Global antimicrobial resistance surveillance system (GLASS)

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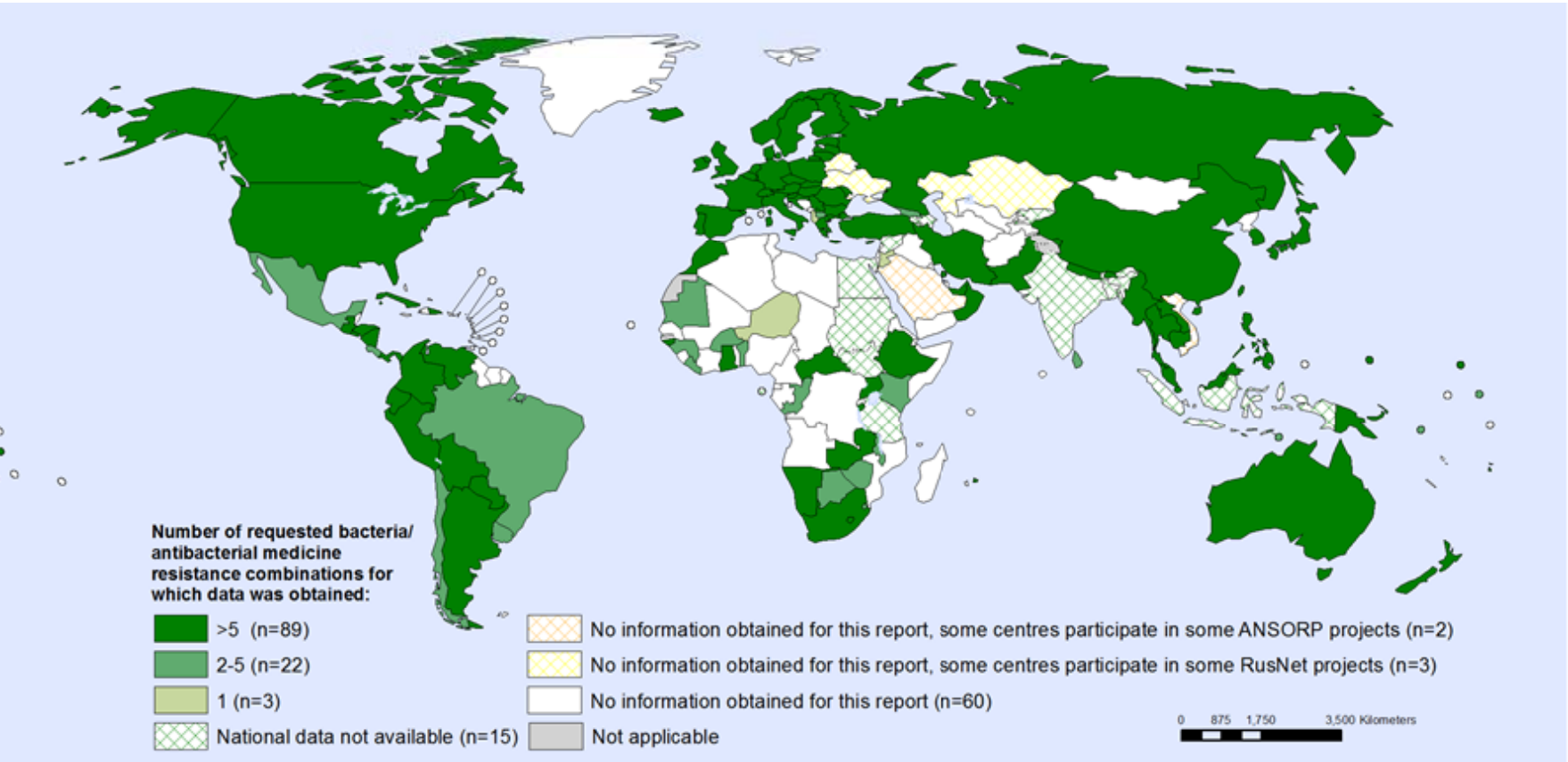
Acknowledgen
Dr Carmem Lucia Pessoa-
& the GLASS Team at WHO headqua

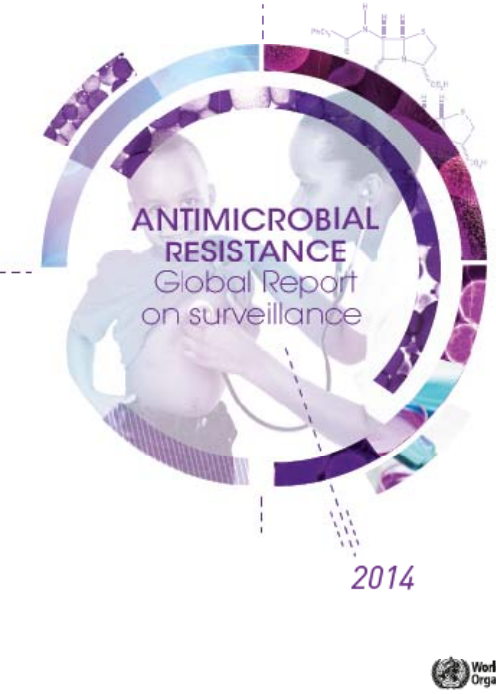
Global report on AMR surveillance



- Widesprea high levels AMR!
- National da **17%** (22/12 on all 9 bug drug combinatio

National data = obtained from official sources, but may not necessarily be representative for the population or country as a whole

Lessons learnt



- Lack of harmonized standards & coordinatio
- Country data, when available, not shared w national bodies
- Limited information on impact of antibacterial resistance on humans
  - Most frequent data: %R tested isolates
  - Limited relatedness with infections

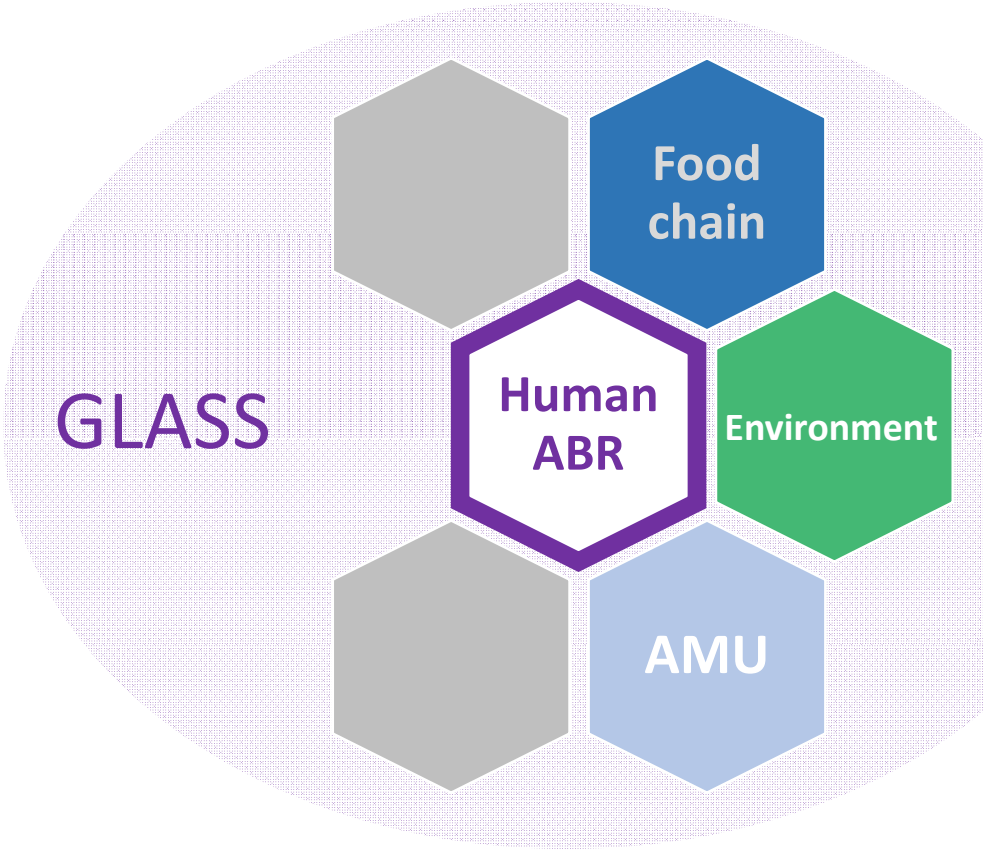
p://www.who.int/drugresistance/documentssurveillancereport/en/

Objectives of GLASS

oster national AMR surveillance systems
hrough harmonized global standards to

- Monitor AMR trends
- Detect emerging resistance
- Estimate extent & burden of AMR globally

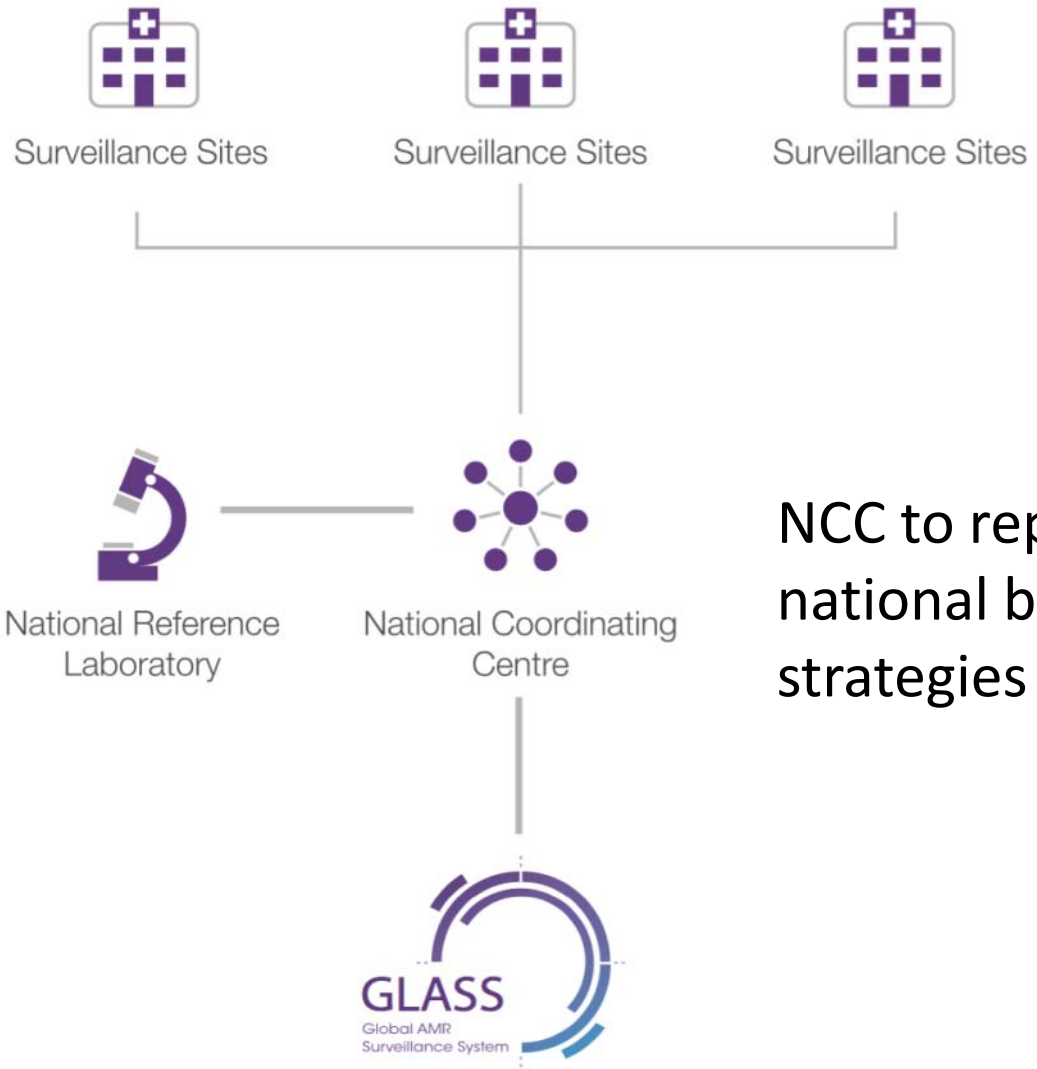
…to capture and integrate information needed to inform strategies to tackle AMR locally, regionally and globally



GLASS - Guiding Principles

- **Foster national AMR surveillance systems**
  - Coordinated within the national action plan/strategy for AMR
  - Build upon existing surveillance structures
- **Collect epidemiological, clinical and microbiological data**
- **Stepwise approach to meet local and global priorities**
- **GLASS early implementation focus on bacterial pathogens**
  - Priority specimens and pathogens from routine samples in humans
  - Priority pathogen-antibacterial combinations
  - Progressive inclusion of AMR-related surveillance (food, AM use, environment)

ore components for national surveillance systems



NCC to report to the national body in charge of strategies to contain AMR

Which data to be reported to GLASS?

- Progress in implementing national AMR surveillance system
  - Initially, may be only information on national AMR surveillance system
- Aggregated AMR data of priority indicators according to GLASS
  - At least one indicator, progressively add as per national capacity & priorities
- New types of AMR

GLASS – targets for global reporting on AMR

2. Priority specimens and pathogens for surveillance of AMR

…imen	Laboratory case definition	Surveillance type and sampling setting	Priority pathogens for surveillance
…od	Isolation of pathogen from blood[a]	Selected sites or national coverage Continuous Patients in hospital and in the community	*E. coli* *K. pneumoniae* *A. baumannii* *S. aureus* *S. pneumoniae* *Salmonella* spp.
…e	Significant growth in urine specimen[b]	Selected sites or national coverage Continuous Patients in hospital and in the community	*E. coli* *K. pneumoniae*
…es	Isolation of *Salmonella* spp.[c] or *Shigella* spp. from stools	Selected sites or national coverage Continuous Patients in hospital and in the community	*Salmonella* spp. *Shigella* spp.
…thral and cervical …bs	Isolation of *N. gonorrhoeae*	Selected sites or national coverage Continuous Patients in hospital and in the community	*N. gonorrhoeae*

Acinetobacter baumannii	Tetracyclines	Tigecycline or minocycline
	Aminoglycosides	Gentamicin and amikacin
	Carbapenems[c]	Imipenem, meropenem, ertapenem or doripenem
	Polymyxins	Colistin
Staphylococcus aureus	Penicillinase-stable beta-lactams	Cefoxitin[d]
Streptococcus pneumoniae	Penicillins	Oxacillin[e]
		Penicillin G
	Sulfonamides and trimethoprim	Co-trimoxazole
	Third-generation cephalosporins	Ceftriaxone or cefotaxime

GLASS early implementation

- **4 sites** (specimen type as proxy for infection
- **8 pathogens**, 62 bug-drug combinations
- Stratified – age, sex, origin

Rationale

- Common community and hospital infection
- Indicators used in foodborne AMR surveilla
- Shall be expanded in future

Emerging AMR Reporting (EAR)

- Timely communication of newly detected AMR findings

  that may influence surveillance and control practices

  - Exceptional phenotypes not reported previously, or very rare
  - Novel resistance genotypes/mechanisms
    - High public health impact (high potential for spread)
    - Serious challenges in laboratory detection and surveillance
- Mapping global spread of new types of AMR

EAR reporting: provisional watch list

- Pan-drug resistant (PDR) phenotypes (& responsible genes)
- Pre-defined critical resistance phenotypes (& responsible genes)
- Extensively drug-resistant (XDR) phenotypes
  (not previously detected in a country & responsible genes)
- Novel genetic determinants of resistance
  (not previously reported globally)

Call for enrolment: 21 March 2016

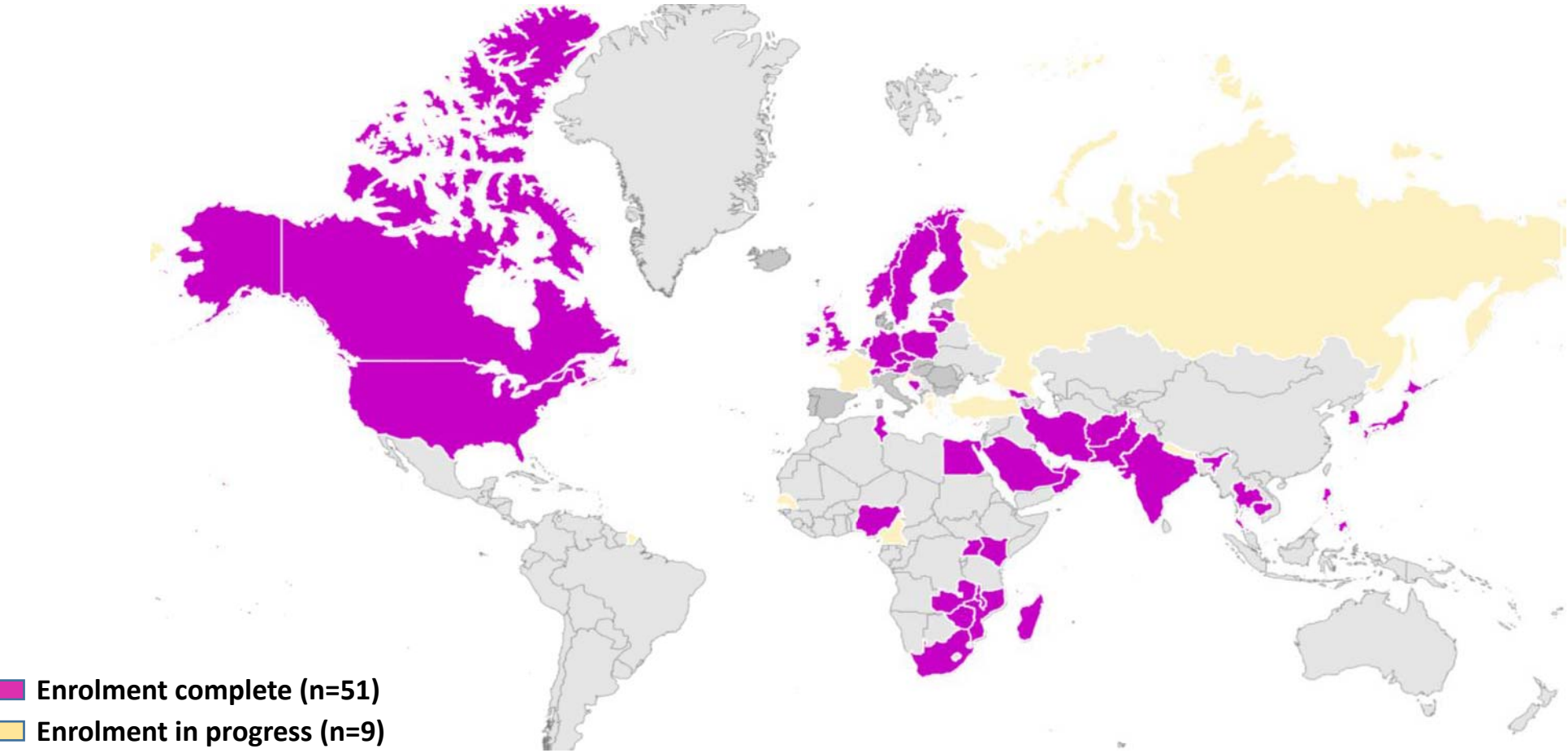
National commitment

Share status
of national AMR surveillance

Share da

GLASS enrolment

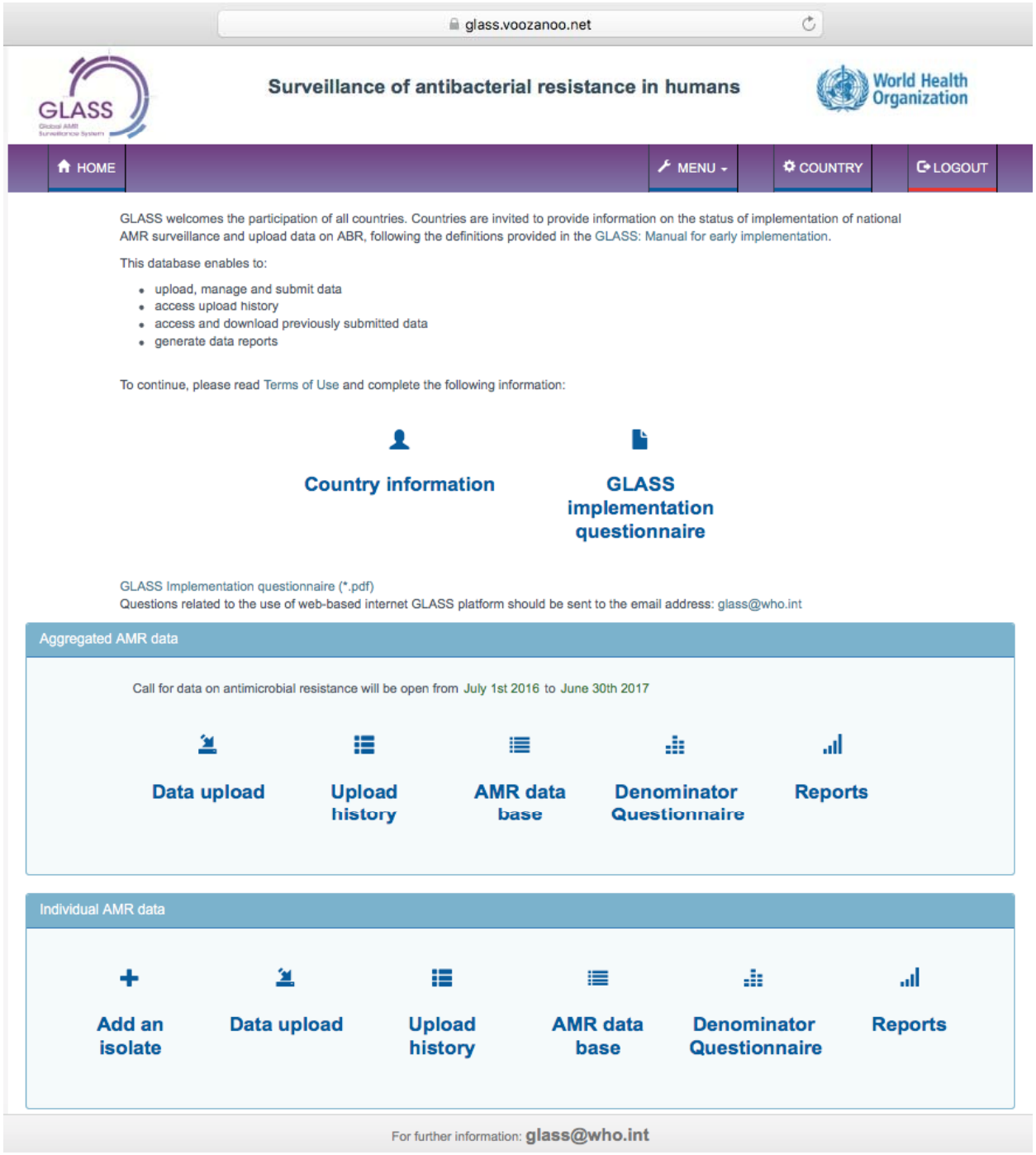
nd July 2017*



Enrolment complete (n=51)

Enrolment in progress (n=9)

GLASSware: the GLASS IT platform



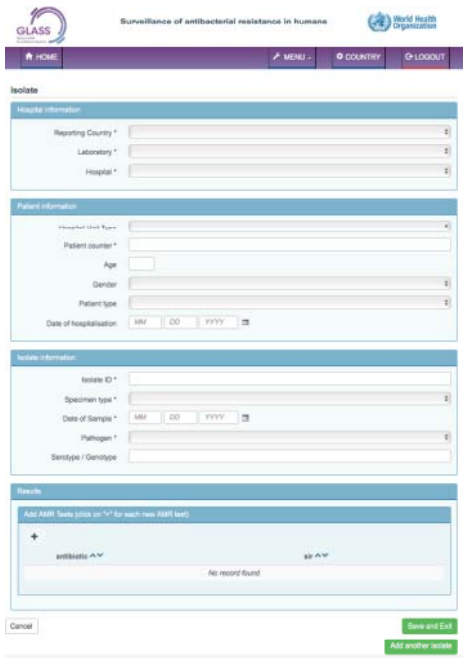
Antibacterial resistance in humans

- GLASS focal points registratic and submission of data on implementation of national AMR surveillance programm
- Aggregated AMR data: upload, validation and analys
- Individual AMR data: direct entry or upload of data files, validation and analysis

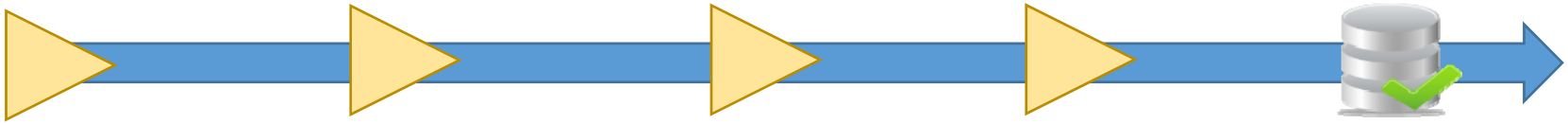
Data validation and submission

Aggregated data

Individual data



4 data validation steps



File format

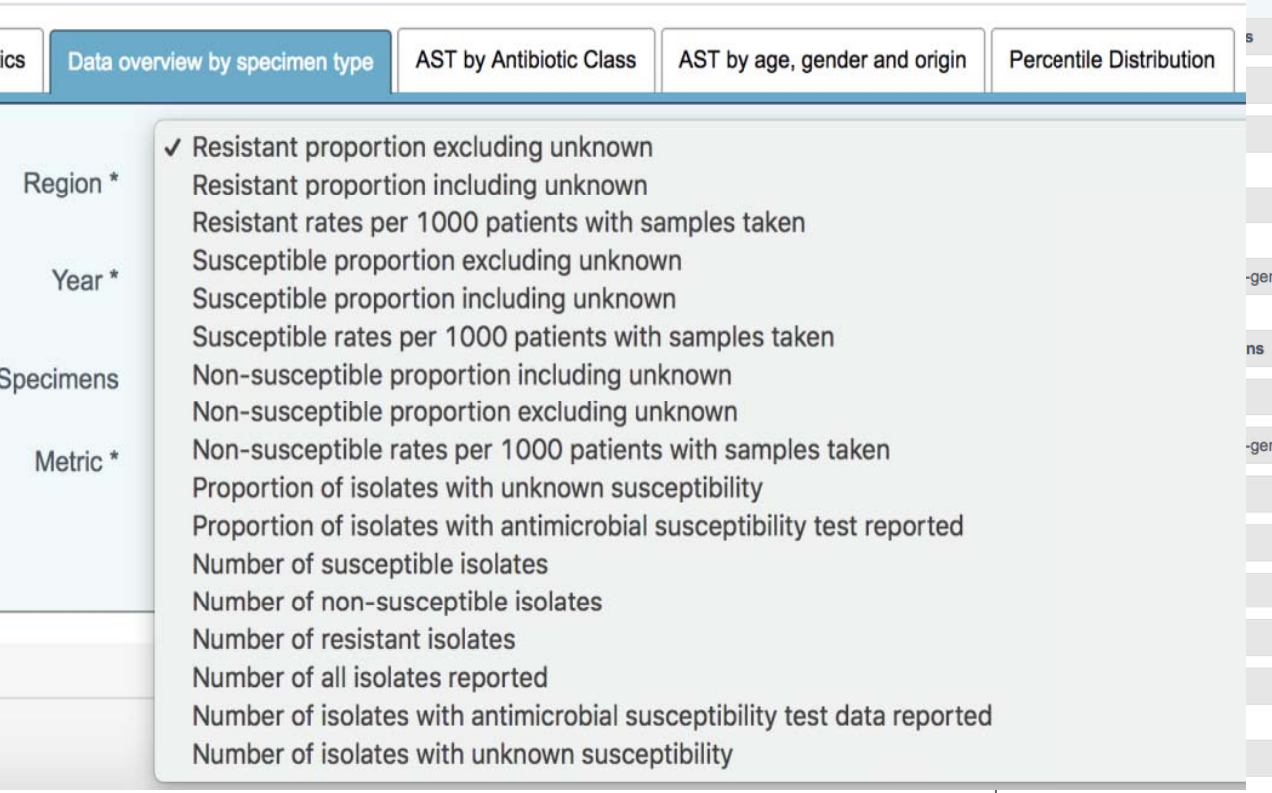
Missing data
Invalid codes
Invalid format

Data summary
Report

Consistency
checks

Validation &
submission

Reports available on GLASSware



Klebsiella pneumoniae pathogen, Origin : All, Gender : All, Age group : All, Batch Id : All, Metric : Proportion excl

	Susceptible	Intermediate	Resistant	S+I+R	Unknown
s					
Cefotaxime	ND	ND	ND	ND	ND
Ceftazidime	3118	25	135	3278	536
	95.1 %	0.8 %	4.1 %	85.9 %	14.1 %
Ceftriaxone	3095	3	109	3207	550
	96.5 %	0.1 %	3.4 %	85.4 %	14.6 %
-generation cephalosporins	6213	28	244	6485	1086
	95.8 %	0.4 %	3.8 %	85.7 %	14.3 %
ns					
Cefepime	ND	ND	ND	ND	ND
-generation cephalosporins	ND	ND	ND	ND	ND
Doripenem	ND	ND	ND	ND	ND
Ertapenem	ND	ND	ND	ND	ND
Imipenem	ND	ND	ND	ND	ND
Meropenem	3773	0	2	3775	558
	99.9 %	0 %	0 %	87.1 %	12.9 %
Carbapenems	3773	0	2	3775	558
	99.9 %	0 %	0 %	87.1 %	12.9 %
Sulfonamides and trimethoprim					
Co-trimoxazole	3383	20	760	4163	502
	81.3 %	0.5 %	18.3 %	89.2 %	10.8 %
Sulfonamides and trimethoprim	3383	20	760	4163	502

For further information: **glass@who.int**

1st GLASS data call: MS participation

- 1 April – 8 July 2017
- Data on status of national AMR surveillance: 38
- AMR data: 24

GLASS in 2016-17

Done

- IT platform: aggregated and individual data
- WHONET adapted for GLASS
- Implementation package
  (focus on low-income countries)
  - Implementation manual
  - Assessment tool
  - Guidance on diagnostic stewardship
  - GLASS data management guides
- Guidelines on integrated surveillance for foodborne AMR
  (led by WHO/FOS)

On-going

- AM consumption survey & AM use methods (led by WHO/EMP)
- Enhanced GASP (led by WHO/STI)
- ESBL - *E. coli*: environment, humans, food, animals
  (led by WHO/FOS)
- AMR in leprosy (led by GLP)
- Links to AMR surveillance systems in humans (TB, HIV, malaria)
- GLASS-EAR
- Laboratory capacities
- IT tools for LMIC

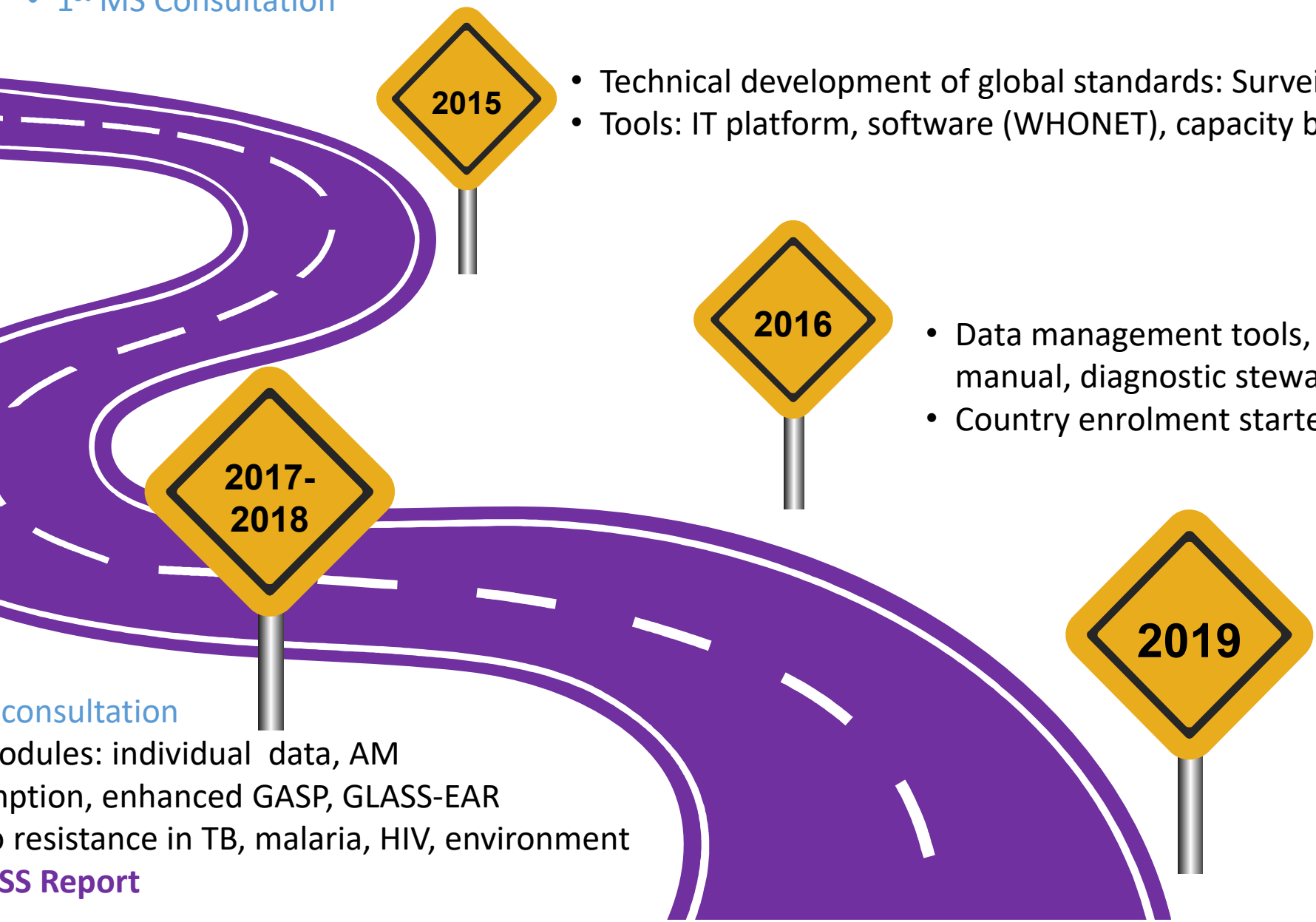
Technical support to countries

GLASS
Global AMR Surveillance System

World Health Organization

GLASS Early Implementa

- Draft global surveillance standards
- 1st Global Report on AMR
- 1st MS Consultation



- Technical development of global standards: Surveillance Manual
- Tools: IT platform, software (WHONET), capacity building materials

- Data management tools, implementation manual, diagnostic stewardship manual
- Country enrolment started

consultation
odules: individual data, AM
nption, enhanced GASP, GLASS-EAR
resistance in TB, malaria, HIV, environment
SS Report

- Review lessons
early implemer
and adapt the
- **2nd GLASS Repo**


d High Level Technical Meeting on Surveillance of
timicrobial Resistance for Local and Global Actions
Thank y