

Goal 3: Ensure healthy lives and promote well-being for all at all ages

TARGET 3.d: Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks

Proposed Indicator 3.d.2: Reduce the percentage of bloodstream infections due to selected antimicrobial resistant organisms

Institutional information

Organization(s):

World Health Organization (WHO)

Concepts and definitions

Definition:

Frequency of bloodstream infection among hospital patients' due to methicillin-resistant *Staphylococcus aureus* (MRSA) and *Escherichia coli* resistant to 3rd-generation cephalosporin (e.g., ESBL- *E. coli*).

Rationale for selecting these two types of AMR organisms:

- (i) *E. coli* and *S. aureus* are among the most common human fast-growing bacteria causing acute human infections;
- (ii) *E. coli* is highly frequent in both humans, animals and environment, being an excellent indicator for monitoring AMR across the sectors in line with the One Health approach;
- (iii) both MRSA and ESBL- *E. coli* are largely disseminated and frequently in high frequency in hospital settings all over the world. Infections with these types of AMR lead to increase in use of the last resort drugs (e.g., vancomycin for MRSA infections, and carbapenems for ESBL- *E. coli*) against which new types of AMR are emerging. WHO has defined global infection prevention and control standards and strategies.

Effective control of these two types of AMR will ultimately preserve the capacity to treat infections with available antimicrobials while new prevention and treatment solutions can be developed.

Rationale for the proposed indicator:

Antimicrobial resistance (AMR) is a global threat to health, livelihoods and the achievement of many of the Sustainable Development Goals noted in the earlier section. Antibiotics, antivirals, antiparasitic agents and antifungals are increasingly ineffective owing to resistance developed through their excessive or inappropriate use, with serious consequences for human and animal health (terrestrial and aquatic), and plant health, and negative impacts on food production, the environment and the global economy.

Antimicrobial resistance will negatively impact the achievement of many of the targets listed earlier under Goal 3 due to reduced treatment options for infections by resistant pathogens, will impact targets under Goal 2 by impacting the agricultural productivity, including food animal production, and will impact targets in Goal 1 as increased antimicrobial resistance will result in large declines in economic growth, increase economic inequality and drive an additional 24 million people into extreme poverty by 2030¹.

Achieving some of the targets under Goal 3, Goal 6, and Goal 12 would also positively impact the burden of antimicrobial resistance in countries.

Given the above context, and the urgent need to build country capacity to address this growing national and global multisectoral risk, it is critical that the proposed additional indicator on AMR be considered for inclusion in the list of SDG Indicators. This new indicator, while providing data to monitor the trend globally, will also be very effective as a proxy for tracking progress of enhancing country capacity to effectively implement their national action plans on AMR.

Comments and limitations:

Constraints associated with in national AMR surveillance systems (number and distribution of surveillance sites and representativeness of surveillance data, sampling bias, poor diagnostic capacity, measurements errors, issues with data management).

Methodology

Computation Method:

The WHO Global AMR Surveillance System (GLASS) supports countries to implement an AMR standardized surveillance system. At national level cases are found among patients from whom routine clinical samples have been collected for blood culture at surveillance sites according to local clinical practices, and antimicrobial susceptibility tests (AST) are performed for the isolated blood pathogens. The microbiological results (bacteria identification and AST) are combined with the patient data and related to population data from the surveillance sites. GLASS does collect information on the origin of the infection either community origin (less than 2 calendar days in hospital) or hospital origin (patients hospitalized for more than 2 calendar days). Data are collated and validated at national level and reported to GLASS where epidemiological statistics and metrics are generated.

Numerator: Number of patients presenting with blood stream infection due to MRSA and ESBL- E. coli among patients seeking hospital care

Denominator: Number of patients seeking hospital care and from whom the blood specimen was taken due to suspected bloodstream infection and from whom blood specimens have been submitted for blood culture and AST.

Disaggregation:

The data is disaggregated by sex, and age group. Data will be aggregated at the country level. Data will be analyzed and reported according to whether specimen is within 2 calendar days of admission (community origin) or after 2 calendar days of admission (hospital origin).

Treatment of missing values:

¹ World Bank Group, *Drug-resistant Infections: A Threat to Our Economic Future – Final Report* (Washington, D.C., March 2017).

- At country level

Countries with no data are reported as blank.

Data Sources

Preferred sources: National AMR data collected through the national AMR surveillance system and reported to GLASS.

Other possible data sources: Published and non-published data from national centers and research/academic institutions and from others regional surveillance networks.

Data Availability

Data are available by country, sex, and age group, and also by whether infection is of community origin or hospital origin.

Calendar

Yearly

Data providers

Ministries of Health

Data compilers

WHO

References

URL: <http://www.who.int/glass/en/> ; <http://www.who.int/gho/glass/en/>