African Union

AFRICA CDC
Centres for Disease Control and Prevention
Safeguarding Africa's Health

AFRICA CENTRES FOR DISEASE CONTROL AND PREVENTION

Guidance on administration of COVID-19 vaccine boosters in Africa

40%

population coverage by end of 2021

70%

70% coverage by June 2022

13%

7 of 55 Africa Union (AU) Member States had reached 40% population coverage by end of 2021

Context

As part of the "Strategy to Achieve Global COVID-19 Vaccination by mid-2022", global targets of 40% population coverage by end of 2021 and 70% coverage by June 2022 have been set by the World Health Organization (WHO), to successfully prevent severe illness and deaths, minimize social disruption and economic consequences of COVID-19, curtail the emergence of new SARS-CoV-2 variants of concern (VOCs) and ultimately control the pandemic.

What is the current status of COVID-19 vaccination campaigns in Africa?

By the 31st December 2021, only seven (13%) of 55 Africa Union (AU) Member States had reached the year end 40% population coverage goal (Botswana, Cape Verde, Mauritius, Morocco, Rwanda, Seychelles and Tunisia), and currently only two Member States (Mauritius and Seychelles) have fully vaccinated more than 70% of their population[1]. By beginning of February 2022, at the continental level, **11%** of the population had received a complete primary COVID-19 immunization series (either 1 or 2 doses depending on the vaccine)[2]. Fifty-four Member States were actively vaccinating their populations; of these, 21 extended immunization to younger age groups (children and/or adolescents) and 22 offered booster vaccine doses. Comparatively, countries in the European Union and the United States, had fully vaccinated 60% or more of their populations, including adolescents and children, and had rolled out booster vaccine doses.

1 https://africacdc.org/download/africa-cdc-mastercard-foundation-saving-lives-and-livelihoods-newsletter-january-2022/

2 https://africacdc.org/covid-19-vaccination/

What is the available evidence about the protection conferred by COVID-19 vaccines?

» ***Protection against infection, severe disease/hospitalization and death***
Available clinical trial data[3] on COVID-19 vaccines included on WHO's emergency use list (EUL) indicate that approved vaccines demonstrate high efficacy against SARS-CoV-2 infection, ranging from 65% to more than 95% after the primary immunization series. Efficacy against severe disease, hospitalization and death, was higher, ranging from 77% to 100%. These initial vaccine efficacy trials were conducted in different settings with varying endpoints, and therefore, should not be compared directly.

» ***Need for one extra dose as part of primary vaccination series for the immuno-compromised***
Available clinical trial data indicate that the immune response to COVID-19 vaccines (as indicated by SARS-CoV-2 specific antibody levels) is lower in immunocompromised individuals. It is now recommended that the standard COVID-19 primary immunization series be extended to include an additional vaccine dose in immunocompromised individuals to ensure sufficient level of protection against COVID-19[4].

» ***Duration of protection after primary immunization series (waning)***
Effectiveness data obtained after roll out of COVID-19 vaccines at population level, indicate that there is a reduction (or waning) over time of vaccine induced protection against infection and symptomatic COVID-19 disease[5]. Although the degree of waning varies across populations and vaccine types, this decreased immunity can lead to infections in those previously vaccinated (e.g. breakthrough infections). Waning is more pronounced in those aged 50 years and above and in those who received inactivated COVID-19 vaccines. Vaccine effectiveness against severe disease including hospitalization and death decrease is slower over time for each of the COVID-19 vaccines on WHO's EUL.

» ***Impact of Variants of Concern (VoCs) on vaccine induced protection***
The Beta, Delta and Omicron SARS-CoV-2 VoCs harbor mutations that correlate with immune evasion as evidenced by a drop in neutralizing antibodies (Ab) responses *in vitro*[3], which may indicate an increased risk for breakthrough infections. This drop is more substantial in the case of Omicron[6] across all COVID-19 vaccines on WHO's EUL (mRNA, vectored and inactivated vaccines). Emerging data globally indicate that vaccine effectiveness against infection with Omicron is reduced below the 50% threshold[7]. Vaccine effectiveness against hospitalization and death appears however to be preserved, presumably due to persistent cellular (T lymphocytes) immune responses over time[8].

Data from the Gauteng province in South Africa indicates that effectiveness of the BNT162b2 (or Pfizer BioNtech) mRNA vaccine was maintained against hospital admission, albeit at a level reduced from 93% during the Delta surge to 70% during the recent Omicron surge, in persons who had completed their 2 doses primary vaccination series[9].

» ***Rationale for booster doses***
A booster dose enhances vaccine effectiveness against infection, symptomatic disease and severe outcomes, including for SARS CoV-2 VoCs. This effect has been observed with both homologous (booster dose with an identical vaccine) and heterologous (booster dose with a different vaccine) boosting schedule[5,7].

3 https://doi.org/10.1016/j.immuni.2021.06.017
4 https://apps.who.int/iris/rest/bitstreams/1383659/retrieve
5 https://view-hub.org/sites/default/files/2022-02/COVID19%20Vaccine%20Effectiveness%20Transmission%20Studies%20-%20Summary%20Tables_20220210.pdf
6 https://www.biorxiv.org/content/10.1101/2021.12.31.474032v2.full.pdf
7 https://view-hub.org/sites/default/files/2022-01/COVID19%20VE%20Studies_Forest%20Plots_Delta_Omicron_0.pdf
8 https://www.nature.com/articles/s41591-022-01700-x
9 https://www.nejm.org/doi/full/10.1056/NEJMc2119270

Preliminary data from the Sisonke 2 phase 3b trial in South Africa, performed as Omicron became the dominant variant in the country, indicates that a homologous booster of the Ad26.COV.2 J&J vectored vaccine, given 6-9 months after the primary single dose vaccination, increased vaccine effectiveness against hospitalization from 63% at 0-13 days, to 84% at 14-27 days, and 85% at 1-2 months after the booster dose[10].

Recommendations to AU Member States and health authorities

COVID-19 vaccines remain a key tool to prevent severe cases and deaths from COVID-19 infection. Africa CDC's strongly recommend that AU Member States should continue expanding their COVID-19 vaccination efforts in a stepwise manner to meet the COVID-19 vaccination target of 70% coverage of the global population by June 2022.

Africa CDC accordingly recommends the following to AU Member States and health authorities:

- AU Member States should continue to expand COVID-19 vaccination to achieve high primary vaccination population coverage in line with global targets, prioritizing those at highest risk (the elderly, those with comorbidities, healthcare workers).
- In line with previous Africa CDC guidance, Member States should consider extending vaccination to younger age groups to attain global targets11.
- AU Member States should offer an additional vaccine dose to immunocompromised individuals to complement the standard primary immunization series.

Africa CDC furthermore acknowledges accumulating evidence that booster doses consolidate vaccine induced protection. Africa CDC accordingly recommends the following to AU Member States and health authorities:

- Where supplies allow, AU Member States should administer COVID-19 vaccine booster doses to address waning of immunity, especially in the dawn of immune escape from VoC, such as Omicron
- Vaccine boosters consist of one extra dose administered between 4 to 6 months after primary immunization series.
- In alignment with the interim recommendations of the WHO Strategic Advisory Group of Experts (SAGE)[12], whereas homologous booster schedules are standard practice, Member States may opt for heterologous booster schedules to allow programmatic flexibility in case of limited vaccine supply, or if aiming to enhance vaccine effectiveness (e.g. where inactivated vaccines have been used for the primary immunization series).

10 https://www.medrxiv.org/content/10.1101/2021.12.28.21268436v1.full.pdf

11 https://africacdc.org/download/vaccination-advocacy-infographics/

12 https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines-SAGE-recommendation-heterologous-schedules

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