

Should Africa continue COVID-19 vaccination to 70% target?

A team of experts review the necessity to meet the 70% target for COVID 19 vaccine for Africa.



Training on use of PPE courtesy of Cooper Inveen (Photo courtesy of Reuters)

Background

This contribution extends previous submission¹ showing COVID-19 seems less an existential health threat to Africa to warrant extraordinary expenditure that may not represent the best value for money. Specifically, “if vaccinating 70% of populations everywhere² is the only way to protect everyone, how has Africa largely unvaccinated (<4% vaccination rate) recorded incomparably fewer COVID-19 deaths than highly vaccinated (over 60%) regions also increasingly inoculating minors?” This question arose at a time of inequitable access to vaccines which framed Africa as victim.² Recent data³ also show fewer than 3% of global COVID-19 deaths thus far this year occurred in Africa where mortality is projected to decline 94% in 2023 unlike regions with vaccination near or over 70% coverage where most deaths happened. This communication argues that inoculating to 70% coverage is unfeasible and could further hurt Africa in ways probably unintended.

Global Covid-19 vaccination and Africa

Recent estimates⁴ indicate early COVID-19 vaccination saved more people than died except in Africa. Specifically, of an estimated 14.4 million to 19.8 million excess mortality averted worldwide in

2021 through COVID-19 vaccination, 466,400 were saved in Africa from an estimated 1.6 million excess deaths versus 4,469,000; 5,811,000; 565,8000; 2,429,000 and 992,800 in the Americas, Europe, South East Asia, Oceania and Mediterranean corresponding to vaccination rates of 58.30%, 56.50%, 35.40% and 28.10% relative to 5.48% in Africa.⁴ Other estimates also indicate disproportionate deaths in Africa in 2021 from inadequate vaccination.

Covid-19 deaths versus Malaria mortality

Surprisingly, Africa recorded 3.95% of the cumulative COVID-19 deaths globally as of September 1, 2022 versus over 20% in regions with higher vaccination (Table 1). This compares to 1,134,000 Malaria deaths in Africa in two years to December 2021 responsible for 96% of Malaria mortality worldwide⁵, meaning 343% more Africans died from Malaria than from COVID-19. Given this sustained disparity in mortality (Fig.1), it seems reasonable to expect higher funding for Malaria, particularly with over 5 million COVID-19 deaths predicted by June 2021 not evident.⁶

E O. Okoro, MB; B. Ch' eokoro@unilorin.edu.ng; N A. Ikoba, PhD2; A O. Giwa, LLB(Hons), BL, LLM, PhD3, B. E Okoro, LLB (Hons.), BL⁴, A.S. Akpila, MB; B. Ch, BAO5. Departments of Medicine ¹Statistics ²,University of Ilorin, Nigeria, Department of Jurisprudence and International Law, Delta State University, Abraka, Nigeria³, Hillary Rodham Clinton School of Law, Institute of International Shipping and Trade Law, Swansea University⁴, SA²PP. UK, Clinical Fellow in Clinical Oncology. Mount Vernon Cancer Centre, Rickmansworth Road, Northwood, Greater London, HA6 2RN, UK⁵.

Table 1:

Table 1: COVID-19 DEATHS BY REGIONS AND SELECTED VARIABLES AS AT SEPTEMBER 1, 2022

Region	Deaths and (deaths/106)	% Vaccinated (fully)	Boosters/100 persons	Aggregate Covid-19 loans (in 106 Dollars) and (%)	Loan-Death ratio (in US Dollars)
Africa	256,555 (184)	22.3	3.4	25.934 (15.20%)	101,085.54
Asia	1,472,393 (314)	71.9	33.4	17.021 (9.98%)	11,560.09
Europe	1,926,126 (2,565)	66.3 (EU 73.3)	43.1(EU 56.3)	6.676 (3.91%)	3,466.02
North America	1,498,296 (2,513)	64.4	39.7	0	0
Oceania	18,693 (421.47)	62.7	40.5	2.622 (1.54%)	140,266.41
South America	1,324,959 (3,054)	76.8	52.9	118.315 (69.37%)	89,297.10
World	6,496,957 (821)	62.2	30.6	170.568	

Figure1:

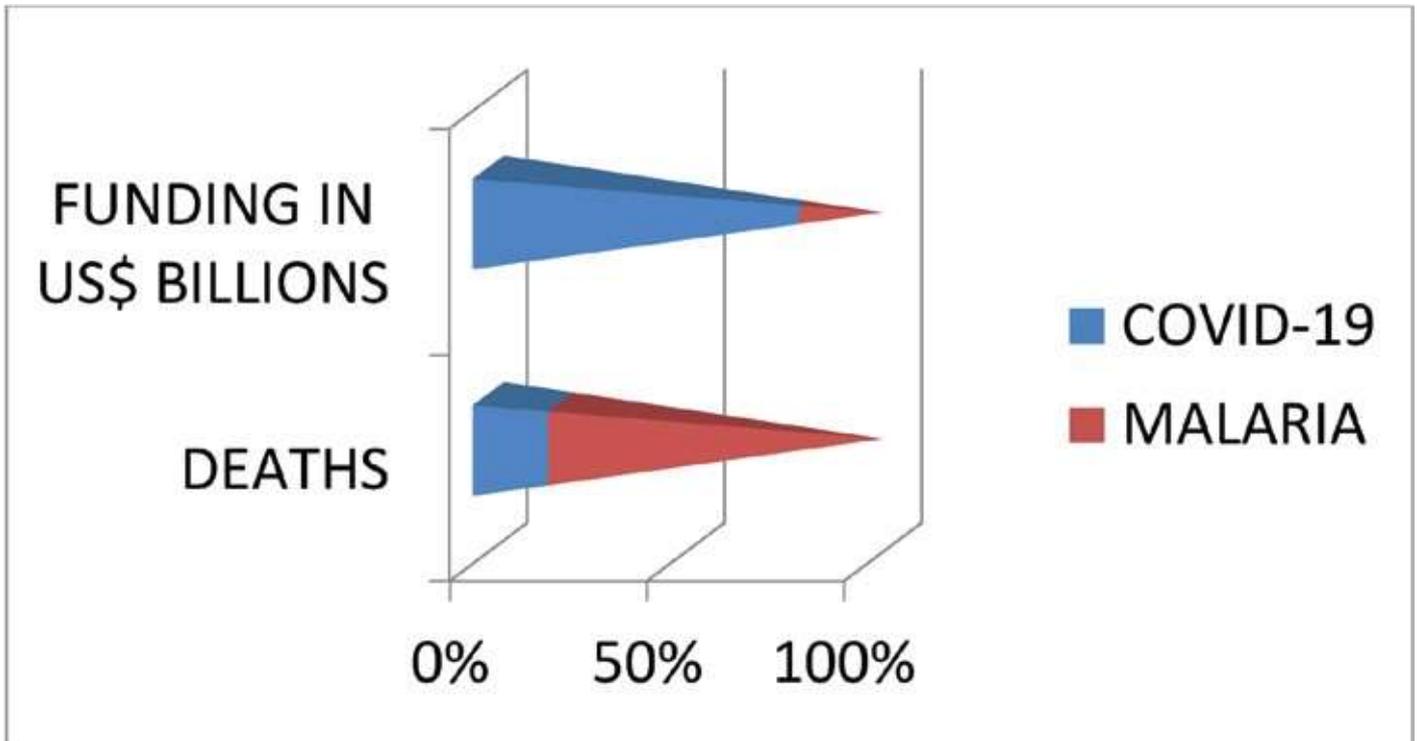


FIGURE 1: FUNDING VERSUS COVID-19 AND MALARIA DEATHS IN AFRICA AS AT SEPTEMBER 1, 2022 (Constructed with data in References 3,5,7)

Covid-19 versus Malaria Funding

Paradoxically, 25.934 US\$ billion from IMF went to COVID-19 response versus 6.3 US\$ billion for Malaria; showing COVID-19 was over 400% better funded from IMF source alone than Malaria killing 343% more (Fig.1). Africa also has the second-highest COVID-19 indebtedness to IMF and Loan-to-death ratio of US\$ 101,085/death (Table 1), raising questions of inefficient spending. And its debt profile became 63.1% and 60.3% of GDP in 2020 and 2021 respectively versus 55.4% in 2019 while revenue projections for 2020 and

2021 declined as the economy contracted 13.6% and 9.3 % of GDP respectively relative to pre-pandemic estimates of 2019.^{7,8} Specifically, public health measures introduced in 2020 to limit COVID-19 spread slowed many economies in Africa and pushed others into recession^{7,8}; thereby dragging 29 million into extreme poverty in 2021; a figure likely to rise in 2022 with events in Ukraine. Indeed, Africa requires \$424 billion to recover from this damaging economic impact of COVID-19 according to African Development Bank.

Are covid-19 loans all inevitable?

Many regions were caught unprepared including Africa where the worst was expected given its struggling health systems. Early evidence⁹ nonetheless indicated COVID-19 was diverging to two regional epidemics with different severity; one with terrifying daily mass deaths; another mainly in Africa unfolding at a 50% or more lowly risk gradient for severe outcomes still evident (Table 1). This demanded a response sensitive to Africa's reality.

Pandemic preparation:

As daily images of corpses piling up in hospitals, etc and empty streets in Europe and China were beamed globally; a heightened state of preparedness including emergency health procurement became evident. However, what emerged largely across Africa was underutilization of capacity, sometimes up to 60%¹⁰ with many ICUs, Quarantine centers, etc. hurriedly procured closing.

Purchasing more vaccine doses

Africa is borrowing to vaccinate 70% of its population at an estimated cost of 12-15 billion US Dollars.¹¹ Towards this, Africa's \$30.5 billion debt service obligations in 2021 were re-scheduled by rich countries and IMF cancelled \$485 million debt for low-income countries which also benefited Africa.^{7,8,11}

Donor driven-COVAX was to deliver 50% of doses required to vaccinate 40% of Africa's population by December 2021 to protect everyone and prevent under-vaccinated populations becoming incubator for deadlier mutations that could threaten global health and delay economic recovery worldwide.^{2,4,11} Also, African Union purchased more doses financed by AFREXIM for distribution to member States according to need. Sadly, these initiatives largely fell short despite economic reliefs Africa received and sovereign debts involved. Strikingly, some 40% of Africa's external debt stock of \$702.4 billion in 2020 involved lenders with a large chunk of COVID-19 economic reliefs granted Africa going to private lenders.¹¹ And evidence indicates countries in Africa procuring additional vaccine doses could be paying higher than rich countries; some over 200% more.¹¹ Even so, Africa missed the global vaccination targets of 2021 and 2022 due to supply chain issues linked to hoarding and nationalism; echoing previous observations with HIV/AIDS, Ebola, HINI, and Smallpox pandemics where the global response seem more about purchasing power and region than need. This is worsened by widespread vaccine hesitancy; despite SARS-CoV-2 evolving into explosively more contagious omicron sub-lineages.

Natural infection as mass immunization against COVID-19

Three years into COVID-19, it seem evident neither vaccine-induced immunity nor from prior infection, prevents re-infection, this is however unlikely to cause severe disease, except in those 50+ years with multiple comorbidities who constitute under 8% of

Africa's population³. This natural immunity appears long lasting and modifies the clinical severity of COVID-19 in ways comparable to vaccines alone, sometimes more so. The evidence is compelling, growing and also increasingly show¹² an initial response to a first encounter with SARS-CoV-2 can shape the pattern of subsequent immune protection against variants emerging further down the line regardless of how the virus is mutating. Coincidentally, seroprevalence surveys indicate over 65% of Africa's population already exhibit antibodies to SARS-CoV-2 as of December 2021¹², signaling high population immunity despite low vaccination [Table 1]. This observation seems parallel to Africa's incomparably low COVID-19 mortality; a protection probably boosted by repeated exposure to an ever-increasing contagious virus with diminishing lethality.³

To reach this point, Africa suffered unbelievable lack of access to incredibly life-protecting vaccines with lives saved as percentage of COVID-19 deaths being 63.2% for Africa versus 153%, 226.2%, 548.1%, 200.54% and 1056.4% for the Americas, Europe, South East Asia, Eastern Mediterranean and Western Pacific regions corresponding to vaccination rates of 5.48% (Africa) relative to 58.30%, 56.50%, 35.40%, 28.10% and 62.40% as a few powerful countries stockpiled vaccine doses beyond their immediate need only releasing some to Africa after its time of dire need in 2021.⁴

Contextually therefore, accumulating further sovereign debts just to keep vaccinating towards 70% coverage when high population immunity appears evident is double jeopardy and tantamount to borrowing to acquire that already present. Luckily, experts and policy makers^{12,13} behind Africa's technical response to COVID-19 are embracing the uncomfortable reality of a two-tier global vaccination order (Table 1) with Africa at the back of the priority queue and focusing more on extensive immunization of the most vulnerable as previously submitted.¹ Nevertheless, mixed messaging persists with some advocating COVID-19 vaccination as primary health service and routine immunization.^{2,13} The benefit of such repeated universal vaccination remains unclear given current evidence and is probably unsustainable without more foreign loans. Clearly, solidarity which promised protection for everyone in need, failed woefully in Africa.^{2,4,13,14}

COVID-19 VACCINES AND INTERNATIONAL LAW

Allowing millions in low-income populations to die from lack of access to incredibly life-saving interventions developed mostly with public funds while big pharmaceutical companies earn billions in profits from prioritising high-income nations, despite global solidarity on how to end the pandemic everywhere fueled intense international debate on ownership rights of COVID-19 Vaccines. This prompted India and South Africa to approach World Trade Organization (WTO) in 2020 requesting for a "patent right waiver" to increase supply and local manufacturing of COVID-19 vaccines, tests and therapeutics. Majority supported the request sometimes presented as "we're not safe until we're all safe".¹¹ However, a few countries linked to the industry opposed it saying it will stifle innovation despite WTO rules guiding waivers during global crisis as COVID-19 was initially framed and robust provisions for it.¹⁵ Moreover, patent laws across jurisdictions appear similar in allowing for bypass of Intellectual Property (IP) rights during existential crisis through Compulsory License to third party even without recourse to or approval of IP owners. This requires compensations to IP owners for losses at economic rates.

With such conditions, it was therefore not entirely surprising that after almost two years of intense discussion sometimes polarized; the waiver ratified in June 2022 came not only late as COVID-19 severity was diminishing globally, but restrictive excluding some countries like China with huge manufacturing capacity to rapidly upscale vaccines availability. The waiver also seems unlikely to hold beyond 2027 and excludes tests, equipment and other extremely lifesaving therapeutics.⁽¹⁴⁾ This is the dilemma some condemn and

others hailed as a new dawn for humanity. Fortunately, Africa's predominantly youthful population remains less prone to adverse outcomes despite being least vaccinated globally (Table 1). Indeed, the cumulative mortality data (Table 1, Fig.1) and diminishing case fatality aligns with previous suggestion that Africa may be less vulnerable to severe outcomes of coronaviruses and influenza pandemics.

Consequently, it remains to be seen how accumulating further debts to pay towards 70% global vaccination target is in Africa's best interest when malaria which kills far more remains underfunded.

Instructively, while emphasis is shifting from minimizing transmission to preventing disease severity^{2,13}, life-saving therapeutics like Paxlovid required to do so remain excluded as low-cost generics in the waiver ratified in June 2020.⁽¹⁴⁾ Therefore, inequity in access to life saving interventions persists only shifting to therapeutics as unutilized vaccine doses accumulate and COVID-19 evolving in ways that demands a different approach to minimize its deadliest outcomes.

Conclusion

With Catastrophe predicted not evident as SARS-CoV-2 lethality diminish globally, the worst seems behind Africa. Specifically, mortality data reflects more about the dominant disease behavior of SARS-CoV-2 than the impact of any intervention in Africa including vaccination; which remains the lowest globally. Therefore, continuing vaccination towards 70% target could signal Africa's COVID-19 response remains guided by a worst-case scenario, and not how the pandemic has unfolded and evolving.

Luckily, COVID-19 increasingly looks different in different regions, thus, Africa can find its own way out of the pandemic. Repeated universal inoculation against every imaginable variant of a constantly changing virus is simply unsustainable in Africa without further borrowing, and increasing dependence on others that could benefit from Africa's high vaccination but chose to withhold badly needed vaccine doses when it mattered most.

Going forward, Africa's response needs re-setting in the context of what is now known about local disease behavior of SARS-CoV-2. In particular, Africa's vaccination priority ought to align more with local reality and shift beyond protecting the most vulnerable to discontinuing a global inoculation strategy which prioritizes other people's fear of Africa's low vaccination enabled in the first place by the same powers. Doing so is urgent if social disorder arising from mounting COVID-19 debts is to be averted. Finally, Africa requires health systems that optimize resources to meet its own priorities.

DEDICATION

This work is dedicated to Pius Abioje, PhD, Professor of African Religious Studies, and University of Ilorin, Nigeria for his unwavering commitment to a better Nigeria.

References

1. Okoro, EO, Salihu, M, Ayuba G, Ikoba, N (2021), Africa requires a sustainable COVID-19 vaccination approach: Nigeria as a case study, *Academia Letters*, Article 4455, <https://doi.org/10.20935/AL4455>
2. WHO SAGE Roadmap for Prioritizing Uses of COVID-19 Vaccines: An approach to optimize the global impact of COVID-19 vaccines, based on public health goals, global and national equity, and vaccine access and coverage scenarios (Version 2.1 January 2022), available at: <https://www.who.int/news/item/21-01-2022-updated-who-sage-roadmap-for-prioritizing-uses-of-covid-19-vaccines> [can also cover references 32 & 33]
3. Our World in Data: a. Daily confirmed COVID-19 deaths per million people; b.

- c. Switzerland: COVID-19 weekly death rate by vaccination status; d. Share of people vaccinated against COVID-19; e. Chile: COVID-19 weekly death rate by vaccination status; f. United States: COVID-19 weekly death rate by vaccination status; g. Population by broad age group. www.ourworldindata.org/charts#coronavirus-disease-covid-us-19.
4. Oliver J Watson, Gregory Bamsely, Jaspreet Toor et al "Global impact of the first year of COVID-19 Vaccination: a mathematical modeling study, *Lancet Infect. Dis* 2022, Published Online, June 23, 2022 at [https://doi.org/10.1016/S1473-3099\(22\)0032-6](https://doi.org/10.1016/S1473-3099(22)0032-6).
5. World malaria report 2021. Geneva. World Health Organization 2021. CC. Licensed BY CC. NC-SA-3.0. IGO
6. Patrick GT. Walker, Charles Whittaker, Oliver J. Watson et al, The impact of COVID-19 and strategies for mitigation and suppression in low-and middle-income countries, *Science* 369,413-422 (2020), 24 July 2022
7. IMF (2022). COVID-19 Financial Assistance and Debt Service Relief. Published by the International Monetary Fund (IMF): www.imf.org/en/Topics/imf-and-covid19/COVID/Lending-Tracker#APD.
8. Chris Heitzig, Aloysius Uche Ordu, Lemma Senbet, Sub-Saharan Africa debt problem-mapping the pandemic's effect and the way forward, Africa Growth Initiative at BROOKINGS, October 2021, www.brookings.edu
9. Andrew Clark, Mark Jit, Charlotte Warren-Gash et al Global, regional and national estimates of the population at increased risk of severe COVID-19 due to underlying health conditions in 2020: a modeling study, *Lancet Glob Health* 2020; 8: e1003-17, DOI: <https://doi.org/10.1016/j.2020.10.09X>(20)30264-3
10. Tessema GA, Kinfu Y, Dachew BA et al, The COVID-19 pandemic and healthcare systems in Africa: a scoping review of preparedness, impact and response, *BMJ Global Health* 2021; 6: e007179; doi:10.1136/bmjgh-2021-007179
11. VACCINE Debts. How Africa's debt Crisis is slowing Vaccination, and how vaccination costs threaten to add to the debt burden, ACTalliance, Briefing Paper Vaccine Debts, May 2021, <https://www.christianaid.org.uk/resources/our-work/vaccine-debts>, <https://www.christianaid.org.uk/sites/default/files/2021-05/20May%202021.pdf>.
12. World Health Organization, 01 June 2022, Interim statement on hybrid immunity and increasing population sero-prevalence rates AVAILABLE at: <https://www.who.int/news/item/01-06-2022-interim-statement-on-hybrid-immunity-and-increasing-population-seroprevalence-rates/>
13. African Union, 10 May 2022, Epidemiological and Economic Impact of COVID-19 Roll-out Scenarios in Africa, POLICY BRIEF available at: <https://africacdc.org/download/epidemiological-and-economic-impact-of-covid-19-vaccine-rollout-scenarios-in-africa/> [CAN REPLACE REFERENCES 31 & 32]
14. John Zaracostas, Mixed response to COVID-19 intellectual property waiver, *Lancet* 2022, 2-8 April ;399(10332):1292-1293.
15. World Trade Organization General Council, "Agreement on Trade-Related Aspects of Intellectual Property Rights," I867, I-3 I874 <The Marrakesh Agreement Establishing the World Trade Organization, 320 (2001) https://www.wto.org/english/docs_e/legal_e/27-trips.pdf

*Additional references for further reading are available on request.