

## Coronavirus Pandemic

### Navigating the COVID-19 outbreak in Zambia

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#### Abstract

COVID-19 is a global public health crisis wreaking havoc in nearly every corner of the globe and Zambia is not an exception. Amid an already existing disease burden of HIV/AIDS, malaria, malnutrition, and cholera, the resilience of the health care system is yet to be tested especially since it lacks about 40% of its estimated workforce. Meanwhile, the government has already established measures to contain the spread of COVID-19. This includes; reorientation and training for health workers, indefinite closure of all learning institutions, and banning non-essential traveling. With the COVID-19 vaccine roll-out on the ground, the milestones achieved thus far in fighting the pandemic are expected to intensify.

**Key words:** COVID-19; measures; vaccine roll out; Zambia.

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#### Introduction

In December 2019, a cluster of cases of pneumonia with unknown causes was reported in Wuhan, in the Hubei province of China [1]. On 7 January 2020, a novel coronavirus, severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), previously known as the 2019 novel coronavirus was identified as the causative agent by Chinese facilities via deep sequencing analysis of a patient's respiratory tract samples. The World Health Organization (WHO) declared the outbreak a Public Health Emergency of International Concern on 30 January 2020. WHO further declared the COVID-19 outbreak as a pandemic on 12 March 2020 [2]. COVID-19 is a global pandemic indiscriminately flipping nations' economies and throwing them into panic regardless of their economic status or the strength of the healthcare system. Zambia, with an already burdened healthcare system and a consistently detouring economic status, is no exception. Amid an already existing severe burden of HIV/AIDS, malaria, malnutrition, and cholera, Zambia's healthcare system is yet to stand the test of the pandemic times. However, the government of the republic of Zambia has put in a

number of measures in the hope of effectively containing the burden. Some of these measures include sensitization programs, training health workers on COVID-19 protocol, reorientation of the health care system, and a fine of \$40 USD when one is found moving in public places without a face mask. This fine is extremely high as compared to the cost of a facemask which is \$0.27.

With a population of 18.4 million people, the Zambian government had taken the measure of closing down public places of gathering and initiated a temporary closure of learning institutions too. Despite the efforts and measures put in place, the country is still facing some challenges not only in terms of healthcare but also economically, and until there is a precise cure for COVID-19, Zambia needs to sit tight and fight through these trying times.

Zambia recorded its first two cases of COVID-19 on 18 March 2020 [3]. The first 28 cases in Zambia had traveled to either Europe or Asia. The capital city, Lusaka, was declared the epicenter of COVID-19 on 31 March 2020. Three weeks into the outbreak, cases were noted among people without any foreign travel history

but had been in contact with confirmed cases indicating evidence for local transmission [3]. There has since been an increase in community transmission with increasing geographic spread. As of 26 July 2021, Zambia has recorded 1,92,071 COVID-19 cases, 1,81,638 recoveries, and 3,272 deaths. The increase in geographic spread could have been attributed to transmissions from one commuter to another. This is because public transport, mainly overcrowded buses, has continued to be the major form of transportation for a majority of Zambians. Churches, funerals, bars, and markets may have also contributed to the spike. In this commentary, we provide the current state of COVID-19 in Zambia, efforts put across to address it, as well as the associated challenges.

### Detailed Analysis

COVID-19 testing is a challenge globally and African countries including Zambia are not an exception to this challenge [2,4]. As of 15 July 2020, a total of 1,994,635 tests (10.5% of the population) have been conducted in the country, with a positivity rate of 9.13%. On account of what is known about SARS-CoV-2 regarding its transmissibility, Zambia's testing capacity must be improved especially since we are in the cold season where cases tend to massively increase as was the case in the first and second waves. Another notable factor contributing to the low testing capacity is the lack of human resources in Zambia. In a country that has ten (10) provinces, only five (5) provinces have COVID-19 testing facilities [5]. The University of Zambia, the School of Veterinary Medicine, and the University Teaching Hospital are the major testing centers in the country. The testing platforms for COVID-19 diagnosis utilized at these facilities are real-time Reverse Transcriptase Polymerase Chain Reaction, Gene Xpert, and Roche Cobas 6800 [6]. In terms of the testing platforms being utilized for COVID-19 diagnosis, the country's testing facilities have benefited greatly from donor aid and other corporate entities. Furthermore, it is important to note that there has been an increase in brought-in-dead cases which are later confirmed as either COVID-19 deaths or COVID-19-related deaths [6]. This could imply that there are numerous cases of COVID-19 in the country that go untested, thus unconfirmed.

On 25<sup>th</sup> March 2020, the government of Zambia indefinitely closed all learning institutions, banned public gatherings of more than 50, drinking places, non-essential traveling, and gave an authoritative command for restaurants to only offer takeaway services [7]. Furthermore, three of the four country's airports were

closed, and intense surveillance and screening were started at the remaining one [7]. Measures were put in place to ensure that all travelers found with fever are quarantined and further investigations are done to determine whether to take them to a designated isolation facility for further management and care. On the other hand, a 14-day home quarantine protocol was enforced for travelers that showed no COVID-19 symptoms upon entry but came from a high-risk country, followed by a medical expertise residential visit. Health education and dissemination of COVID-19-related information were made possible through broadcasts, the distribution of posters, and billboards. The ministry of health came up with awareness campaigns to encourage citizens to adhere to the health guidelines as adherence is the most potent weapon to limit the spread of this redoubtable crisis. Information on COVID-19 is also readily available through various social media platforms and a free national toll line.

A significant milestone in the country's infantile health workforce was made when the government under the ministry of health recruited 3,400 health workers to help mount up a massive response against COVID-19 [8].

Besides that, coronavirus-specific training of health workers was instituted to amplify early disease detection and supportive treatment of cases. Additionally, infection and prevention measures were strengthened, with the procurement of disinfectants and personal protective equipment including gloves, facemasks, aprons, and hand hygiene supplies. In order to reinforce the aforementioned measures, the government through the ministry of finance proposed to set up an epidemic preparedness fund under the ministry of health amounting to \$3.04 million and a COVID-19 contingency and response plan with a budget of \$35 million under the disaster and mitigation unit [9]. The government of United States of America through the United States Agency for International Development (USAID) also provided more than \$6 million dollars to help prevent the spread of this formidable virus through the promotion of educational materials and by strengthening laboratory as well as clinical systems to diagnose and treat new cases [10]. Furthermore, USAID in collaboration with the United Nations children's fund is establishing infection prevention and control systems by improving water and sanitation services [10].

According to the April 2020 interim clinical guidance for the management of coronavirus, there is no specific treatment for SARS-CoV-2 in Zambia. The standard clinical management includes the

implementation of recommended infection prevention measures and limiting onward transmission as well as supportive management of complications such as superimposed bacterial infections. Utmost attention is directed towards the management of the three most significant complicated clinical syndromes associated with COVID-19; severe acute respiratory infection (SARI) or pneumonia, Acute respiratory distress syndrome (ARDS), and Sepsis (Septic shock). Treatment guidelines for SARI include Amoxicillin in all age groups and occasional Co-trimoxazole in children. Regarding sepsis, empirical antibiotics such as azithromycin are given based on clinical diagnosis and local epidemiology. Supportive oxygen therapy is employed in cases of ARDS. In spite of the reports concerning the massive usage of Hydroxychloroquine in North and Western Africa, the Zambian interim clinical guidance prohibits the use of such experimental drugs in the treatment of COVID-19. In September 2020, the Zambian government also acquired an antiviral Remdesivir as a new drug for the treatment of severely ill patients.

The emergence of COVID-19 in Zambia aggravated the catastrophic events that were already unfolding in the economic sector. In pursuance to regain the economic foothold, the government reopened certain businesses after seeing an abrupt depreciation of the Zambian currency. A mandate was given to every business reopened to adhere to the health guidelines and only offer services to clients with face masks.

The increase in the number of recoveries has prompted a lot of citizens to speculate that COVID-19 is a hoax. This has birthed inconsistencies in keeping up with health regulations as citizens no longer wear masks or observe physical distancing. This compelled the government to come up with a policy of charging \$40 USD or bringing to book whoever is found moving in public without a facemask [11]. However, most stakeholders were against this policy because most people are out of employment and cannot afford masks, worse off a fine of \$40 USD.

Although measures put in place have had a tremendous positive impact in flattening the curve, much is left to be desired as citizens who depend on daily wages are dropping into desperate deprivation. This has made the government's directives fall on deaf ears as marketeers and street vendors continue running their ventures amid the crisis, increasing the risk of local transmission in the process. With technical support from the United States centers for disease control and the Japanese government, the country managed to establish the first three testing capabilities.

Isolation centers were also set up in every district [3]. However, transportation of COVID-19 samples from district isolation centers to their designated locations for testing seems to be markedly onerous. In this regard, lab technicians are left with no choice but to resort to public transport [12,13]. This transportation challenge led to the death of one laboratory technician and precipitated national outrage and brought to the fore the woefully inadequacies and inequalities in the healthcare system. Furthermore, this is an indication that many COVID-19 samples have to be transported across the country and that the WHO's guidelines place a duty on authorities to ensure samples are packaged, transported safely, efficiently, and in accordance with health and legal requirements ensuring the safety of everyone involved is contravened.

The country's healthcare system seems to be deteriorating now that the emergence of the novel coronavirus disease creates another health burden. The government and donors are the two biggest sources of health expenditure in Zambia, accounting for about 80 percent of total health expenditure. The country lacks about 40% of its estimated health workforce needs, despite remarkable investment and commitment. This challenge of insufficient human resources is compounded by the inequalities in their geographic distribution. In 2017, about 90 percent of the trained health workers were located in urban areas, while more than half of the population lives in rural areas. For the past four years, there has been a decrease in the budget percentage allocated to the health sector [2018 (9.46%), 2019 (9.30%), 2020 (8.84%), 2021 (8.1%)] despite the plea for more resources [14]. The COVID-19 pandemic has strained the health care system. To address this issue, the government has had to realign the 2020 budget to provide more resources to the health sector so as to strengthen the system and make it more resilient. Nonetheless, in 2021, the government is still spending 0.78% less on health compared to the previous year.

In May 2021, resident doctors went on 'go slow' after the government failed to meet their demands. This took a toll on the health care system in terms of human resources, owing to the fact that some health workers were in quarantine, thus off-duty. With that being said, we argue that more funds should be allocated towards the health system and the front-line worker's demands met if we are to curb COVID-19. Additionally, the workforce needs to be intensified in the rural parts of the country.

In early May 2020, concerns were raised about the continuous influx of foreign lorry drivers, especially at the border town of Nakonde [15]. This followed a surge

in new cases at the border town, which was the highest recorded surge in a single district at that particular time. The cases consisted of foreign lorry drivers and sex workers who contacted them. Lorry drivers are known to have multiple sexual partners, and are therefore key drivers in transmitting both HIV and COVID-19.

After several months of unremittingly combating the COVID-19 pandemic [16,17], Zambia and the world at large have come to terms that the virus is here to stay and that the COVID-19 vaccine will be an additional tool in this fight. In this regard, the ministry of health officially launched the COVID-19 vaccination on 14 April 2021 at the University teaching hospital where they received the first consignment of 2,28,000 doses of the AstraZeneca vaccine from the COVAX facility [18]. The vaccination exercise in the country is said to target a total of 8.4 million people, 46% of the total population during phase 1 and phase 2. According to the April 2021 National COVID-19 vaccine deployment plan, the first phase was aimed at catering 3% of the national population comprising front-line workers who are essential in sustaining the COVID-19 response and those most essential in maintaining core societal functions such as police officers [19]. The additional 17% was to cover those individuals at risk of severe disease and their caregivers (7%) as well as the population in congregate settings (10%). The remaining 26% shall be covered in phase 2, a process that commenced on 23 June 2021.

The Zambia Medicines Regulatory Authority (ZAMRA), as of 1 June 2021 approved five COVID-19 vaccines to be administered. This includes China's Sinopharm, Johnson & Johnson, AstraZeneca, AZD 1225-Korea AstraZeneca, and Pfizer Biotech [20]. The government of Zambia received the second consignment of 2,28,000 doses of AstraZeneca vaccine on 5<sup>th</sup> July 2021 and is expecting to receive more vaccines namely: 1,00,000 doses of Sinopharm from the People's Republic of China, 4.4 million doses of Johnson and Johnson through the Africa Vaccine Acquisition Trust (AVAT), and an additional 1,65,600 doses of Johnson and Johnson, as part of dose sharing allocated to Zambia from the American government through the COVAX facility [21-23]. The vaccine response in the country is quite overwhelming despite the numerous speculations regarding its efficacy. As of 15 July 2021, the cumulative number of vaccinations stood at 2,02,690. Dose-1 vaccinations (1,95,791 AstraZeneca and 6,899 Sinopharm), and of these, 58,192 have gone on to receive dose-2 vaccinations (51,856 AstraZeneca, 26% of those that received dose-1 and 6,336 Sinopharm, 92% of those that received

dose-1) [21]. Currently, no study has been done to measure population perception and knowledge about COVID-19 disease or the vaccines.

## Conclusions

Zambia is facing a formidable task of addressing COVID-19. Various measures have been put in place; however, the country still needs to continue to intensify efforts to ensure the COVID-19 pandemic is effectively contained. The government of the republic of Zambia should begin to view the need to address COVID-19 from a lens of positivity; using this wave of COVID-19 as an opportunity to revisit the country's investment in the health sector.

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## Authors' Contributions

Chikwe Mwansa, Hope Ezra Mukwinda, and Yusuff Adebayo Adebisi wrote the draft of the manuscript and conceptualize the study. Knovicks Simfukwe and Don Eliseo Lucero-Prisno III assisted with the critical review, data collection, and language editing. All the authors read and approved the final manuscript.

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