

Global Antimicrobial Resistance and Use Surveillance System (GLASS) Report

Early implementation **2020**



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Foreword

May, 2020

During the past six months, the world has faced a pandemic crisis like no other in a century. The COVID-19 experience has shown that surveillance systems are crucial for the detection and management of new public health threats. Antimicrobial resistance (AMR) is an example of such an emerging threat with permanent humanitarian and economic consequences if not tackled aggressively.

Guiding the world towards optimal public health response and informed decision making requires harmonized data collection. In 2015, the World Health Organization launched the Global Antimicrobial Resistance and Use Surveillance System (GLASS) – the first global system to collect official national AMR data in selected bacterial pathogens causing common infections in humans.

Our aim is to ensure that countries can design cost effective, evidence-based AMR response strategies that are prioritized for impact, in the context of whole of society engagement across the One Health spectrum.

In the span of four years, 91 countries and territories have enrolled in GLASS and this report presents AMR data in over two million patients from 66 countries. It shows disturbing high rates of resistance among antimicrobials frequently used to treat common bacterial infections.

GLASS is poised now to move from its infancy to mature development towards a representative database that will reveal the burden of AMR, trends in resistance, determinants and ultimately, the cost of inaction. Initial limitations due to coverage and interpretation of results from the implementation phase of GLASS will give way to allow for robust estimation of AMR burden.

WHO is grateful for the support from international, regional, and national partners that enabled harmonization and coordination of AMR surveillance efforts. Together we will see GLASS move from a newly launched surveillance system finding its way, to robust data collection incorporating more pathogens, specimens and surveillance approaches to broaden the evidence base and help the world to stem the tide of drug resistance.

Dr. Hanan Balkhy Assistant Director – General for Antimicrobial Resistance World Health Organization

Summary

AMR represents a major threat to human health with significant global economic and security implications. In 2015, WHO Member States unanimously approved a Global Plan of Action to tackle AMR. Subsequently, Heads of States endorsed the AMR Action Plan and called for concerted action across all sectors in the context of the One Health approach.

WHO launched the Global Antimicrobial Resistance and Use Surveillance System (GLASS) in 2015 to continue filling knowledge gaps and to inform strategies at all levels. GLASS has been conceived to progressively incorporate data from surveillance of AMR in humans, such as monitoring of resistance, use of antimicrobial medicines, AMR in the food chain and in the environment.

GLASS provides a standardized approach to the collection, analysis, interpretation and sharing of data by countries, territories and areas and monitors the status of existing and new national surveillance systems. The various types of AMR-related surveillance activities led by GLASS are grouped into technical modules. Furthermore, GLASS provides support and evidencebased guidelines to assist countries, territories and areas to build capacity and take corrective actions.

GLASS works through all three levels of WHO – headquarters and regional and country offices – and is supported by the WHO AMR Surveillance and Quality Assessment Collaborating Centres Network. It enjoys strong commitment from participating countries, territories and areas and close collaboration with AMR regional networks such as CAESAR (Central Asian and European Surveillance of Antimicrobial Resistance), EARS-Net (European Antimicrobial Resistance Surveillance Network) and ReLAVRA (Latin American Network for Antimicrobial Resistance Surveillance). Since 2015, GLASS has continued to evolve and currently comprises five technical modules, including surveillance based on routinely collected data (e.g. patient samples collected for clinical purposes and national sales of antimicrobials), and focussed surveillance to generate information for specific purposes. The first GLASS surveillance module, launched in 2016, addresses AMR in bacteria that cause common human infections and against which antimicrobials are becoming increasingly ineffective. The antimicrobial consumption (AMC) module was added in 2019, and the first call for data on national AMC will be conducted in 2020.

As of April 2020, 92 countries, territories and areas are enrolled in GLASS, specifically 91 in the AMR surveillance module and nine in the AMC surveillance module. The aims of this third GLASS report are to:

- · describe the elements and status of development of GLASS;
- summarize the results of the data call on 2018 AMR data from participating countries, territories and areas;
- summarize participation of countries, territories and areas and their progress in AMR-related surveillance; and
- summarize AMR surveillance activities globally.

By the end of the data call (31 July 2019), 82 countries, territories and areas were enrolled in the AMR module, comprising 13 lowincome, 23 lower-middle-income, 16 upper-middle-income and 30 high-income countries, territories and areas in all WHO regions. Of these, 78 countries, territories or areas reported to GLASS during the data call, of which 66 reported data on AMR. Of these, 12 provided information on the status of their national AMR surveillance systems, 1 reported AMR data for 2018, and 65 countries, territories and areas provided both information on the status of their national surveillance system and AMR data for 2018.

In the AMR module, GLASS captures information on the frequency of resistance among high-priority pathogens that cause infections in humans: Acinetobacter spp., Escherichia coli, Klebsiella pneumoniae, Neisseria gonorrhoeae, Salmonella spp., Shigella spp., Staphylococcus aureus and Streptococcus pneumoniae. Data on AMR are collected through a case-finding surveillance system, with collation of the results for specimens of blood (Acinetobacter spp., E. coli, K. pneumoniae, Salmonella spp., S. aureus and S. pneumoniae), urine (E. coli, K. pneumoniae), stool (Salmonella spp., Shigella spp.) and cervical and urethral specimens (N. gonorrhoeae) sent routinely to laboratories for clinical and public health purposes. In 2019, GLASS received data on specimens from 2 365 972 infected patients; of these, 2 164 568 (91%) underwent antimicrobial susceptibility testing (AST). Twenty- eight of the 66 countries, territories and areas that provided information on the proportion of infections due to selected types of AMR also provided information on the population tested with suspected infections.

Capacity to conduct AMR surveillance is still being established in some countries, territories and areas; therefore, the data collected by GLASS-AMR are not yet of sufficient representativeness to allow comparison of trends in AMR among countries, territories and areas, and regions. The data nevertheless show progress in the development and strengthening of national AMR surveillance systems over the past 3 years. Interactive virtualization of the AMR results of single countries, territories and areas is available on the WHO Global Health Observatory GLASS webpage https:// www.who.int/gho/glass/en/ The GLASS-One Health module, based on the extendedspectrum β -lactamase (ESBL) *E. coli* Tricycle project, has been pilot-tested in six low-income and lower-middle-income countries, and another nine countries have been selected for implementation in 2020. The aim of the project is to detect the presence of ESBL *E. coli* in animal, human and environmental ecosystems as a first step in the development of a standardized method for integrated AMR surveillance in the context of the One Health approach. The enhanced gonococcal antimicrobial surveillance programme (EGASP) module has been pilot-tested in the Philippines and Thailand, providing an unprecedented set of clinical data related to resistant *N. gonorrhoeae* for finalization of the EGASP protocol, which could be adapted by countries to combat AMR for this pathogen.

The report summarizes not only GLASS activities but also describes developments over the past years in other surveillance programmes led by WHO, including resistance to anti-HIV and anti-tuberculosis (TB) medicines, antimalarial drug efficacy and environmental surveillance of AMR.

GLASS has already collected an unprecedented amount of information on AMR globally and regionally and continues to foster development of national AMR surveillance systems. In the near future, GLASS will fully integrate information on AMC and from targeted surveillance with evidence-based data collection methods and will offer an exceptional platform for data analysis and information-sharing, playing an essential role in the identification and understanding of AMR trends and drivers globally. The support of the WHO regional offices, WHO collaborating centres, other public health institutions and international partners to participating countries, territories and areas, territories and areas continues to be fundamental to the achievements to date.

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