AMR Surveillance In Bangladesh
Way Forward
Role Of Sectoral Working Group Members

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The secret of getting ahead

is

getting started

– Mark Twain

Introduction

Antimicrobial resistance (AMR) is recognized as a global public health threat, causing grave health problems and putting a severe economic burden on people and nations.

AMR can also negatively impact food safety, nutrition security, livelihood and the attainment of sustainable development goals (SDGS).

Antibiotic use and misuse in humans, animals—particularly in the food-animal sector—and crops are known causes of rising AMR.

Now, the environment is also recognized to play a key role in the emergence and spread of AMR.

Introduction

A growing concern is the waste from factories, healthcare settings, farms and community settings, which could contain antibiotics, resistant bacteria or genes that confer resistance to antibiotics.

AMR is a 'one health' issue that needs to be addressed through improved policy and practice across diverse sectors including human-health, animal and crop production, and environment.

Antibiotic-Resistant Infections Threaten Modern Medicine

Sepsis Treatment

AT LEAST **1.7M**
adults develop sepsis each year.

Surgery

1.2M
women had a cesarean section (C-section) in 2017.

Chronic Conditions

MORE THAN **30M**
people have diabetes.

Organ Transplants

MORE THAN **33,000**
organ transplants were performed in 2016.

Dialysis for Advanced Kidney

MORE THAN **500,000**
patients received dialysis treatment in 2016.

Cancer Care

AROUND **650,000**
people receive outpatient chemotherapy each year.

(Source: CDC's 2019 AR Threats Report)

Antibiotic Resistance Spreads Easily Across the Globe

Resistant bacteria and fungi can spread across countries and continents through people, animals, and goods.

Introduction

The tripartite of the World Health Organization (WHO), Food And Agriculture Organization of the united nations (FAO) and World Organisation For Animal Health (OIE) has been working towards AMR containment.

Recently, the United Nations Environment Programme (UNEP) has also been roped in to address the environmental aspects of AMR.

Integrated and multi-sectoral surveillance of AMR is vital to gather evidence for necessary action.

- On 22 October 2015, WHO launched the Global Antimicrobial Resistance And Use Surveillance System (GLASS), the first global collaborative effort to standardize AMR surveillance.

- GLASS was created to support the second objective of the GAP-AMR initiative to “strengthen knowledge through surveillance and research”, and to continue filling knowledge gaps, with the aim to inform strategies at all levels.

GLASS provides a **standardized approach** to the collection, analysis, interpretation and sharing of data by countries and seeks to actively support capacity building and monitor the status of existing and new national surveillance systems.

GLASS Surveillance Activities

The various types of AMR-related surveillance activities led by GLASS are grouped into technical modules

Routine surveillance:

- **GLASS-AMR** provides a standardized approach to the collection, analysis and sharing of national AMR data in samples collected routinely for clinical purposes for a set of pathogens that cause common bacterial infections in human.

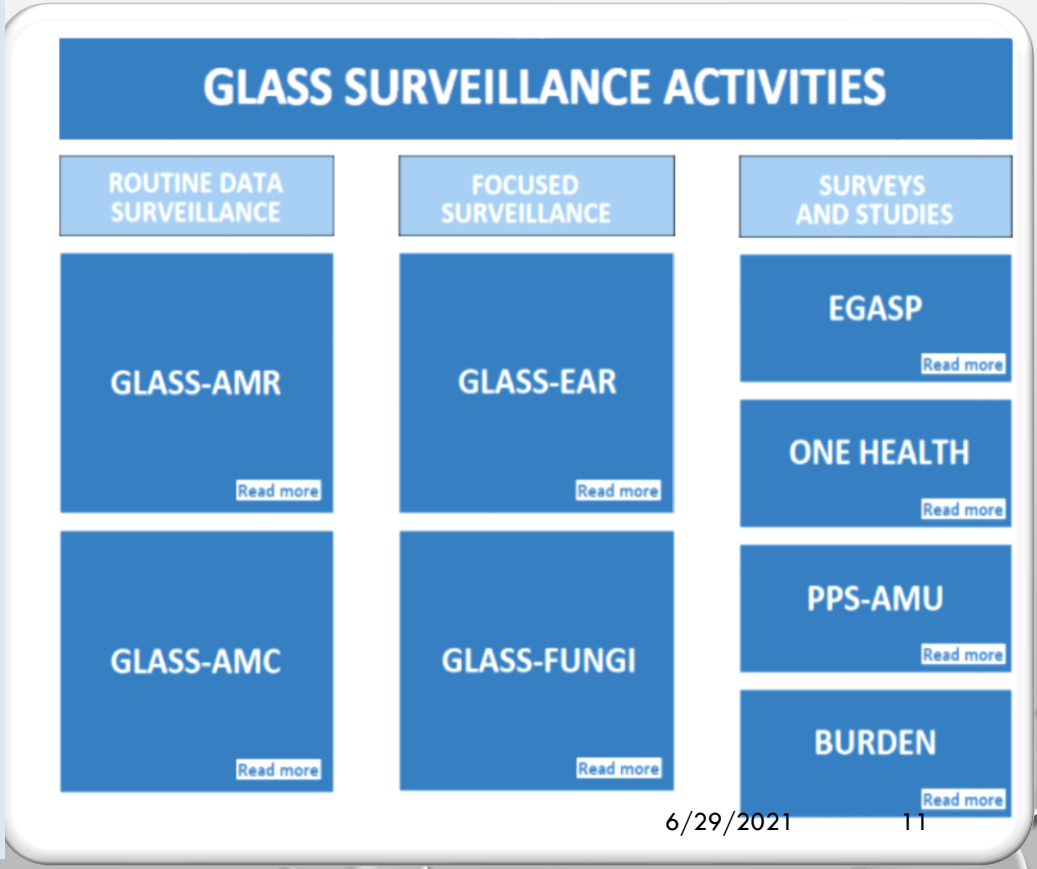
- **GLASS-AMC** provides a common and standardized set of methods for measuring and reporting antimicrobial consumption (AMC) at country, regional and global levels.

Glass Surveillance Activities

Focused surveillance

- GLASS-EAR, the emerging AMR reporting (EAR) module, supports the timely detection, reporting, risk assessment and monitoring of emerging resistance.

- GLASS-fungi focuses on the surveillance of invasive fungal bloodstream infections caused by *candida* spp.



Glass Surveillance Activities

Surveys and Studies

- **EGASP** offers an enhanced approach to sentinel gonorrhoea surveillance of men with urethral discharge and suspected urogenital infections.
- The **One Health** technical module offers an integrated multi-sector surveillance programme based on the extended-spectrum beta-lactamase (ESBL)-*Escherichia coli* ('tricycle') project.
- **PPS-AMU** proposes a method for the conduct of point prevalence SURVEYS (PPS) of antibiotic use (AMU) at the hospital level,
- **Burden** technical module presents studies estimating the public health impact of AMR

The National AMR Surveillance Strategy Of Bangladesh 2020-2025 :

Sectoral AMR Surveillance

(Human Health)

OBJECTIVES

Establish	Establish a national surveillance system to monitor the prevalence and evolving trends of AMR in organisms using a one health approach
Facilitate	Facilitate evidence-based decision making for AMR containment
Establish	Establish a genomic-based AMR surveillance system
Make	Make available surveillance data that can be combined with AMU and AMC data to facilitate evidence-based decision making

OBJECTIVES

Enable	Enable the surveillance of antibiotic resistance and antibiotic residues in the environment.
Establish	*Establish national laboratory network with a monitoring and evaluation (M&E) framework.*
Contribute	Contribute data to global and regional data-sharing mechanisms (e.g., the WHO Global Antimicrobial Resistance Surveillance System (GLASS), the World Organisation For Animal Health (OIE) system).
Promote	Promote research on antimicrobial resistance containment

Importance Of AMR Surveilance

- Surveillance is an indispensable tool for monitoring new emerging patterns of resistance

- It helps evaluating the effectiveness of local, national and global containment and mitigation strategies.

Importance Of AMR Surveillance

Understand	Understand when, where, how, and why drug resistance is emerging.
Reveal	Reveal antimicrobial efficacy.
Improve	Improve the management of patients and infection control in hospital settings.
Improve	Improve the management of community-infection control.
Guide	Guide evidence-based action by policymakers
Improve	Improve the empirical selection of antimicrobial agents when treating community or hospital-acquired infections.

Expected Outcomes (by the end of 2025)

- National AMR data is generated, antibiotic usage in all sectors is monitored, at the local and national levels.
- Using a one health approach, a system is developed to enable stakeholders to regularly access and analyse AMR data.
- Standard treatment guidelines on evidence-based usage are updated based on AMR data
- Laboratories are capable of identifying pathogens and performing AST according to guidelines and standard procedures, thereby generating quality data

Expected Outcomes (by the end of 2025)

- A system is established for evidence-based advocacy, communication, and social mobilisation initiatives on AMR containment among policymakers, producers, prescribers, consumers, farmers, and the general public.
- Sharing of data with regional and global agencies WHO (GLASS) and OIE established as a routine practice.
- A national repository for AMR isolates and data is established.
- AMR data inform the implementation of an evidence-based antimicrobial stewardship programme.

Expected Outcomes (by the end of 2025)

- Progressive changes in the rational use of antibiotics are visible in prescriber, producer, distributor, and consumer behaviour.
- Policymakers use surveillance data to make evidence-based decisions.
- AMR data contribute to in-depth research on AMR containment.
- An advanced AMR surveillance system, including molecular and genetic sequencing, is established.

Roles of National Reference Laboratories

Provide	Perform	Perform	Provide
Provide supportive supervision of the sentinel sites, using on-site visits and online support	Perform the primary analysis of samples (when necessary), as well as specialised and confirmatory testing	Perform confirmatory testing for the characterisation of AMR that cannot be performed at surveillance sites.	Provide external quality assurance (EQA) to the sentinel laboratories and preparing and providing proficiency testing (PT) panels

Roles of National Reference Laboratories

Participate in	Develop	Support	Build
Participate in an internationally-recognised EQA programme to ensure the attainment of an acceptable level of quality.	Develop the capacity to identify and perform molecular characterisation of different species and organisms.	Support outbreak investigations.	Build the capacity of sentinel sites through the provision of training and supportive supervision.

Roles of National Reference Laboratories

Support	Support	Collate and analyse
Support capacity building of laboratories through oversight and training.	Support the development of Standard Operating Procedures (SOPS) for the sentinel laboratories and ensure they are implemented.	Collate and analyse AMR data from respective sectors and share them with the NCC.

Roles of National Reference Laboratories

Play	Serve	Publish
Play a major role in planning and implementing monitoring and evaluation activities.	Serve as the physical repository for microbial isolates.	Publish periodic reports reflecting current AMR patterns.

Key features:

One health approach is emphasized

Molecuar mehods introduced keeping in line with recent advance in diagnostics and WHO directives

Research is one of the major objectives

Surveillance Methods In Human Health

Sl. No.	Critical resistance profiles and pathogens
1	Extended-spectrum beta-lactamase (ESBL) producing Enterobacteriaceae
2	Carbapenem resistant Enterobacteriaceae (CRE)
3	Methicillin-resistant Staphylococcus aureus (MRSA)
4	Vancomycin Intermediate Staphylococcus aureus (VISA)
5	Vancomycin resistant Staphylococcus aureus (VRSA)
6	Vancomycin resistant enterococci (VRE)
7	Penicillin resistant Streptococcus pneumoniae (PRSP)
8	Penicillinase producing Neisseria gonorrhoeae (PPNG)
9	Burkholderia pseudomallei
10	Pan drug resistant pathogens

Specimen	AMR priority pathogen
Blood	*E. coli* *Klebsiella pneumonia* *Acinetobacter baumannii complex* *Staphylococcus aureus* *Salmonella spp.* *Streptococcus pneumoniae* *Pseudomonas spp.* *Enterobacter*
Urine	*E. coli* *Klebsiella pneumonia* *Salmonella spp.* *Enterococcus species* *Enterobacter*
Stool	*Shigella spp.* *Vibrio cholera* *Salmonella spp*
Urethral and cervical swabs	***Neisseria gonorrheae***

Gaps in AMR Surveillance

- Critical gaps in surveillance is transforming surveillance data from informational to analytical and predictive

- In most countries' surveillance data is used primarily for informational purposes, not analytically or predictively.

- Accordingly, there is an opportunity to use data to proactively improve:

  - clinical decision making
  - help governments predict areas of emerging resistance and react accordingly
  - assessing the effectiveness of the response

SECTORAL WORKING GROUPS

- Each Sectoral Working Group (SWG) will work as a forum of the surveillance sites, laboratory networks, and reference laboratories within the sector
- Work experiences, surveillance findings, aid issues will be shared within the SWG to facilitate joint learning and problem-solving.
- The SWG will report on progress and challenges faced to the core working group (CWG) and the National Technical Committee (NTC)

SECTORAL WORKING GROUPS

- The SWG, along with the appropriate NRL of the sector, will ensure high safety and quality standards through established protocols for laboratory quality and participation in a National Quality Assurance Programme

- SWG members will participate in supportive supervisory visits to the sentinel sites

SECTORAL WORKING GROUPS

- SWG will convene monthly meetings and prepare quarterly progress reports for submission to CWG/NTC
- Membership of each SWG will be decided by NTC with a recommendation from CWG.

ZAMBIA'S INTEGRATED ANTIMICROBIAL RESISTANCE SURVEILLANCE FRAMEWORK

January 2020


“EVERYTHING
START
from a
dream”