UNMD
UNITED NATIONS MEDICAL DIRECTORS

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# UN Medical Directors Recommendations for additional vaccine and booster doses[1] for COVID-19 vaccinations

## BACKGROUND

Against the background of the ongoing global circulation of SARS-COV2 and the availability of COVID-19 vaccines, the UN Medical Directors (UNMD) welcome the continuation of the UN vaccination deployment efforts as part of the UN's first line of defence to strengthen vulnerable duty stations thus ensuring the protection and discharging the duty of care to UN personnel, families and partners, in particular those who are at increased occupational risk[2].

## PURPOSE OF THIS DOCUMENT

This document provides UN duty stations with a general approach to COVID-19 vaccine administration by medical professionals. It identifies the key elements that should be addressed in COVID-19 vaccination and suggests approaches depending on a number of criteria, such as age, dosing schedules, vaccine types, and authorizations and approvals given by regulatory authorities. In the attached Annex A, the UNMD recommendations for utilization of Moderna vaccine within the UN System-wide vaccination programme are discussed.

## UNMD GENERAL COVID-19 VACCINATION RECOMMENDATIONS

As part of the UN strategy and the system-wide deployment effort of COVID-19 vaccines to UN duty stations and missions, the UNMD provide the following recommendations:

1. To continue guaranteeing access **to primary vaccination** series from WHO EUL[3] approved vaccines to all its personnel, family dependents, and eligible partners, particularly to those belonging to the high risk category groups identified by WHO / SAGE[4] criteria, and within these category groups, at risk workers according to occupational health and safety principles as defined by UNMD. All WHO EUL approved vaccines have been proven effective and safe, offering a high level of protection against severe disease and death, can be administered to adults, and for some, to children.
   Bivalent original/Omicron BA.5 mRNA vaccines may be used for primary vaccination.[5]

2. To administer **an additional dose** in line with WHO's recommendation towards immunocompromised individuals, recipients of Sinopharm/Sinovac aged 60+, and all recipients of the Janssen vaccine (Johnson & Johnson)[6] to administer a second dose (between 2 and 6 months after the first dose) per WHO indications that the benefits of a second dose of Janssen vaccine administered are superior to the benefits conferred by

[1] Please see para 8 in UN FAQs under this link
[2] https://www.un.org/sites/un2.un.org/files/coronavirus_unmdstatementcovidvaccine.pdf
[3] Regulation and Prequalification (who.int)
[4] Strategic Advisory Group of Experts to WHO on Immunization.
https://apps.who.int/iris/bitstream/handle/10665/334299/WHO-2019-nCoV-SAGE_Framework-Allocation_and_prioritization-2020.1-eng.pdf?sequence=1&isAllowed=y
[5] SAGE updates COVID-19 vaccination guidance (28 March 2023)
[6] Interim recommendations for the use of the Janssen Ad26.COV2.S (COVID-19) vaccine (who.int)

one dose.

3. To administer **booster doses** in line with the WHO's recommendation[7] for a targeted and risk-based approach and UN mandate to preserve its UN personnel capacity to deliver on its programs, prioritizing the most at risk of infection or symptomatic diseases, and following protocols set in place by Local Regulatory Authority, or, if absent, by Stringent Regulatory Authorities[8] such as the US, EMA, the UK, or Australia, provided that the UN is not constrained by limited supply of COVID-19 vaccine[9].
    - There is strong evidence that the level of protection conferred by the original COVID-19 vaccines wanes over time, and that the latest variants are associated with higher immune evasion and lower vaccine effectiveness against symptomatic illness, which is disruptive to UN activities. In accordance with this information, **UNMD recommends a primary schedule of 2 doses + additional booster dose 4 to 6 months after last dose. The use of further booster doses should be considered in particular** for the highest risk groups (personal risk factors; age> 50; high exposure occupational groups, such as healthcare workers), with administration 6 to 12 months after the last dose.[5]
    - In reference to WHO practice statements from August 18 2022 and October 17 2022, once authorized for use, **any variant-containing vaccines can be considered** as they may broaden and enhance the immune response to Omicron variants.[10,11]
    - **Individuals at high risk should not delay receiving a booster if such variant-containing vaccines are not yet available.**

4. To administer **homologous or heterologous (mix and match) vaccines series** following these general principles (see summary table 1 below for summary of WHO recommended combination):
    - Homologous schedules are considered standard practice based on substantial safety, immunogenicity, and efficacy data available for each COVID-19 vaccine with WHO EUL approval.
    - SAGE accepts two heterologous doses of WHO EUL COVID-19 vaccines as a complete primary series. A 2-dose series continues to offer high protection against COVID-19 hospitalization and mortality.
    - The primary vaccination schedule is a 2-dose series for all WHO EUL approved vaccines. A 3rd dose as part of the primary vaccination series is recommended for immunocompromised persons and persons aged 60+ who received two doses of Sinopharm or Sinovac.
    - There is increasing evidence of waning vaccine effectiveness against mild and asymptomatic SARS-CoV-2 infection over time. A booster dose is shown to restore vaccine effectiveness to the same levels as those recorded immediately after the administration of the 2-dose series.
    - Booster dose should be administered 4-6 months after last dose. All persons age 12 or older are eligible to receive a monovalent or bivalent booster dose.[12]

[7] https://www.who.int/news/item/04-10-2021-interim-statement-on-booster-doses-for-covid-19-vaccination
[8] The concept of Stringent Regulatory Authority (SRA) is currently being phased out to be replaced by WHO Listed Authority (WLA) . The original list of SRAs can be found here
[9] Please see para 6 in UN FAQs under this link
[10] https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines-SAGE-good-practice-statement-second-booster
[11] https://apps.who.int/iris/bitstream/handle/10665/363554/WHO-2019-nCoV-Vaccines-SAGE-Variants-2022.1-eng.pdf?sequence=1&isAllowed=y
[12] See Annex A for the specific guidance on the administration of Moderna and appropriate booster dosing per age group.

- No additional safety concerns have been identified for the use of heterologous schedule (either within the primary series or the booster dose).

Note that specific guidance for the administration of Moderna is provided in Annex A.

**Summary table 1:** ***Recommended mix and match combinations (for primary and/or booster schedule)***

| DOSE #1 | DOSE #2[13] | DOSE #3/BOOSTER#1[14] | DOSE#4 / BOOSTER#2[15] |
|---|---|---|---|
| mRNA* | mRNA* | vectored | mRNA |
| mRNA* | vectored | mRNA | mRNA |
| vectored | vectored | mRNA | mRNA |
| vectored | mRNA* | mRNA | mRNA |
| Inactivated‡ | inactivated‡ | mRNA or vectored | mRNA or vectored |
| Inactivated‡ | mRNA or vectored | mRNA or vectored | mRNA or vectored |
| non WHO EUL | non WHO EUL | After primary vaccination with WHO EUL[16] | After primary vaccination and booster dose with WHO EUL[16] |

**Legend**

**mRNA: Moderna/Pfizer (*monovalent or original/BA.5). Moderna half dose if used as booster or in children aged 6-11**

**vectored: AZ/Janssen**

**inactivated‡: Sinopharm/Sinovac/Bharat. 3rd dose recommended for age 60+ having received Sinopharm/Sinovac.**

**Non WHO EUL: Sputnik, Soberana, Abdala**

**References**

- COVID-19 Vaccine for UN Personnel Considerations and Recommendations from the UN Medical Directors Network
- UN Medical Directors UN System-Wide COVID-19 Vaccination Programme Occupational Risk Groups Prioritization

[13] https://www.who.int/emergencies/diseases/novel-coronavirus-2019/covid-19-vaccines/advice
[14] https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines-SAGE-recommendation-heterologous-schedules
[15] https://www.who.int/publications/i/item/WHO-2019-nCoV-vaccines-SAGE-good-practice-statement-second-booster
[16] https://extranet.who.int/pqweb/vaccines/vaccinescovid-19-vaccine-eul-issued

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# Annex A: UNMD recommendations for utilization of Moderna vaccine for the UN System-wide vaccination programme

**Disclaimer**

- This guidance does not imply that Moderna is the only option for booster doses within the context of the COVID-19 vaccination series but refers specifically to situations where the Moderna vaccine is an available option.
- This advice is based on currently available evidence on the possible use of Moderna vaccine either as a primary SARS-COV2 immunization tool or as a mix/match second dose of a primary immunization cycle (heterologous vaccination), or as a booster dose of a completed primary immunization cycle.
- Primary doses can be monovalent/ancestral strain or bivalent ancestral/Omicron variant BA.5[17]
- Booster doses can be monovalent/ancestral strain or bivalent ancestral/Omicron variant
- Homologous vaccination (i.e., same vaccine) schedules are considered standard practice based on substantial safety, immunogenicity, and efficacy data available for each COVID-19 vaccine with WHO EUL approval.
- **Heterologous vaccination (i.e., mixed vaccines) with any two WHO EUL approved vaccines[18] is considered a complete primary series.[19]**
- Where scientific evidence of above uses of Moderna vaccine has been judged weak or unavailable, a risk averse peer review process has informed the technical recommendation.
- Advice regarding additional dosing for non-WHO EUL COVID-19 vaccines is less well established and should be based on an individual risk assessment.
- As new information becomes available, the recommendations presented in this document will be adjusted accordingly.
- See table 2 below for details.

**Rules for use of Moderna**

- **Primary schedule age 12-17 and 18 and above:** administer dose#1 and dose#2 as full dose monovalent (100 µg) or bivalent original/Omicron BA.5[11]
- **Primary schedule age 6-11:** administer dose#1 and dose#2 as half dose monovalent (50 µg)
- **Moderna as 2nd dose (and 3rd dose for selected immunocompromised individuals)** should be administered 4-8 weeks after the initial dose (8-week interval recommended for mRNA-only primary vaccination to further increase effectiveness and further reduce rare risk of myocarditis[20]).
- **First booster doses age 12-17 and 18 and above:** monovalent or bivalent half dose (50 µg) given 4 to 6 months (or less depending on local health authority policies) after the completion of the last dose.[21]
- **Subsequent booster doses for high risk groups: monovalent or bivalent half dose (50 µg) 6 to 12 months after last dose.**[5]
- Note that for primary immunization with non-WHO EUL approved vaccines a new primary schedule should commence at least 4 weeks after the last dose administered.[22]

[17] At current, the COVID-19 Vaccination Programme does not carry in stock Moderna bivalent ancestral/Omicron variant BA.5 vaccine

[18] https://www.who.int/groups/strategic-advisory-group-of-experts-on-immunization/covid-19-materials

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

[20] https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

[21] https://www.who.int/publications/i/item/WHO-2019-nCoV-Vaccines-SAGE-Variants-2022.1

[22] https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html#foot-04

- Delay in receiving a dose after the recommended interval does not require additional dose.[23]

**Table 2: Primary and first booster Moderna vaccination schedule options (age 12 and above)**

| | Vaccine type | Primary schedule | Moderna dose | When to give | Comment |
|---|---|---|---|---|---|
| **WHO EUL approved vaccines** | Viral vector (Astra Zeneca, Janssen) | Complete | Half | 4-6 months[24] after 2nd dose | Heterologous vaccination replacement for 3rd (booster) dose |
| | | Incomplete | Full | 4 weeks after 1st dose | Heterologous vaccine replacement for 2nd and subsequent doses |
| | Inactivated virus (Sinopharm, Sinovac) | Complete | Half | 4-6 months[20] after 2nd dose | Heterologous vaccination replacement for 3rd (booster) dose |
| | | Incomplete | Full | 4 weeks after 1st dose | Heterologous vaccine replacement for 2nd and subsequent doses |
| | mRNA (Moderna, Pfizer) | Complete | Half | 4-6 months[20] after 2nd dose | Normal Moderna 'booster' schedule |
| | | Incomplete | Full | 8 weeks after 1st dose | Heterologous/Homologous vaccine replacement for 2nd and subsequent doses |
| | Protein subunit (Novavax) | Complete | Half | 4-6 months[20] after 2nd dose | Normal Moderna 'booster' schedule |
| | | Incomplete | Full | 4 weeks after 1st dose | Heterologous vaccine replacement for 2nd and subsequent doses |

[23] https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fvaccines%2Fcovid-19%2Finfo-by-product%2Fclinical-considerations.html#Appendix-A

[24] Or less depending on local health authority policies

| | | |
|---|---|---|
| **Non-WHO EUL approved vaccines** | Sputnik, Soberana, Abdala | Commence a new primary schedule at least 4 weeks after the last dose administered. |