

Establishment of national laboratory-based surveillance of antimicrobial resistance



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Introduction

During the past six decades antimicrobial agents¹ have played a critical role in reducing the burden of communicable diseases all over the world. However, the emergence of resistance and its rapid spread is negating the impact of these drugs, and hindering effective application of modern technologies in mitigating human misery. While the appearance of resistance is a continuous phenomenon in microorganisms, its amplification and spread is through an array of practices conducted by human beings. Improper utilization of antimicrobial agents, especially in high disease-burden settings, results in strong selection pressure that allows the resistant strain to grow and rapidly replace the susceptible isolates.

Diseases due to resistant organisms take longer to heal, and require expensive and at times toxic drugs for longer periods, often making the disease untreatable. The resistant organisms can also move across countries through travel and trade. In that sense, antimicrobial resistance is a global challenge requiring concerted efforts at national and international levels to preserve the available antimicrobial agents. This is possible through treatment policies such as combination therapy, rational prescription, patient adherence, a strong regulatory mechanism coupled with educational activities, along with an efficient surveillance system that monitors the emergence and spread of resistance as well as the utilization of antimicrobial agents.

To facilitate this activity at the country level, WHO has developed a strategy that is simple, practical and easy to scale up. The regional

¹ In the strict sense, all antimicrobials are not antibiotics since some of these are chemically synthesized. However, for ease of reading these two terms will be used synonymously in this document.

strategy aims to accord particular attention to interventions involving the introduction of legislation and policies governing the use of antimicrobial agents, ensuring the rational use of these drugs at all levels of health-care settings and establishing laboratory-based networks for surveillance of resistance.

Scope of the document

This document aims to provide an overview of the steps that can be initiated to establish national laboratory-based surveillance of antimicrobial resistance. The document also provides guidance on key elements of a good surveillance system. The document relies heavily on the experience gained in Thailand where the national antimicrobial resistance surveillance programme has been in operation for several years.

Guideline development process

The WHO Regional Office for South-East Asia commissioned the WHO Collaborating Centre on Antimicrobial Resistance, National Institute of Health, Ministry of Public Health, Thailand to develop the first draft of the guidelines. The objectives were to provide a tool to developing countries in establishing procedures and practices for a national system for a laboratory-based surveillance of antimicrobial resistance which should generate evidence for forming policies and programmes for the rational use of antibiotics. The guidelines were reviewed by several experts at the WHO Collaborating Centre and subsequently by colleagues in the WHO Regional Office for South-East Asia and WHO Country Office for India.

Guidelines development team

WHO wishes to acknowledge the support provided by various experts in drafting, reviewing and finalization of the guidelines (please see list in Annex 1).

Surveillance of antimicrobial resistance

Surveillance is defined as *“the ongoing and systematic collection, analysis and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know”*.

In simpler terms surveillance is data collection for action.

Surveillance of antimicrobial resistance

Antimicrobial resistance (AMR) surveillance data will help to formulate, monitor and identify the prevailing and emerging problem, which can be contained by effective strategy. Understandably, the majority of surveillance programmes are laboratory -based. Very few clinical data are collected and the data obtained by most surveillance programme are not useful to implement control and/or prevention measures. One strategy to improve collection, collation and dissemination for

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