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Viewpoint

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COVID-19 Response in Zimbabwe: The Need for a Paradigm Shift?

Itai Chitungo ¹, Tafadzwa Dzinamarira ^{2,3,*}, Nigel Tungwarara ⁴, Munashe Chimene ⁵, Solomon Mukwenha ², Edward Kunonga ⁶, Godfrey Musuka ² and Grant Murewanhema ⁷

- ¹ Chemical Pathology Unit, Department of Medical Laboratory Sciences, Faculty of Medicine and Health Sciences, University of Zimbabwe, Harare, Zimbabwe; ichitungo@medsch.uz.ac.zw
 - ² ICAP at Columbia University, Harare, Zimbabwe; sm4803@cumc.columbia.edu (S.M.); gm2660@cumc.columbia.edu (G.M.)
 - ³ School of Health Systems & Public Health, University of Pretoria, Pretoria 0002, South Africa
 - ⁴ Department of Health Studies, University of South Africa, Pretoria 0002, South Africa; 34846751@mylife.unisa.ac.za
 - ⁵ Department of Health Sciences, Africa University, Mutare, Zimbabwe; chimenem@africau.edu
 - ⁶ School of Health and Life Sciences, Teesside University, Middlesbrough TS1 3BX, UK; edward.kunonga1@nhs.net
 - ⁷ Unit of Obstetrics and Gynaecology, Department of Primary Health Care Sciences Faculty of Medicine and Health Sciences, University of Zimbabwe, Harare, Zimbabwe; gmurewanhema@yahoo.com
- * Correspondence: td2581@cumc.columbia.edu

Abstract: Zimbabwe reported its first case of coronavirus disease 2019 (COVID-19) on 20 March 2020 and the country's response has largely adhered to international protocols. From the outset of the pandemic, most control measures were premised upon knowledge of breaking infectious diseases' chains of transmission gained from previous experiences with comparable pathogens. As relatively little was known about the novel virus, and the prospects of effective vaccines were not on the horizon, these tough control measures were deemed appropriate. Two years into the pandemic, a massive evolution of knowledge has transpired, and safe and effective vaccines against the virus are now available, are administered to billions of people, and can significantly reduce new infections, severe disease, hospitalisation, and death from the disease. Based on the understanding of the pandemic and the need to restore socio-economic activities, in this review we propose a paradigm shift in addressing the challenges of the COVID-19 pandemic. The COVID-19 response should take into consideration the local context and tailor-make a response that addresses local challenges.

Keywords: COVID-19 pandemic; lockdown; vaccination; pandemic response; endemic



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1. Introduction

Zimbabwe reported its first case of coronavirus disease 2019 (COVID-19) on 20 March 2020. The first wave of the outbreak in the country which started with the first reported case saw over 8000 cases by the end of October 2020, with 243 COVID-19-related deaths [1]. While most first-wave cases of COVID-19 were largely imported from neighbouring countries and the UK, the second wave, which peaked in January 2021 due to SARS-CoV-2 variant B.1.351 (Beta variant), was mainly the consequence of increased local human mobility resulting in a combination of clustering and sporadic and widespread community transmission [2,3]. At the peak of the second wave between 30 November 2020 and 31 January 2021, there were a total of 10,034 cases and a corresponding death toll of 960 at the most [4]. The introduction of the third wave into the country was linked to an imported case found to be a SARS-CoV-2 infection with the delta variant (B.1.617.2) [5]. The third wave peaked in July 2021 with a corresponding cumulative increase in COVID-19 cases from approximately 38,000 to 120,000 in two months [3]. The fourth wave was mainly

due to the Omicron (B.1.1.529) variant and had a positivity rate of approximately 35% on several days, signaling widespread community transmission and possibly under-testing in the country. Data from the Ministry of Health and Child Care indicated that the highest number of daily recorded infections (4031, in December) surpassed the previous record of 3,110 reached during the third wave of infections in July [6]. The first and third waves peaked during winter periods in Zimbabwe, whereas the second and fourth corresponded to the festive December period, which is associated with increased mobility and cross-border migration [7]. This period also corresponds to the rainy season in the country. As of 29 January 2022, the country had recorded a total of 228,948 cases and 5,321 deaths, while having 216,028 recoveries and 7594 active cases [8]. Table 1 presents a summary of COVID-19 infection waves in Zimbabwe.

Table 1. Summary of Zimbabwe COVID-19 infection waves.

First wave	Peaked in July 2020	Alpha strain—largely attributed to travelers arriving from SA and the UK
Second wave	Peaked in January 2021	Beta variant—mainly contributed to increased community transmission
Third wave	Peaked in July 2021	Delta variant—linked to imported case
Fourth wave	Peaked December 2021	Omicron variant—widespread community transmission

COVID-19 and the attendant restrictive and socially engineered measures aimed at “flattening the curve” resulted in widespread disruption of all spheres of human life globally. The situation of escalating COVID-19 cases and spiraling local transmissions against a background of fragile healthcare [9] and social protection systems presented challenges to Zimbabwe’s COVID-19 response. Zimbabwe, like most countries worldwide, adopted tough measures to limit widespread importation and local transmission of SARS-CoV-2. During this time, scientific information regarding the spread, prevention, and transmission of the virus was still scarce. Moreover, the gruesome picture of massive fatalities witnessed in some countries such as Spain, Italy, and the United States in the early phases of the pandemic necessitated these tough measures to limit the morbidity and mortality from the virus, which was spreading inexorably. This was more important in African countries that had their health systems described largely as fragile during the onset of the pandemic and were expected to fail to cope with the increased COVID-19 burden [10,11]. This was noted in Zimbabwe during the second and third waves when sudden surges in case burden resulted in unanticipated requirements for hospital admission, personal protective equipment, and medical consumables, resulting in unprecedented strain on the public health sector [12].

Two years into the pandemic, knowledge regarding the transmission dynamics of SARS-CoV-2 and its prevention and treatment have significantly improved. Moreover, vaccines have become widely available, with Zimbabwe having fully vaccinated almost 40% of its eligible population to date and even having offered booster doses to the eligible [8]. Socioeconomic restoration is a high priority to allow most aspects of people’s lives to return to normalcy and allow for economic recovery. The responses that were widely adopted at the beginning, including strict lockdowns, bans on local and international travel, and prolonged school, college, and university closures have been perceived as doing more harm than good to the population. There is therefore a strong need for a paradigm shift in the COVID-19 responses in Zimbabwe, from more harsh measures to measures that allow socio-economic activities to continue with minimal disruptions. In this viewpoint, we, therefore, discuss and critique the earlier COVID-19 responses adopted by the government of Zimbabwe and propose a direction for the future.

2. Zimbabwe's Response to the Pandemic

Zimbabwe's estimated population in 2020 was 14,862,924, with a population density of 38 people per Km². The country's median age is approximately 18.7 years [13]. According to the 2017 ZimStat report, 40% of the population is under 15 years and about 6% are over the age of 65, while less than 1% is above 70 years [13].

The government launched the COVID-19 National Preparedness and Response Plan in March 2020 and subsequently declared a state of disaster [14]. In response to the first recorded case, the government introduced mitigatory measures aimed at curbing transmissions. Zimbabwe, with support and guidance from the World Health Organisation (WHO), stratified the COVID-19 responses into 8 pillars including surveillance, infection prevention and control, case management, ports of entry, risk communication and community engagement, laboratory, logistics, security, and coordination [15].

Enforcement of these restrictive measures was done through coordination among various government arms such as port authorities, the police, the military, the ministry of health, and local authorities. A 4-tier risk level response was introduced to inform public health interventions. Each tier (Table 2) informed the level of restrictions. For the first wave, the country went into a level 4 lockdown. Subsequent COVID-19 waves were treated with variations of levels 2 and 4 to allow formal economic activity to resume while formal trade remained banned with minimal activity in agriculture and farmers' markets and some manufacturing. Table 3 presents a timeline for some of the key interventions implemented in the Zimbabwean COVID-19 response.

Table 2. Zimbabwe tiered response to COVID-19.

Level	Response
1	most normal activity can resume, with precautions and health guidelines followed at all times.
2	the easing of some restrictions, including on work and social activities, to address a high risk of transmission but the maintenance of physical distancing and restrictions on some leisure and social activities to prevent a resurgence of the virus.
3	some activities can be allowed to resume subject to extreme precautions required to limit community transmission and outbreaks.
4	drastic measures are required to contain the spread of the virus to save lives.

Source: Ministry of Health and Child Care, Government of Zimbabwe.

Table 3. Zimbabwe's public health intervention in response to the covid-19 pandemic and ensuing waves.

Date	COVID-19 Pandemic Timeline	Public Health Interventions
20 March 2020	The first case detected in Zimbabwe	Contact tracing protocol initiated
21 March 2020	A second confirmed case in Zimbabwe	Launch of Zimbabwe's preparedness and response plan for coronavirus aimed at building an integrated and coordinated strategy for preventing the spread of the virus and mitigating its effects. Introduction of restriction of movement except for essential and critical reasons. Increase the supply of potable water and measures to decongest informal and formal markets [16]

Table 3. *Cont.*

Date	COVID-19 Pandemic Timeline	Public Health Interventions
23 March 2020		Declaration of a national state of disaster due to COVID with the promulgation of a statutory instrument (SI) 76. Introduction of Public Health (COVID-19 Prevention, Containment and Treatment) Regulations, 2020-SI 77
30 March 2020		Imposition of National lockdown Level 4
17 May 2020		Level 2 measures declared indefinitely
22 July 2020	First Wave	New lockdown measures include curfew (1800 to 0600 h), nonessential business to operate from 0800 to 1500 h and abiding by WHO protocols relating to social distancing, sanitizing, and masking. Schools remained closed and public gatherings banned [17]
January 2021	Second Wave	Level 4 measures
22 February 2021		COVID-19 vaccination rollout targeting health workers and essential service providers [18]
29 February 2021		End of level 4 lockdowns and transition to level 2 [19]
21 May 2021		Localised lockdown of Kwekwe city after detection of delta variant; curfew imposed from 1900 to 0600 h while business to operate from 0800 to 1700 h. Public gathering is banned [20]
24 June 2021	Third Wave	Imposition of national Level 4 lockdown: Business operating hours 0800 to 1530 h, curfew imposed from 1830 to 0600 h. Decongest offices to 40% and only vaccinated people were allowed to resume economic activity [21]
8 September 2021		COVID-19 lockdown from Level 4 to Level 2, intercity travel allowed, and extended time for businesses operating (0800 to 1900 h) and curfew (2200 to 0500 h) [22]
1 October 2021		Zimbabwe receives 943,200 COVID-19 doses of covid-19 vaccines from COVAX [18]
30 November 2021	Fourth Wave	Mandatory PCR testing of all returning residents and visitors and quarantine at their cost, curfew hours increased to run from 9 p.m. to 6 a.m. Only vaccinated individuals to patronise places of worship, restaurants, and entertainment [23,24]

To ameliorate the impact of the COVID-19 pandemic on the economy and livelihoods of the poor, the Zimbabwean government launched a US\$2.2 billion domestic and international humanitarian appeal on 2 April 2020. The funds were aimed at fighting COVID-19 and improving critical health spending; water, sanitation, and hygiene (WASH); food insecurity; and social protection [16].

2.1. Testing, Tracing, and Governance

Zimbabwe adopted a position to pivot the molecular testing platform for TB and HIV to test for COVID-19 in public laboratories. The country also invited and accredited private laboratories to perform PCR and lateral-flow COVID-19 tests. As of 29 January 2022, the country had managed to perform a total of 1,971,574 tests against a population of 15,201,977, translating to a testing average of around 13%. Comparatively, this is lower than neighbouring countries Zambia and South Africa, which had an average of 16.5% and 36.5%, respectively [8]. Notifications of laboratory-confirmed cases have grossly underestimated the true infections as highlighted by a seroprevalence study carried out during the second wave in three high-density suburbs in Harare that revealed that an estimated 184,800 (172,900–196,700) SARS-CoV-2 infections occurred in these three communities alone, greatly exceeding the reported number of cases for the whole city [25].

2.2. Surveillance

The main objective of surveillance in the country is the rapid detection of cases, comprehensive and rapid contact tracing, and case identification. It was anticipated that the surveillance response will adapt to changes in seven transmission scenarios for COVID-19 (no cases, sporadic cases, clusters of cases, and four levels of community transmission). To effectively implement this objective COVID-19 surveillance, data is collated and used to guide an appropriate and proportionate public health response [26]. However, the COVID-19 surveillance system was hampered by the lack of timely data reporting, thereby affecting contact tracing [27]. Genomic surveillance of COVID-19 in the country is restricted to the National Microbiology Reference Laboratory with limited capacity. However, laudable technical support from partners—Quadram Institute Bioscience, Norwich, UK, and the World Health Organization—has been reported, the extent of which is yet to be measured [28].

2.3. Vaccination

Zimbabwe was among the first African countries to implement COVID-19 vaccination, with the first vaccine administered on 18 February 2021 [29]. However, the initial uptake was slow among the targeted population of HCW, with studies reporting a lack of government trust and uncertainty in vaccine effectiveness and safety as the reasons [30,31]. The Zimbabwean government to date has approved five SARS-CoV-2 vaccines, namely the Sinovac, Sinopharm, Covaxin, Sputnik V, and Janssen, for the vaccination of the Zimbabwean population. The nation's vaccination rollout in February 2021 targeted to vaccinate about 10 million individuals aged 18 years and above by year-end 2021. The vaccination programme was phased to prioritise vaccinating vulnerable populations such as healthcare workers and older people [32], with phase 1 targeting health workers and frontline workers like those working at the country's entry points. The 2nd and 3rd phases of the vaccination were aimed at those with chronic health conditions, the elderly (60 years and above) [33], essential workers like those in education, and subsequently the rest of the adult population over 18 years of age [31]. The country's vaccination program has seen an initial slow uptake with periodic peaks [34]. At the time of writing, 3.46 million Zimbabweans were fully vaccinated, constituting 23% of the eligible adult population [35].

3. Challenges and Limitations

COVID-19 arrived in Zimbabwe against a background of deteriorating health infrastructure and facilities and a worsening epidemiological profile characterised by high morbidity and mortality trends due to infectious diseases and noncommunicable diseases [9]. The country's leadership took a precautionary approach to minimise the pandemic's effect on the population and ensure public health. However, the government's COVID-19 response came with attendant limitations and challenges.

3.1. Fragile Health System

The healthcare system for most of the society in Zimbabwe before the current pandemic was worrisomely characterized by a dysfunctional infrastructure, lack of healthcare equipment including PPEs, shortage of therapeutic drugs, and overworked and underpaid healthcare workers [1]. Striking healthcare workers demanding better wages and conditions during the early phase of the pandemic reduced the capacity to cater for and admit cases of COVID-19 patients, delaying the setup of isolation and treatment centres [1,17]. The pandemic arrived at a time when medical professionals were in the throes of industrial action for poor working conditions. Public health facilities were manned by a grossly inadequate and poorly remunerated healthcare workforce compared to regional standards. In addition, the health system lacked essential medicine and consumables and had limited personal protective equipment [1]. The addition of COVID-19 into the mix exacerbated the situation leading to further strikes on 25 March 2020 by nurses, who felt undervalued and exposed to the risk of COVID-19 due to the lack of personal protective equipment,

unreliable water supplies, and inadequate remuneration. There was no trust that the government had their best interest at heart, and the noncommittal response by the government ultimately led to the massive resignation of HCW, who relocated to greener pastures. The resultant brain drain deprived the nation of experienced HCW who could help in devising effective and principled COVID-19 pandemic response strategies [9]. In May 2021, the WHO reported that about 115,000 health workers had died of COVID-19 globally [36] and similar patterns were experienced in Zimbabwe although there is no official figure for the number of health workers who succumbed to COVID-19.

3.2. *Public Health vs. the Economy*

Lockdown policies threatened to reverse the country's public health gains as the restrictions resulted in the stoppage of nonemergency medical care at health institutions and disruptions in the supply chains of consumables for medical care [37]. In a rapid survey conducted in Zimbabwe in April 2020, 19% of people with HIV attempting to get a refill of an antiretroviral drug had not been able or were only able to get a partial refill due to movement restrictions [38]. Movement restrictions and communication challenges also led to disruption to maternity services as antenatal, intrapartum, and postnatal care services became difficult to access for pregnant women [39]. Between the period of April to June 2020, there was a 59% reduction in the number of clients tested for HIV and receiving their results, a 15% reduction in the distribution of HIV self-test kits, a 99% reduction in voluntary medical male circumcisions (VMMCs) performed, a 49% reduction in sexually transmitted infection (STI) clients tested for syphilis, a 51% reduction in patients newly diagnosed with HIV initiated on antiretroviral therapy (ART), and a 29% decline in viral load (VL) sample collection [40].

The combination of restrictive measures and the threat of infection at medical centres resulted in disruption of access to care and utilization of essential health services [41]. The WHO emergency use listing (EUL) and the US Food and Drug Administration (FDA) emergency use authorization (EUA), which authorized the use of HIV VL, EID, and TB-related instruments for SARS-CoV-2 testing, led to Zimbabwe reassigning the already limited HIV (VL/EID) and TB laboratory diagnostic equipment such as GeneXpert (Cepheid) and Abbott (Abbott Molecular) for COVID-19-related testing [40]. This reassignment reduced the HIV and TB health services' capacity for testing and monitoring. However, the measures failed to adequately address the demand for COVID-19 tests, leading the government to adopt rapid antigen testing. The economic difficulties experienced in Zimbabwe meant that all the government could do was impose lockdowns and quarantine, with minimal or no contact tracing due to the lack of resources and inadequate critical governance [8].

There is a critical lack of prioritising the continuity of essential health services such as HIV, TB, antimicrobial stewardship, and chronic noncommunicable diseases amid the COVID-19 pandemic. The pandemic is not segregatory in terms of how a group is perceived; geographical area and economic activity, therefore, justify the need for inclusive approaches. Public health response was reframed and focused on fighting COVID-19 while other medical health services were deprioritised. The resultant effect was an increased vulnerability for those with comorbidities and chronic conditions. The lockdown limited mobility for those who require urgent care [36]. Other health conditions such as 'forced nonadherence' applied to people living with HIV infections, as travel restrictions prevented them from accessing treatment at clinics [36].

The strict lockdown restrictions threatened citizens' livelihood considering that the majority of the country's work is in the informal sector [42]. One survey indicated that about 90% of households reported a loss of revenue [42]. Most households earn daily income and did not have savings or food stocks to weather prolonged lockdowns. Additionally, basic amenities such as bathing and clean water are shared. These challenges limited communities' ability to comply with prevention measures such as social distancing [36]. This happened against a background of a nonexistent social net to cushion citizens from the lack of economic activity. Inasmuch as the government introduced a COVID-19 allowance

to cushion the most vulnerable citizens, the figure of ZWL\$300 (US\$12) falls short of the US\$1 a day international poverty datum line. The minister of finance discontinued the initiative towards the end of 2021 due to minimal uptake. The revised restrictive measures introduced from the second lockdown relied on individuals' implementation of IPC protocols and self-policing. However, the additional costs to purchase the relevant IPC consumables such as masks and hand sanitisers would escalate the price of selling goods and services. The dilemmas faced by traders who sought to recover revenue lost during the hard lockdown due to implementing IPC protocol and convincing buyers with limited disposal income meant that implementing pandemic protocols was going to be a stretch at best.

3.3. *The Rise of Education Elitism*

Zimbabwe followed a phased approach to school closing and reopening with a full closure of face-to-face learning from March to mid-September 2020, a partial reopening from mid-September to October, and then a full reopening from November to December 2020 [43]. School closures in response to the lockdown measures resulted in educational inequalities, with more than 9500 schools closed affecting more than 4.6 million children by end of March 2020. Zimbabwe's literacy, reported to be around 88.7% in 2014, was under serious threat from COVID-19 with learners not having been in school for more than two years [44]. Despite an online curriculum having been introduced by the Ministry of Primary and Secondary Education long before the COVID-19 pandemic, there are still information communication technology (ICT) challenges limiting national coverage.

The closure of schools led to the introduction of online learning, but access to it was limited, with only 9% of pupils in rural areas compared to 40% of urban pupils reported as having used mobile applications for learning during pandemic-related school closures [45]. The online learning outcomes differed between government schools and private schools, as most government schools have limited access to ICT and this challenge affected even the educators [46]. The most elite schools managed to digitalise the education space in compliance with WHO COVID-19 guidelines, widening the pre-COVID-19 gap between the underprivileged and privileged [47]. Furthermore, students in rural areas suffered more, with one study revealing that educators whose duty stations were in the rural areas spent the entire national lockdown period in urban areas or at their rural homes, which left most rural schools with minimum or no educators present at the school [46].

3.4. *Vaccination*

At the time of writing in January 2022, the average daily rate of vaccines administered in the country is declining from a peak of approximately 100,000 during the third wave to 22,000 in October to about 10,524. According to the Reuters COVID-19 tracker, this daily rate will increase the number of vaccinated by 10% in a further 279 days [48]. Vaccine administration is progressing slowly and will take a long time to reach the proposed target of 60% set for December 2022. According to WHO, vaccine hesitancy results from complacency, convenience, and overconfidence. The initial low uptake by HCW and the general public was due to a lack of confidence in the vaccines from China. Then there was the government's failure to anticipate increased demand during the third wave, creating logistical challenges that caused vaccine stockouts and certain centres limiting access convenience. Again, those who took the first jab of Covaxin in early 2021 failed to get the second jab, as the government blamed the third wave affecting India at the time, which inconvenienced some citizens. Later as the third wave began to wane and cases and death from COVID-19 declined, complacency set in and fewer and fewer people got vaccinated [49].

4. *The Need for a Paradigm Shift*

From the onset of the COVID-19 pandemic it was largely predicted that Africa would be vulnerable and experience record numbers of cases and deaths. Predicated on these

predictions, Zimbabwe and the African continent as a whole undertook default global responses—lockdowns and restrictive measures—which inadvertently undermined the achievements of existing public health priorities and overlooked local contexts. These default pandemic responses neglect to factor in nonfatal consequences leading to the disruption of the socioeconomic wellbeing of the society at large. The country's economy was heavily disrupted, people's livelihoods were threatened, and the benefits of lockdown restrictions were dwarfed by its long-term cost [50]. Two years into the pandemic, a massive evolution of knowledge has transpired, and safe and effective vaccines against the virus are now available which are administered to billions of people and can significantly reduce new infections, severe disease, hospitalization, and death from the disease. Additionally, variants of concern (VOCs) have continued to emerge. The most recent variant, termed Omicron, is more transmissible than the previous variant but has significantly attenuated clinical presentations. Based on these advances concerning vaccination, the continued emergence of VOCs, the need to restore socioeconomic activities, and the realisation that the disease is evolving into endemicity, the battle with the virus has become protracted; therefore, the key to a productive and non-disrupted future is 'learning to live with the virus.' SARS-CoV-2 will likely remain an important respiratory pathogen in the future. As highlighted earlier, there is therefore a strong need for a paradigm shift.

4.1. Policies Development and Implementation

A paradigm shift entails a total overhaul in responses, moving from being afraid of COVID-19 to learning to live with it. We must transition from a fear-induced pandemic to coexisting and managing COVID-19 as an endemic illness using a combination of strategies. Zimbabwe's economy is highly informalized and agrarian-based, and the one-size-fits-all approach to the national responses was not prudent. The lockdowns disrupted agriculture value chains and informal trading, threatening livelihoods. Opening the country to economic activity is supposed to be supported by the robust provision of sanitary consumables and protective masks in the marketplace. The authorities should also implement self-regulation at agricultural marketplaces and encourage physical distancing, handwashing, and sanitization [51]. Furthermore, to limit the threat to livelihoods and help families mitigate lost revenues and improve compliance with the stay-at-home policy, the government can elicit assistance from donors and the international community to provide support packages—such as food hampers—for families and communities, in addition to cash allowances [36]. In the future, the government needs to invest wealth and resources in sustainable mechanisms such as social protection floors and schemes [52].

4.2. Addressing Vaccine Hesitancy

Learning to live with the virus entails taming its effect and impact on both public health and the economy. COVID-19 vaccines are now widely available to mitigate the impact of the virus. We now know that in the context of SARS-CoV-2, herd immunity is an impossible target; instead, our focus is on widely vaccinating the population to protect individuals from severe illness and the adverse outcomes from such, and reducing new infections, breakthrough infections, and the emergence of variants of concern. The Ministry of Health and Child Care of Zimbabwe (MoHCC) should adopt a 3-pronged approach to increase the vaccination rate.

- Ensure the adequacy of vaccine supplies and address logistical issues regarding vaccine distribution and storage to ensure that all communities are reached, particularly in marginalised areas with inadequate road networks and public transportation, thus helping combat complacency [34].
- Devise appropriate strategies to address infodemic threats (fake news, discommunication, and miscommunication), to increase vaccine uptake, and to counter hesitancy. Undertake a people-centred approach to counter the infodemic by targeting community leaders, chiefs, religious leaders, 'traditionalists,' other 'opinion leaders,' and

‘gatekeepers’ to be drivers of change by encouraging behaviour change in response to the pandemic.

- Invest in expanding social services and in improving the availability, accessibility, quality, and use of healthcare in remote and underserved areas [51].

4.3. Surveillance

Surveillance is a critical aspect of informing policy and the development of appropriate and proportionate responses. The nation will need to continue monitoring the incidence of infections and disease morbidity and mortality, track potential epidemiological changes over time, and monitor variants of concern [53]. This will help guide COVID-19 control and response measures such as self-isolation guidelines for those who are symptomatic; encouraging such people to seek medical attention when their clinical condition deteriorates will help limit pressure on strained public health facilities. Hotspots of infection will be addressed through appropriate and proportionate responses that ensure limited disruption of economic activity. Currently, surveillance is done at NMRL in the capital; we propose that it be decentralized to 59 districts across Zimbabwe. This will help identify infection hotspots quickly and measure the degree of implementation of appropriate responses.

4.4. Health Systems Strengthening

Zimbabwe has both produced many medical professionals over the years and lost many of them to greener pastures due to various causes. Firstly, to address the challenge of brain drain, the government should prioritise the welfare and conditions of service through HCW through the provision of adequate resources and by offering a comprehensive incentive: competitive remuneration, career growth opportunities, and participation in policy formulation [54]. Secondly, the government can potentially mobilise professionals in the diaspora to collaborate with local public health specialists and map a pandemic response that closes those gaps. The nation should also transparently invest in capacitating elements of the health infrastructure, including public health laboratories, that are critical to evidence-based public health programming [9].

The public laboratory system needs to change to reflect current and future needs and be capacitated to meet these challenges. We propose a return to a public health laboratory system that fosters integrated service provision through coordinated and shared resources. A robust public health system is critical to the provision of evidence-based patient treatment and management and the development and implementation of strategies in response to epidemics and pandemics. The siloed laboratory system currently in operation is not agile enough to respond to the threat posed by public health outbreaks, and a review to change is long overdue.

4.5. Invest in Infrastructure and ICT

The government must enact policies to improve access to care, especially during pandemics. The nation needs to build resilience in healthcare and education through investing in infrastructure, including generating more electricity, expanding the distribution grid, and building more clinics and hospitals and information and communication technologies. These infrastructure developments will help to provide healthcare (in the form of telehealth) and education (in the form of online lessons) and improve access, thus ensuring continuity in services and mitigating health and education inequalities. Additionally, the workforce can continue to provide services from home, ensuring that business operations continue and hence that the economy continues to function while aiding compliance to social distance and workplace decongestion.

As the country adopts this new paradigm, the country can safely remove current COVID-19 restrictions and return to normal socioeconomic activities. Monitoring of COVID-19 infection will continue and be reported like other notifiable diseases. For a country with a large informal economy, a return to normal business will enhance economic activity and improve the majority earning capacity, thereby preserving livelihoods.

5. Conclusions

The Zimbabwean government took a proactive approach in dealing with the COVID-19 pandemic by developing an eight-pillar strategy before the detection of the first case. However, the country's response was hampered by limited funding and a poor healthcare system. The default non-pharmaceutical strategy was lockdown, which created serious socioeconomic challenges. The EUA of vaccines witnessed the country become among the first adopters and implementors, but progress has been slow, and the nation missed its target of 65% vaccinated population at the end of 2021. The country needs to shift the paradigm and treat COVID-19 as an endemic disease, thus opening the country to economic and social activity; it may do so using a raft of tactics including but not limited to improved funding, technological capacity, and critically informed governance that coproduces pandemic outcomes. We recommend the following:

- Policy shifts that promote economic activity while also addressing the threat posed by SARS CoV-2
- Ensuring vaccine availability, access, and quality in all corners of the country and proactively address vaccine hesitancy
- Decentralize surveillance to the district level for quick identification of outbreak hotspots
- Strengthening healthcare systems through adequate provision of resources to build and capacitate health infrastructure and retain health professionals.
- Investment in the digital economy to aid in the implementation of mitigation measures while limiting disruption to the nation's economic, educational, and social activities.

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