

Tenofovir DF-Emtricitabine (*Truvada*)

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Drug Summary

In the past decade, tenofovir disoproxil fumarate (DF)-emtricitabine has been the principal nucleoside reverse transcriptase inhibitor (NRTI) backbone for initial and salvage antiretroviral regimens; it is also the NRTI backbone component of three single-tablet regimens: efavirenz-tenofovir DF-emtricitabine, rilpivirine-tenofovir DF-emtricitabine, and elvitegravir-cobicistat-tenofovir DF-emtricitabine. Tenofovir DF-emtricitabine can also be used as the NRTI backbone for the treatment of chronic hepatitis B virus infection in persons coinfecting with HIV and is recommended in most postexposure prophylaxis (PEP) regimens. It is also the first and only FDA-approved medication for HIV preexposure prophylaxis (PrEP). Tenofovir DF-emtricitabine is generally well tolerated, has few drug interactions, and has a more favorable lipid profile than other NRTIs. On the negative side, long-term use of tenofovir DF may cause renal adverse effects and greater bone mineral density loss than other antiretroviral agents. For these reasons, use of tenofovir DF-emtricitabine has declined in the United States following the availability of tenofovir alafenamide-emtricitabine, a medication with similar virologic efficacy but less potential to cause long-term adverse renal and bone effects. The dosage of both tenofovir DF and emtricitabine must be adjusted in the setting of impaired renal function.

Key Clinical Trials

Tenofovir DF-emtricitabine has been a part of numerous studies for treatment-naïve and treatment-experienced persons. In a trial that randomized participants to abacavir-lamivudine or tenofovir DF-emtricitabine, combined with efavirenz or ritonavir-boosted atazanavir, use of tenofovir DF-emtricitabine resulted in fewer virologic failures in the subset of participants with baseline HIV RNA greater than 100,000 copies/mL [[ACTG 5202](#)]. Tenofovir DF-emtricitabine has been studied for treatment-naïve individuals as a part of combination therapy with anchor drugs from multiple classes; it has proven effective when combined with dolutegravir [[SPRING-2](#)], elvitegravir-cobicistat [[Study 102](#)] and [[Study 103](#)], raltegravir [[STARTMRK](#)], boosted darunavir [[ARTEMIS](#)], efavirenz [[GS-934](#)], and rilpivirine [[ECHO](#)]. Tenofovir DF-emtricitabine has also shown to be effective in several preexposure prophylaxis trials, including those with serodifferent heterosexual couples [[Partners PrEP](#)] and men who have sex with men and transgender women [[iPrEx](#)].

Adverse Effects

The emtricitabine component of tenofovir DF-emtricitabine infrequently causes significant short-term or long-term adverse effects. Hyperpigmentation of the palms and soles has been reported with emtricitabine and the risk is higher in persons with darker pigmented skin. The primary adverse effects that occur with tenofovir DF-emtricitabine result from the tenofovir DF component and include a renal proximal tubule wasting syndrome and a reduction in bone mineral density. Other NRTIs do not cause similar nephrotoxicity or as much bone mineral density loss. More general side effects may include fatigue, malaise, nausea, diarrhea, and rash. Tenofovir DF has a mild lipid-lowering effect, though the clinical significance of this is not known..

Use In Pregnancy

In the HHS Perinatal Guidelines section Recommendations for Use of Antiretroviral Drugs During Pregnancy (last updated October 19, 2017), **tenofovir DF-emtricitabine** is designated as a Preferred Two-NRTI Backbone in the category Preferred Initial Regimens in Pregnancy.

- For additional information regarding the safety and toxicity of tenofovir DF and emtricitabine in pregnancy see the HHS Perinatal Guidelines summaries on [Tenofovir DF](#) and [Emtricitabine](#).
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Resistance

For a listing of the most common clinically significant mutations associated with tenofovir df-emtricitabine (TDF-FTC, Tenofovir disoproxil fumarate-Emtricitabine) resistance, see the [NRTI Resistance Notes on the Stanford University HIV Drug Resistance Database](#).

Key Drug Interactions

For complete information on tenofovir df-emtricitabine-related drug interactions, see the [Drug Interactions section in the Tenofovir DF-Emtricitabine \(Truvada\) Prescribing Information](#).

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<https://www.hiv.uw.edu/page/treatment/drugs/tenofovir-disoproxil-fumarate-emtricitabine>