衞生防護中心
Centre for Health Protection

Scientific Committee on AIDS and STI

Guidance Notes on COVID-19 Vaccination for People (Adults) with HIV

Introduction

The emergence of Coronavirus Disease (COVID-19) caused by SARS-CoV-2 has seeded a pandemic since late 2019. Different SARS-CoV-2 Variants of Concern (VOCs) have evolved with different phenotypic characteristics leading to differences in terms of transmissibility, disease severity, risk of reinfection, and impacts on diagnostic and therapeutic options, vaccine efficacy, or other public health and social measures[1].

2. Despite initial smaller scale studies showing contradictory findings, subsequent data from larger observational studies indicate that a subset of people with HIV are at increased risk of severe COVID-19 outcomes, such as hospitalisations, admissions to intensive care units, and in-hospital mortality[2-8]. Age above 60, and the presence of comorbidities have been identified as the most consistent factors that are associated with increased severity of COVID-19 in the general population[9]. Many people with HIV have one or more comorbidities that may put them at increased risk for a more severe course of COVID-19. Those with advanced HIV disease or AIDS with uncontrolled viraemia and low CD4 count or CD4 nadir are also demonstrated to be at increased risk for developing severe disease[10].

3. At both individual and population level, COVID-19 vaccination is the most critical prevention measure to lower the risk of infection, and the risk of severe COVID-19 outcomes even if infected. Two COVID-19 vaccines have been authorised for emergency use in Hong Kong: i) inactivated virus technology platform: CoronaVac by Sinovac Biotech (Hong Kong) Limited; and ii) mRNA technology platform: Comirnaty by Fosun Pharma/BioNTech. The first two doses of vaccine are to be given at least 28 days apart for CoronaVac and at least 21 days apart for Comirnaty.

4. This Guidance Notes aim to provide information for healthcare professionals and other stakeholders in the field on the recommended use of locally available COVID-19 vaccines for people with HIV. The Guidance notes are based on the interpretation of data available at the time of its preparation, while acknowledging the limitations of studies on vaccine effectiveness against the rapidly evolving viral strains. It would be kept under review and be subjected to further revision with a growing body of scientific information.

Recommendations on vaccination

(I) Vaccination against COVID-19 (SARS-CoV-2) is strongly recommended for all people with HIV, regardless of CD4 count or viral load

(a) Safety

- Available data and extensive experience following vaccine administration suggest that current COVID-19 vaccines validated for use by World Health Organization (WHO) are safe for people with HIV. There are no reported interactions between COVID-19 vaccines with antiretroviral medications, and people with HIV should be advised to continue with their treatment while receiving COVID-19 vaccination[11].

(b) Vaccine effectiveness and choice of COVID-19 vaccines

- All WHO approved COVID-19 vaccines, including both Comirnaty and CoronaVac, when fully administered, are effective at preventing serious illness, hospitalisation and death from COVID-19[12]. People

with HIV should be encouraged to get vaccinated to protect themselves and those around them.

- Small studies of people with well-controlled HIV showed comparable immune responses to mRNA vaccines and adenovirus-vectored vaccine compared to the general population[13-14]. A local study of people with HIV after receiving Comirnaty and CoronaVac showed that inactivated vaccine gave a generally lower peak and shorter duration of surrogate viral neutralisation test responses compared to mRNA vaccine.

- For those who have received two doses of CoronaVac, a local study has shown that a third dose of Comirnaty elicits a better immune response than CoronaVac in the general population[15]. Upon the emergence of Omicron, another local study examining the protection of COVID-19 vaccines against infection by SARS-CoV-2 showed markedly reduced serum antibody titres against the Omicron variant as compared to wild-type SARS-CoV-2 after two doses of either Comirnaty or CoronaVac vaccines. Booster dose with Comirnaty in people who received two doses of Comirnaty or CoronaVac has been shown to elicit better response that those vaccinated with three doses of CoronaVac, thus offering better protection in response to the spread of Omicron in the community[16].

- Health service providers should provide relevant information to their clients to facilitate decision making regarding their choice of COVID-19 vaccines.

(c) Contraindications

- There are very few conditions that would exclude an individual from being vaccinated. As HIV infection is being identified as one of the risk factors for severe COVID-19 outcomes, people with HIV are in fact more indicated to receive COVID-19 vaccine, unless with contraindications (same as other people) as listed in **Table 1**.

Table 1. Contraindications to receiving COVID-19 vaccines[17]

Comirnaty	Persons with: i) hypersensitivity to previous dose of Comirnaty, or to the active substance or to any of the excipients
CoronaVac	Persons with: i) history of allergic reaction to CoronaVac or other inactivated vaccine; or any component of CoronaVac (active or inactive ingredients, or any material used in the manufacturing process); or ii) previous severe allergic reactions to vaccine (e.g. acute anaphylaxis, angioedema, dyspnea, etc.); or iii) severe neurological conditions (e.g. transverse myelitis, Guillain-Barré syndrome, demyelinating disease, etc.); or iv) uncontrolled severe chronic diseases

(d) Timing of COVID-19 vaccination

- In general, for people with HIV who have acute/unstable disease who are undergoing treatment to achieve immune reconstitution, it may be preferable to defer COVID-19 vaccination until the clinical condition is more stable in order to maximise the vaccine effectiveness. However, health service providers shall exercise clinical judgement to decide the best timing for vaccination on individual basis. Factors to consider include HIV status (e.g. CD4 count, HIV viral load, presence of concurrent acute conditions including opportunistic infections), other comorbidities, one's potential risk of exposure and the extent of local COVID-19 transmission etc.

(e) Booster (third dose) vaccination

- Except for those with advanced or untreated HIV who are recommended for a 3-dose primary series as listed in Recommendation (II), people with HIV who are otherwise stable with antiretroviral treatment should receive booster vaccination as in

the recommendations for the general adult population. Booster dose (third dose) should be administered as soon as threemonths after the second dose [18,19].

(II) People who have advanced or untreated HIV should receive an additional dose of COVID-19 vaccine (i.e. a 3-dose primary series) for better protection against COVID-19

- Immunocompromised individuals, including people with HIV with CD4 count less than 200 cells/uL, evidence of an opportunistic infection, not on HIV treatment, and/or those with a detectable viral load, may have suboptimal response to a 2-dose primary series. They are recommended to receive the third dose at least 28 days from the second dose[20].
- Those who have received a 3-dose primary series are strongly recommended to receive the fourth dose of COVID-19 vaccine three months after the third dose to offer better protection[19].

(III) Confidentiality of HIV status should be ensured during vaccine administration

- Health service providers and vaccination facilities should ensure that the confidentiality about one's HIV status or other underlying conditions be preserved during the vaccine administration procedures.

(IV) Antibody testing is not a standard post-vaccination

- It should also be noted that SARS-CoV-2 antibody tests does not need to be routinely performed to evaluate an HIV patient's level of immunity or protection from COVID-19, especially after receiving COVID-19 vaccination[21]. Unless in research setting and when appropriate advice is offered by health care providers familiar with the use and limitations of the test to aid interpretation, there is a potential risk that the vaccinee may interpret the antibody test results incorrectly and results in taking suboptimal precautions against SARS-CoV-2 exposure undesirably.

Other recommendations

(I) Other precautionary measures should be continued to mitigate the risk of exposure to SARS-CoV-2

- Although COVID-19 vaccines are highly effective against severe outcomes, hospitalisations and death, they are, however, less effective in preventing non-severe infections. The effect of vaccination on reducing transmissibility and preventing onward transmission has shown to be mild and transient. Vaccine effectiveness in terms of prevention of infection and transmission also differs with different strains of SARS-CoV-2[12]. Therefore, regardless of HIV status, it remains important for everyone to continue exercising infection control measures to mitigate the risk of exposure to SARS-CoV-2, such as wearing masks, practicing hand hygiene, and following guidance on social distancing.

(II) People with HIV should not switch their antiretroviral regimens for the purpose of preventing or treating COVID-19

- Some antiretroviral agents, e.g. lopinavir/ritonavir, booster darunavir, and tenofovir disoproxil fumarate/emtricitabine, have been evaluated in clinical trials or have once been prescribed for off-label use to treat or prevent COVID-19 during the early pandemic. To-date, no antiretroviral agents have been shown to be effective in these settings. There is no role to consider prescribing specific antiretrovirals for the prevention or treatment of COVID-19 per se.

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References

1 World Health Organization. Tracking SARS-CoV-2 variants. Available at https://www.who.int/en/activities/tracking-SARS-CoV-2-variants/. Accessed 16 January 2022.

2 Mirzaei H, McFarland W, Karamouzian M, Sharifi H. COVID-19 among people living with HIV: a systematic review. AIDS Behav 2021; 25:85–92.

3 Park LS, Rentsch CT, Sigel K. COVID-19 in the largest US HIV cohort. In: 23rd International Conference on AIDS, San Francisco, CA, 2020.

4 Cooper TJ, Woodward BL, Alom S, Harky A. Coronavirus disease 2019 (COVID-19) outcomes in HIV/AIDS patients: a systematic review. HIV Med 2020; 21:567–77.

5 Costenaro P, Minotti C, Barbieri E, Giaquinto C, Donà D. SARS-CoV-2 infection in people living with HIV: a systematic review. Rev Med Virol 2021; 31:1–12.

6 Bhaskaran K, Rentsch CT, MacKenna B, et al. HIV infection and COVID-19 death: a population-based cohort analysis of UK primary care data and linked national death registrations within the OpenSAFELY platform. Lancet HIV 2021; 8:e24–32. doi: 10.1016/S2352-3018(20)30305-2.

7 Dandachi D, Geiger G, Montgomery MW, et al. Characteristics, comorbidities, and outcomes in a multicenter registry of patients with HIV and coronavirus disease-19 [manuscript published online ahead of print 9 September 2020]. Clin Infect Dis 2020. doi:10.1093/cid/ ciaa1339.

8 WHO Global Clinical Platform for COVID-19. Data for public health response. July 2021. Clinical characteristics and prognostic factors of COVID-19 in people living with HIV hospitalized with suspected or confirmed SARS-CoV-2 infection. Available at https://www.who.int/publications/i/item/WHO-2019-nCoV-Clinical-HIV-2021.1. Accessed 22 January 2022.

9 Centers for Disease Control and Prevention. Underlying medical conditions associated with high risk for severe COVID-19: Information for healthcare providers. Available at: https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/underlyingconditions.html. Accessed 22 January 2022.

[10] Braunstein SL, Lazar R, Wahnich A, Daskalakis DC, Blackstock OJ. COVID-19 infection among people with HIV in New York City: a population-level analysis of linked surveillance data [manuscript published online ahead of print 30 November 2020]. Clin Infect Dis 2020. doi:10.1093/cid/ciaa1793.

[11] World Health Organization. July 2021. Coronavirus disease (COVID-19): COVID-19 vaccines and people living with HIV. Q&A. Available at https://www.who.int/news-room/q-a-detail/coronavirus-disease-(covid-19)-covid-19-vaccines-and-people-living-with-hiv. Accessed 22 January 2022.

[12] International Vaccine Access Center, Johns Hopkins Bloomberg School of Public Health and World Health Organization. Results of COVID-19 vaccine effectiveness studies: an ongoing systematic review. Available at https://view-hub.org/sites/default/files/2022-01/COVID19%20Vaccine%20Effectiveness%20Transmission%20Studies%20-%20Summary%20Tables_20220120_0.pdf. Accessed 22 January 2022.

[13] Frater J et al. Oxford COVID Vaccine Trial. Safety and Immunogenicity of the ChAdox1 nCoV-19 (AZD1222) Vaccine Against SARS-CoV-2 in HIV Infection. Available at https://ssrn.com/abstract=3829931 or http://dx.doi.org/10.2139/ssrn.3829931. Accessed 22 January 2022.

[14] Madhi S, Koen A, Fairlie L et al. ChAdOx1 nCoV-19 (AZD1222) vaccine in people living with and without HIV. Available at Research Square: https://www.researchsquare.com/article/rs-322470/v1 or doi: 10.21203/rs.3.rs-322470/v1. Accessed 22 January 2022.

[15] Mok CKP, Cheng SMS, Chen C, et al. A RCT Using CoronaVac or BNT162b2 Vaccine as a Third Dose in Adults Vaccinated with Two Doses of CoronaVac. Am J Respir Crit Care Med. 2022 Jan 11. doi: 10.1164/rccm.202111-2655LE. Epub ahead of print.

[16] Cheng SMS, Mok CKP, Leing YWY et al. Neutralizing antibodies against the SARS-CoV-2 Omicron variant following homologous and heterologous CoronaVac or BNT162b2 vaccination. Nat Med (2022). https://doi.org/10.1038/s41591-022-01704-7.

[17] Centre for Health Protection, Department of Health, Hong Kong Special Administrative Region. February 2022. Interim Guidance Notes on Common Medical Diseases and COVID-19 Vaccination in Primary Care Settings. (As of February 21, 2022). Available at https://www.covidvaccine.gov.hk/pdf/Guidance_Notes.pdf. Accessed 28 February 2022.

[18] Centre for Health Protection, Department of Health, Hong Kong Special Administrative Region. December 2021. Consensus Interim Recommendations on the Use of Comirnaty Vaccine in Hong Kong (As of 23 December 2021). Available at https://www.chp.gov.hk/files/pdf/consensus_interim_recommendations_on_the_use_of_comirnaty_vaccines_23dec.pdf. Access 22 January 2022.

[19] Centre for Health Protection, Department of Health, Hong Kong Special Administrative Region. February 2022. Consensus Interim Recommendations on the Use of COVID-19 Vaccines in Hong Kong (As of 25 February 2022). Available at https://www.chp.gov.hk/files/pdf/consensus_interim_recommendations_on_the_use_of_covid19_vaccines_in_hong_kong_25feb.pdf. Accessed 28 February 2022.

[20] Centre for Health Protection, Department of Health, Hong Kong Special Administrative Region. November 2021. Consensus Interim Recommendations on the Use of COVID-19 Vaccines in Hong Kong (Updated on 19 November 2021). Available at https://www.chp.gov.hk/files/pdf/consensus_interim_recommendations_on_the_use_of_covid19_vaccines_in_hong_kong.pdf. Accessed 22 January 2022.

[21] U.S. Food & Drug Adminstration. May 2021. Antibody testing is not currenly recommended to assess immunity after COVID-19 vaccination: FDA Safety Communication. Available at https://www.fda.gov/medical-devices/safety-communications/antibody-testing-not-currently-recommended-assess-immunity-after-covid-19-vaccination-fda-safety. Accessed 22 January 2022.