

Challenges of Coronavirus Disease 2019 Testing in Resource Limited Settings: A Case of Zambia

Diana Mannan^{1*} , Chiti Nseluka¹ 

¹Department of Public Health, School of Medicine & Health Sciences, University of Lusaka, Zambia

*Corresponding author: dianamannan@yahoo.co.uk

Letter to the Editor

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Dear Editor,

Coronavirus disease 2019 (covid-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with covid-19 virus experience mild to moderate respiratory illness and recover without special treatment. Those that are more likely to develop serious illness are older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease and cancer [1].

The global spread of the virus has overwhelmed health systems, and caused widespread social and economic disruption especially in most African countries including Zambia. A review of covid-19 in Africa shows that, inadequate spike in covid-19 has reduced government budgets, leading to underfunded health care, poor governance, significant public debt rises, and large infrastructure gaps. Considering Africa's weak health systems and its lack of physicians, health care workers, medications and medical supplies, infections with covid-19 are likely to increase, and will

mostly lead to unreported humanitarian crisis[2]. The covid-19 pandemic has had a huge toll on individuals, families, communities, and societies across the world. People's daily lives have been profoundly changed, economies have fallen into recession, and many of the traditional social, economic, and public health safety nets have been put under unprecedented strain. In order to help control the infection in the community, there is need to test suspects for covid-19 as well as individuals who have been in contact with them. One of the main things learnt so far is that the faster all cases are found, tested and isolated, the harder it is for the virus to spread. This principle will save lives and mitigate the economic impact of the pandemic [3]. However, to be able to achieve this, there is need to have effective testing facilities. Most developing countries like Zambia are far from achieving this because of several challenges being faced in the testing of covid-19.

One of the challenges is the lack of decentralization in covid-19 testing; testing in

most resource limited settings is by Polymerase Chain Reaction (PCR) which requires a well set up laboratory with well-trained laboratory personnel and tends to be centralized in provincial laboratories such as University Teaching Hospital Virology Laboratory, Arthur Davison Hospital and Livingstone Central hospital which are the laboratories being used in Zambia. Samples have to be collected and sent to a central laboratory like University Teaching Hospital Virology Laboratory for testing and this tends to delay the turnaround time and defeats the purpose of finding cases fast and isolating them. Results take up to three or more weeks to be ready and if someone is found positive, they would have already been in contact with so many other people and probably infected them or got infected themselves if the test will come out negative.

Proper laboratory testing that meet ISO 15189 would make it easy to get an epidemiological pattern which can help to manage the pandemic by being guided by empirical scientific evidence. Therefore, it is necessary to decentralize the testing so that turnaround time is reduced enabling quick and better management of those found positive for covid-19. A Memorandum of understanding can also be signed with the private hospitals to increase covid-19 testing facilities. The Ministry of Health in Zambia can sign MoUs with private hospitals and laboratories such as Nkanza laboratory, Coptic hospital, Medlands hospital and Fairview hospital.

Another challenge is the availability of test kits as well as consumables required for covid-19 testing. Resource limited settings rely on donated test kits from agencies like the Global Fund who also distribute kits according to World Health Organization allocation. In Zambia, most of the test kits have been donated by the global fund. These are not enough to cater for the whole of Zambia and makes it difficult to test all covid-19 suspects and their contacts. International supply chains have also been affected by the pandemic contributing to the late delivery of covid-19 test kits. The government of the republic of Zambia should allocate more resources for test kits and partner with other cooperating partners to help increase the supply of test kits for covid-19. In addition, consideration should be given to introduce more covid-19 test kits approved by WHO for emergency so that access to testing is increased and result turnaround time is reduced. The most

preferable turnaround time would be 24-48 hours as is the case in most other settings like the Netherlands where they have a turnaround time of 24-48 hours [4].

The challenge of the lack of protective personal equipment (PPE) for the frontline health care workers is another crucial one. Health care workers working on the frontlines need to be protected adequately to prevent them from covid-19 infection or from even dying. Most resource limited settings do not have and cannot afford appropriate PPE such as safety goggles and N95 masks. This makes them vulnerable to catching covid-19 and further spreading it to their family members. Through partnering with different stake holders, enough funds can be raised to purchase appropriate PPE for covid-19 for the health care workers in Zambia.

Lack of trained manpower capable of performing the molecular biology experiments required to test for covid-19 and interpreting the results is another major limitation in the testing and confinement in developing countries [5]. In Zambia, the few available trained laboratory personnel tend to be overwhelmed and this has the tendency to affect the quality of results. Training of more laboratory personnel in molecular testing through virtual and online training can help to increase the number of well-trained manpower in Zambia.

Transport is also a challenge; some facilities do not have readily available transport to take the samples collected to a central laboratory for testing and this also contributes to a long turnaround time. Sometimes they end up using public transport which is not ideal as this poses a threat to all the people on board, like for example in Zambia, a laboratory personnel died in a road traffic accident involving a public transport bus they travelling in while taking samples for covid-19 for testing. Therefore, there is need to have readily available transport to ferry the samples for testing as soon as they are collected.

The emergence of covid-19 has had a negative impact on the entire country in Zambia and all sectors have been affected bringing the economy down. Companies like Pick and Pay have had to downsize their employee base because of lockdowns in South Africa, businesses like bars which are a source of serious revenue have not been operating at par and people have lost their jobs, hotels and lodges have fewer clients because of reduction

in international travel denying the country the much needed revenue and copper exports have also reduced because of the global economic crisis. This presents lessons and opportunities to invest in research laboratories. As a country, we cannot live in isolation and need to live up to the agreement of Abuja declaration in which heads of state of African Union countries met and pledged to set a target of allocating at least 15% of their annual budget to improve the health sector [6]. Health systems have to be strengthened and there is need to begin to strongly invest in the medical laboratory departments with adequate equipment and well trained staff if we have to address the challenges of lack of testing facilities, availability of covid-19 tests and other consumables, lack of adequate PPE, lack of adequately trained manpower and transport.

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