

# The National AMR Surveillance and Data Management System

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# **Antimicrobial Resistance Surveillance in Bangladesh**

**Implementing agency:**

**Institute of Epidemiology Disease Control & Research (IEDCR)**

**Sectoral Coordination center (Human health) and National Reference Laboratory (NRL) for AMR**

# The Global Antimicrobial Resistance Surveillance System (GLASS)

The WHO manual for GLASS describes three types of surveillance methods:

Laboratory-based surveillance without linkage to patient data

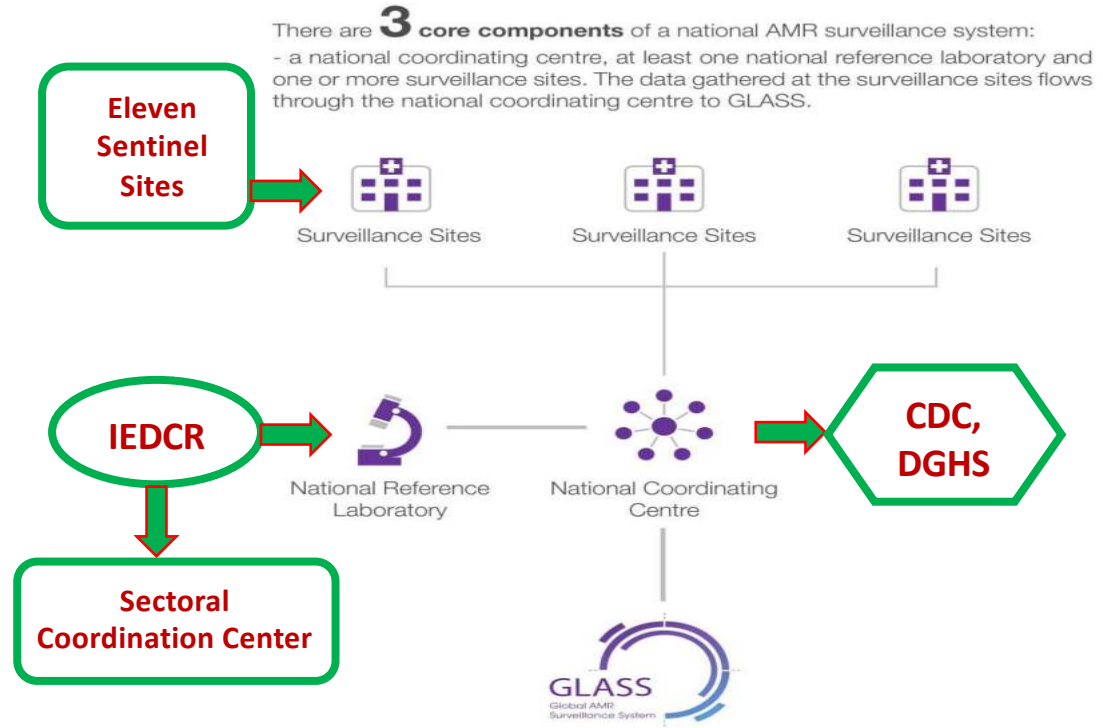
Case-finding based on routine clinical specimens

Case-based surveillance of clinical syndromes



AMR  
Surveillance in  
Bangladesh

# Antimicrobial Resistance Surveillance in Bangladesh



## IEDCR

Institute of Epidemiology, Disease Control & Research & National Influenza Centre (NIC), Bangladesh  
রোগতত্ত্ব, রোগ নিয়ন্ত্রণ ও গবেষণা ইনস্টিটিউট (আইইডিসিআর) ও ন্যাশনাল ইনফ্লুয়েঞ্জা সেন্টার (এনআইসি), বাংলাদেশ



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# AMR Surveillance Sites for the Case-Based surveillance

2017

1. Mymensingh Medical College & Hospital
2. Rajshahi Medical College & Hospital
3. Rangpur Medical College & Hospital
4. Bangladesh Institute of Tropical and Infectious Diseases (BITID)
5. Uttara Adhunik Medical College & Hospital

2018

6. Dhaka Medical College & Hospital
7. Sylhet MAG Osmani Medical College & Hospital
8. Khulna Medical College & Hospital

2019

9. Cox's Bazar Medical College & Hospital

2022

10. Sher-e-bangla Medical College & Hospital
11. Chittagong Medical College & Hospital

# Preventing Antimicrobial Resistance together

## **General Objective**

To establish a surveillance system to find out the status of Antimicrobial Resistance among common pathogens in Bangladesh





## Specific Objectives

1. To strengthen selected Microbiology laboratories for performing standard techniques of bacterial culture & sensitivity testing.
2. To isolate, identify & perform Antimicrobial Sensitivity testing (AST) of the selected pathogens using uniform laboratory protocol.
3. To develop antibiogram periodically according to the observed sensitivity pattern.

# Surveillance team at sentinel site

Team lead: Head, Microbiology department

Consultant Microbiologist

Surveillance Physicians and nurses

Medical technologists

Lab attendant

Support staff/Cleaner

Project Facilitator (PF) - *Recruited by IEDCR, posted in sentinel site*



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# Surveillance activities at sentinel site

Samples are cultured and isolates are being tested at the sentinel sites to determine the antibiotic sensitivity pattern.

All the relevant epidemiological as well as laboratory data is being compiled in hard copy as well as uploaded in the **CAMS** software.

## **Central surveillance team at IEDCR (AMR surveillance coordination committee)**

- ❑ AMR surveillance co-ordination subcommittee consists of Epidemiologists, Laboratory personnel, AMR Surveillance Consultant, CDC representative, lead by Director IEDCR .
- ❑ This team is supported by IT expert, data management assistant and Medical technologists and AMR surveillance consultant

**AMR team meeting held routinely and as and when required.**

# Central surveillance team activities

- Central team co-ordinates all the activities of the sentinel sites.
- They collaborate and communicate with national and international agencies.
- They conduct **monitoring and evaluation visit** to the sites to assess their activities



# Central surveillance team activities

- They give technical support to the sentinel site laboratories and maintain logistic supply chain
- They perform data cleaning, analysis, review and feedback





# Improving capacity of the sites

- **Training (both basic & refresher)**
- Doctors and nurses
- Microbiologists, medical technologists
- Project Facilitators
- **Technical support**
  - Lab SOPs
  - Consumables, Equipments
  - Laboratory strengthening
  - Quality management

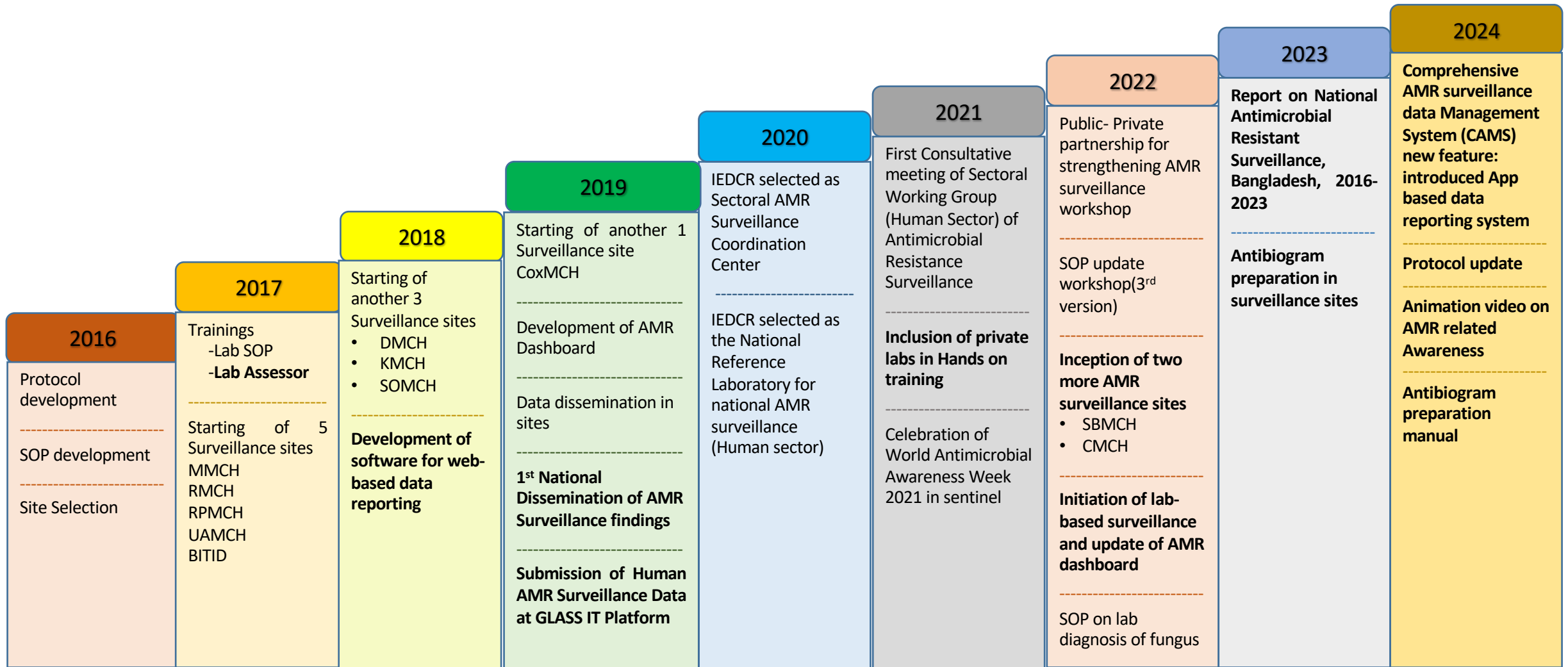


# Quality Control of Laboratory Activities:

- ❖ All the laboratory activities performed strictly following the ‘Lab SOP’s provided by NRL at IEDCR.
- ❖ Initial and refresher training of all laboratory personnel on the relevant SOPs, quality management system including internal quality control, external quality assurance provided by NRL.
- ❖ All the sentinel sites Microbiology laboratory is provided with SOPs, centrally purchased quality-ensured consumables, reagents, and quality control strains by IEDCR.
- ❖ IQC is ensured by using SOPs for all laboratory works using quality control strains.
- ❖ Isolates from the samples sent to NRL which is further analyzed at regular interval by retesting to assess the quality of testing and feedback is provided for improvement.
- ❖ EQA program will be provided by NRL subject to availability.



# AMR Surveillance in Bangladesh milestones (Human Sector)



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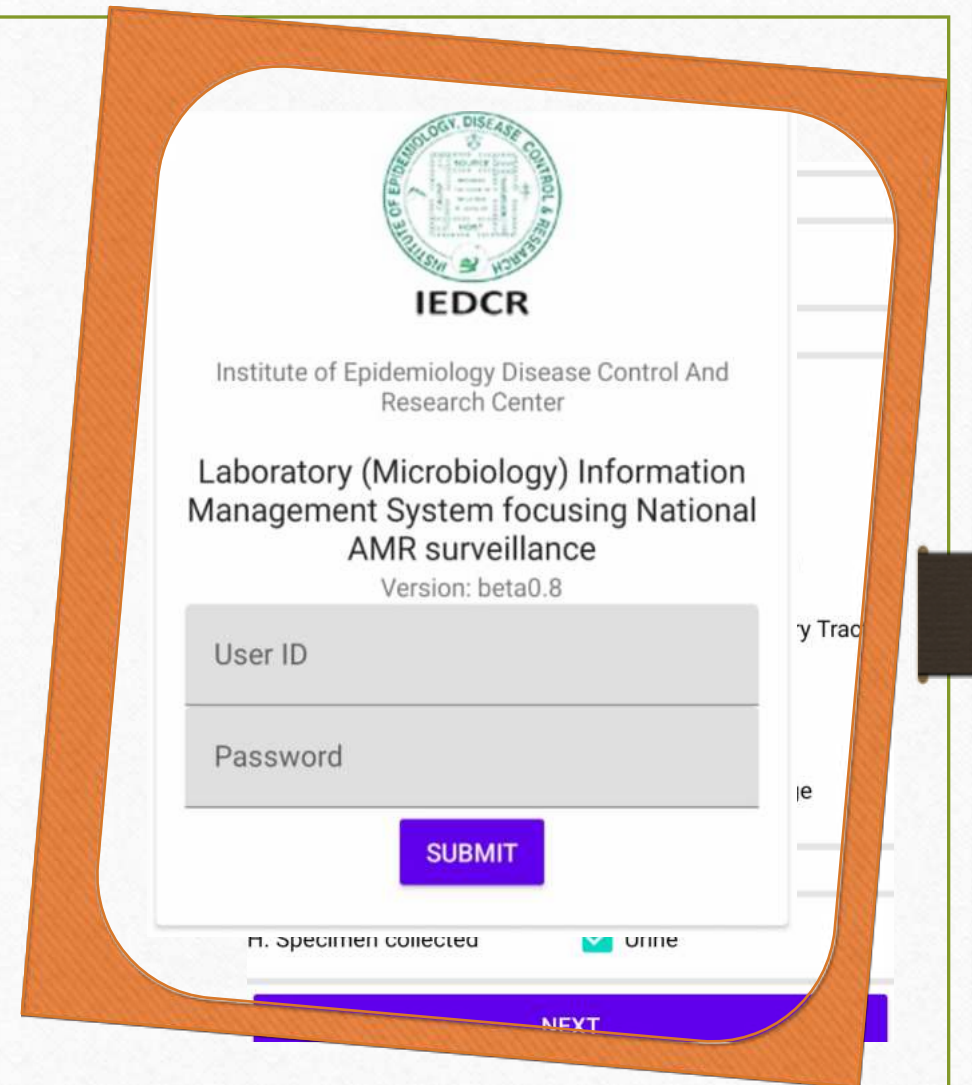
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# Data management

National surveillance system introduce Comprehensive AMR data Management System (CAMS) to 11 sentinel sites. This is a multi platform system which consist an android app for data collection and a web-based platform for data monitoring and integrated to national AMR dashboard to visualize data publicly.

Designated project facilitator collects data from patient who have given culture sensitive test.

This CAMS guide them to follow the national SOP and helps them to avoid human error.



The image shows a screenshot of the login interface for the Comprehensive AMR data Management System (CAMS). The interface is displayed on a white background with a blue border. At the top center is the logo of the Institute of Epidemiology, Disease Control and Research (IEDCR), which is a circular emblem with a building and text. Below the logo, the text reads "IEDCR" in bold, followed by "Institute of Epidemiology Disease Control And Research Center". The main title of the system is "Laboratory (Microbiology) Information Management System focusing National AMR surveillance", with "Version: beta0.8" below it. The login form consists of two input fields: "User ID" and "Password", both with grey borders. Below these fields is a blue "SUBMIT" button. At the bottom of the form, there are two checkboxes: "n. Specimen collected" and "Urine", both with green checkmarks. A blue "NEXT" button is located at the bottom right of the form.



### ANTIMICROBIAL RESISTANCE (AMR) SURVEILLANCE IN BANGLADESH

Welcome to Data Dashboard  
This dashboard facilitates the types of data surveillance regarding to public health and animal health sector in Bangladesh.



#### Human health



##### Case Based Surveillance

This is an active surveillance. The surveillance is ongoing in selected institutions since 2017. Surveillance sites are listed here.

[View Report](#)



##### Lab Based Surveillance

This is a passive surveillance started in July 2018. The monitoring surveillance has been notified after submission of reports from IEDCR Bangladesh. The laboratories are listed here.

[View Report](#)

#### Animal health



##### Department of Livestock Services (DLS)

Department of Livestock Services is a Bangladesh government department under the Ministry of Fisheries and Livestock responsible for livestock services in Bangladesh. View here.

[View Report](#)



##### Bangladesh Livestock Research Institute

This is a passive research surveillance since Ministry of Fisheries and Livestock was notified to conduct research on research and quality improvement of the country. View here.

[View Report](#)

#### Get in Touch



#### Contact Us

Full name

Email

Address

Telephone

Enter message

[Send Message](#)

[AMR Bangladesh \(iedcr.gov.bd\)](http://iedcr.gov.bd)



# IEDCR Dashboard for AMR Data management



The graphical representation of this data is updated real time from the surveillance sites. This may be changed after checking by IEDCR reference laboratory.

Select specimen type from drop-down list:

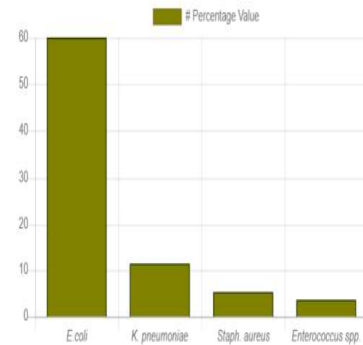
Select site:

Select Organism:

Distribution of **Urine** sample by growth character from All sites (n=16207)



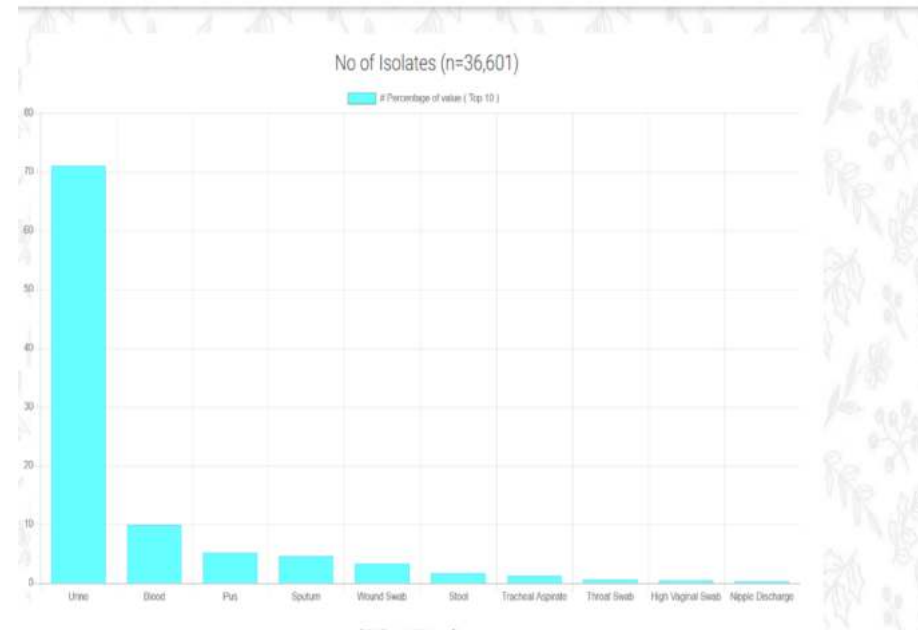
Isolated organisms from **Urine** Culture from All sites, (n=3060)



## Antimicrobial Resistance (AMR) Surveillance in Bangladesh

Lab based surveillance information at a glance

Directly uploaded from the supplied data of the participating lab



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# Monitoring Dashboard

AMR | Case Based Surveillance Specimen Details Data AST Data MDR organism Antibiotics Disc not Available Logout

select the following criteria

Start Date	End Date
dd/mm/yyyy	dd/mm/yyyy
Sites	Specimen
All sites	All specimen

Hospital ID	Specimen type	Identified organism	Total
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# Monitoring Dashboard

- CAMS give individual sentinel sites administrator access to admin panel to monitor their laboratory performance.
- Number collected sample and number of sample tested indicate their performance to achieve target goal
- Organism found in specimen along with MDR are automatically summarize and reported to the panel.
- Admin can monitor auto generated antibiogram from the admin panel.



# Global Antimicrobial Resistance And Use Surveillance System (GLASS) Report-2021



## Bangladesh

Population 163.05 million

The current AMR surveillance system is based on case-based surveillance of clinical syndromes, which will be complemented by Laboratory based surveillance in a short time.

### National AMR surveillance systems key indicators

SURVEILLANCE ACTIVITIES	IMPLEMENTATION
GLASS-AMR	✓
GLASS-AMC	
HIV DR <sup>1</sup>	
DR-TB <sup>2</sup>	✓
Malaria TES <sup>3</sup>	✓
One health	
EGASP	

1. HIV Drug-Resistance  
2. Drug-resistant TB  
3. Malaria Therapeutic Efficacy Studies

### National AMR surveillance systems key indicators

Indicators reported to GLASS

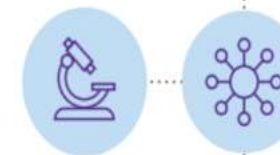
**9**  
surveillance sites participating to the national surveillance system

**9**  
in-out patient facilities

**8 laboratories** performing AST  
EQA provided to all laboratories

**NRL**  
Established  
**AST standard**  
CLSI  
**EQA**  
Provided

**in 2020 data call**  
all national surveillance sites reported to GLASS



**NCC**  
Established  
**National Action Plan**  
In place



1. HIV Drug-Resistance  
2. Drug-resistant TB  
3. Malaria Therapeutic Efficacy Studies

# Antibiogram Preparation in Surveillance Sites

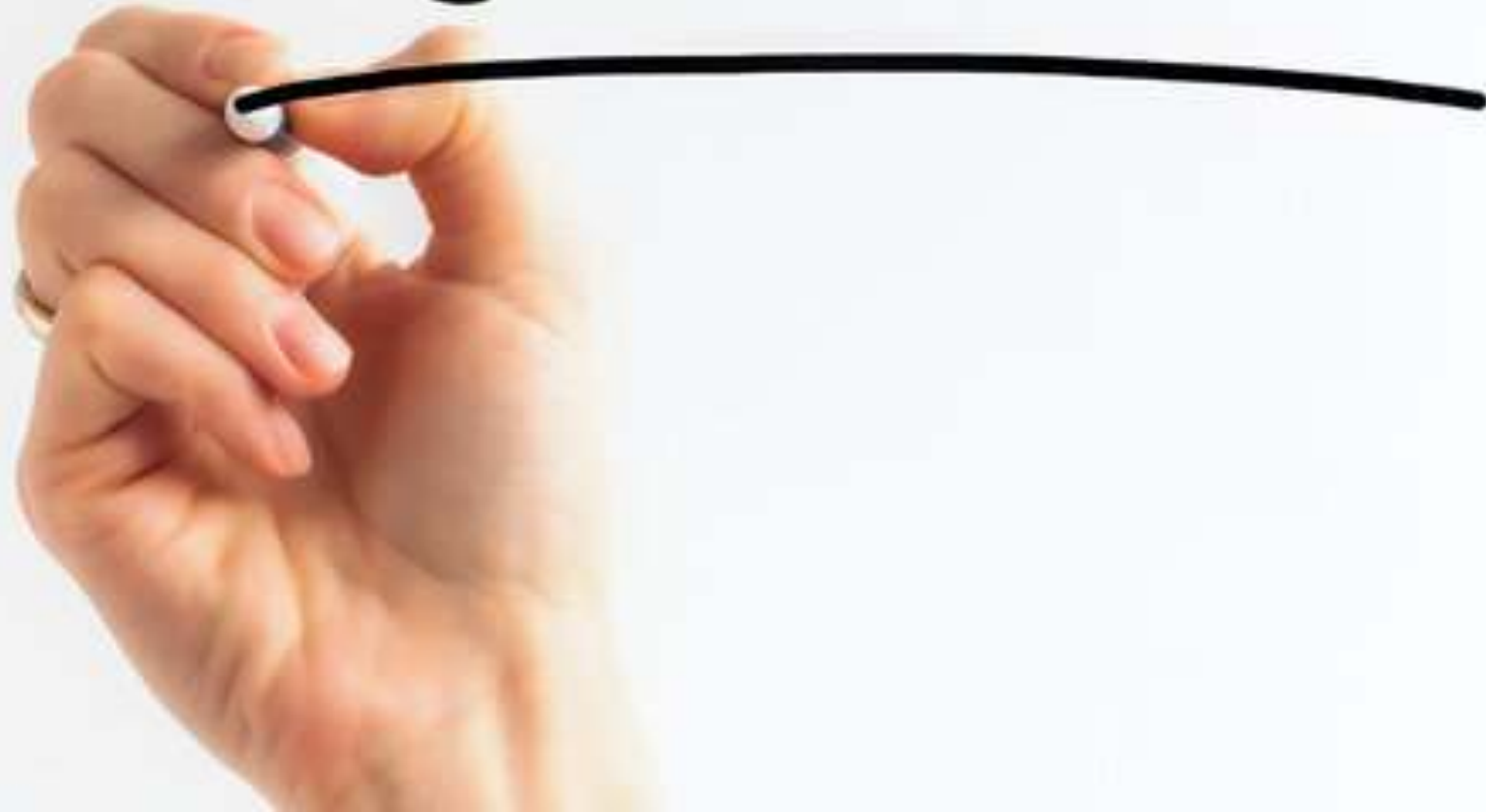
## Cumulative Antibiogram

Organism	No. of isolates	Ampicillin	Amoxicillin + clavunate	Amikacin	Attreonam	Azithromycin	Ceftazidime	Cefotaxime	Cefixime	Ciprofloxacin	Ceftriaxone	Cefepime	Cefuroxime	Cefoxitin	Clindamycin	Colistin	Doxycycline	Gentamicin	Linezolid	Nitrofurantoin	Netelmycin	Piperacillin-tazobactam	Sulfameth+Trimethoprim	Tetracyclin	Tigecycline	Meropenem	Vancomycin
E. coli	133	7	41	82	42	6	15	47	5	51	21	49	18	-	-	95	-	68	-	83	-	72	56	33	-	66	
Pseudomonas	65	-	-	70	20	-	25	-	-	60	-	18	-	-	-	93	35	-	-	42	82	50	-	-	-	74	
Klebsiella	37	8	31	64	35	-	12	36	8	43	18	43	-	-	-	-	40	-	-	-	62	-	-	-	-	64	
Proteus	13	20	40	60	35	-	-	20	10	43	25	30	22	-	-	-	55	-	-	-	80	15	18	-	-	70	
Acinetobacter	14	-	-	40	10	-	8	-	5	10	-	20	-	-	-	88	75	-	-	-	70	-	-	35	48	-	
S. aureus	15	-	67	83	20	-	-	-	-	40	8	-	-	55	75	-	90	84	100	-	-	-	58	-	-	100	

Note: Organism with fewer than 30 isolates should be interpreted with caution, as small number may bias the group susceptibilities

Colour coding	% of susceptibility
Green	>80%
Yellow	60-80%
Red	>60%

# Any Questions?



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Thanks for the  
continuous  
support



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# *Thank you*



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