Guidance for COVID-19 and People with HIV

Developed by the Guidelines Working Groups of the NIH
Office of AIDS Research Advisory Council

How to Cite the COVID-19 and HIV Guidance:

Guidelines Working Groups of the NIH Office of AIDS Research Advisory Council. Guidance for COVID-19 and People with HIV. Available at https://clinicalinfo.hiv.gov/en/guidelines/guidance-covid-19-and-people-hiv/whats-new-covid-19-and-hiv-guidance/. Accessed (insert date) [include page numbers, table number, etc., if applicable].

It is emphasized that concepts relevant to HIV management evolve rapidly. The Panels have a mechanism to update recommendations on a regular basis, and the most recent information is available on the Clinical Info website (https://clinicalinfo.hiv.gov/)

Table of Contents

What's New in the COVID-19 and HIV Guidance

Updated: February 22, 2022
Reviewed: February 22, 2022

February 22, 2022

Since the last publication of this guidance in February 2021, several new advances in COVID-19 therapeutics have provided more guidance on the prevention and treatment of COVID-19, including for people with HIV.

Below are the key updates to this guidance:

- This guidance continues to recommend that all people with HIV receive COVID-19 vaccines and the recommended booster doses, according to the Centers for Disease Control and Prevention (CDC) guidance.
- The Guidelines Working Groups of the NIH Office of AIDS Research Advisory Council (the Panels) note that the Food and Drug Administration (FDA) has issued an Emergency Use Authorization (EUA) for the combination of tixagevimab with cilgavimab—anti-SARS-CoV-2 monoclonal antibodies (mAbs)—for pre-exposure prophylaxis for persons aged 12 years or older and at high risk for severe COVID-19. People with advanced or untreated HIV are eligible for receiving these anti-SARS-CoV-2 mAbs.
- The Panels note that five treatment options are now available for non-hospitalized patients with mild-to-moderate COVID-19 and who are at high risk of progression to severe disease. Among these options is a new oral antiviral agent—ritonavir-boosted nirmatrelvir—given for 5 days. It is recommended that people with HIV who are on ritonavir- or cobicistat-based antiretroviral (ARV) regimens be maintained on their ARV drugs without any dosage modification.
- The guidance provides an update on what to do with ARV regimens when a person with HIV requires hospitalization for the treatment of COVID-19, with specific recommendations for patients who receive long-acting injectable cabotegravir and rilpivirine as part of their regimens.

For pregnant individuals with HIV:

- The Panels revised language and added new data and citations regarding increased risks of severe illness and death in pregnant versus non-pregnant individuals with COVID-19, as well as higher risks of complications, adverse pregnancy outcomes, and mortality in pregnant people with COVID-19 illness.
- The Panels also note emerging data about an increased risk for stillbirth in pregnant people with COVID-19, with a stronger association during the period the Delta variant was predominant than during the pre-Delta variant period.
- Unfortunately, there are no updates about pregnancy or maternal outcomes for people with HIV and COVID-19 as data remain limited.
- **COVID-19 vaccination is strongly recommended for all pregnant and lactating individuals, as well those planning pregnancy.**

For children with HIV:

- The Panels updated the epidemiology of COVID-19 severity in children, including multisystem inflammatory syndrome in children (MIS-C), and added new references and links to relevant resources.
- The guidance now includes COVID-19 vaccine recommendations for children with HIV, with links to relevant CDC resources. Approvals, authorizations, and vaccine dosing differ by age group and vaccine manufacturer.
- The Panels note that some anti-SARS-CoV-2 mAbs are available under EUA for treatment, and for PrEP and post-exposure prophylaxis against COVID-19 in infants and children with HIV. Eligibility and indications for anti-SARS-CoV-2 mAbs are evolving; the CDC and FDA websites, and the National Institutes of Health COVID-19 Treatment Guidelines should be reviewed for updates.
- The guidance notes that remdesivir is now FDA approved for treatment of COVID-19 in children aged ≥12 years and weighing at least 40 kg, and it is available under EUA for treatment of COVID-19 in children aged <12 years and weighing ≥3.5 kg.

Guidance for COVID-19 and People with HIV

Updated: February 22, 2022
Reviewed: February 22, 2022

This guidance reviews special considerations regarding COVID-19 for people with HIV and their health care providers in the United States. Information and data on COVID-19 are rapidly evolving. Clinicians should refer to updated sources for more specific recommendations regarding prevention, diagnosis, and treatment of COVID-19, including the National Institutes of Health (NIH) COVID-19 Treatment Guidelines, which has a section on Special Considerations in People with HIV.

Whether people with HIV are at greater risk of acquiring SARS-CoV-2 infection is currently unknown. Data are emerging on the clinical outcomes of COVID-19 in people with HIV. In some of the initial case series of people with COVID-19 in Europe and the United States, no significant differences were observed in the clinical outcomes of COVID-19 between people with HIV and people who did not have HIV.[1-10] In contrast, more recent reports suggest worse outcomes for patients with HIV and COVID-19, including high COVID-19 mortality rates in cohort studies from the United States, the United Kingdom, and South Africa.[11-18] HIV was independently associated with an increased risk of severe and critical COVID-19 in a large trial from the World Health Organization's Global Clinical Platform that included data from 24 countries.[11] In a multicenter cohort study of 286 patients with HIV and COVID-19 in the United States, lower CD4 T lymphocyte (CD4) cell counts (i.e., <200 cells/mm^3) were associated with a higher risk for the composite endpoint of intensive care unit (ICU) admission, invasive mechanical ventilation, or death. This increased risk was observed even in patients who had achieved virologic suppression of HIV.[12] In a large observational cohort study of people with HIV and COVID-19 in the United States, those with CD4 counts <350 cells/mm^3 were more likely to be hospitalized, require ventilation, or die. Higher levels of viremia were also associated with worse clinical outcomes.[13] In another study of 175 patients with HIV and COVID-19, a low CD4 count or a low CD4 nadir was associated with poor clinical outcomes.[14] In a cohort study conducted in New York, people with HIV and COVID-19 had higher rates of hospitalization and mortality than people with COVID-19 who did not have HIV.[15]

In the general population, individuals who are at highest risk of severe COVID-19 include those older than 60 years; those who are pregnant; solid organ or hematologic transplant recipients; and those with comorbidities—such as obesity, diabetes mellitus, cardiovascular disease, liver disease (especially cirrhosis), chronic kidney disease, pulmonary disease, cancer, smoking history, and sickle cell disease.[19] Many people with HIV have one or more comorbidities that may put them at increased risk for a more severe course of COVID-19. Both COVID-19 and HIV disproportionately affect communities of color.

Guidance for All People with HIV

- People with HIV should follow all applicable recommendations of the Centers for Disease Control and Prevention (CDC) to prevent acquisition of SARS-CoV-2, such as practicing social or physical distancing, wearing masks consistently, avoiding crowded areas, and using proper hand hygiene **(AIII).**

- People with HIV who have COVID-19 should be clinically managed in the same way as people in the general population with COVID-19, including when making medical care triage determinations **(AIII).**
- People with HIV should receive the full series of a COVID-19 vaccine, regardless of CD4 count or viral load, because the potential benefits outweigh potential risks **(AIII).**
    - People with HIV were included in clinical trials of the three COVID-19 vaccines available through approval or emergency use authorization (EUA) by the U.S. Food and Drug Administration (FDA).[20-22] At this time, the safety and efficacy of these vaccines in people with HIV have not been fully reported. Preliminary data in people with HIV who have received COVID-19 vaccines indicate good responses in those well controlled on antiretroviral therapy (ART) with normal CD4 counts, but diminished responses in those with advanced or untreated HIV infection.[23-25] Guidance for these vaccines, including for people with HIV, is available through the Advisory Committee on Immunization Practices (ACIP) and from the Infectious Diseases Society of America.
    - People with HIV also should receive booster doses of COVID-19 vaccines as recommended by the ACIP.
    - The CDC, the American College of Obstetricians and Gynecologists, and the Society of Maternal Fetal Medicine now recommend that all pregnant persons, lactating individuals, and those planning pregnancy be vaccinated against COVID-19.[26] The CDC also provides information about COVID-19 vaccines while pregnant or breastfeeding.
- In December 2021, the FDA issued an EUA for the combination of tixagevimab with cilgavimab for pre-exposure prophylaxis (PrEP) in certain adults and children (≥12 years and weighing at least 40 kg) who are at risk for severe COVID-19. This EUA included people with advanced or untreated HIV infection (i.e., people with CD4 counts <200 cells/mm^3, history of an AIDS-defining illness without immune reconstitution, or clinical manifestations of symptomatic HIV); see the FDA's Fact Sheet for Health Care Providers for more information.
- Although bamlanivimab plus etesevimab and casirivimab plus imdevimab—two anti-SARS-CoV-2 monoclonal antibodies (mAbs) combinations—have received FDA EUA for post-exposure prophylaxis, the Guidelines Working Groups of the NIH Office of AIDS Research Advisory Council (the Panels) recommend against their use, including for people with HIV, because the Omicron variant is currently the predominant variant circulating in the United States and is not susceptible to these anti-SARS-CoV-2 mAbs **(AIII)**.
- Influenza and pneumococcal vaccinations should be kept up to date. These vaccines, as well as other vaccines, can be administered with COVID-19 vaccines during the same health care visit **(AIII).**

General Management Considerations in People with HIV

Although some antiretroviral (ARV) agents (e.g., lopinavir/ritonavir, boosted darunavir, tenofovir disoproxil fumarate/emtricitabine) have been evaluated in clinical trials to treat or prevent COVID-19, at this time, no ARV agents have been shown to be effective in these settings.[27,28] People with HIV should not switch their ARV regimens or add ARV drugs to their regimens for the purpose of preventing or treating SARS-CoV-2 infection **(AIII).**

When there is substantial community transmission of SARS-CoV-2—

- Health care providers should make every effort to ensure that people with HIV maintain an adequate supply of ART and all other concomitant medications **(AIII).** This may include exploring options for alternative delivery, such as changing the delivery of medications to mail order, when possible.
- If an ARV regimen switch is planned for reasons other than toxicities or virologic failure, the switch should be done when close follow-up and monitoring are possible **(AIII).**

Clinic or Laboratory Monitoring Visits Related to HIV Care

When there is substantial community transmission of SARS-CoV-2—

- Together with their health care providers, people with HIV should weigh the risks and benefits of attending versus not attending in-person HIV-related clinic appointments. Factors to consider include the extent of local COVID-19 transmission, health needs that will be addressed during the appointment, HIV status (e.g., CD4 count, HIV viral load), interval since last laboratory testing, need for vaccinations, and overall health.
- Telephone or virtual visits for routine or non-urgent care and adherence counseling may replace face-to-face encounters.

People with HIV in Opioid Treatment Programs

- Clinicians caring for people with HIV who are enrolled in opioid treatment programs (OTPs) should refer to the Substance Abuse and Mental Health Service Administration's updated guidance on avoiding treatment interruptions during the COVID-19 pandemic. State methadone agencies also are responsible for regulating OTPs in their jurisdictions and may provide additional guidance.

Guidance for People with HIV in Self-Isolation or Quarantine Due to SARS-CoV-2 Exposure

- Instruct patients to contact their health care providers to report that they are self-isolating or in quarantine.
- Verify that patients have adequate supplies of all medications, and expedite additional drug refills as needed.
- Devise a plan to evaluate patients if they develop COVID-19–related symptoms, including for possible transfer to a health care facility for COVID-19–related care.

Guidance for People with HIV Who Have Signs and Symptoms Consistent with or Documented SARS-CoV-2 Infection

- Clinicians should consult CDC recommendations as well as state and local health department guidance on infection control, triage, and diagnosis of SARS-CoV-2 infection, and the NIH COVID-19 Treatment Guidelines for therapeutic management of non-hospitalized or hospitalized patients with COVID-19.

- Patients should be advised to follow CDC recommendations regarding symptoms of COVID-19 and call their health care providers for medical advice if they develop a fever and symptoms (e.g., cough, dyspnea). New onset or worsening dyspnea warrants in-person evaluation.
- Patients should call their clinic in advance before presenting to the care providers.
- Patients should always use respiratory, hand hygiene, and cough etiquette when presenting to a health care facility, and they should wear a face mask.
- Upon arrival to a health care facility, patients should alert registration staff of their symptoms if they have not called in advance, so that measures can be taken to prevent COVID-19 transmission in the health care setting. Specific clinic actions include placing a mask on the patient and rapidly putting the patient in a room (if available, a negative-pressure room) or other space separated from people.

Guidance for Managing People with HIV and COVID-19

Guidance When Hospitalization Is Not Necessary

- Advise patients to manage symptoms at home with supportive care for symptomatic relief. Patients should maintain close communication with their health care provider and report if symptoms progress (e.g., sustained fever for >2 days, new shortness of breath). Patients and/or caregivers should be aware of warning signs and symptoms that warrant in-person evaluation, such as new dyspnea, chest pain/tightness, confusion, or other mental status changes.
- Non-hospitalized people with HIV who have mild-to-moderate COVID-19 may be eligible to receive one of the following treatment options: ritonavir-boosted nirmatrelvir, sotrovimab, remdesivir (3 days as outpatient), bebtelovimab, or molnupiravir. Priority should be given to those with advanced HIV infection (defined as people with CD4 counts <200 cells/mm3, history of an AIDS-defining illness without immune reconstitution, or clinical manifestations of symptomatic HIV) (AIII).[29]
- People with HIV who are on a ritonavir- or cobicistat-based ARV regimen and are prescribed a 5-day course of ritonavir-boosted nirmatrelvir for the treatment of COVID-19 should continue to take their ARV regimen as prescribed without dosage alteration or interruption.
- Continue ARV regimens and other medications as prescribed.

Guidance When the Person with HIV Is Hospitalized

- ART should be continued. If the ARV drugs are not on the hospital's formulary, administer medications from the patient's home supplies.
- ARV drug substitutions **should be avoided.** If necessary, clinicians may refer to recommendations in the Appendix C: Antiretroviral Medications that Can Be Switched Temporarily Due to Supply Shortage section of the U.S. Department of Health and Human Services (HHS) Guidelines for Caring for Persons with HIV in Disaster Areas.
- If patients are receiving long-acting injectable cabotegravir and rilpivirine as their ARV regimen and are due for their next dose during hospitalization, clinicians should arrange with the patient's hospital provider to continue administration of these medications without interruption. If interruptions cannot be avoided, oral forms of these agents or alternate oral ART should be made available for planned missed doses.

- If patients receive ibalizumab intravenous infusion every 2 weeks as part of their ARV regimen, clinicians should arrange with the patient's hospital provider to continue administration of this medication without interruption.
- If patients are taking an investigational ARV medication as part of their regimen, arrangements should be made with the investigational study team to continue the medication if possible.
- For critically ill patients who require tube feeding, some ARV medications are available in liquid formulations, and some pills may be crushed. The Oral Antiretroviral/HCV DAA Administration[30] provides information on crushing pills and formulating liquid ARV drugs. Additional information also may be available in drug product labels. Clinicians should consult an HIV specialist and/or pharmacist to assess the best way for a patient with a feeding tube to continue an effective ARV regimen.

Guidance Regarding Approved, Investigational, or Off-Label Treatment for COVID-19

- The treatment of COVID-19 in people with HIV is the same as that for people without HIV **(AIII).** The therapeutic management strategies for treating COVID-19 are evolving rapidly; clinicians should consult the NIH COVID-19 Treatment Guidelines for treatment recommendations for COVID-19 based on disease severity.
- For patients with HIV receiving COVID-19 treatment, clinicians must assess the potential for drug interactions between the COVID-19 treatment and the patient's ARV therapy and other medications. Information on potential drug interactions may be found on product labels and in drug interaction resources, clinical trial protocols, or investigator brochures.
- When available, and if indicated, clinicians may consider enrolling patients with HIV in a clinical trial evaluating the safety and efficacy of an experimental treatment for COVID-19. People with HIV should not be excluded from consideration for these trials. *ClinicalTrials.gov* is a useful resource for finding studies investigating potential treatments for COVID-19.

Additional Guidance for HIV Clinicians

- Some Medicaid and Medicare programs, commercial health insurers, and AIDS Drug Assistance Programs (ADAPs) have restrictions that prevent patients from obtaining a 90-day supply of ARV drugs and other medications. During the COVID-19 pandemic, clinicians should ask insurers/programs to waive drug-supply quantity restrictions. ADAPs also should provide patients with a 90-day supply of medications.
- People with HIV may need additional assistance with food, housing, transportation, and childcare during times of crisis and economic fragility. To enhance care engagement and continuity of ARV therapy, clinicians should make every attempt to assess their patients' need for additional social assistance and connect them with resources, including navigator services, when possible.
- During this pandemic, social distancing and isolation may exacerbate mental health and substance use issues for some persons with HIV. Clinicians should assess and address these patients' concerns and arrange additional consultations, preferably virtually, as needed.
- When there is substantial community transmission of SARS-CoV-2 in the area, telehealth options, including telephone or video calls, should be considered for routine visits and to triage visits for patients who are ill.

- Reports indicate that some measures designed to control the spread of COVID-19 may increase the risk of intimate partner violence and/or child abuse, as well as limit the ability of people to distance themselves from abusers or to access external support.[31,32] Health care providers should assess patient safety at each clinical encounter, either in person or via telemedicine, being cognizant of the patient's ability to speak privately.
- During the COVID-19 pandemic, reproductive desires and pregnancy planning should be discussed with all people of childbearing potential. This discussion should include information on what is known and not known about COVID-19 during pregnancy. Pre-pregnancy discussions should be patient centered and should include the option to defer efforts to conceive until after the peak of the pandemic and/or more is known about the effect of COVID-19 during pregnancy. Individuals may be at increased risk of unintended pregnancy when stay-at-home measures are in effect, and continuation or initiation of appropriate contraception should be addressed, including emergency contraception. Based on clinical trial data, use of intrauterine devices and contraceptive implants beyond the expiration date specified on a package insert may be considered.[33] Depot-medroxyprogesterone acetate also may be considered for subcutaneous self-injection.

Special Considerations for Pregnancy, HIV, and COVID-19

COVID-19 and Pregnancy

- Pregnant or recently pregnant individuals are at a higher risk for severe illness and death from COVID-19 than non-pregnant individuals.
- Pregnant individuals with COVID-19 are at a higher risk for more severe infections, ICU admissions, extracorporeal membrane oxygenation, and death than individuals who are not infected with COVID-19.[34,35] COVID-19–associated deaths among pregnant individuals increased when the Delta variant became predominant compared with the pre-Delta variant period.[36]
- In a retrospective analysis from a single institution, the proportion of pregnant women with severe COVID-19 was higher during the period the Delta variant was predominant than during the pre-Delta variant period.[37]
- In a population-based cohort study of pregnant women with COVID-19 in South Africa, mortality was higher among pregnant women with COVID-19 than among pregnant women without COVID-19; maternal tuberculosis, but not HIV coinfection or other comorbidities, was associated with admission for COVID-19.[38]
- Pregnant individuals with severe COVID-19 experience more adverse outcomes—such as venous thromboembolism, increased requirement for cesarean delivery, hypertensive disorders of pregnancy, and preterm birth—than pregnant individuals with COVID-19 who are asymptomatic.
- Given the severity of COVID-19 in pregnant or recently pregnant individuals, **the Panels strongly recommend COVID-19 vaccines for pregnant and lactating individuals, as well as for those planning pregnancy.**
- As in the overall population, a disproportionately high rate of COVID-19 exists among pregnant women of color compared with pregnant White women, and possibly a higher rate of COVID-19 severity among pregnant women of color than among pregnant White women.[39-42]

- Emerging data indicate that COVID-19 diagnosis is associated with an increased risk for stillbirth, with a stronger association during the period the Delta variant was predominant than during the pre-Delta variant period.[43]
- Emergency cesarean delivery and preterm delivery (28–36 weeks gestation) appear to be higher in pregnant individuals with COVID-19 than in pregnant individuals without COVID-19.
- A high rate of ICU admission in neonates exposed to SARS-CoV-2 has been seen; however, this trend is primarily due to complications of prematurity or known exposure, and most neonates do well.[44-46]
- Transmission of SARS-CoV-2 from mother to infant appears to be very uncommon; neonatal infection appears to occur postnatally, in most cases.[46,47]

COVID-19, Pregnancy, and HIV

- Currently, data on pregnancy and maternal outcomes in individuals who have COVID-19 and HIV are limited.
- Pregnant individuals with HIV who have COVID-19 should be clinically managed in the same way as pregnant individuals without HIV who have COVID-19, including when making medical care triage determinations and decisions about vaccination and treatment. COVID-19 treatment and vaccination should not be withheld from pregnant individuals with HIV; see the joint statement by the American College of Obstetricians and Gynecologists and the Society of Maternal Fetal Medicine.
- Pregnant individuals with HIV admitted for COVID-19 should continue their ARV regimen. Clinicians should consult with an HIV expert if any changes in ARV regimens are needed for individuals not virally suppressed.

Children with HIV

Knowledge to date about COVID-19 in children and in children with HIV can be summarized as follows:

- Minimal data exist on COVID-19 among children with HIV infection. One report from South Africa of 159 children with COVID-19 included two children with HIV.[48] Although both children with HIV were hospitalized, only one was symptomatic, and neither died. HIV infection did not seem to contribute to more severe COVID-19.[49] Like the adult population, children and adolescents of color have disproportionately higher rates of COVID-19 and hospitalization.[50]
- Children appear less likely to become severely ill with COVID-19 than adults.[51-54]
- Some subpopulations of children at higher risk for more severe COVID-19 may exist: younger age (younger than 12 months), obesity, underlying pulmonary or cardiac pathology or neurologic disease, and immunocompromising conditions are associated with more severe outcomes.[55-58]
- A multisystem inflammatory syndrome in children (MIS-C) presenting with hyperinflammatory shock, with features of Kawasaki disease and toxic shock syndrome, is associated with SARS-CoV-2. The syndrome usually occurs 2 to 4 weeks or more following infection. More than 6,400 cases have been reported in the United States alone, with more than 50 MIS-C-related deaths as of January 2022. The children have serologic evidence of infection but may not have a

positive nasopharyngeal reverse transcription-polymerase chain reaction test result.[59-61] Children can present with diverse signs and symptoms, including fever and gastrointestinal symptoms; significantly elevated markers of inflammation; and, in severe cases, myocarditis and cardiogenic shock. Children with MIS-C tend to be older (mean age 8–9 years) than in classic Kawasaki disease (peak incidence at age 10 months).[62-65]

- Infants and children with HIV should be current on all immunizations, including influenza and pneumococcal vaccines. For additional information on vaccines, refer to Preventing Vaccine-Preventable Diseases in Children and Adolescents with HIV Infection and Figure 1. Recommended Immunization Schedule for Children with HIV Infection Aged 0 through 18 Years; United States, 2019 in the Guidelines for the Prevention and Treatment of Opportunistic Infections in HIV-Exposed and HIV-Infected Children.
- During the pandemic, guidance for ART management and clinic or laboratory monitoring visits related to HIV care in children with HIV should follow the guidance outlined above (see the General Management Considerations in People with HIV and Clinic or Laboratory Monitoring Visits Related to HIV Care sections).

Recommendations in the Guidance for All People with HIV section above are applicable for children with HIV. Additional considerations include the following:

- Children with HIV who are eligible should receive COVID-19 vaccines, regardless of CD4 count or viral load. Approvals, authorizations, and vaccine dosing differ by age group and vaccine manufacturer. COVID-19 is a rapidly evolving situation, and updates will be posted as new data become available. For expedient updates on COVID-19 vaccine indications and dosing by age group, health care providers should refer to the CDC's Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Approved or Authorized in the United States.
- Remdesivir is FDA approved for the treatment of COVID-19 in children aged ≥12 years and weighing at least 40 kg, and it is available under an FDA EUA for children aged <12 years and weighing ≥3.5 kg.
- Children with HIV and COVID-19 should be managed in the same manner as children who do not have HIV. For more information, health care providers should refer to Special Considerations in Children in the NIH COVID-19 Treatment Guidelines.
- There are limited data on the use of anti-SARS-CoV-2 mAbs in children and youth. Some mAbs are available through FDA EUA for PrEP and post-exposure prophylaxis against COVID-19 in infants and children with HIV. Updated guidance based on variants in circulation should be sought before use. Priority should be given to those with advanced HIV infection and/or those with other underlying conditions that increase risk of severe COVID-19.
- FDA review and CDC guidance on eligibility and indications for anti-SARS-CoV-2 mAbs continue to evolve. Health care providers should refer to the FDA and CDC websites for expedient updates.

More information regarding ARV management in adult, pregnant, and pediatric patients, as well as recommendations for prophylaxis and treatment of specific opportunistic infections, can be found in the Clinical Guidelines for HIV/AIDS.

The CDC provides information about COVID-19 for people with HIV.

This guidance was prepared by the Guidelines Working Groups of the NIH Office of AIDS Research Advisory Council:

- HHS Panel on Antiretroviral Guidelines for Adults and Adolescents
- HHS Panel on Antiretroviral Therapy and Medical Management of Children Living with HIV
- HHS Panel on Treatment of HIV During Pregnancy and Prevention of Perinatal Transmission
- HHS Panel on Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV
- HHS Panel on the Prevention and Treatment of Opportunistic Infections in HIV-Exposed and HIV-Infected Children

Basis for Recommendations

Recommendations in this guidance are based on scientific evidence and expert opinion. Each recommendation statement includes a letter (A, B, or C) that represents the strength of the recommendation and a Roman numeral (I, II, or III) that represents the quality of the evidence that supports the recommendation (see Table 1).

Table 1. Rating Scheme for Recommendations

Strength of Recommendation	Quality of Evidence for Recommendation
A: Strong recommendation for the statement B: Moderate recommendation for the statement C: Optional recommendation for the statement	I: One or more randomized trials with clinical outcomes and/or validated laboratory endpoints II: One or more well-designed, nonrandomized trials or observational cohort studies with long-term clinical outcomes III: Expert opinion

References

1. Byrd KM, Beckwith CG, Garland JM, et al. SARS-CoV-2 and HIV coinfection: clinical experience from Rhode Island, United States. *J Int AIDS Soc*. 2020;23(7):e25573. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32657527.

2. Gervasoni C, Meraviglia P, Riva A, et al. Clinical features and outcomes of patients with human immunodeficiency virus with COVID-19. *Clin Infect Dis*. 2020;71(16):2276-2278. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32407467.

3. Harter G, Spinner CD, Roider J, et al. COVID-19 in people living with human immunodeficiency virus: a case series of 33 patients. *Infection*. 2020;48(5):681-686. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32394344.

4. Karmen-Tuohy S, Carlucci PM, Zervou FN, et al. Outcomes among HIV-positive patients hospitalized with COVID-19. *J Acquir Immune Defic Syndr*. 2020;85(1):6-10. Available at: https://pubmed.ncbi.nlm.nih.gov/32568770.

5. Patel VV, Felsen UR, Fisher M, et al. Clinical outcomes and inflammatory markers by HIV serostatus and viral suppression in a large cohort of patients hospitalized with COVID-19. *J Acquir Immune Defic Syndr*. 2021;86(2):224-230. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33433966.

6. Shalev N, Scherer M, LaSota ED, et al. Clinical characteristics and outcomes in people living with human immunodeficiency virus hospitalized for coronavirus disease 2019. *Clin Infect Dis*. 2020;71(16):2294-2297. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32472138.

7. Sigel K, Swartz T, Golden E, et al. Coronavirus 2019 and people living with human immunodeficiency virus: outcomes for hospitalized patients in New York City. *Clin Infect Dis*. 2020;71(11):2933-2938. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32594164.

8. Stoeckle K, Johnston CD, Jannat-Khah DP, et al. COVID-19 in hospitalized adults with HIV. *Open Forum Infect Dis*. 2020;7(8):ofaa327. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32864388.

9. Vizcarra P, Perez-Elias MJ, Quereda C, et al. Description of COVID-19 in HIV-infected individuals: a single-centre, prospective cohort. *Lancet HIV*. 2020;7(8):e554-e564. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32473657.

10. Park LS, Rentsch CT, Sigel K, et al. COVID-19 in the largest U.S. HIV cohort. Presented at: 23rd International AIDS Conference; 2020. Virtual. Available at: https://www.natap.org/2020/IAC/IAC_115.htm.

11. Bertagnolio S, Thwin SS, Silva R, et al. Clinical characteristics and prognostic factors in people living with HIV hospitalized with COVID-19: findings from the WHO Global Clinical Platform. Presented at: International AIDS Society; 2021. Virtual. Available at: https://theprogramme.ias2021.org/Abstract/Abstract/2498.

12. Dandachi D, Geiger G, Montgomery MW, et al. Characteristics, comorbidities, and outcomes in a multicenter registry of patients with human immunodeficiency virus and coronavirus disease

2019. *Clin Infect Dis*. 2021;73(7):e1964-e1972. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32905581.

13. Sun J, Patel RC, Zheng Q, et al. COVID-19 disease severity among people with HIV infection or solid organ transplant in the United States: a nationally representative, multicenter, observational cohort study. *medRxiv*. 2021. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8328066.

14. Hoffmann C, Casado JL, Harter G, et al. Immune deficiency is a risk factor for severe COVID-19 in people living with HIV. *HIV Med*. 2020;22(5):372-378. Available at: https://pubmed.ncbi.nlm.nih.gov/33368966.

15. Tesoriero JM, Swain CE, Pierce JL. COVID-19 Outcomes among persons living with or without diagnosed HIV infection in New York State. *JAMA Netw Open*. 2021;4(2). Available at: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2775827.

16. Western Cape Department of Health in collaboration with the National Institute for Communicable Diseases South Africa. Risk factors for coronavirus disease 2019 (COVID-19) death in a population cohort study from the Western Cape Province, South Africa. *Clin Infect Dis*. 2021;73(7):e2005-e2015. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32860699.

17. Bhaskaran K, Rentsch CT, MacKenna B, et al. HIV infection and COVID-19 death: a population-based cohort analysis of U.K. primary care data and linked national death registrations within the OpenSAFELY platform. *Lancet HIV*. 2021;8(1):e24-e32. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33316211.

18. Geretti AM, Stockdale AJ, Kelly SH, et al. Outcomes of coronavirus disease 2019 (COVID-19) related hospitalization among people with human immunodeficiency virus (HIV) in the ISARIC World Health Organization (WHO) Clinical Characterization Protocol (U.K.): a prospective observational study. *Clin Infect Dise*. 2021;73(7):e2095-e2106. Available at: https://academic.oup.com/cid/article/73/7/e2095/5937133.

19. The Centers for Disease Control. People at increased risk and other people who need to take extra precautions. 2021. Available at: https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/index.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fneed-extra-precautions%2Fpeople-at-increased-risk.html.

20. Baden LR, El Sahly HM, Essink B, et al. Efficacy and safety of the mRNA-1273 SARS-CoV-2 vaccine. *N Engl J Med*. 2021;384(5):403-416. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33378609.

21. Polack FP, Thomas SJ, Kitchin N, et al. Safety and efficacy of the BNT162b2 mRNA COVID-19 vaccine. *N Engl J Med*. 2020;383(27):2603-2615. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33301246.

22. Sadoff J, Gray G, Vandebosch A, et al. Safety and efficacy of single-dose Ad26.COV2.S vaccine against COVID-19. *N Engl J Med*. 2021;384(23):2187-2201. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33882225.

23. Levy I, Wieder-Finesod A, Litchevsky V, Cohen C, Lustig Y, Rahav G. Immunogenicity and safety of the BNT162b2 mRNA COVID-19 vaccine in people living with HIV-1. *Clin Microbiol and Infect*. 2021;27(12):1851-1855. Available at: https://www.clinicalmicrobiologyandinfection.com/article/S1198-743X(21)00423-7/fulltext.

24. Brumme ZL, Mwimanzi F, Lapointe HR, et al. Humoral immune responses to COVID-19 vaccination in people living with HIV receiving suppressive antiretroviral therapy. *medRxiv*. 2021. Available at: https://pubmed.ncbi.nlm.nih.gov/34671779.

25. Noe S, Ochana N, Wiese C, et al. Humoral response to SARS-CoV-2 vaccines in people living with HIV. *Infection*. 2021. Available at: https://link.springer.com/article/10.1007/s15010-021-01721-7.

26. The American College of Obstetricians and Gynecologists. COVID-19 vaccination considerations for obstetric–gynecologic care. 2020. Available at: https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/12/covid-19-vaccination-considerations-for-obstetric-gynecologic-care?utm_source=redirect&utm_medium=web&utm_campaign=int.

27. Cao B, Wang Y, Wen D, et al. A Trial of lopinavir-ritonavir in adults hospitalized with severe COVID-19. *N Engl J Med*. 2020;382(19):1787-1799. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32187464.

28. Del Amo J, Polo R, Moreno S, et al. Incidence and severity of COVID-19 in HIV-positive persons receiving antiretroviral therapy: a cohort study. *Ann Intern Med*. 2020;173(7):536-541. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32589451.

29. The National Institutes of Health. Coronavirus disease 2019 (COVID-19) treatment guidelines. 2022. Available at: https://www.covid19treatmentguidelines.nih.gov.

30. Oral Antiretroviral/HCV DAA Administration: Information on Crushing and Liquid Drug Formulations [package insert]. Tseng A, Foisy M, Hughes C. 2021. Available at: https://www.hivclinic.ca/main/drugs_extra_files/Crushing%20and%20Liquid%20ARV%20Formulations.pdf.

31. Evans ML, Lindauer M, Farrell ME. A pandemic within a pandemic: intimate partner violence during COVID-19. *N Engl J Med*. 2020;383:2302-2304. Available at: https://www.nejm.org/doi/full/10.1056/NEJMp2024046.

32. Boserup B, McKenney M, Elkbuli A. Alarming trends in U.S. domestic violence during the COVID-19 pandemic. *Am J Emerg Med*. 2020;38(12):P2753-2755. Available at: https://www.ajemjournal.com/article/S0735-6757(20)30307-7/fulltext.

33. Cohen MA, Powell AM, Coleman JS, Keller JM, Livingston A, Anderson JR. Special ambulatory gynecologic considerations in the era of coronavirus disease 2019 (COVID-19) and implications for future practice. *Am J Obstet Gynecol*. 2020;223(3):372-378. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7832936.

34. Villar J, Ariff S, Gunier RB. Maternal and neonatal morbidity and mortality among pregnant women with and without COVID-19 infection: the INTERCOVID multinational cohort study. *JAMA*

Pediatr. 2021;175(8):817-826. Available at: https://jamanetwork.com/journals/jamapediatrics/fullarticle/2779182.

35. Joseph NT, Metz TD. Coronavirus disease 2019 (COVID-19) and pregnancy outcomes: state of the science. *Obstet Gynecol*. 2021;138(4). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8454283.

36. Kasehagen L, Byers P, Taylor K, et al. COVID-19–associated deaths after SARS-CoV-2 Infection during pregnancy: Mississippi, March 1, 2020–October 6, 2021. Centers for Disease Control and Prevention; 2021. Available at: https://www.cdc.gov/mmwr/volumes/70/wr/mm7047e2.htm?s_cid=mm7047e2_w.

37. Seasely AR, Blanchard CT, Arora N, et al. Maternal and perinatal outcomes associated with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) Delta (B.1.617.2) variant. *Obstet Gynecol*. 2021;138(6):842-844. Available at: https://www.ncbi.nlm.nih.gov/pubmed/34592747.

38. Budhram S, Vannevel V, Botha T, et al. Maternal characteristics and pregnancy outcomes of hospitalized pregnant women with SARS-CoV-2 infection in South Africa: an International Network of Obstetric Survey Systems-based cohort study. *Int J Gynaecol Obstet*. 2021;155(3):455-465. Available at: https://www.ncbi.nlm.nih.gov/pubmed/34499750.

39. Sakowicz A, Ayala AE, Ukeje CC, Witting CS, Grobman WA, Miller ES. Risk factors for severe acute respiratory syndrome coronavirus 2 infection in pregnant women. *Am J Obstet Gynecol MFM*. 2020;2(4):100198. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32838274.

40. Flannery DD, Gouma S, Dhudasia MB, et al. SARS-CoV-2 seroprevalence among parturient women in Philadelphia. *Science Immunology*. 2020;5(29):eabd5709. Available at: https://immunology.sciencemag.org/content/5/49/eabd5709.

41. Knight M, Bunch K, Vousden N, et al. Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in U.K.: national population based cohort study. *BMJ*. 2020;369:m2107. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32513659.

42. Zambrano LD, Ellington S, Strid P, et al. Update: characteristics of symptomatic women of reproductive age with laboratory-confirmed SARS-CoV-2 infection by pregnancy status — United States, January 22–October 3, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(44):1641-1647. Available at: https://www.cdc.gov/mmwr/volumes/69/wr/pdfs/mm6944e3-H.pdf.

43. DeSisto CL, Wallace B, Simeone RM, et al. Risk for stillbirth among women with and without COVID-19 at delivery hospitalization: United States, March 2020–September 2021. Centers for Disease Control and Prevention; 2021. Available at: https://www.cdc.gov/mmwr/volumes/70/wr/mm7047e1.htm?s_cid=mm7047e1_w.

44. Jering KS, Claggett BL, Cunningham JW, et al. Clinical characteristics and outcomes of hospitalized women giving birth with and without COVID-19. *JAMA Intern Med*. 2021;181(5):714-717. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33449067.

45. Allotey J, Stallings E, Bonet M, et al. Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: living systematic review and meta-analysis. *BMJ*. 2020;370:m3320. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32873575.

46. Woodworth KR, Olsen EO, Neelam V, et al. Birth and infant outcomes following laboratory-confirmed SARS-CoV-2 infection in pregnancy: SET-NET, 16 jurisdictions, March 29–October 14, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(44):1635-1640. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33151917.

47. Raschetti R, Vivanti AJ, Vauloup-Fellous C, Loi B, Benachi A, De Luca D. Synthesis and systematic review of reported neonatal SARS-CoV-2 infections. *Nat Commun*. 2020;11(1):5164. Available at: https://www.nature.com/articles/s41467-020-18982-9.

48. van der Zalm MM, Lishman J, Verhagen LM, et al. Clinical experience with severe acute respiratory syndrome coronavirus 2-related illness in children: hospital experience in Cape Town, South Africa. *Clin Infect Dis*. 2020;ciaa1666. Available at: https://pubmed.ncbi.nlm.nih.gov/33170927.

49. Marais BJ. COVID-19 disease spectrum in children: first insights from Africa. *Clin Infect Dis*. 2020;ciaa1731. Available at: https://doi.org/10.1093/cid/ciaa1731.

50. Kim L, Whitaker M, O'Halloran A, et al. Hospitalization rates and characteristics of children aged <18 years hospitalized with laboratory-confirmed COVID-19: COVID-NET, 14 states, March 1–July 25, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(32):1081-1088. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32790664.

51. Cruz A, Zeichner S. COVID-19 in children: initial characterization of pediatric disease. *Pediatrics*. 2020;145(6):e20200834. Available at: https://pubmed.ncbi.nlm.nih.gov/32179659.

52. Dong Y, Mo X, Hu Y, et al. Epidemiology of COVID-19 among children in China. *Pediatrics*. 2020;145(6):e20200702. Available at: https://pubmed.ncbi.nlm.nih.gov/32179660.

53. Shen K, Yang Y, Wang T, et al. Diagnosis, treatment, and prevention of 2019 novel coronavirus infection in children: experts' consensus statement. *World J Pediatr*. 2020;16(3):223-231. Available at: https://pubmed.ncbi.nlm.nih.gov/32034659.

54. Liguoro I, Pilotto C, Bonanni M, et al. SARS-COV-2 infection in children and newborns: a systematic review. *Eur J Pediatr*. 2020;179(7):1029-1046. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32424745.

55. Ogimi C, Englund JA, Bradford MC, Qin X, Boeckh M, Waghmare A. Characteristics and outcomes of coronavirus infection in children: the role of viral factors and an immunocompromised state. *J Pediatric Infect Dis Soc*. 2019;8(1):21-28. Available at: https://www.ncbi.nlm.nih.gov/pubmed/29447395.

56. Kompaniyets L, Agathis NT, Nelson JM. Underlying medical conditions associated with severe COVID-19 illness among children. *JAMA Netw Open*. 2021;4(6). Available at: https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2780706.

57. Shi Q, Wang Z, Liu J, et al. Risk factors for poor prognosis in children and adolescents with COVID-19: a systematic review and meta-analysis. *EClinicalMedicine*. 2021;41:101155. Available at: https://www.ncbi.nlm.nih.gov/pubmed/34693233.

58. Connelly JA, Chong H, Esbenshade AJ, et al. Impact of COVID-19 on pediatric immunocompromised patients. *Pediatr Clin North Am*. 2021;68(5):1029-1054. Available at: https://www.ncbi.nlm.nih.gov/pubmed/34538297.

59. Godfred-Cato S, Bryant B, Leung J. COVID-19–associated multisystem inflammatory syndrome in children: United States, March–July 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(32):1074-1080. Available at: https://www.cdc.gov/mmwr/volumes/69/wr/mm6932e2.htm.

60. Davies P, Evans C, Kanthimathinathan HK, et al. Intensive care admissions of children with paediatric inflammatory multisystem syndrome temporally associated with SARS-CoV-2 (PIMS-S) in the U.K.: a multicentre observational study. *Lancet Child Adolesc Health*. 2020;4:669-677. Available at: https://www.thelancet.com/pdfs/journals/lanchi/PIIS2352-4642(20)30215-7.pdf.

61. Webb K, Abraham DR, Faleye A, McCulloch M, Rabie H, Scott C. Multisystem inflammatory syndrome in children in South Africa. *Lancet Child Adolesc Health*. 2020;4(10):e38. Available at: https://pubmed.ncbi.nlm.nih.gov/32835654.

62. Shulman ST. Pediatric Coronavirus disease-2019–associated multisystem inflammatory syndrome. *J Pediatric Infect Dis Soc*. 2020;9(3):285-286. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32441751.

63. Rogo T, Mathur K, Purswani M. Systemic inflammation with cardiac involvement in pediatric patients with evidence of COVID-19 in a community hospital in the Bronx, New York. *J Pediatric Infect Dis Soc*. 2020;9(4):502-503. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7454706.

64. Sharma C, Ganigara M, Galeotti C, et al. Multisystem inflammatory syndrome in children and Kawasaki disease: a critical comparison. *Nat Rev Rheumatol*. 2021;17(12):731-748. Available at: https://www.ncbi.nlm.nih.gov/pubmed/34716418.

65. Aronoff SC, Hall A, Del Vecchio MT. The natural history of severe acute respiratory syndrome coronavirus 2–related multisystem inflammatory syndrome in children: a systematic review. *J Pediatric Infect Dis Soc*. 2020;9(6):746-751. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32924059.