
LETTERS TO THE EDITOR

Engaging medical laboratory scientists in future pandemics: Lessons from the COVID-19 pandemic in Nigeria

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Abstract

The role of medical laboratory scientists has been critical in the early identification of the causative agent of the COVID-19 global pandemic, and the ongoing management and surveillance of the disease. Lessons from the Nigerian experience include the need to improve the capacity of laboratories in molecular diagnosis, increase the number of laboratories within the Nigerian Centre for Disease Control network, and establish more viral laboratories across the country.

Keywords: COVID-19, infectious disease, health care reform, pandemic, medical laboratory scientist

Introduction

The current COVID-19 pandemic has overwhelmed health systems in multiple countries, with many health professionals losing their lives due to the virus [1]. Medical and nursing staff are recognized for their efforts in the recovery of COVID-19 patients; however, medical laboratory scientists are also pivotal to these successes. Medical laboratory operations have been critical in the COVID-19 response through the identification of the pathogen, diagnostic services, surveillance, and vaccine development [2]. The COVID-19 pandemic has highlighted the need to revisit the roles, challenges, and recommendations for improving medical laboratory operations.

Role of Medical Laboratory Scientists in the COVID-19 pandemic

Identification

The identification of the phylogenetics and characteristics of a virus is key in containing spread and optimizing medical management [3]. At the start of the COVID-19 pandemic, when numerous persons contracted a virus causing acute pneumonia in Wuhan, China, the scientists at the Viral Research Institute of China identified the causative agent of the disease, a Betacoronavirus that was subsequently named SARS-CoV-2 by the World Health Organization (WHO) [2].

Diagnosis

Medical laboratory operations are critical in the COVID-19 response through rapid diagnosis of viral infection, serological monitoring of affected populations, biochemical monitoring of hospitalized

patients with more severe COVID-19-induced complications, establishing quality control programs to monitor and ensure accuracy of test results, validation of testing protocols, discovery and development of vaccines, disease surveillance and notification [2].

Disease surveillance and control

Medical laboratory scientists have advised on government policies on containment [4]; provided support for sterilization, disinfection, and monitoring of sterilization in a facility; and implemented effective disease surveillance systems to respond to outbreaks promptly to prevent catastrophic spreading [5]. The combined technological and intellectual capabilities of laboratory professionals make them unique contributors to disease surveillance and control through several laboratory tests and research.

Challenges and recommendations

Challenges faced by medical laboratory scientists during the COVID-19 outbreak include regulatory hurdles, staffing strains, inadequate funding, unavailability of diagnostic methods and kits, low testing capacity, poor bio-safety practices, poor attitude towards research and development (R&D) capabilities, and supply-chain shortages [1]. Lessons learned from previous outbreaks emphasize the need for diagnostic preparedness, as poor diagnostic preparedness was seen to have contributed significantly to delays in the identification of recent outbreaks of multiple

pathogens, including, COVID-19, Lassa fever, Ebola, Yellow fever, and Zika [6]. Strengthening Nigeria's laboratory diagnostic capacity is required, therefore, especially in the area of molecular diagnosis. During the critical early weeks of the virus's spread in Nigeria, regulatory barriers of the Nigerian Centre for Disease Control (NCDC) prevented many specialist molecular diagnostic laboratories from rapidly offering high-quality, validated laboratory-developed testing services [7]. Hence, there is a need for an increase in the number of qualified medical laboratories in NCDC's Laboratory Response Network to enable rapid deployment of diagnostic testing. In the event of future emergencies, the NCDC should rapidly standardize testing criteria, practice guidelines, rapid assay protocols, and control materials that will enable more laboratories to perform diagnostic testing [7]. Currently, in Nigeria, there are few standard virology laboratories [8]. The establishment of virology laboratories in each of the six geopolitical zones of the country should be considered to aid in the early detection of potential viral outbreaks and the study of the characteristics of the causative agent.

Conclusion

Medical laboratory science is the foundation of diagnostic medicine and plays a critical role in pandemic containment. In Nigeria, it is inevitable that there will be another outbreak of an infectious disease; therefore, it is necessary to develop pandemic preparedness strategies, particularly with regard to capacity building for medical laboratory diagnosis.

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