

Surveillance involves the systematic collection and analysis of health-related data, and reporting the findings to those who will use them in decision-making on public health issues.

1. Why is surveillance necessary to combat antimicrobial resistance?

Surveillance is needed:

to detect resistant microorganisms, follow their spread among people and geographic areas, and enable outbreaks of diseases caused by drug-resistant infections to be notified and investigated promptly;

to enable correct decisions to be taken about treatment of patients, and to prevent and control the spread of infection;

to guide policy recommendations and to monitor how well the measures taken to combat antimicrobial resistance (AMR) are working;

to track the use and misuse of antimicrobial medicines, so that the public health consequences can be assessed.

Examples of functioning worldwide health surveillance networks:

[Map 1 Coverage of WHO global laboratory network on M/XDR-TB surveillance](#)

[Map 2 Coverage of WHO global laboratory network on HIV drug-resistance surveillance](#)

2. Challenges to overcome

Shortage of competent laboratories: AMR surveillance depends on microbiology laboratories

which can accurately identify resistant microorganisms. Low-income countries generally lack such laboratories, and where laboratories exist, the means to check the reliability of their work are often lacking.

Poor infrastructure and data management: poor data management prevents routine monitoring and reliable data collection to measure the extent of AMR.

Variation in methods: Without standard protocols for measuring resistance, data cannot be shared and compared between laboratories and countries.

Low coverage of surveillance: A number of global databases and regional networks for specific diseases hold data related to AMR, but the data are patchy, with many gaps.

Lack of intersectoral cooperation: The impact on human health of using antibiotics as growth promoters and for disease prevention in food-producing animals is unclear. It cannot be assessed without better collaboration for surveillance of AMR in bacteria from humans, food products and animals.

Inadequate international collaboration: More extensive international collaboration on AMR surveillance is needed so that information can be shared to provide an early warning of new or unusual outbreaks of drug-resistant infections.

3. Core actions

(A) Establish AMR surveillance and monitoring systems

Consolidate AMR surveillance, using the right epidemiological methods (including sample-based surveys, sentinel site surveillance and routine surveillance).

Apply standardized protocols to assess AMR consistently over time and across geographical areas.

Adapt available model information systems and software for AMR surveillance (e.g. WHONET) and ensure that data flows from hospitals and other health-care facilities to the national level, so that laboratory results and clinical information can be linked.

Establish systems for recording the use of antimicrobial medicines in hospitals and other health-care facilities and in the community, and link these findings to AMR surveillance data.

Set up quality assurance systems, including monitoring and supervision of laboratories, continuing education for staff, and verification of the AMR data collected. · Integrate systems for AMR surveillance between public health services, veterinary services and food safety authorities, including health facilities and congregate settings¹.

Ensure that surveillance data are analysed and reported promptly on a regular basis; and that the data are used to inform national medicines policy and standard treatment guidelines, to promote the rational use of medicines, and in infection control.

(B) Build laboratory capacity for rapid and reliable diagnostic testing

Designate reference microbiology laboratories to carry out reliable diagnostic testing, with strengthening of the laboratories as necessary.

Ensure that laboratory data are recorded and reported promptly to prescribers, infection control programmes and national health authorities.

Establish quality assurance systems and supervision to ensure the reliability of laboratory results.

Extend access to the best AMR diagnostic methods, including rapid molecular techniques.

(C) Engage in regional and global surveillance networks

Share the national surveillance data on AMR and antimicrobial use promptly.

Support and participate in regional networks and reference laboratories for surveillance of AMR.

Promote standard reporting and dissemination of information at regional and global levels.

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