

Global Antimicrobial Resistance and Use Surveillance **System** (GLASS)

Achievements & Lessons Learned

ReLAVRA meeting
11-13 July 2023, Medellín, Colombia

Carmem L Pessoa-Silva, MD, PhD

Unit Head

Surveillance, Evidence and Laboratory Strengthening Unit

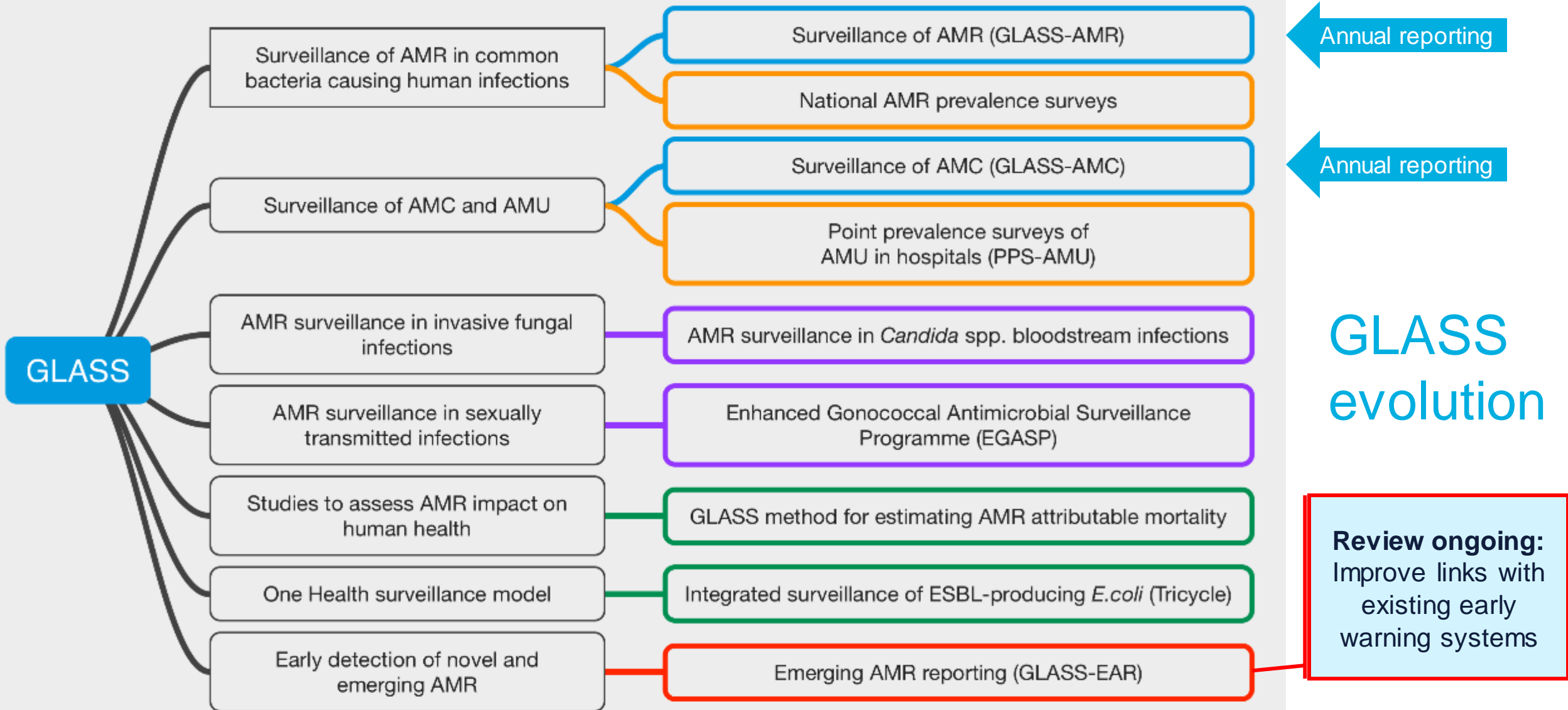
Surveillance, Prevention and Control Dept.

Antimicrobial Resistance Division



Outline

- GLASS evolution
- Highlights from the 2022 GLASS report
- Addressing gaps in AMR surveillance
- The way forward



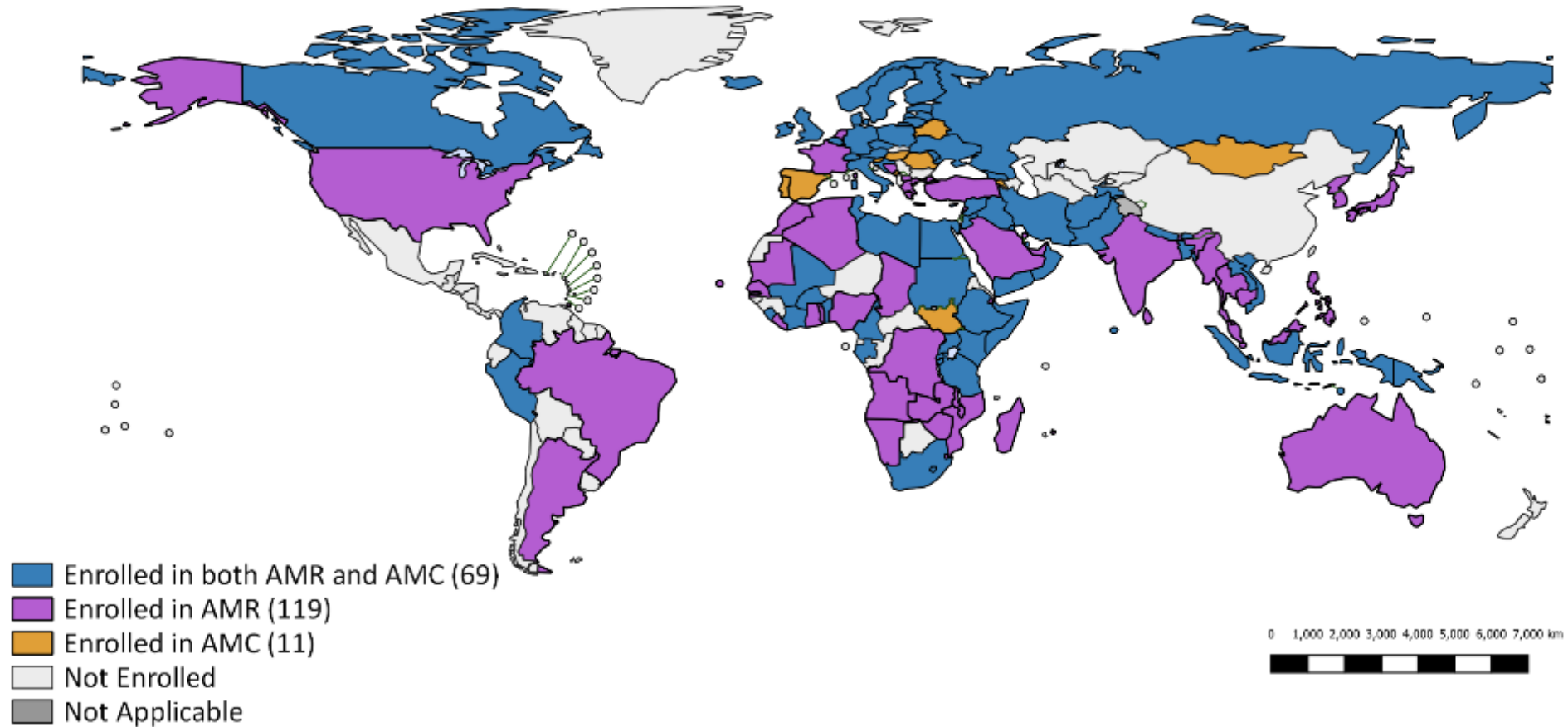
- Routine surveillance*
- Surveys
- Focused surveillance
- Special studies
- Event-based surveillance

*countries report national data to WHO annually



GLASS Enrolment Map July 2023

Number of countries enrolled in GLASS: 130



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data source: World Health Organization
Map production: Information Evidence and Research (IER)
World Health Organization
© WHO 2019. All rights reserved.



Expansão do GLASS na fase inicial

Reported to GLASS - AMR	2016 (22 countries)	2017 (48 countries)	2018 (66 countries)	2019 (70 countries)
Number of sites *				
Hospitals	466	3,097	5,557	5,942
Outpatients clinics	139	2,358	56,818	60,239
In-out patients	N.A.	N.A.	1,998	6,351
Other institutions	124	560	424	1,089
Total	729	6,015	64,797	73,621
Number of patients with suspected infection				
Blood stream	81,920	262,265	441,794	502,584
Urinary tract	415,679	1,424,011	1,888,545	2,577,333
Gastro-intestinal	7,477	10,735	17,061	17,003
Sexually transmitted	2,847	9567	18,572	9,682
Total	507,923	1,706,578	2,365,972	3,106,602

* Continuous increase in the number of surveillance sites!

2020 data = 3 346 523 infections

Sustainable Development Goal AMR Indicator



Goal 3: Ensure healthy lives and promote well-being for all at all ages

Indicator 3.2.d: Proportion of bloodstream infections due to selected antimicrobial-resistant organisms.

Proportion of bloodstream infections among patients due to

- methicillin-resistant *Staphylococcus aureus* (MRSA)
- *Escherichia coli* resistant to 3rd generation cephalosporin

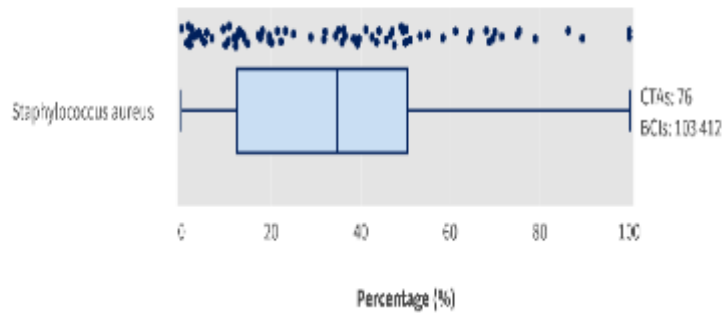
- WHO = Custodian for SDG 3
- AMR SDG indicators are monitored & reported through GLASS

Sustainable Developmental Goals indicators in 2020

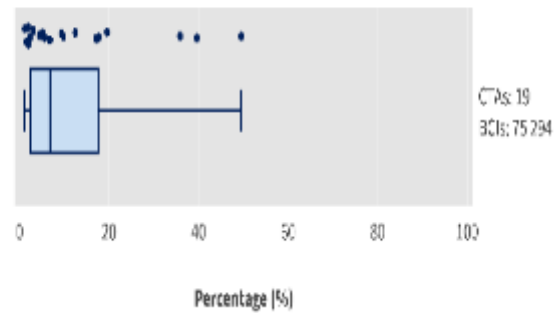
Bloodstream infections due to *E. coli* resistant to 3rd generation cephalosporins and methicillin-resistant *S. aureus*

Methicillin resistance

Countries territories and areas with ≥ 10 BCIs with AST



Countries territories and areas (CTAs) where BCIs with AST per million population is above the 75th percentile



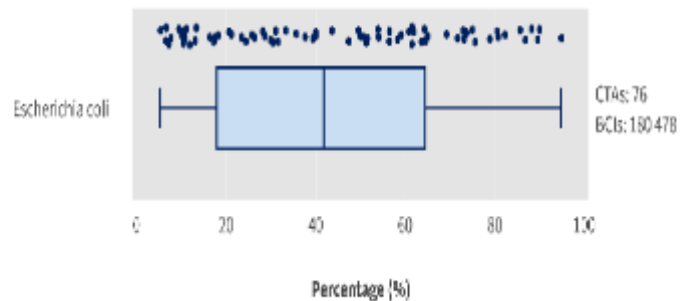
Global
2019



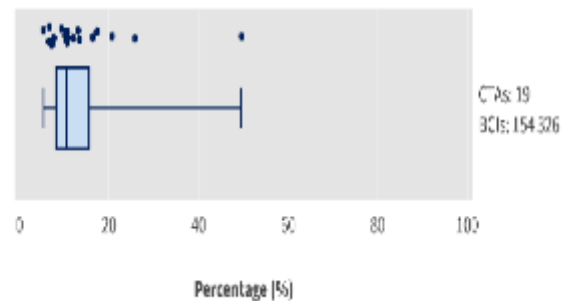
<https://data.who.int/indicators/i/5DD9606>

Third generation cephalosporins resistance

Countries territories and areas with ≥ 10 BCIs with AST



Countries territories and areas (CTAs) where BCIs with AST per million population is above the 75th percentile



Global
2020



<https://data.who.int/indicators/i/745F475>

Países com melhor cobertura de testagem relataram taxas mais baixas.

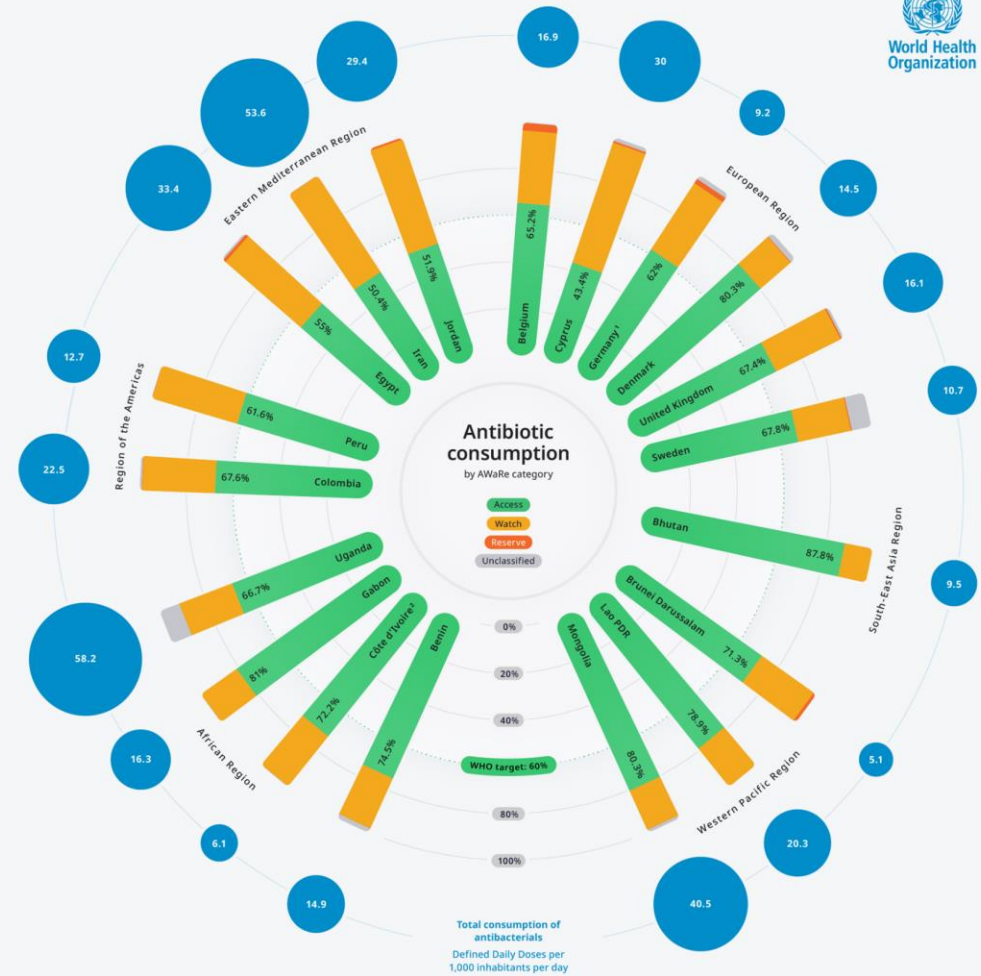
Antimicrobial consumption as per AWaRe* classification

*AWaRe

A = Access; W = Watch; R = Reserve

<https://data.who.int/indicators/i/19E688D>

July 21, 2023



Decoding Antibiotics

Antimicrobial consumption across the world and how the WHO AWaRe framework is used to protect against resistance

In order to keep antibiotics effective and reduce resistance, the WHO categorizes antibiotics using the AWaRe framework:

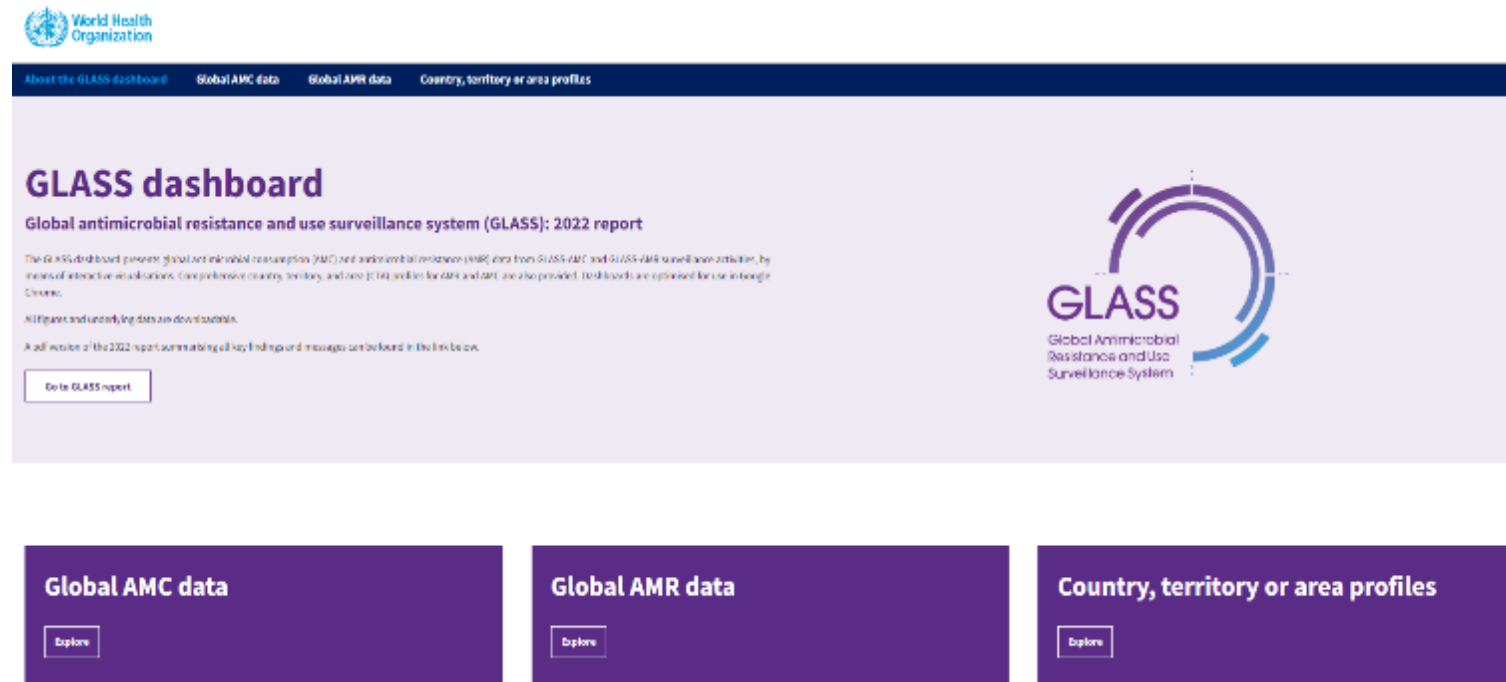
- Access** (Green): Offer the best therapeutic value, while minimizing the potential for resistance.
- Watch** (Orange): More prone to be a target of antibiotic resistance. Prioritized as targets of stewardship programs and monitoring.
- Reserve** (Red): Used only as a last resort. Closely monitored as targets of stewardship programs to ensure continued effectiveness.
- Unclassified** (Grey): Not all antibiotics were included in this framework. Some may be included in future or are addressed in other WHO guidelines.

New Online Interactive GLASS Dashboard

Online fully interactive and flexible data visualisation portal to complement the printed report

Allowing users to interact with and download

- Data
- Graphs
- Maps
- GLASS indicators



The screenshot displays the GLASS dashboard interface. At the top left is the World Health Organization logo. A dark blue navigation bar contains links: "About the GLASS dashboard", "Global AMC data", "Global AMR data", and "Country, territory or area profiles". The main content area features the title "GLASS dashboard" and "Global antimicrobial resistance and use surveillance system (GLASS): 2022 report". Below this, there is a paragraph of text describing the dashboard's purpose and a link to "Go to GLASS report". To the right is a circular graphic with the text "GLASS Global Antimicrobial Resistance and Use Surveillance System". At the bottom, there are three purple buttons: "Global AMC data", "Global AMR data", and "Country, territory or area profiles", each with an "Explore" button below it.

<https://worldhealthorg.shinyapps.io/glass-dashboard/>

Gaps

- **Low/limited use of surveillance data**
- **Data limitations**
 - Low representativeness
 - Incompleteness
 - Selection biases
 - Microbiological gaps

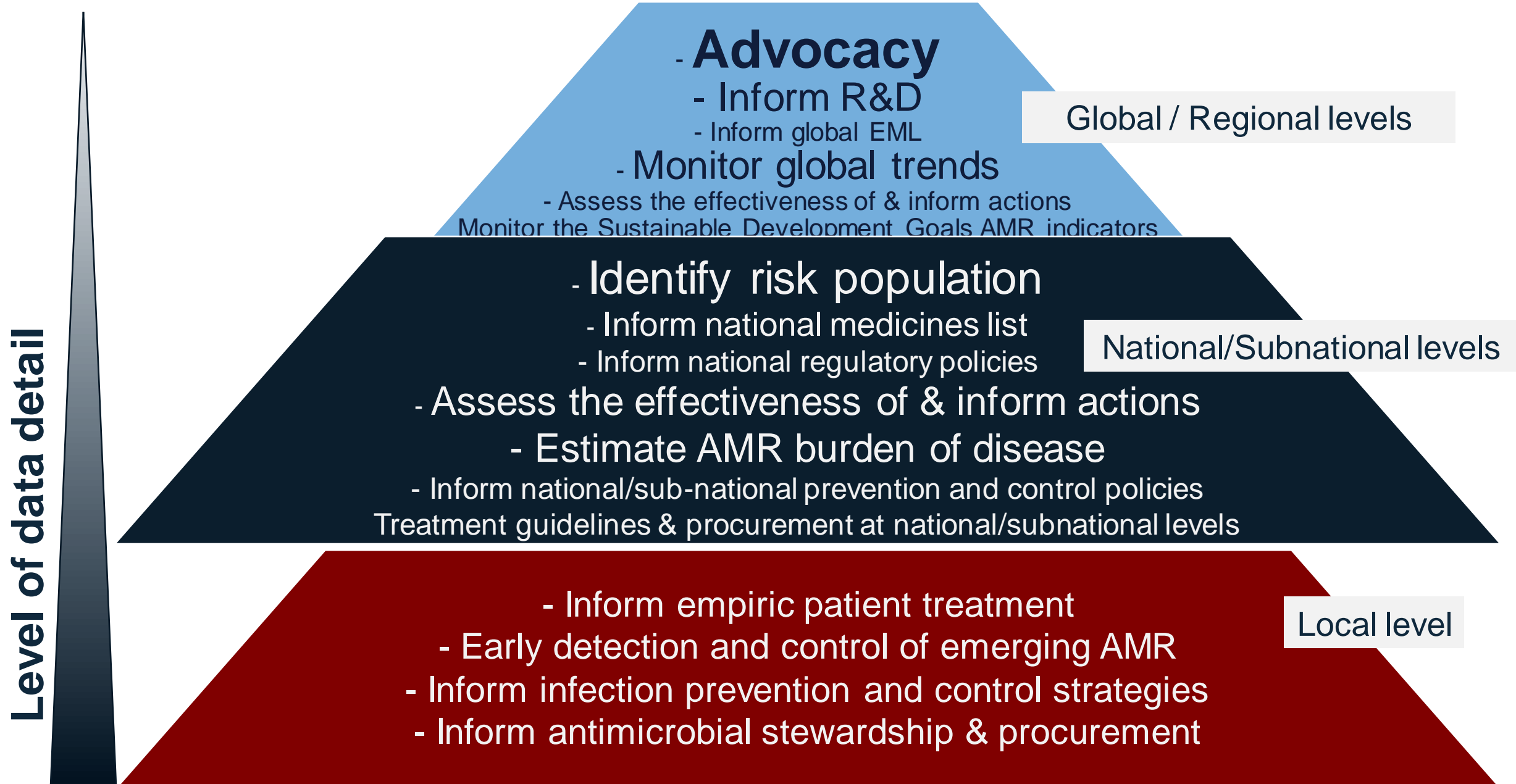


Fundamental questions about surveillance (1)

Why do you want AMR surveillance?

- What are the defined objectives and targets of the national action plan?
- What are the essential information, answers and outcomes that we need from AMR surveillance?
- What needs to be in place to obtain the needed information?

AMR surveillance objectives



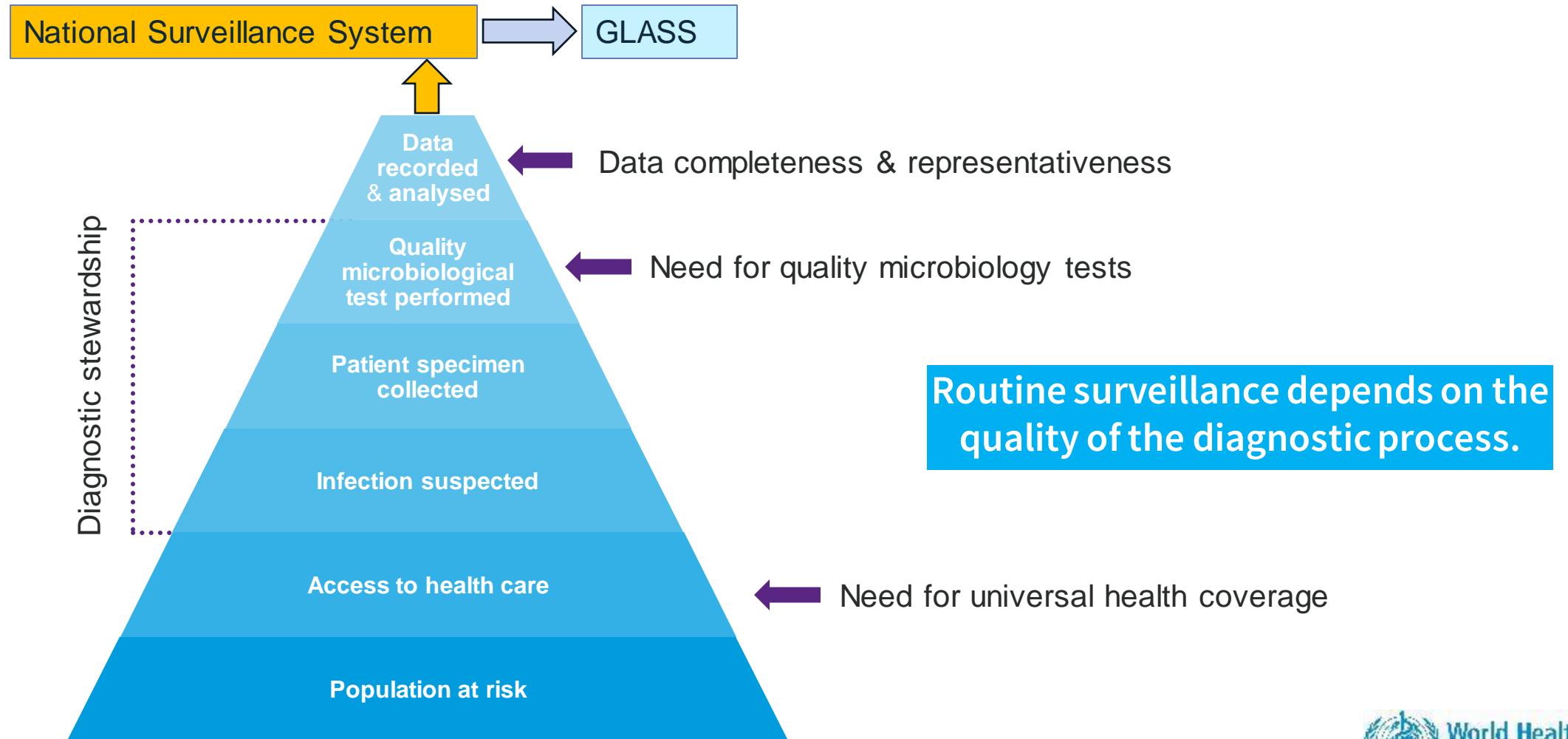
Fundamental questions about surveillance (2)

What can you DO with the data you get?

- Be aware of the data limitations, but...
- **COMMUNICATE**

Coming up soon:
GLASS guide on the use of
AMR surveillance data.

Limitations of routine surveillance



Global Antimicrobial Resistance and Use Surveillance System (GLASS)

GLASS manual for antimicrobial
resistance surveillance in
common bacteria causing
human infection



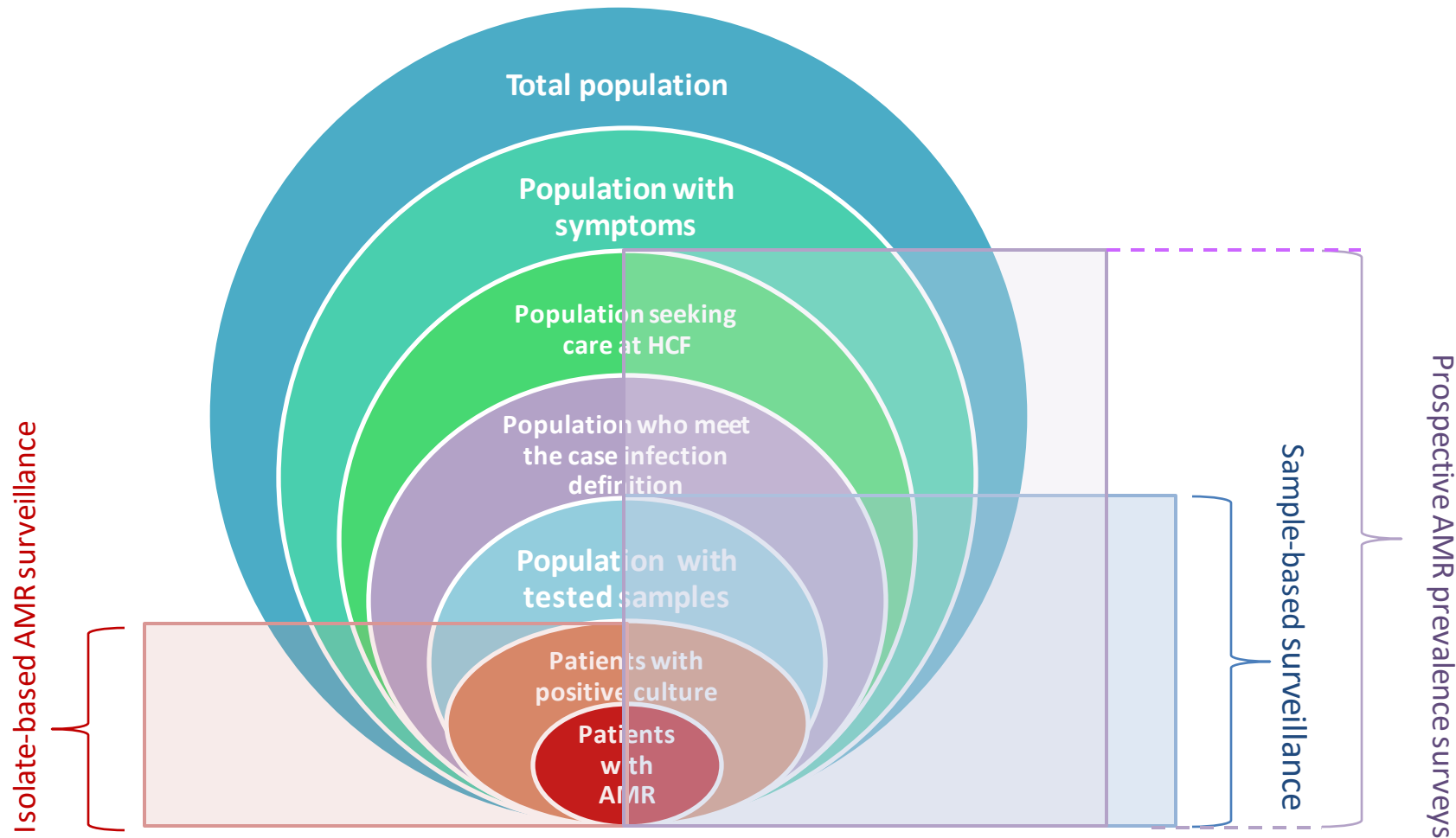
- Additional sites of infection and pathogens
- Possibility to report molecular markers
 - E.g., NDM, OXA, VIM, IMP, GES, KPC
- Individual patient data reporting
- Two-pronged approach for AMR surveillance

New GLASS manual coming up soon!



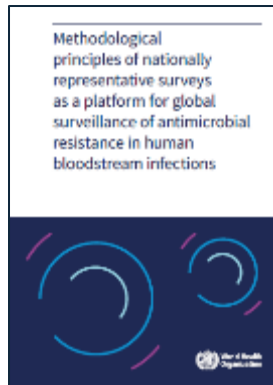
New GLASS manual retains the flexibility of reported data

Population under AMR surveillance according to the approach



New manual: a two-pronged approach for AMR

- Continue fostering AMR surveillance based on routine patient testing
- Foster periodic national AMR prevalence surveys



Goals of National AMR prevalence surveys

- **Accelerate the generation of quality strategic information.**
- **Improve access** to appropriate diagnosis, treatment and care.
- Development of **national platforms** for AMR surveillance & evidence building.
- Contribute to **strengthening national AMR surveillance capacity**, informing further development of AMR surveillance based on routine patient testing.

Methodological principles of nationally representative surveys as a platform for global surveillance of antimicrobial resistance in human bloodstream infections



February 2023

National AMR prevalence surveys

- Cross-sectional (< 12 months survey)
- Hospitals selected using probability sampling methods, independent of the availability of microbiology diagnostic services (access to be granted during the survey)
- Inclusion of consecutive patients with suspected BSIs
- Quality-assured microbiology laboratory
- Minimum set of demographics and clinical information
- Ethical principles adhered to

The way forward...

- Enhancing the representativeness and quality of AMR data
 - Short-term: application of national prevalence surveys
 - Long-term: expand and strengthen routine surveillance
- Expansion of AMC, with a particular focus on national data and community use
 - Data disaggregation by sectors, levels, geographical areas and by quarters to inform UHC goals
 - Improve community data - more than 80% of antimicrobials are consumed in the community!



Source of any charts or graphics here if needed.

The way forward (cont/.)

- WHO Global Laboratory Diagnostic Initiative
- Enhancing the use of data at local and national levels
 - **GUIDANCE COMING UP SOON!**
- Assessment of AMR impact on human health
- Development of genomic surveillance of AMR
- Enhancing digital solutions & links to other health data
- Improve linkages between data from the human sector with other sectors



Source of any charts or graphics here if needed.

GLASS
benefits
from
regional
networks!



More information on GLASS and synergies, enrolment procedures, links to the GLASS manuals, the yearly report and dashboards can be found at <https://www.who.int/initiatives/glass>

Obrigada!
Gracias!
Thank you!
Merci!

