Laboratory Quality Control For All

Can This Be Achieved?

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Visiting hospitals in Africa and meeting with clinicians, pathologists, and laboratory directors, it rapidly becomes apparent that confidence in any diagnostic services is lacking. Clinicians cite many reasons. Some days complete blood cell counts and chemistries are available, while on other days, because there are no reagents available, physicians have no results to guide treatment for their patients. Blood cultures, when available, are frequently contaminated by fungi and bacteria and you cannot be sure if the organism identified is the cause of the patient’s fever. Turnaround times are incredibly long, and by the time a result is available, it is too late to be clinically relevant. Consequently, clinicians continue to practice medicine using a syndromic approach rather than defining a specific diagnosis. Unfortunately, this happens routinely, even in large African academic centers and in much of the developing world.

One of the things that clinicians in developed countries take for granted are efficient laboratories that deliver credible results. For example, clinicians order blood work as the patient is leaving their office, and the results appear in the electronic medical record that afternoon. They get a call from the laboratory when budding yeasts show up in a blood culture obtained 2 days ago in a patient with a transplant who had been admitted with fever and treat the patient accordingly; they know blood culture contamination rates in the hospital are low and are confident that there is little likelihood that these yeasts are a contaminant. Two days after a patient with a gastric ulcer undergoes an endoscopic biopsy, a pathologist’s report shows adenocarcinoma, and thus staging and treatment can be started. Having reagents daily in the laboratory and working with well-maintained instruments allow for dependable turnaround times. Using internal and external quality controls is indispensable for consistency of laboratory results. These activities are completely invisible to clinicians but they provide confidence and credibility to the laboratory results in our environment. Thus, it is not surprising that physicians depend on laboratory results to diagnose and guide treatment.

The article by Amukele et al1 in this issue demonstrates that given the opportunity and resources, multiple centers in Africa are capable of taking the necessary steps to establish confidence in laboratory results. In the context of research, the authors have implemented good laboratory practices in African institutions collaborating under the auspices of the US President’s Emergency Plan for AIDS Relief (PEPFAR). As shown by their results of external quality control, these African laboratories can provide consistent laboratory results because the reagents are available and daily quality control measures are in place. The challenge is how to propagate to other institutions in Africa the efforts established in the few that participated in the study. Availability and sustainability using each country’s own resources should now be the goal; currently several initiatives toward this goal are evolving.

The Medical Education Partnership Initiative (MEPI) was established to increase workforce capacity after PEPFAR showed the importance of having in-country sustainability of diagnosis and treatment of patients with AIDS.2 Thus, MEPI, with its different collaborators in the United States and African countries, seeks to improve the quantity and quality of medical and health care–related professionals and retain graduates in their countries. It is expected that as new medical school graduates of the programs start practicing they will demand laboratory services that will help them define specific diagnoses rather than continue to practice
In addition to the previously mentioned activities, many foreign organizations are already partnering with organizations in Africa. Defining the number of such organizations and their activities has proven to be difficult because communication between them does not exist or is minimal. For example, “Friends of Africa,” an initiative of the United States and Canada Academy of Pathology and the International Academy of Pathologists, has been working on a catalog of foreign organizations interested in laboratory medicine professionals and pathologists who work or train in Africa-related issues, but this has proven challenging. Coordination and collaboration among the multiple foreign organizations working in improving pathology and laboratory medicine in Africa will be an important step forward. These efforts will address gaps, thus avoiding duplication and conserving limited resources.

Now, the reader might ask, why do we care if laboratories in Africa are using good laboratory practices? Infectious diseases are the most palpable explanation of why we all need to care in this era of globalization. For example, the use of broad-spectrum antibiotics to treat patients in countries where obtaining cultures and performing susceptibility testing are not available frequently leads to the development of antibiotic-resistant bacteria in “that” other place of the world; however, as a result of globalization, these resistant bacteria are now in our hospitals. The most recent example is the New Delhi metallo-β-lactamase 1 (NDM1) found in a variety of Gram-negative bacteria that probably originated in India and are now in most Asian countries, Europe, and the United States. The patients who have had the NDM1 bacteria in Europe and the United States have all been linked to travel and health care in Asia. Just like multidrug-resistant bacteria enter the United States or Europe without passports, developed countries export eating habits that are now contributing to the epidemic of obesity, diabetes, and coronary heart disease that is an increasing burden for developing countries. Thus, countries in Africa, Asia, and Latin America have a double burden of communicable and noncommunicable diseases.

In 2010, the African Union Commission held an official side event on health financing in Africa. A policy and management strategy suggested was that countries with PEPFAR funding should use some of the money to address health system issues. The work of Amukele et al is a good example of evaluating quality control in laboratories for a particular study but with the potential to benefit the entire system if physicians learn that the laboratory is using the correct procedures and having adequate controls for all samples. Thus, it is time for all to advocate for harmonizing donor support with national health care priorities and plans in resource-poor countries; this includes laboratory services, which will improve overall quality of patient care. It is also
time to advocate for local capacity building and sustainability by creating the structure for in-country pathology and laboratory medicine training, ensuring a steady supply chain of reagents, and having adequate maintenance of existing instrumentation.

The reliable laboratory tests that physicians in developed countries use to provide quality patient care should no longer be a luxury but should be a desirable and achievable aim for our clinical colleagues in Africa.

References


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