

INSTITUTE OF EPIDEMIOLOGY, DISEASE CONTROL AND RESEARCH (IEDCR) ACTIVITIES AND ANTIMICROBIAL RESISTANCE

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INSTITUTE OF EPIDEMIOLOGY,
DISEASE CONTROL AND RESEARCH
(IEDCR) &
NATIONAL INFLUENZA CENTRE (NIC)



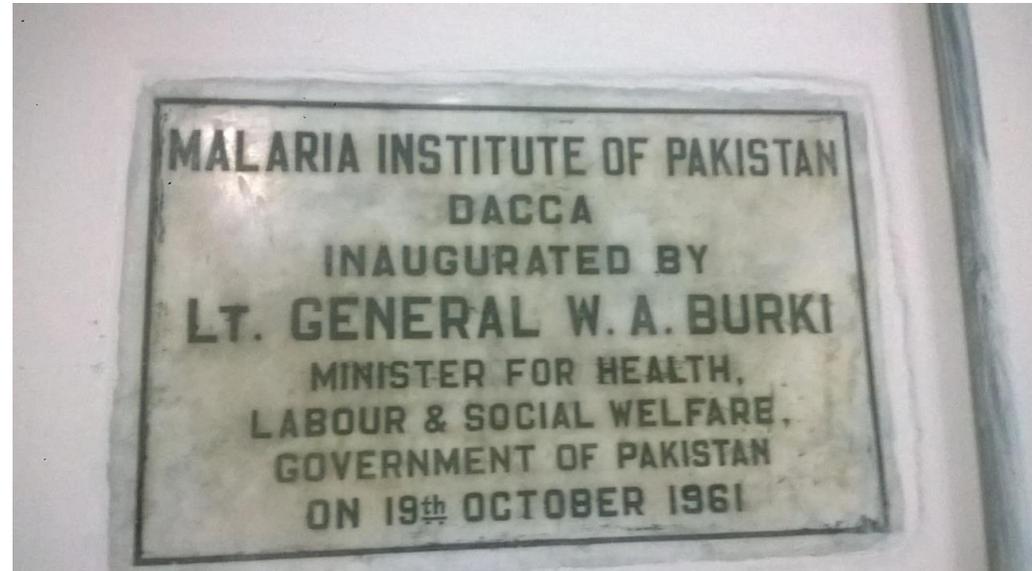
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রোগতত্ত্ব, রোগ নিয়ন্ত্রণ ও গবেষণা ইনস্টিটিউট (আইইডিসিআর) ও ন্যাশনাল ইনফ্লুয়েঞ্জা সেন্টার (এনআইসি), বাংলাদেশ



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- Formerly Malaria Institute of East Pakistan
- 1976 - IEDCR started functioning under MoHFW
- 2007- Designated as National Influenza Centre



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Focal Institute



- National Influenza Center (NIC)
- Global Health Security (GHS)
- One Health Secretariat
- International Health Regulation (IHR)
- Food Borne Emergency Response
- Global Disease Detection Centre for US CDC



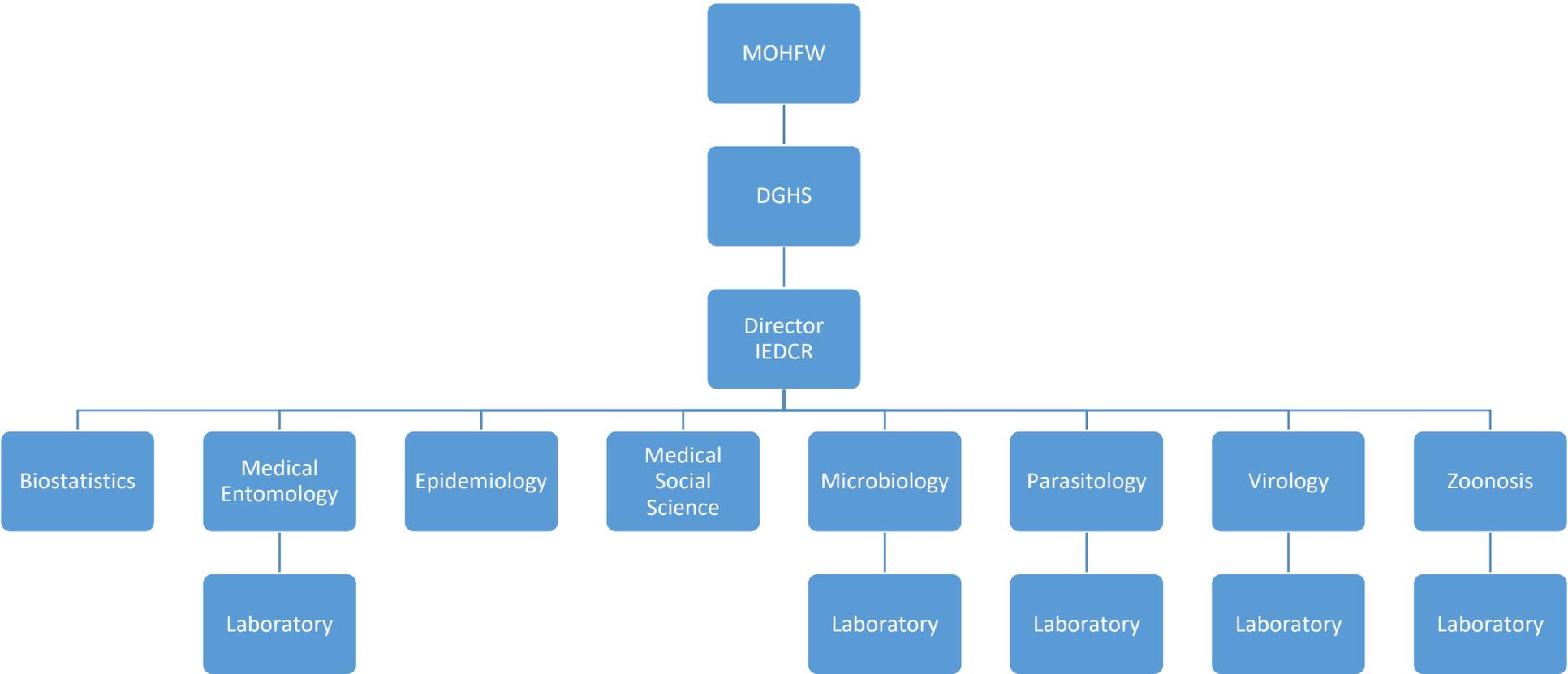
Reference laboratory

Influenza

AMR

JEE

Organogram of IEDCR



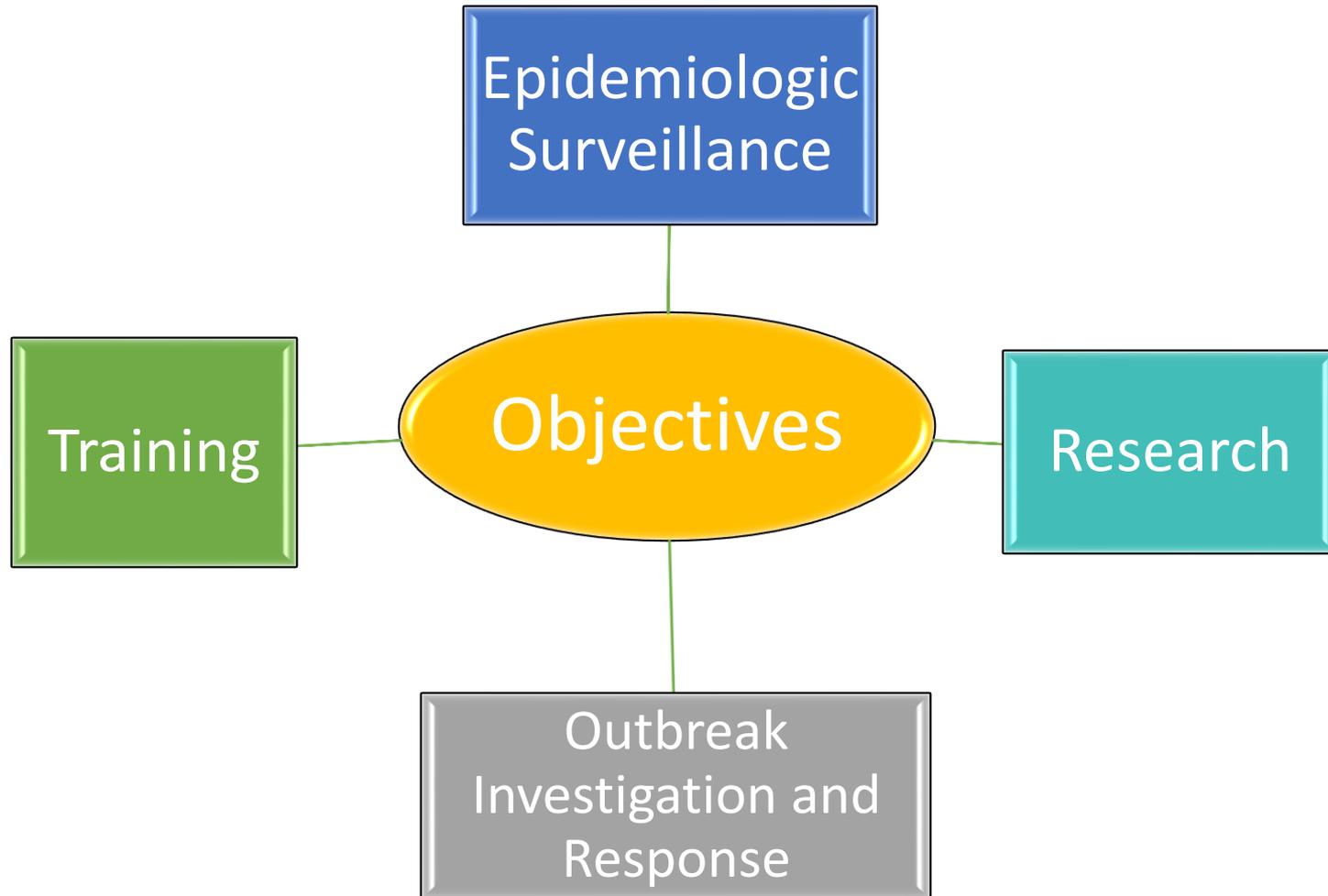
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Objectives of IEDCR



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Multidisciplinary problem solving One Health approach



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CENTERS FOR DISEASE CONTROL AND PREVENTION



বন অধিদপ্তর



icddr,b



EcoHealth Alliance



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World Health Organization

Epidemiologist

Clinicians

Wildlife Expert

Veterinarian

Anthropologist

Ecologist

A new professional culture to solve complex problem

International Partners

WHO

UNICEF

FAO

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US CDC

IANPHI

EcoHealth Alliance

Johns Hopkins University

University of Cambridge

Massey University

Columbia University

University of London

Emory University



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Disease Surveillance

Surveillance at IEDCR

National Influenza Surveillance, Bangladesh

***Antimicrobial Resistance (AMR)
surveillance***

Nipah virus Transmission in Bangladesh

Hospital Based Dengue Surveillance

Hospital Based Rotavirus and
Intussusceptions Surveillance (HBRIS)

Food borne illness Surveillance (FBIS)
Bangladesh

Acute Meningo-Encephalitis Syndrome
(AMES) Surveillance

Surveillance at IEDCR

Respiratory Event Based Surveillance

Cholera Surveillance

Anthrax Surveillance

Leptospirosis Surveillance

Cell phone Based Disease Surveillance system

Non Communicable Diseases (NCD)

Web Based Dengue Surveillance

Web Based Integrated Disease Surveillance

Surveillance for Emerging Zoonotic Disease Threats in
High-Risk Interface in Bangladesh

Cont.....

17. Event based surveillance



Event monitoring

- Hotline numbers (4)
- Media monitoring
- Informal reporting

- ✓ 01937000011
- ✓ 01937110011
- ✓ 01927711784
- ✓ 01927711785



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Antimicrobial Resistance (AMR)

AMR is one of the most complex and multifaceted health challenges facing the global community today.

Drug-resistant infections already contribute to at least 700,000 deaths a year

Given the current trajectory, drug resistance could lead to 10 million deaths annually and plunge 24 million people into extreme poverty by 2050.

International initiatives

- ❑ WHO has promoted the global monitoring of AMR for many years and taken steps to raise awareness of the impending public health crisis it will cause.

Global Action Plan:

In May 2015, the **68th** World Health Assembly adopted the **Global Action Plan** on Antimicrobial Resistance, which reflects the global consensus that AMR poses a profound threat to human health.

One of the five strategic objectives of the Global Action Plan is to strengthen the evidence base activities through surveillance and research.

All countries are required to develop their own national action plan based on the GAP, and start implementing it at local level.

National Action Plan and AMR surveillance

- A National Strategy for ARC in Bangladesh as well as National Action Plan 2017-2022 was developed
- Establishment of Surveillance System for AMR is emphasized in NAP

Ministry of Health & Family Welfare



National Action Plan

Antimicrobial Resistance Containment in Bangladesh
2017-2022

Disease Control Unit

Communicable Disease Control Program (CDC)
Directorate General of Health Services



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Antimicrobial Resistance Surveillance in Bangladesh



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Title:

Antimicrobial Resistance Surveillance in Bangladesh

Authority:

Institute of Epidemiology Disease Control & Research
(IEDCR)

Fund:

GoB (CDC,DGHS), GHSA (US-CDC), WHO

Duration:

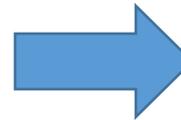
5 years (2016-2020)

***No Cost Extension period up to September 2021

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



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Objectives

General Objective

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

Specific Objectives

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

Methods

- Surveillance period: 2017-till now
- Surveillance sites:
 - 9 sentinel sites in all over Bangladesh
 - 7 are public medical colleges & hospitals
 - 1 is a private medical college & hospital
 - 1 is an infectious disease institute in Chattagram

Surveillance sites:

- Mymensingh Medical College & Hospital, Mymensingh
- Uttara Adhunik Medical College & Hospital, Dhaka
- Rajshahi Medical College & Hospital, Rajshahi
- Rangpur Medical College & Hospital, Rangpur
- Bangladesh Institute of Tropical and Infectious Disease (BITID), Chattogram
- *Dhaka Medical College & Hospital, Dhaka*
- *Sylhet MAG Osmani Medical College & Hospital, Sylhet*
- *Khulna Medical College & Hospital, Khulna*
- *Cox's Bazar Medical College & Sadar Hospital, Cox's Bazar*

Surveillance sites selected on the basis of-

1. Geographical representation

2. Ability of the hospital to enroll cases

3. Availability of a nearby microbiology laboratory with capacity to perform C/S.

Surveillance activities started in 9 sites all over Bangladesh in 2 phases

1st Phase (US-CDC Funded & Started in 2017)

- Uttara Adhunik Medical College & Hospital
- Mymensingh Medical College & Hospital
- Rajshahi Medical College & Hospital
- Rangpur Medical College & Hospital
- Bangladesh Institute of Tropical ND Infectious Diseases (BITID)

2nd Phase (WHO Funded & Started in 2018)

- Dhaka Medical College & Hospital
- Khulna Medical College & Hospital
- Sylhet MAG Osmani Medical College & Hospital
- Cox's Bazar Medical College & Sadar Hospital



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10 Priority Pathogens

1. *Escherichia coli*
2. *Klebsiella pneumoniae*
3. *Enterococcus* species
4. *Vibrio cholerae*
5. *Shigella* species
6. *Streptococcus pneumoniae*
7. *Staphylococcus aureus*
8. *Salmonella* species
9. *Pseudomonas aeruginosa*
10. *Acinetobacter* species

6 Specimens

1. Urine
2. Blood
3. Stool
4. Sputum
5. Endotracheal aspirate
6. Wound Swab

5 Cases

1. Urinary Tract Infection
2. Septicaemia
3. Diarrhoea
4. Pneumonia
5. Wound Infection

Improving capacity of the sites

- **Training (both basic & refresher)**
- Doctors
- Nurses
- Microbiologists
- Medical Technologists
- Project Facilitators
- **Technical support**
 - SOPs
 - Consumables
 - Laboratory strengthening
 - Quality management system



Quality management

Strictly followed by SOPs

All steps involved from specimen collection to pathogen isolation, identification & AST will quality-checked by

- IQC
- EQA



Workshop on SOP update



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Surveillance team at sentinel site

Team lead:

Head, Microbiology department

Surveillance Physicians and nurses: 6-8

Consultant Microbiologist: 1

Medical technologists: 2

Lab attendant: 1

Support staff/Cleaner: 1

Project Facilitator (PF): 1

- GHSA staff; recruited by IEDCR, posted in sentinel site

Surveillance team 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 IEDCR IT team designed software.



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Central surveillance team at IEDCR (AMR surveillance coordination subcommittee)

- ❑ AMR surveillance co-ordination subcommittee consists of Epidemiologists, Laboratory personnel, AMR Surveillance Consultant, representatives from donor agency 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 once in a week and as and when required.



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Central surveillance team at IEDCR

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



Central surveillance team at IEDCR

- ❑ They arrange trainings and refresher trainings of the sentinel site physicians, nurses, microbiologists and technologists
- ❑ They give technical support to the sentinel site laboratories and maintain logistic supply chain
- ❑ They perform data cleaning, analysis, review and feedback



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Achievements so far

IEDCR is designated by the Government as Sectoral Coordination Center (Human health) for AMR surveillance and National Reference Laboratory (NRL) for AMR is situated at IEDCR

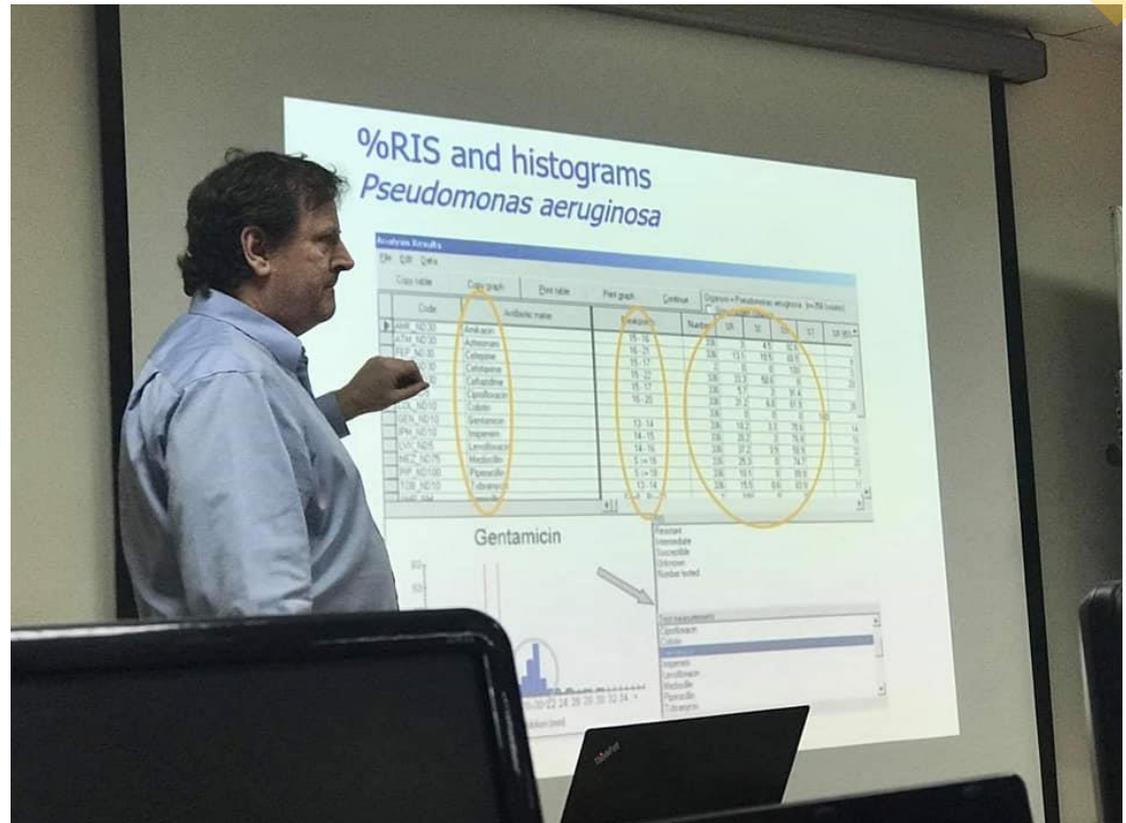
Nine sentinel sites has been established in seven divisions which can act as regional lab in national lab system. .

For the improvement of quality and to assess the quality of the labs in respect to international standard sentinel sites participates in proficiency testing program of College of American Pathologists (CAP).

Achievements

- **John Stelling**, the cofounder of the worldwide reputed software for data analysis of microbiology laboratory – WHONET, visited IEDCR twice and conducted training sessions.

- 6 & 9 December, 2018
- 11 November, 2019



Achievements so far

Surveillance data, antibiogram has been disseminated to all the stakeholders of the sentinel sites as well as centrally to all the stakeholders

National Human AMR Surveillance data of 2017, 2018 & 2019 is entered in **Global Antimicrobial Resistance Surveillance System (GLASS)** platform of WHO from Bangladesh.

The antibiogram of different sites is readily visible for physicians, microbiologists or other concerned personnel through IEDCR website.

Link for dashboard:

http://119.148.17.100:8080/amr/summary_graph.php



Antimicrobial Resistance (AMR) Surveillance in Bangladesh

Information at a glance

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

Urine

SHOW

Select site

All

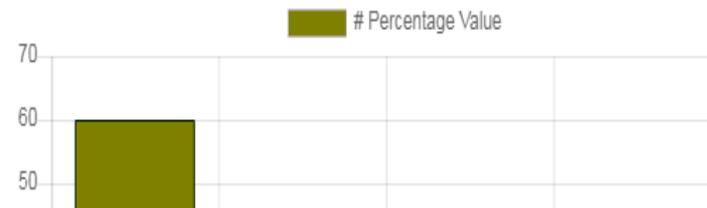
Select Organism

All

Distribution of **Urine** sample by growth character from All sites (n=9297)



Isolated organisms from **Urine** Culture from All sites, (n=1761)



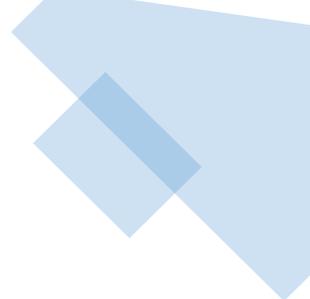
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Activities of AMR Surveillance in Bangladesh (2016-2021)

Inception Program Antimicrobial Resistance Surveillance

Date: 19 March, 2018

Venue: Cox's Bazar Sadar Hospital
Chittagong, Bangladesh.



- Inception





Trainings



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Lab assessment





Site monitoring visit



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Monitoring & Supervision



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SOP update and customization



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Presentation of AMR surveillance findings in AMR awareness week, 2018



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DISSEMINATION PROGRAM IN MMCH 10 OCTOBER 2019



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DISSEMINATION PROGRAM IN RMCH 14 OCTOBER 2019



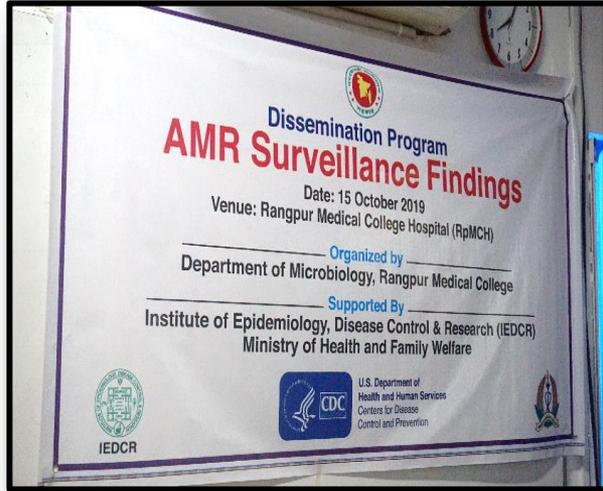
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DISSEMINATION PROGRAM IN RPMCH 15 OCTOBER 2019



DISSEMINATION PROGRAM IN UAMCH 21 OCTOBER 2019



REFRESHER TRAINING OF SURVEILLANCE PHYSICIANS AND NURSES 29 & 30 SEPTEMBER 2019



CENTRAL DISSEMINATION

- **Date:** 24 November 2019
- **Venue:** IEDCR
- **Chief Guest:**

Prof. Dr. Md. Abdul Aziz, MP

Member of Standing Committee,

Ministry of Health & Family Welfare

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