



Prevention and Management of Hepatitis B Virus Infection in Adults With HIV

August 2022

Table 4: Available Medications for Treatment of HBV Infection in Adults With HIV

Medication	Clinical Comment
Tenofovir disoproxil fumarate (TDF)	<ul style="list-style-type: none"> • A prodrug of the NRTI tenofovir active against HIV and HBV, including 3TC-resistant HBV • A preferred agent for chronic HBV treatment because of its high virologic efficacy and low risk of HBV resistance [Terrault, et al. 2018] • Potential association with renal impairment and loss of bone density [McComsey, et al. 2011; Gupta 2008] • Initiate only in patients with CrCl \geq50 mL/min.
Tenofovir alafenamide (TAF)	<ul style="list-style-type: none"> • A prodrug of the NRTI tenofovir active against HIV and HBV that achieves higher intracellular concentrations in peripheral blood mononuclear cells and hepatocytes than TDF [Agarwal, et al. 2018] • Improved biomarkers for renal and bone safety compared with TDF while maintaining high rates of HIV and HBV viral suppression [Lampertico, et al. 2020; Gallant, et al. 2016; Callebaut, et al. 2015] • In HIV/HBV coinfection, switching from a TDF- to a TAF-containing regimen demonstrated similarly high levels of HBV virologic control [Gallant, et al. 2016]. • Initiate only in patients with CrCl \geq30 mL/min.
Lamivudine (3TC)	<ul style="list-style-type: none"> • An HBV reverse transcriptase inhibitor and HIV NRTI active against HIV and HBV • Has a low genetic barrier to HIV and HBV resistance and should not be used as the sole anti-HBV drug in an ART regimen. Studies found the rate of HBV resistance reached 90% after 4 years of 3TC monotherapy [Benhamou, et al. 1999]. Avoid 3TC monotherapy.
Emtricitabine (FTC)	<ul style="list-style-type: none"> • An NRTI similar to 3TC and active against HIV and HBV • 3TC-resistant isolates are also cross-resistant to FTC [Gallant 2006]. • Do not use as the sole anti-HBV drug in an ART regimen.
Entecavir (ETV)	<ul style="list-style-type: none"> • An NRTI active against HIV and HBV • May select for 3TC- and FTC-resistant HIV • ETV monotherapy for HBV is not recommended in patients with HIV unless combined with a fully active ART regimen to treat HIV.
Interferon (IFN)	<ul style="list-style-type: none"> • IFN alfa-2a or -2b or PEG-IFN alfa-2a is used as HBV treatment in patients with HBV mono-infection. • Contraindicated in patients with decompensated liver disease (Child-Turcotte-Pugh class B or C) • PEG-IFN alfa-2a monotherapy for up to 48 weeks may be considered for HBV treatment in patients with HIV/HBV coinfection if concurrent ART active against HIV and HBV is not possible. • PEG-IFN alfa-2a is not associated with HBV drug resistance [DHHS 2022].

Abbreviations: ART, antiretroviral therapy; CrCl, creatinine clearance; HBV, hepatitis B virus; NRTI, nucleoside/nucleotide reverse transcriptase inhibitor; PEG-IFN, pegylated interferon.

References

- Agarwal K, Brunetto M, Seto WK, et al. 96 weeks treatment of tenofovir alafenamide vs. tenofovir disoproxil fumarate for hepatitis B virus infection. *J Hepatol* 2018;68(4):672-81. [PMID: 29756595] <https://pubmed.ncbi.nlm.nih.gov/29756595>
- Benhamou Y, Bochet M, Thibault V, et al. Long-term incidence of hepatitis B virus resistance to lamivudine in human immunodeficiency virus-infected patients. *Hepatology* 1999;30(5):1302-6. [PMID: 10534354] <https://pubmed.ncbi.nlm.nih.gov/10534354>
- Callebaut C, Stepan G, Tian Y, et al. In vitro virology profile of tenofovir alafenamide, a novel oral prodrug of tenofovir with improved antiviral activity compared to that of tenofovir disoproxil fumarate. *Antimicrob Agents Chemother* 2015;59(10):5909-16. [PMID: 26149992] <https://pubmed.ncbi.nlm.nih.gov/26149992>
- DHHS. Guidelines for the prevention and treatment of opportunistic infections in adults and adolescents with HIV. 2022 Nov 13. <https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-opportunistic-infection/hepatitis-b-virus-infection?view=full> [accessed 2021 Apr 16]
- Gallant J. The M184V mutation: what it does, how to prevent it, and what to do with it when it's there. *AIDS Read* 2006;16(10):556-9. [PMID: 17096474] <https://pubmed.ncbi.nlm.nih.gov/17096474>
- Gallant J, Brunetta J, Crofoot G, et al. Brief report: efficacy and safety of switching to a single-tablet regimen of elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide in HIV-1/hepatitis B-coinfected adults. *J Acquir Immune Defic Syndr* 2016;73(3):294-98. [PMID: 27171740] <https://pubmed.ncbi.nlm.nih.gov/27171740>
- Gupta SK. Tenofovir-associated Fanconi syndrome: review of the FDA adverse event reporting system. *AIDS Patient Care STDS* 2008;22(2):99-103. [PMID: 18260800] <https://pubmed.ncbi.nlm.nih.gov/18260800>
- Lampertico P, Buti M, Fung S, et al. Switching from tenofovir disoproxil fumarate to tenofovir alafenamide in virologically suppressed patients with chronic hepatitis B: a randomised, double-blind, phase 3, multicentre non-inferiority study. *Lancet Gastroenterol Hepatol* 2020;5(5):441-53. [PMID: 32087795] <https://pubmed.ncbi.nlm.nih.gov/32087795>
- McComsey GA, Kitch D, Daar ES, et al. Bone mineral density and fractures in antiretroviral-naïve persons randomized to receive abacavir-lamivudine or tenofovir disoproxil fumarate-emtricitabine along with efavirenz or atazanavir-ritonavir: AIDS Clinical Trials Group A5224s, a substudy of ACTG A5202. *J Infect Dis* 2011;203(12):1791-1801. [PMID: 21606537] <https://pubmed.ncbi.nlm.nih.gov/21606537>
- Terrault NA, Lok AS, McMahon BJ, et al. Update on prevention, diagnosis, and treatment of chronic hepatitis B: AASLD 2018 hepatitis B guidance. *Hepatology* 2018;67(4):1560-99. [PMID: 29405329] <https://pubmed.ncbi.nlm.nih.gov/29405329>