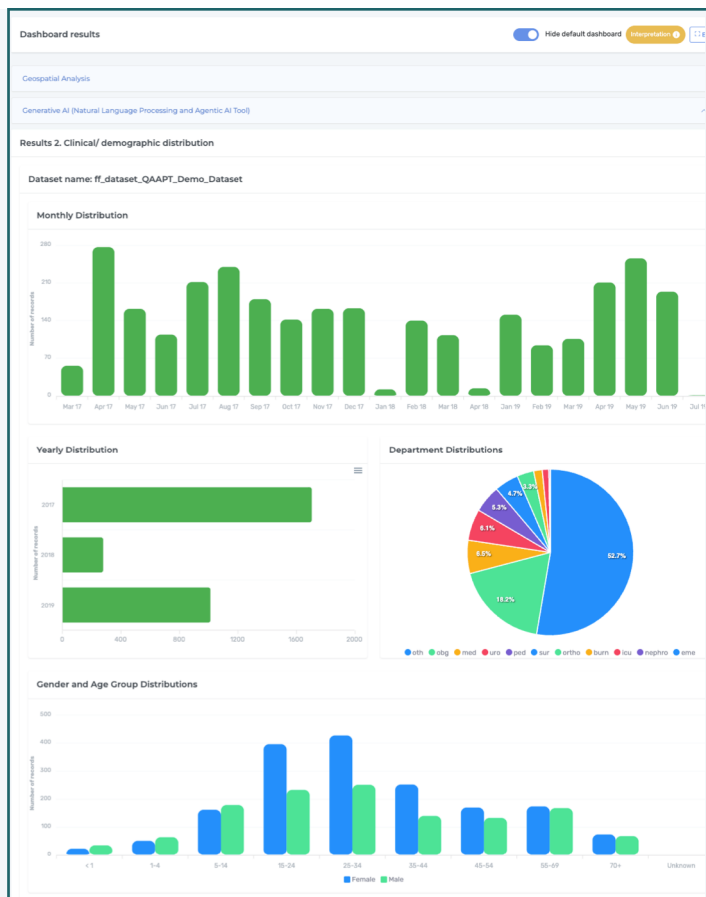
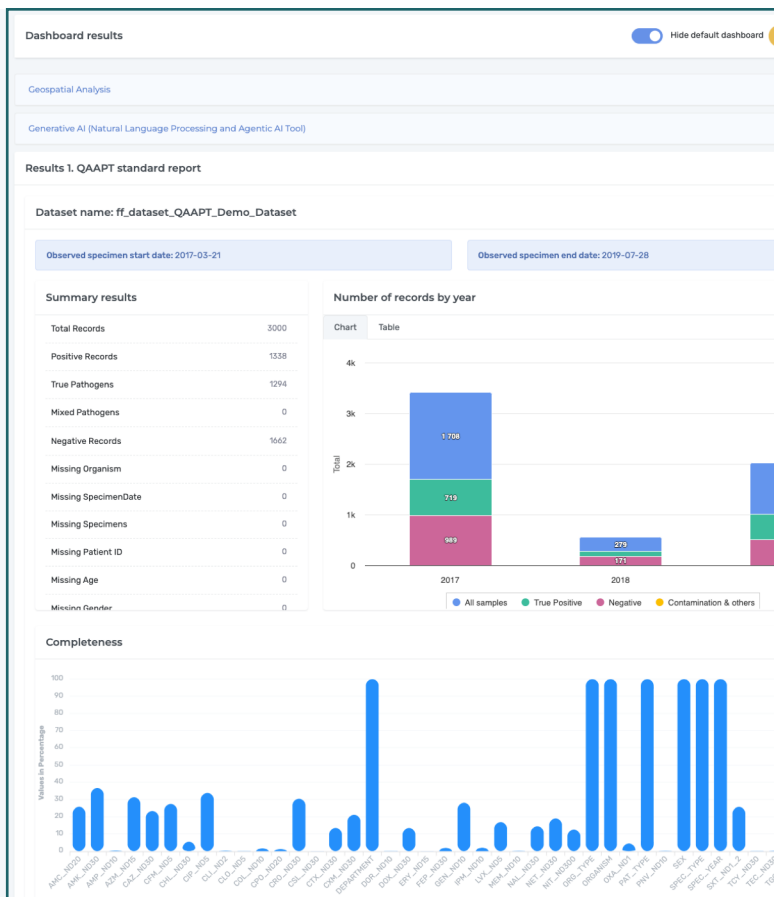
Next

Antibiotics	Total tested isolates (n)	Resistance (n, %)	Susceptible (n, %)	Intermediate (n, %)
Amikacin	305	80, 26.2%	205, 67.2%	20, 6.6%

Example 4: Identifying hotspots of resistant infections



Example 5: Standard, Clinical, Specimen and Microorganism Reports



5. QAAPT Academy

Building Expertise in Antimicrobial Defense



<https://qaapt.com/academy>



Global Users of the QAAPT Website from July 2024



WHONET and QAAPT Training in Malaysia, 2024



WHONET and QAAPT Training in Malaysia, 2024



WHONET and QAAPT Training in Malaysia, 2023



QAAPT Training in Seoul, Feb 2025



QAAPT Training in Bangladesh, Jan 2025



QAAPT Training in Bangladesh, Jan 2025

QAAPT Impact & Use Cases

- **For Microbiologists:** Rapidly analyze lab-based AMR data.
- **For Epidemiologists:** Identify emerging resistance threats.
- **For Hospitals & Public Health Agencies:** Improve antimicrobial stewardship programs.
- **For Policymakers:** Data-driven decision-making for AMR control strategies.

Future Developments

- **Enhanced AI Models:** Improving accuracy in AMR trend predictions.
- **Integration with GIS:** Spatial mapping of resistance patterns.
- **Expanding Data Sources:** Linking with global AMR surveillance databases and integrating HIS/LIS/EMR.
- **Agentic AI:** Improving NLP and LLM Models.
- **Federated Learning:** Introducing FL approach for source data.
- **Voice Search**
- **Piloting in One Health Approach**

The background is a solid teal color. In the top-left corner, there are several overlapping, semi-transparent teal geometric shapes (triangles and parallelograms) pointing towards the center. In the top-right corner, there is a 4x5 grid of small white dots. In the bottom-left corner, there is a 5x2 grid of small white dots. The text is centered in the middle of the image.

*"Creating solutions to fight AMR:
Reducing spread, saving lives."*

Live Demo

<https://qaapt.com/login>

Username: testme

Password: Testme@Seoul25



THANK YOU

for attention



CAPTURA
Capturing data on Antimicrobial resistance
Patterns and Trends in Use in Regions of Asia



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