

**EDITORIAL****IMPROVING LABORATORY CAPACITY IS VITAL TO PERFORM OPTIMAL ANTIMICROBIAL RESISTANCE SURVEILLANCE IN ETHIOPIA**Alemseged Abdissa, PhD<sup>1</sup>, Abebe Genetu PhD<sup>1</sup>

The advent of antimicrobials many years ago revolutionized medicine, both for the treatment of bacterial infections and for prophylaxis. Antimicrobial resistance (AMR) is now increasing world-wide at an alarming rate and represents a growing threat to the health of all people in the world. Needless to say, antibiotic resistance increasingly compromises the clinical outcome of many common infections in Ethiopia and the rest of the world that were, until recently, treatable.

Cognizant of this global crisis, the May 2015 World Health Assembly adopted a global action plan on AMR, which outlined five objectives, one of which was to strengthen the knowledge and evidence base through surveillance and research (1). Surveillance studies make use of the antimicrobial susceptibility tests performed on pathogenic bacteria isolated from patients and provide valuable information on the current resistance situation for various infectious diseases in a given geographic area or hospital setting. Surveillance of AMR generally provides data that is needed to raise the awareness of the problem and to implement necessary interventions

Surveillance of AMR informing public health and clinical intervention relies on the existence of well-trained, high quality microbiology laboratories, which can perform antimicrobial susceptibility testing with high accuracy. Standardization is the key to good antimicrobial susceptibility testing and one of the outcomes of the early efforts, the Kirby-Bauer method, was adopted by National Committee for Clinical Laboratory Standards (NCCLS) (2).

Basic strain typing includes species identification procedures based on biochemical tests, which can be produced locally and employed using appropriate control methods. Basic bacteriology laboratories are relatively less equipment-dependent and are far short of full automation, rather largely relying on the skills of laboratory personnel unlike many other laboratory methods. On the other hand, although only few laboratories perform bacterial culture and antimicrobial susceptibility testing, supplies are hardly available in the local market for them or are often not included in the national procurement system. Thus, providing continuous training for microbiology laboratory personnel, introducing laboratory proficiency testing and ensuring continuous supply of consumables for bacteriology and AMR testing are urgently needed. The current initiative of accrediting microbiology laboratories in Ethiopia will play a significant positive role in improving the quality of clinical tests and in generating good quality data for decision-making.

Clinicians can play a key role to improve these situations, as clinical laboratory is an integral part of the overall patient care delivery system. Thus, it is imperative for clinicians to work closely with the microbiology laboratories, participate in laboratory improvement plans and make sure that the output contributes to patient management, and generate evidence to inform empiric treatment guidelines including for facilities with no lab capacities. This is best facilitated through an antimicrobial stewardship program (3). University teaching hospitals are expected to lead this by example, including in training of medical and allied health science professionals (4).

A strong leadership and concerted efforts from all actors are required to drive the laboratory improvement and AMR agenda, mobilize resources and achieve progress. We emphasize that it is vital to address the gaps in AMR diagnostic capacity of laboratories in order to regularly generate evidence that inform the optimization of treatment guidelines and guide good practice. A serious team effort, in particular that of clinicians, microbiologists, pharmacists, hospital/health center administrators as well as health policy makers, is critical to preserve our current arsenal of antibiotics.

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