



TONY BLAIR
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Tracing Africa's Invisible Curve

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Executive Summary

What is the true burden of disease caused by Covid-19 in Africa? Nearly two years into the pandemic and one year since the start of vaccination programmes around the world, significant gaps remain in understanding the true scale and nature of the virus on the continent. Africa may have the lowest reported number of cumulative cases per capita globally, with limited testing and reporting concealing the true rates of transmission, but this is not just an issue that impacts the continent – this is a glaring gap in the global response to Covid-19. The detection of the Omicron variant in South Africa made it blindingly clear that robust testing and strong surveillance can help us to identify and respond quickly to new variants of concern (VOCs). But they also hamper the emergence of VOCs by bolstering scientists' abilities to understand the progression and evolution of the virus, and enable governments to implement mitigation measures to slow the virus and stay one step ahead.

Due to a paucity of data, there is little clarity on whether Africa may have inherent contextual defences against the virus, or whether the continent has been affected on a scale similar to the rest of the world. A World Health Organisation (WHO) assessment shows that, in Africa, there is a sevenfold gap between reported cases and actual figures.¹ Likewise, modelling from *The Economist* shows that actual deaths in Africa could be eight times the official numbers reported, but if this were the case, a corresponding spike in hospital admissions or reports of morgues becoming overwhelmed would be expected – as has occurred in many countries – and anecdotal evidence has yet to support this figure. However, we find that the comparatively low recorded impact of Covid-19 on Africa is a result of the lack of accurate and timely reporting, low testing capacity, a larger number of asymptomatic cases, and inadequate Civil Registration and Vital Statistic (CRVS) systems. These gaps create a huge problem for an African response and hinders an evidence-based approach to contain the virus as well as the ability to recover after the pandemic. Without reliable data, governments are unaware of the actual magnitude of the crisis and therefore cannot tailor an appropriate response. These data gaps represent what can be called the “invisible curve”: one that tells a more worrying story of Covid-19 in Africa and its implications. However, it is not too late to get ahead of the curve; we – as an international community that has been responding to Covid-19 for nearly two years now – know what works.

As the Tony Blair Institute for Global Change called for in our recent paper [*The Urgent Need for Universal Genomic Sequencing: Vaccine Supply Is Not the Only Challenge for Africa*](#), there must be targeted and sustained investment and support from the international community in the tools and systems Africa needs to respond to Covid-19. Accelerating the momentum for global investment and support takes time, which is why we recommend that governments, policymakers and scientists in Africa take the immediate following steps to strengthen their Covid-19 responses:

1. **Ramp up systematic testing.** Governments must begin implementing more strategic, regular testing in the community to identify emerging outbreaks, asymptomatic cases and the prevalence of prior infections.
2. **Prioritise digital health-management systems.** Policymakers should have timely access to high-quality, disaggregated, digitised data to inform their decision-making.
3. **Adequately fund data-technology infrastructure.** It is in the interests of the international community to have robust global health-data infrastructure.
4. **Conduct more Africa-led epidemiological analyses.** African scientists are best placed to analyse the characteristics of diseases.
5. **Strengthen the capacity of disease-management institutions, such as the Africa Centres for Disease Control and Prevention (Africa CDC), and the Nigeria Centre for Disease Control (NCDC).** These institutions understand the context of the continent and are best placed to coordinate stakeholder plans and implement strategies to address challenges.
6. **Remain vigilant.** With a new wave of Omicron-driven infections on the horizon, governments must continue to emphasise the risk that Covid-19 poses and the importance of vaccination, and key social and public-health measures to control transmission.

A Trough in the Curve: What Case Numbers Are Telling Us

The number of reported Covid-19 cases and deaths in Africa is remarkably low. Despite early forecasts that Covid would hit African countries the hardest given its comparatively weaker health systems, the continent is recording the lowest number of cumulative cases per capita globally, and the second lowest number of cumulative deaths.² Though Africa makes up over 17 per cent of the global population, it accounts for just 3.3 per cent of global cases and 4.3 per cent of deaths. In contrast, Europe makes up less than 10 per cent of the global population but accounts for 28 per cent of cases. With the exception of South Africa, the numbers indicate that Covid-19 has had less of an impact on morbidity and mortality in Africa compared with the rest of the world.

There are several credible theories as to why Africa is reporting the lowest global impact of Covid-19. To begin with, African leaders reacted decisively and quickly to the threat of Covid-19 as the pandemic began. These measures included early border closures, screenings and lockdowns. [Our analysis](#) of the Oxford Covid-19 Government Response Tracker index of containment measures demonstrated that sub-Saharan African countries were – in general – as decisive, speedy and sustained in their responses as European Union (EU) countries, and in many cases more so. Previous and more recent experience responding to infectious disease epidemics, such as Ebola and HIV, are likely to have bolstered the ability of African governments and citizens to respond quickly to the emerging Covid-19 threat. These actions contributed to keeping case and death levels lower in the early stages of the pandemic.

However, other factors are at play, and these became more evident as initial mitigation measures were scaled back and new waves of infection surfaced but continued to be outpaced by the rest of the world. People aged 65 to 74 are 35 times more likely to develop severe illness from Covid and 1,100 times more likely to die from the virus compared to 5- to 17-year-olds.³ Africa has a median age of 19.7 years, and only 3 per cent of the population is 65 and over. It is therefore reasonable to assume that demographics have played a role in Africa's lower mortality rates. Global epidemiological data also show that Covid-19 reproduces faster in urban settings; 55 per cent of the continent lives in rural settings, making it the least-urbanised region in the world, indicating that Africa's population distribution may have kept case numbers down.

Other plausible factors that may be contributing to Africa's remarkably lower Covid-19 disease burden include: significant open-air working and living; lower rates of pre-existing conditions associated with severe complications from Covid-19, such as diabetes, obesity and hypertension; and genetics.⁴

South Africa is the notable exception. The country makes up 4.6 per cent of the continent's population yet accounts for 34 per cent of the continent's total confirmed Covid-19 cases and 40 per cent of deaths. It has also conducted a quarter of the continent's total tests. Although the South African government took early, deliberate measures to contain the pandemic, including implementing one of the most stringent lockdowns in the world, the country has a larger percentage of citizens aged 65 and over, and a median age ten years older than the continental average. Its population is also comparatively more urban, with only 30 per cent of South Africans living in rural areas. And, with the greatest number of people living with HIV in the world, its population has a higher susceptibility to severe Covid; a recent study suggests Covid-mortality risk doubles for people with HIV.⁵

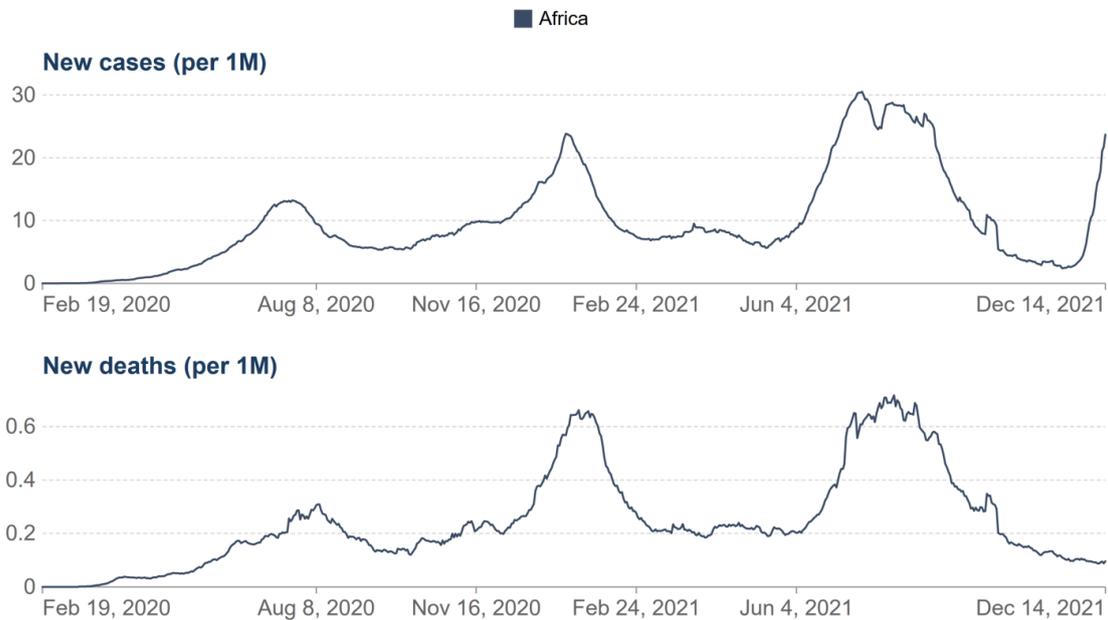
These findings reveal that it is difficult to identify any single factor in determining the degree of impact Covid will have in a country. Various studies are under way to understand how these variables, or a combination of variables, have influenced case and death rates in Africa. The emergence of more severe and transmissible variants like Delta may have found a way through the apparent inherent protection provided by the low median age of some African countries. For example, Africa's third wave in July 2021 was driven by the Delta variant, which has a higher likelihood of severe disease and death among younger people than other variants and was more transmissible than other variants at the time.⁶ The third wave was the continent's most severe to date, both in terms of cases and deaths.

That said, the number of cases reported per capita during Africa's third wave was lower than in the Delta-driven wave in all other regions. Since case and death counts peaked in July 2021, overall rates in Africa have been on a steady decline. In November, daily confirmed cases and deaths at the continental level were at the lowest they had been since May 2020. However, cases have started to increase in December, largely driven by a spike in southern Africa. It was this spike that alerted the world to the existence of the Omicron variant, which is at least three times more transmissible than the dominant Delta variant. Although Omicron is not yet responsible for an increase in deaths, it is too early to tell if this is due to the low severity of the variant or a lag in mortality. However, even if the severity of Omicron is lower, an exponentially increasing epidemic of a more contagious variant will usually kill more people than a virus that is more severe but not more transmissible.

Figure 1 – Daily new confirmed Covid-19 cases and deaths (per million) in Africa

Daily new confirmed COVID-19 cases & deaths per million people

7-day rolling average. Limited testing and challenges in the attribution of cause of death means the cases and deaths counts may not be accurate.



Source: Johns Hopkins University CSSE COVID-19 Data

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Source: [Our World in Data](#)

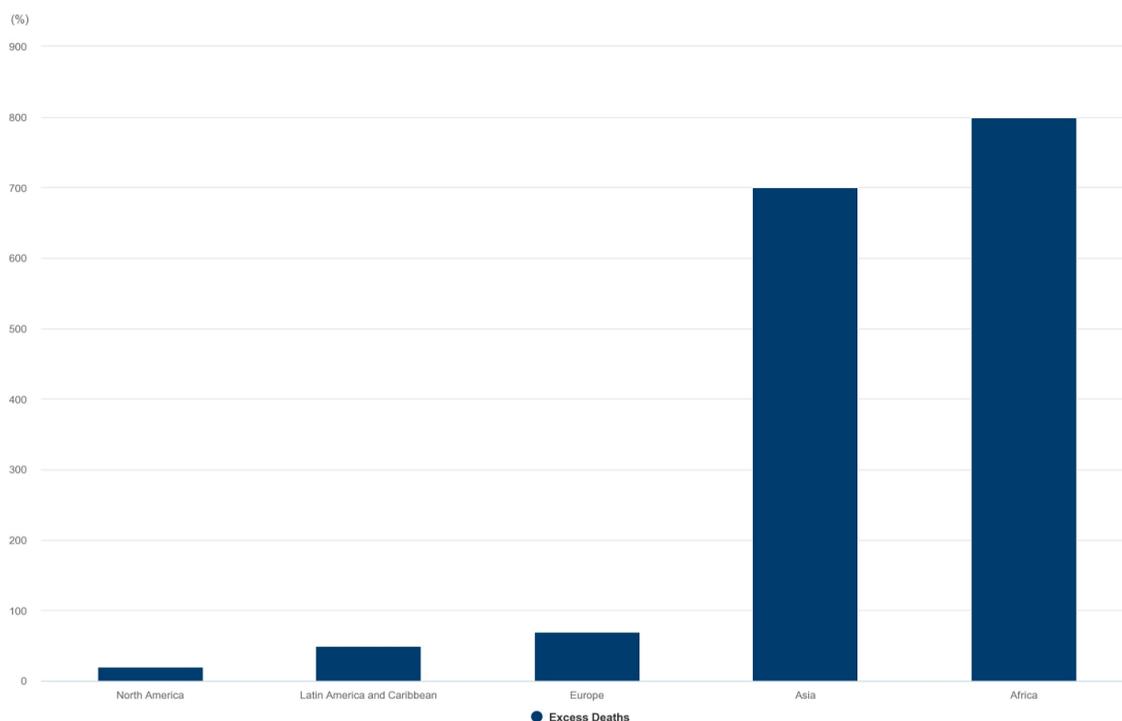
Dr John Nkengasong, Director of the Africa Centres for Disease Control and Prevention (Africa CDC), recently urged countries to remain vigilant during this “trough” in the curve.⁷ Cases are already starting to increase in South Africa, where a fourth wave is already hitting. Yet current modelling suggests that this wave will not be as severe as the last, given that 35 per cent of the country’s residents are fully vaccinated and as much as 70 per cent of the population may have some level of natural antibody protection due to prior infection. The extent to which this applies to the Omicron variant is yet to be determined as there remain several unknowns about the variant’s nature and severity, and its resistance to treatments, antibodies and vaccines. However, it is unclear whether similar predictions can be made for the rest of the continent.

The Invisible Curve: What Case Numbers Aren't Telling Us

While the largely young population and the early action taken to mitigate Covid-19 have played a role in the relatively low number of cases in Africa, there are clear blind spots created by low testing, a lack of comprehensive digitised recording systems and a highly asymptomatic population.

An assessment by the World Health Organisation (WHO) shows that cases are severely undercounted in Africa, where only one in seven (14.2 per cent) Covid-19 infections is being detected.⁸ This could mean that, as of 9 December 2021, there have been more than 60 million Covid-19 infections in the continent, seven times the number of reported cases.

Figure 2 – Excess Covid-19 deaths (% of reported)



Source: *The Economist*

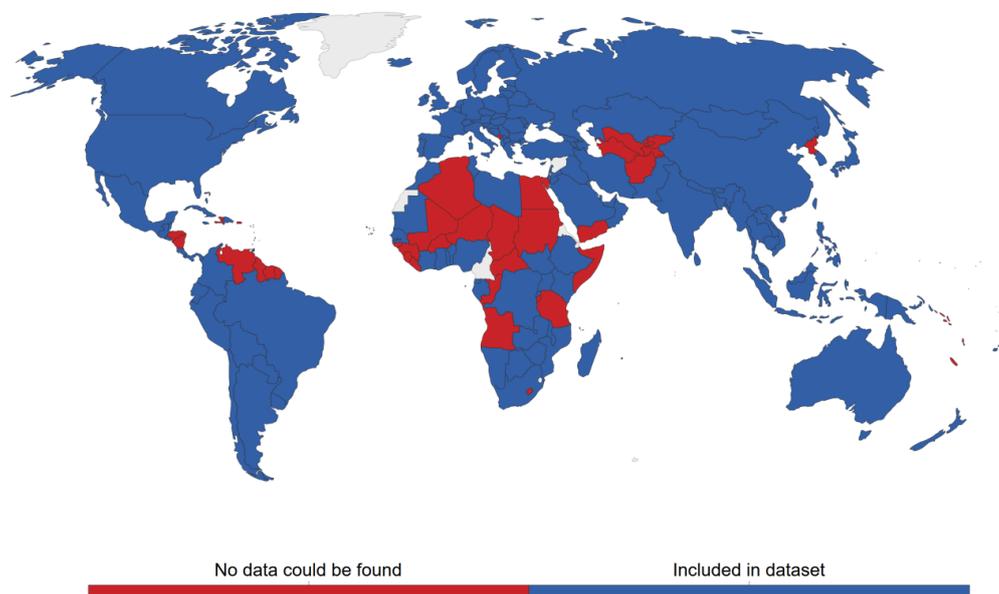
There are likely to be several reasons for these underreported cases. The first is that identification of cases in Africa is highly dependent on people with symptoms reporting to health facilities, rather than a more targeted testing strategy. Second, there are many asymptomatic cases on the continent, accounting for more than 80 per cent of cases in some countries.⁹

Zambia presents an interesting case that shows the level of underreporting of cases and deaths. During the country's first wave, a study investigated the prevalence of Covid-19 in six districts of Zambia using a population-based household survey. The findings show that only one in 92 laboratory cases was reported in these districts.¹⁰ This was primarily due to people who were asymptomatic and unaware of their exposure to infection. Undercounting in Zambia extends to mortality as well. A study conducted in a mortuary in Lusaka found that almost 20 per cent of all study participants who died between June and September 2020 had Covid-19 during the period and only a minority of the deceased had been tested for the virus before death.¹¹ This demonstrates how the impact of Covid-19 at a country level has been significantly underestimated.

Many people who die of Covid-19 are never tested for it and are therefore not counted in official totals. Even if testing were being conducted, there is a lack of consistent reporting of testing statistics across the continent to provide an accurate picture of the severity of the pandemic. The map below shows the testing data available globally and highlights the gaps in Africa in red.

Figure 3 – Availability of Covid-19 testing data

Countries included in the Our World in Data COVID-19 Testing dataset



Source: Official data collated by Our World in Data – Last updated 14 December 2021, 17:20 (London time)
 OurWorldInData.org/coronavirus • CC BY

Source: [Our World in Data](#)

The lack of accurate and timely reporting of Covid-19 cases leads to gaps in reporting deaths attributable to the disease. The Civil Registration and Vital Statistic (CRVS) system, which is used to record vital statistics such as births and deaths in Africa, is inadequate. Forty-seven countries in Africa do not have

fully functional systems to record these statistics and do not provide up-to-date data required to measure mortality. This creates an obstacle to effectively monitor the true impact of Covid-19. This is demonstrated in a 2017 Economic Commission of Africa survey, where it was shown that only 18 African countries record and report on annual deaths.¹² Among those, only one in three deaths was officially registered and just four of the countries met international standards for CRVS, including documenting cause of death. A recent WHO assessment of health-information systems estimates that, overall, just 10 per cent of deaths are officially registered in Africa, compared with 98 per cent in Europe.¹³

In addition to the lack of recording, most countries do not have a digitised method of collecting death records; this compromises the quality of data as well as the ability to aggregate across the continent.

Future Waves

Africa has experienced three waves since the start of the pandemic, each more severe than the last. These waves have been largely driven by emerging variants that spread fast and are harder to contain. However, even with limited capacity to detect variants and track the virus, it is clear that Africa is on the verge of another wave. While the data gaps do not allow a continent-wide estimate of what is yet to come, the fast-spreading Omicron variant and its visible impact in southern Africa show that countries need to act as fast as possible to contain it.

South Africa, for example, is studiously documenting its fourth wave, enabling the international community to learn lessons and swiftly respond. This wave, unlike previous waves, was initially predicted to be less severe because of a comparatively successful vaccination effort in South Africa and widespread previous exposure to Covid-19. The Omicron variant, because of its ability to escape both vaccine and infection-induced immunity to an extent, has created significant doubt about this wave being less severe. Regardless of the impact, it is a wake-up call to Africa and the world about the unpredictability of the virus, and the need to increase testing and vaccinations, as well as to implement further public-health measures to contain the virus.

Flying Blind: Implications of Missing Data

The lack of accurate and consistent data on the prevalence of Covid-19 and the magnitude of its impact will have dire consequences.

First, it hinders the current ability of governments to make evidence-based decisions. We cannot manage what we can't measure. Governments cannot establish effective public-health measures to contain the virus without an accurate picture of the situation. These gaps create a blind spot for policymakers that hinders not only appropriate public-health measures and interventions to contain the spread of the virus, but also the ability to design and implement vaccination campaigns and strategies to get ahead of the curve. One major implication of this is an increased likelihood of new and potentially more transmissible and severe variants that could escape vaccination and infection-induced immunity, such as Delta or more recently Omicron.

Second, these gaps in information lead to an underestimation of the effects of the virus and its long-term socioeconomic consequences. With under-recorded cases and mortality rates, estimating and preparing for the long-term impact of the pandemic on economies, education and workforces is more difficult.

Third, the largely asymptomatic nature of the virus in Africa means that there is a high likelihood of unknowingly transmitting the virus. Serology tests are an effective tool to detect Covid-19 antibodies and can be used to estimate the proportion of the population that has been infected – including asymptomatic infections. These tests enable us to know how much of the virus has been in circulation, if the vaccinated have enough antibodies to provide protection, what the durability of protection is and how vaccines are protecting against variants of concern. However, low antibody testing across Africa hinders the ability to design evidence-based strategies, especially for vaccination campaigns.

Finally, without comprehensive public knowledge of infections and associated deaths, the perception of Covid-19 as a low-risk virus will be reinforced, rendering it more difficult to break through vaccine-hesitancy barriers in Africa. Governments and policymakers must act now to address the data gaps to be able to navigate the pandemic effectively.

Tracing the Curve: Recommendations for Understanding the True Impact of Covid-19 in Africa

Understanding the true scale and impact of Covid-19 in Africa is key not only to formulating the best policies for getting the continent out of the pandemic, but also to ensuring that governments are prepared to respond effectively to the next public-health crisis. Valuable lessons regarding the nature of Covid-19 and the contexts in which it spreads can be used to inform mitigation measures when cases rise, as well as the design of effective vaccination strategies. Applying targeted, evidence-based policies will help to alleviate the economic impact of health-crisis responses, support continuity of essential health services and maximise the limited supplies of vaccines.

Tracing Africa's true Covid-19 curve requires closing critical data gaps:

1. Ramp up systematic testing and infrastructure.

If they are to understand Africa's invisible curve, governments must implement strategic, regular testing to identify emerging outbreaks, asymptomatic cases and prior infections. Increasing asymptomatic surveillance is of paramount importance given Africa's low case numbers and the size of its youth population, which may be largely unaffected by Covid-19 but which also acts as a "reservoir" for new variants, inadvertently spreading the virus to more vulnerable populations. The data gathered from increased testing will enable more efficient allocation of resources and tailored response measures, as well as the avoidance of blunt lockdowns or social and public-health measures that unnecessarily harm economic activity and the public's access to critical health services.

Testing samples should undergo genomic sequencing, improving understanding of the virus and identifying new variants more quickly – a benefit to the continent and the wider global community.

There are fewer barriers today to increasing testing than at the start of the pandemic. Accurate and affordable rapid antigen tests are widely available; these tests do not need to be run by skilled laboratory technicians and can be used in any setting. However, community awareness and systematic implementation of such testing remains low.

More substantial antibody studies need to be conducted across the continent. Seroprevalence tests should be validated in Africa so that local contexts, such as possible cross-reactivity with other viruses like malaria, can be accounted for in assessing the specificity and sensitivity of the tests. Seroprevalence surveys will not only help to complete the picture of Covid transmission in Africa but can also be used to inform vaccination strategies. For example, evidence suggests that three doses of the Covid-19 vaccine

will be required to provide sufficient protection against emerging variants such as Omicron.¹⁴ Omicron has demonstrated that it can escape infection-induced immunity to a greater degree than previous variants, and vaccine-induced immunity is also reduced: a third dose of what were previous two-dose regimens is likely to be needed moving forward.¹⁵ This information can be utilised in efforts to maximise protection of vulnerable populations. Serological tests can also help scientists determine the length of vaccinated immunity, which is important so that policymakers can understand when additional doses will need to be rolled out, thereby informing vaccination strategies and maximising a scarce vaccine supply in some countries.¹⁶

2. Invest in digital health-management systems.

Many governments are already undertaking efforts to improve the quality of their collection of health-related data, to digitise those collection systems and to close reporting gaps. To respond to Covid-19, countries created diverse data and reporting systems. However, few of these countries disaggregated that data by indicators related to patient demographics, comorbidities, testing or local health-care capacity.¹⁷ This information is critical to inform policymaking, but also to a government's ability to be transparent with the public about the direction of the pandemic.

Varying levels of data should also be accessible to those who need it. The more transparent governments can be about the extent of transmission and which communities are most impacted, the greater the degree of public trust. Further, the more health information that health workers and local authorities have access to, the more targeted the response – for example, in identifying who to target for vaccination.

Governments should prioritise enhancing their health-management systems. These systems should collect disaggregated and digitised data to facilitate accurate and timely reporting for policymakers and those working in health systems. Accessible and more comprehensive health-data collection and reporting will buttress unified efforts to improve global public-health crisis response and preparedness. Moreover, investing in this technology will pay dividends for local health systems long after the Covid-19 pandemic is over.

Finally, in line with the development of health-management systems, now is the time to expand – or implement – a comprehensive, digital CRVS system. CRVS systems allow governments to measure both the direct and indirect impact of Covid (or other diseases) on mortality, revealing the true magnitude of health crises. A CRVS system would provide key insights into the demographics of who has been most severely affected by the pandemic by age, sex/gender, underlying medical conditions, ethnicity or location.

In the absence of adequate CRVS systems, rapid mortality surveillance (RMS) can be used to measure excess deaths. RMS is a digital or paper-based system that generates regular disaggregated data on

mortality, capturing both facility- and community-based deaths. The [Africa CDC](#) has produced a [technical guide for implementing rapid mortality surveillance](#). Since June 2020, the African Field Epidemiology Network (AFENET) has been collaborating with Resolve to Save Lives (RTSL) to implement RMS projects in Togo, Burkina Faso, Ghana, Liberia and Sierra Leone.¹⁸ Using RMS can serve to bridge the gap in mortality data in the short term but should not replace the need for long-term improvements to CRVS systems.

3. Adequately fund data-technology infrastructure.

These efforts must be supported by sufficient funding from the international community. Many African governments recognise the need to improve data systems but are operating in an environment with limited resources and competing priorities. Responding to the pandemic and the economic fallout of the past 18 months of mitigation measures has exacerbated public-budgeting challenges.

Ninety per cent of national statistical offices in low- and lower-middle-income countries experienced funding cuts during the pandemic and struggled to maintain normal operations, including delays to planned censuses, surveys and other programmes.¹⁹ Sixty-one per cent of respondents expressed the need for external support in tackling certain Covid-19 challenges, including data-collection systems. The appetite among low- and lower-middle-income countries for more loans is limited, instead, technology- and data-focused grants are needed. These investments in data and statistics systems should ideally include improvements in the collection of socioeconomic indicators as well as health data.

4. Conduct more frequent Africa-led epidemiological analyses.

A joint study by WHO AFRO – the organisation’s Regional Office for Africa – and the University of Edinburgh’s Global Health Research Unit Tackling Infections to Benefit Africa (TIBA) looked at variables influencing mortality rates over the first two waves of the pandemic in Africa.²⁰ The findings revealed that a confluence of factors impacted the degree to which countries were affected by Covid, and that high levels of preparedness and resilience should not be equated with low vulnerability. South Africa is a demonstrable example where, despite comparatively stronger health systems, Covid seems to have taken a higher toll. The implications are that pandemic preparedness and response should be informed not only by the characteristics of a virus but also by the local social contexts and risk environments in which the virus spreads.

The study highlighted the importance of, and need for, more Africa-led epidemiological analysis of diseases. African scientists are best placed to evaluate influencing factors related to local social and environmental settings and health-system structures, and can gain a better contextual understanding of the virus and effective interventions.

5. Strengthen the capacity of disease-management institutions, such as the Africa Centres for Disease Control and Prevention (Africa CDC), and the Nigeria Centre for Disease Control (NCDC).

These institutions understand the context of the continent and are best placed to coordinate stakeholder plans and implement strategies to address challenges. As TBI has detailed previously, it is time to orientate around a credible Africa Pandemic Plan, led by the African Union and coordinated through the Africa CDC, with tangible backing by partners in the Global North and G20. The global pandemic response will not end until Africa has the tools and resources it needs to succeed, and this can only be achieved by empowering an Africa-led and Africa-coordinated response.

6. Remain vigilant.

It is imperative that governments and communities remain alert. With Africa and the globe in the midst of a new wave of infections, governments must continue to emphasise the risk that Covid-19 poses and the importance of vaccinations, and key public-health and social measures to control transmission, such as mask-wearing, handwashing and social distancing. In anticipation of new and more deadly outbreaks, Covid-19 response plans should be reviewed and adapted to the characteristics of any imminent outbreak to ensure the government and people are ready to adapt and respond appropriately.

Conclusion

It is critical that the burden of disease caused by Covid-19 in Africa is fully understood. Only when governments have adequate, real-time information regarding the true scale and nature of the pandemic can they accurately adapt their pandemic-response plans. Governments flying blind will not have enough information to adapt their pandemic-response plans, fine-tune their policies or update their strategies. This ties their hands in being able to effectively manage their way through a long-term, evolving crisis.

Until there is a better understanding of Covid-19 in Africa, there will continue to be gaps in the pandemic response. This will affect global recovery efforts and future pandemic preparedness; it is in the interests of the international community to have robust health systems and infrastructure in Africa. Tracing the continent's true epidemiological curve requires a significant expansion of testing and seroprevalence studies, improvement of health data by prioritisation of investment in digital health-management systems, and avoidance of complacency amid the increasing likelihood of new outbreaks that threaten to set back progress in ending the pandemic.

It is imperative that African governments and the global community uncover the full impact of Covid-19 on the continent to ensure governments are best equipped to bring this pandemic under control and to be better prepared for any future pandemic.

Charts created with [Highcharts](#) unless otherwise credited.

Footnotes

1. ^ Six in seven Covid-19 infections go undetected in Africa | WHO | Regional Office for Africa
 2. ^ <https://www.reuters.com/article/us-health-coronavirus-africa-un/at-least-300000-africans-expected-to-die-in-pandemic-u-n-agency-idUSKBN21Z1LW>
 3. ^ <https://www.mdpi.com/1660-4601/18/16/8638/htm>
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 6. ^ <https://newsnetwork.mayoclinic.org/discussion/how-covid-19-delta-variant-is-impacting-younger-people/>
 7. ^ <https://www.bloomberg.com/news/articles/2021-11-04/africa-cdc-urges-continent-to-ramp-up-rapid-covid-19-testing>
 8. ^ <https://www.afro.who.int/news/six-seven-covid-19-infections-go-undetected-africa>
 9. ^ <https://www.nature.com/articles/s41577-021-00579-y>
 10. ^ [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(21\)00053-X/fulltext](https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00053-X/fulltext)
 11. ^ <https://www.bmj.com/content/372/bmj.n334.long>
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 13. ^ <https://www.who.int/data/data-collection-tools/score/dashboard#/>
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 19. ^ <https://unstats.un.org/sdgs/report/2020/the-need-for-data-innovations-in-the-time-of-COVID-19/>
 20. ^ <https://www.nature.com/articles/s41591-021-01491-7>
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