AMR SURVEILLANCE NETWORKS

PUBLIC-PRIVATE PARTNERSHIPS FOR THE DEVELOPMENT AND STRENGTHENING OF INFORMATION SYSTEMS.

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PAHO
Pan American Health Organization
World Health Organization Americas

PAHO 120th ANNIVERSARY

ReLAVRA+
Latin American and Caribbean Network for AMR Surveillance

Gabriel PEDONE - Global Health Partnerships Director

MEDELLIN - July 12th, 2023

ACKNOWLEDGEMENTS TO DR. PILAR RAMON & MARCELO GALAS FOR THE INVITATION AND THE OPPORTUNITY TO PRESENT ON HOW A PRIVATE COMPANY CAN CONTRIBUTE TO GLOBAL EFFORTS TO COMBAT ANTIMICROBIAL RESISTANCE (AMR)

PRESENTATION MADE ON BEHALF OF LATAM BIOMERIEUX TEAM

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AGENDA

INSTITUTION LEVEL

- Ecology of the local healthcare institution (lab/hospital)

HEALTHCARE NATIONAL LEVEL

- AMR Surveillance Networks (public health officials)

ECOLOGY OF THE LOCAL HEALTHCARE INSTITUTION (HOSPITAL)

REAL™ Lab Analytics

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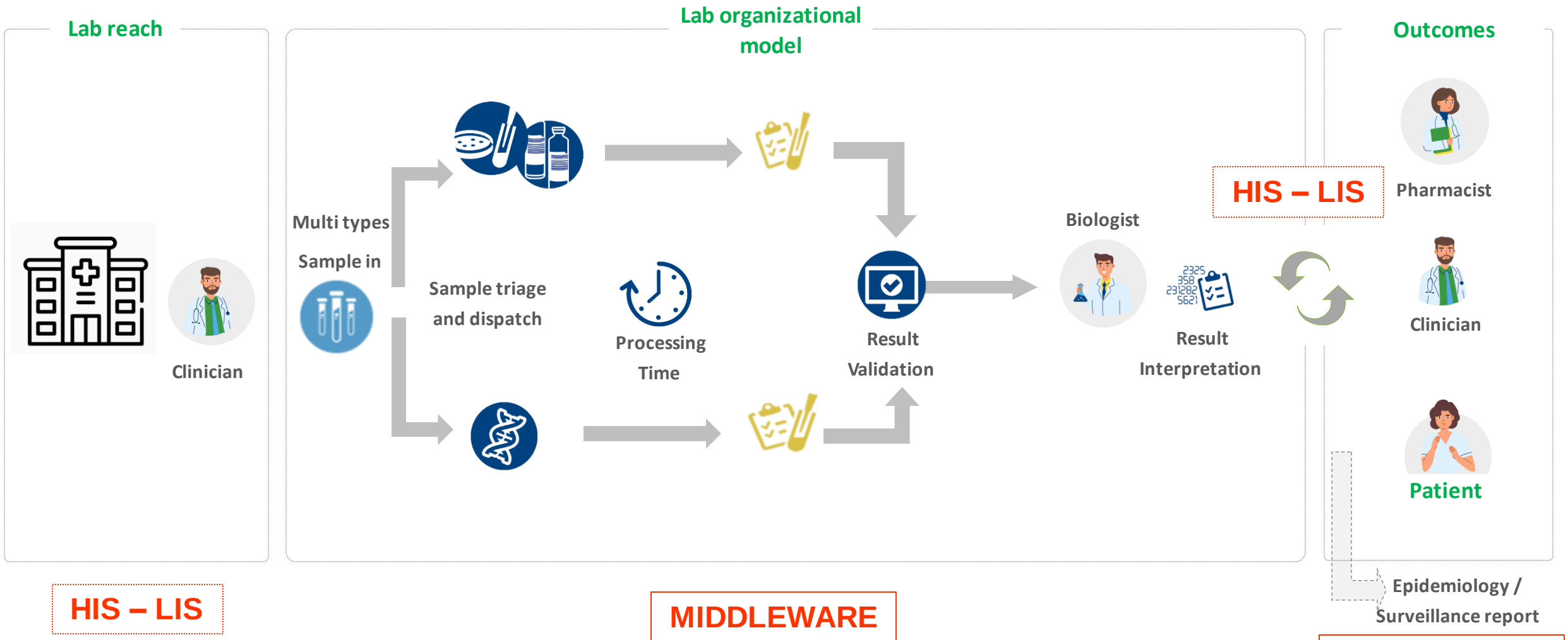
FROM CLINICIAN DEMANDS TO DATA SURVEILLANCE



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A SCALABLE SOLUTION: FROM LOCAL HEALTHCARE INSTITUTIONS (HOSPITAL) TO PUBLIC HEALTH OFFICIALS

Single-Lab

Local AMR surveillance

One single REAL™

Ward A
Ward B
Ward C
…

RE → CN

REAL™

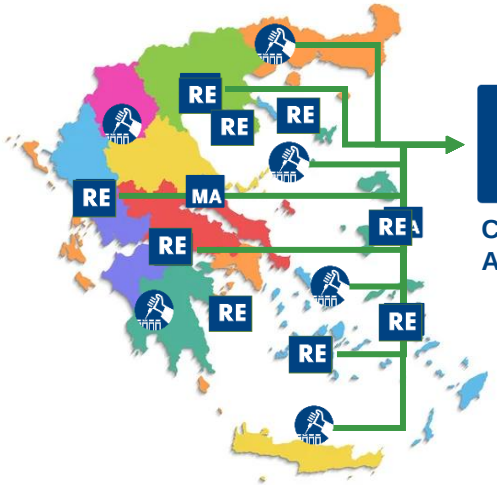
CLARION™
Lab Analytics

Automatization
=
Interoperability
→ Data standardization is a key challenge

Multi-Labs

AMR surveillance networks

Multi Real™



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CLARION™
AMR surveillance networks

REAL™

Microbiology analytical workflow

CLARION™ Lab Analytics

AMS & lab performance

AMR surveillance networks

Epidemiology monitoring

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¿QUÉ ES R·E·A·L?

Information management system for **infectious disease management**, which integrates with the hospital environment and facilitates **timely clinical decisions**, through **optimized workflows** and **superior connectivity.**

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WHAT MIDDLEWARE OFFER ? RELEVANT INFORMATION & MICROBIOLOGICAL STATISTICS FOR CLINICAL DECISION MAKING

- Lab Manager dashboard: Allows to display the main KPIs (Key Performance Indicators) to deliver the current view of the lab activity (“what happen on my lab”),
- Blood culture dashboards:
  - **Analysis**: positivity rate analysis,
  - **Efficiency**: insight into efficiency of blood culture workflow including mean load time and instrument capacity,
  - **Bottle volume**: blood volume assessment,
  - **Contaminants**: contamination rate analysis,
- ID & AST dashboards:
  - **Analysis**: organisms found in the lab and their associated susceptibility profile,
  - **Organism trend**: trending of organism occurrence,
  - **MDRO phenotype**: trending of resistance patterns,
- Cumulative antibiogram: epidemiology / AMS
  - **Cumulative antibiogram** as the view of the ecosystem of the institution in order to improve empiric antibiotherapy (probabilist antibiotherapy),
- Lab Performance dashboards:
  - **Lab efficiency:** time to results and lab efficiency analysis,
  - **Gram staining:** insight as to the Gram staining step of the microbiology lab workflow,
  - **Vitek MS Spotting analysis:** efficiency and quality of the VITEK MS spotting activity.

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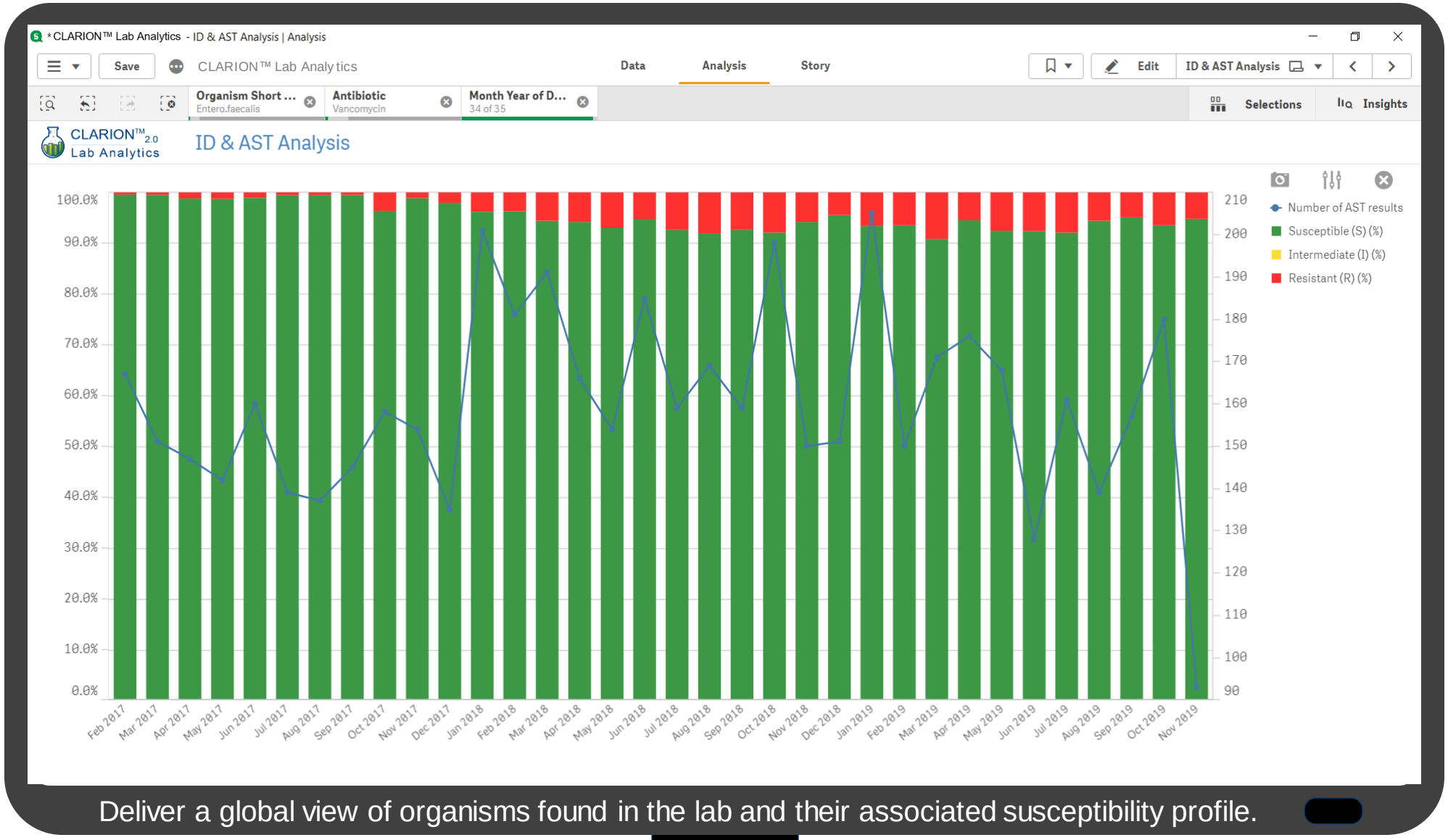
“ I NEED AMR SURVEILLANCE ON VRE (VANCOMYCIN RESISTANT ENTEROCOCCUS) ”



Deliver a global view of organisms found in the lab and their associated susceptibility profile.

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The data used are demo data and are not meant to give any clinical considerations

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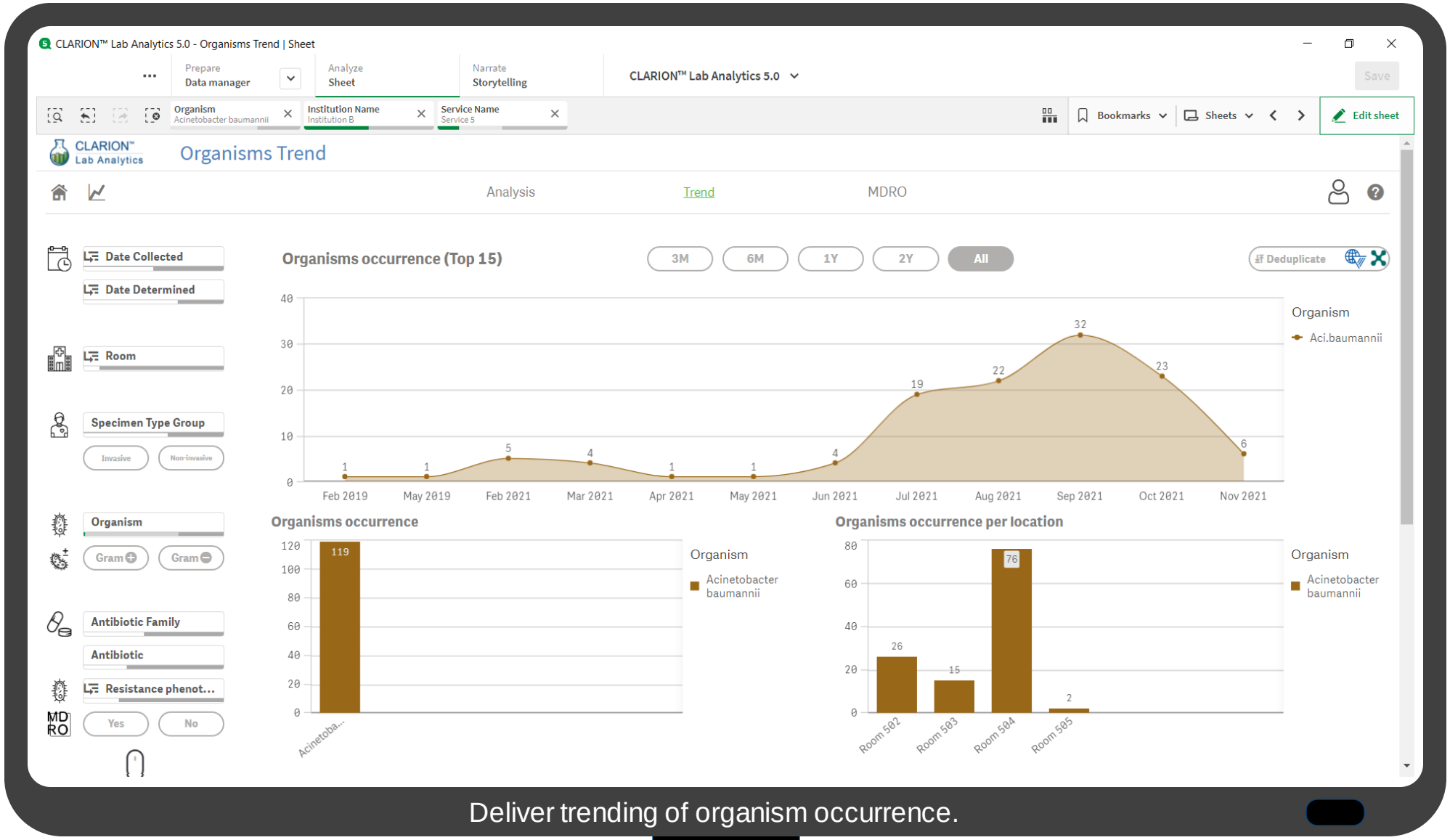
“ IS THE SUDDEN INCREASE IN *ACINETOBACTER BAUMANNII* CASES LINKED TO HAI? ”



Deliver trending of organism occurrence.

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CUMULATIVE ANTIBIOGRAM

CLARION™ Lab Analytics 5.0 - Cumulative Antibiogram | Sheet

Prepare: Data manager | Analyze: Sheet | Narrate: Storytelling | CLARION™ Lab Analytics 5.0 | Save

Antibiotic 13 of 59 | Organism 8 of 836 | Bookmarks | Sheets | Edit sheet

CLARION™ Lab Analytics

Cumulative Antibiogram

Date Collected
Date Determined
Institution
Specimen Type Group: Invasive | Non-invasive
Organism: Gram + | Gram -
Antibiotic Family
Antibiotic
Resistance phenot...
MDRO: Yes | No

Date of data collection : 6/8/22 2:57 PM (UTC)

I | I as R | I as S | 3M | 6M | 1Y | 2Y | All | Deduplicate

Antibiotic susceptibility (number of isolates)

Organism | Antibiotic Family | Antibiotic

	AMINOGLYCOSIDES		BETA-LACTAMS				
	Amikacin	Gentamicin	Ampicillin	Cefepime	Cefoxitin	Ceftazidime	Ertapenem
Enterobacter cloacae	88.2% (3,974)	78.3% (3,978)	1.6% (576)	51.9% (1,337)	0.2% (3,972)	49.4% (3,973)	74.5% (3,973)
Enterococcus faecalis	-	-	99.1% (5,458)	-	-	-	-
Enterococcus faecium	-	-	19.4% (1,887)	-	-	-	-
Escherichia coli	97.4% (41,090)	94.1% (41,106)	46.2% (41,074)	81.1% (4,531)	92.9% (41,066)	91.7% (41,082)	99.0% (41,039)
Klebsiella oxytoca	91.7% (2,022)	86.0% (2,024)	0.2% (2,024)	67.5% (425)	88.9% (2,023)	83.3% (2,024)	92.1% (2,024)
Klebsiella pneumoniae	89.9% (9,197)	79.3% (9,198)	0.1% (9,191)	56.7% (1,903)	85.7% (9,193)	66.7% (9,198)	94.1% (9,192)
Proteus mirabilis	98.5% (4,289)	86.1% (4,291)	55.8% (4,287)	96.5% (230)	97.5% (4,286)	98.4% (4,287)	99.1% (4,285)
Pseudomonas aeruginosa	88.4% (8,009)	86.7% (8,014)	-	81.6% (7,917)	-	82.2% (7,999)	-

Legend: ≥ 90% | 90% - 70% | < 70% | < 30 isolates

Deliver a view of the ecology of the hospital

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AMR SURVEILLANCE NETWORKS

AMR Surveillance networks

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CLARION™ AMR SURVEILLANCE NETWORKS - DEFINITION

AMR surveillance is a critical tool for clinicians and public health officials to improve AMS strategy.

An important cornerstone in the control of AMR is a well-designed **quantitative** system for the surveillance of spread and temporal trends in AMR from local healthcare institution (hospital) to a larger area (large cities, provinces, countries).

This AMR surveillance tool must also be **qualitative** and so based on **standardized** routine data from microbiological laboratories (result deduplication, data mapping, breakpoints…).

A **high frequency** (e.g. monthly based) surveillance supports the possibility of detection of resistance evolution that may be more accurate by merging the AMR surveillance data from microbiological laboratories of a large area.

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CLARION™ AMR SURVEILLANCE NETWORKS - MOCKUP

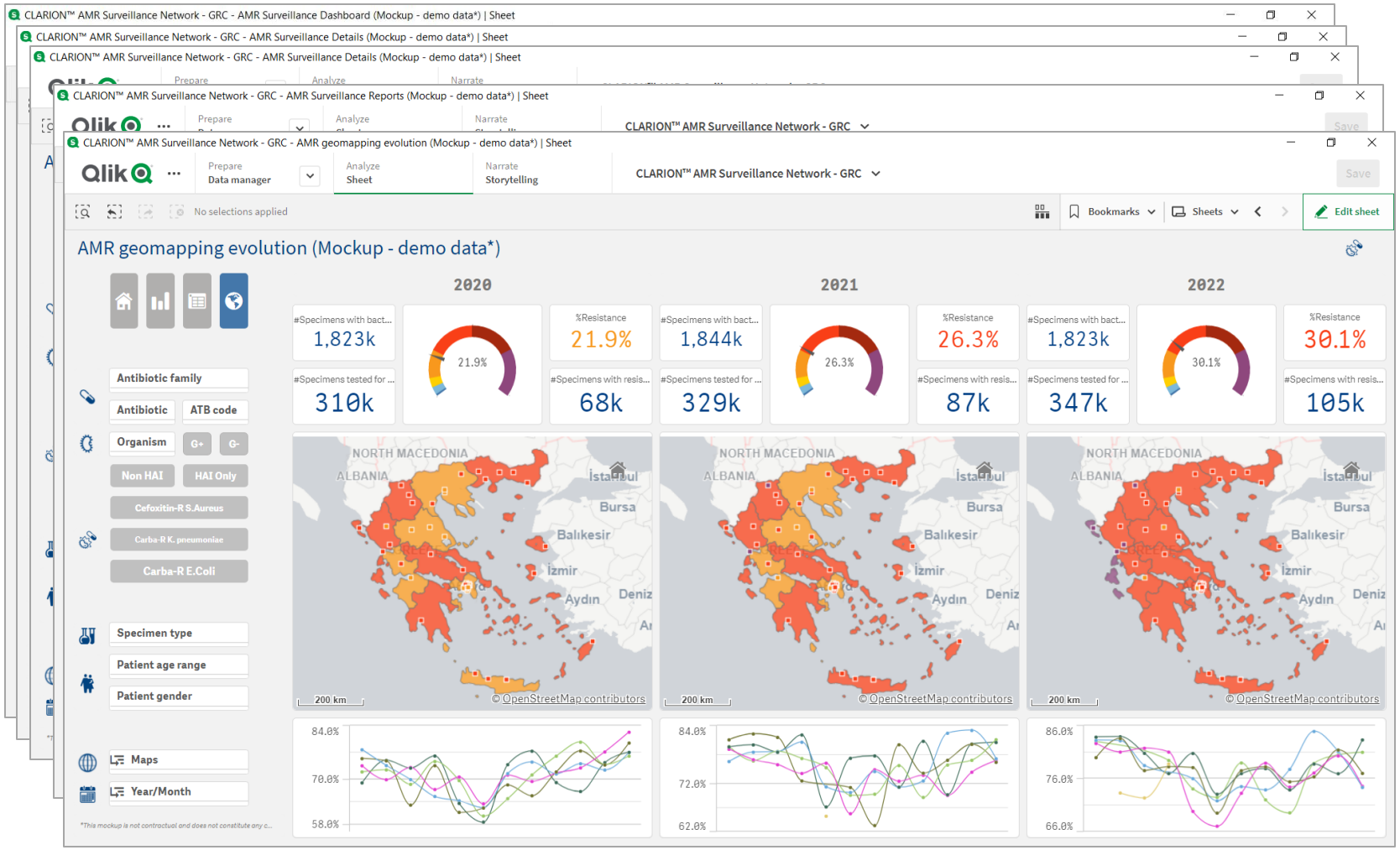
- **Temporal and geographical trends in AMR from local healthcare institution (hospital) to a larger area (large cities, provinces, countries).**

No PHI
No Patient Health Information

Yearly/monthly trend
Drill down capability

Geo-mapping
Drill down capability

Export data
Graphics and row data



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This mockup is not contractual and does not constitute any commitment. The data that are present into the demonstration platform are demonstration data and are not meant to give any clinical considerations, only to demonstrate the capabilities of the tool.

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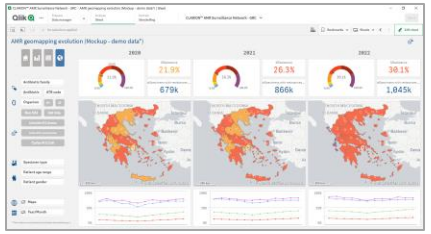
CLARION™ AMR SURVEILLANCE NETWORKS
HOW IT WORKS: OUR AMBITION FOR PILOT SITES



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AMR Surveillance network

AMR Surveillance network

Partnership starting 2022

National Cloud Hosting

HIPAA and GDPR compliant

Data Vizualisation
Data Storage
Data Processing

High frequency (monthly) or PSS data collection

ID and AST
No PHI

On premise

RE → CN Lab Analytics

Microbiology analytical workflow

Lab A

RE → CN Lab Analytics

Microbiology analytical workflow

Lab B

RE → CN Lab Analytics

Microbiology analytical workflow

Lab C

Local AMR Surveillance

Existing module

this diagram is not contractual and does not constitute any commitment

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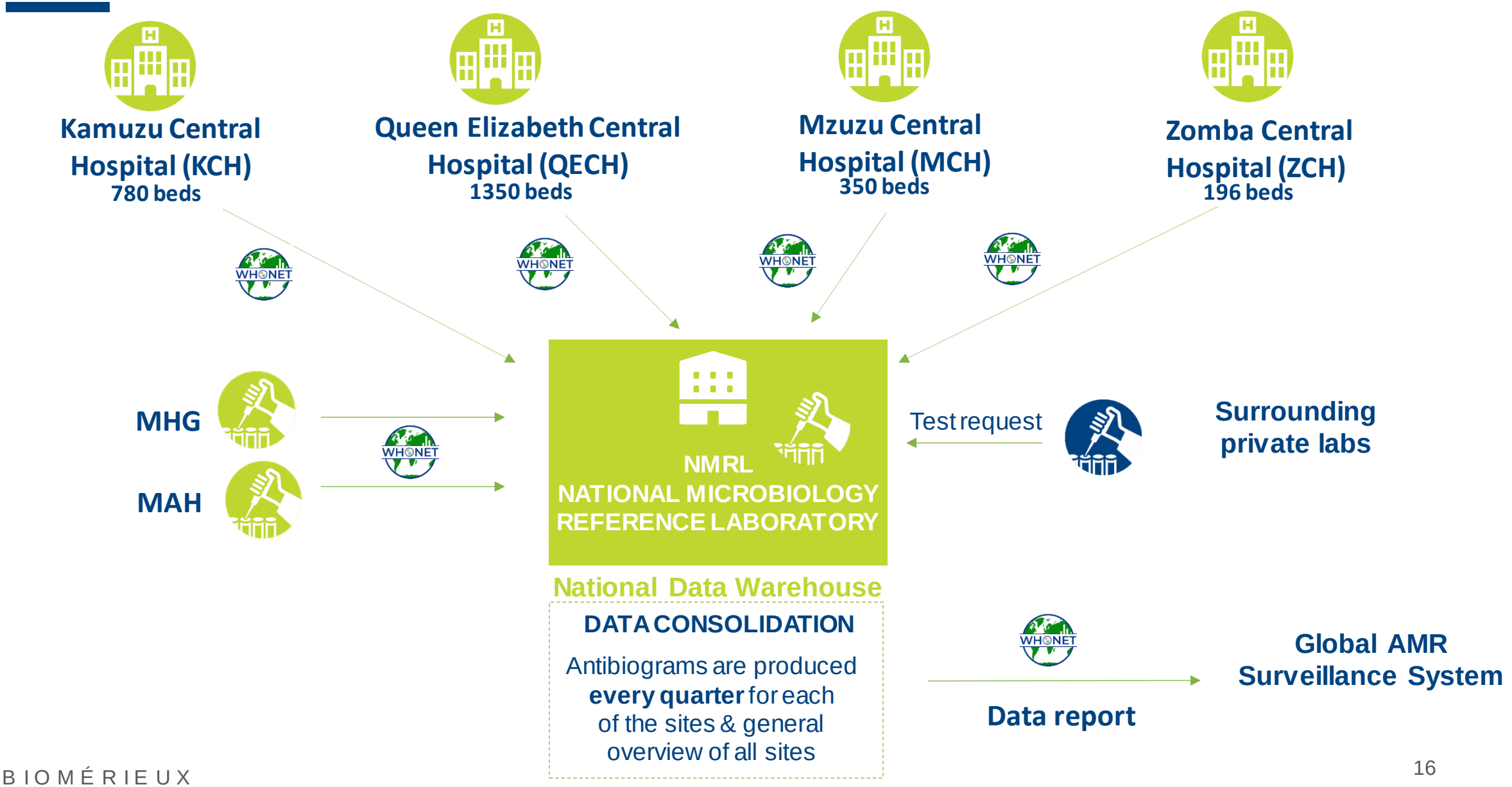
OVERVIEW OF CURRENT SURVEILLANCE DATA WORKLOW/ MALAWI EXAMPLE



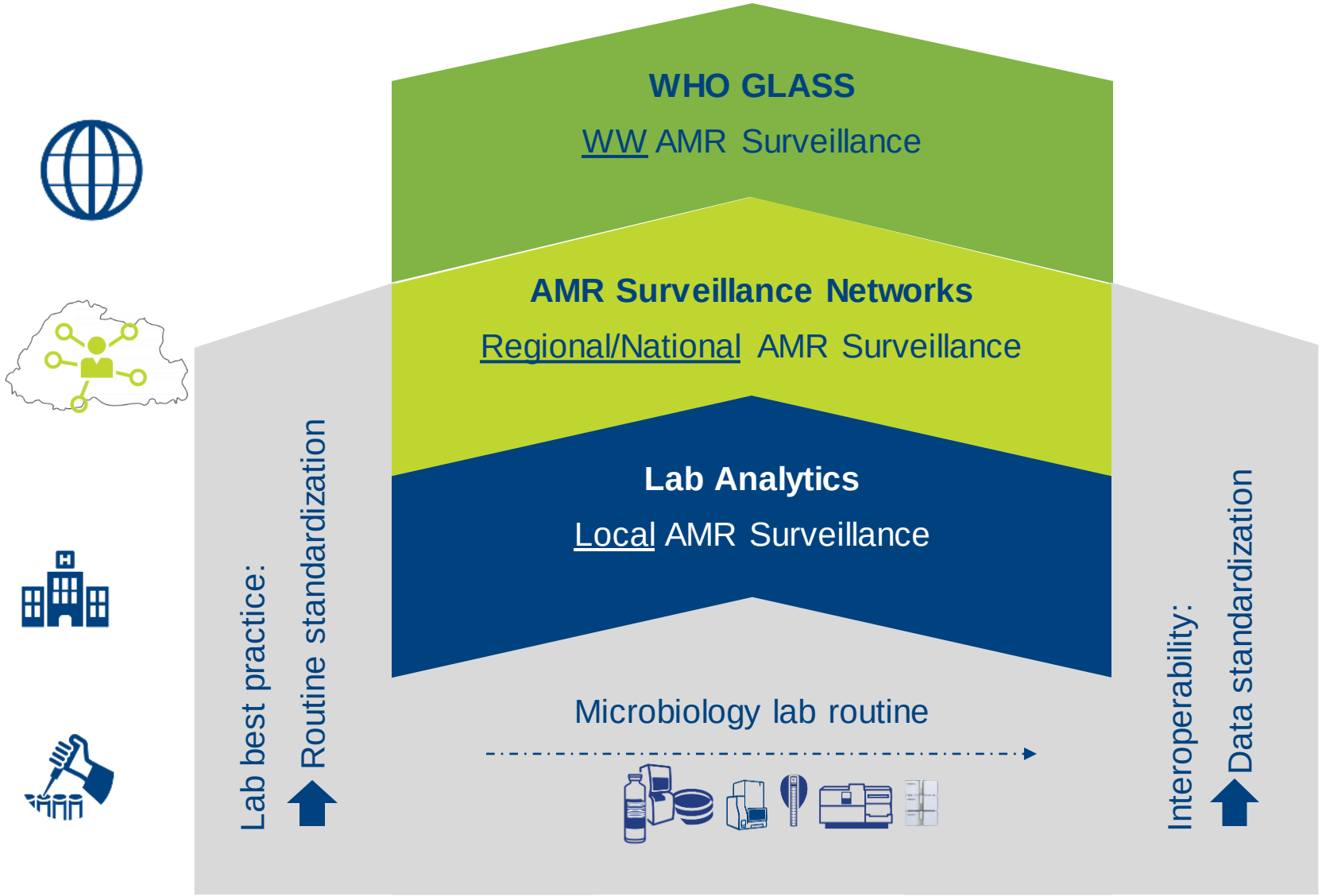
REAL TIME AMR SURVEILLANCE DEPLOYING BIOMERIEUX SOLUTIONS

HEALTHCARE WW LEVEL

HEALTHCARE NATIONAL LEVEL

INSTITUTION LEVEL

LAB LEVEL



GLASS
Global AMR Surveillance System

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CLARION™ AMR Surveillance Network

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CLARION™ LAB ANALYTICS

RE
REAL™

WHONET format

« MAKE I.T REAL »

PIONEERING DIAGNOSTICS