STEPS
New Drug Reviews

Emtricitabine/Tenofovir (Truvada) for HIV Prophylaxis

BARRY COUTINHO, MBBS, and RAMAKRISHNA PRASAD, MD, MPH, *University of Pittsburgh Medical Center Shadyside Family Medicine Residency Program, Pittsburgh, Pennsylvania*

STEPS new drug reviews cover Safety, Tolerability, Effectiveness, Price, and Simplicity. Each independent review is provided by authors who have no financial association with the drug manufacturer.

The series coordinator for *AFP* is Allen F. Shaughnessy, PharmD, Tufts University Family Medicine Residency Program at Cambridge Health Alliance, Malden, Mass.

A collection of STEPS published in *AFP* is available at http://www.aafp.org/afp/steps.

Emtricitabine/tenofovir (Truvada) is a fixed-dose combination of emtricitabine (200 mg) and tenofovir (300 mg) that was initially approved to treat human immunodeficiency virus, type 1 (HIV-1) infection. It is now labeled for use as preexposure prophylaxis to prevent HIV-1 infection in high-risk patients.[1]

Drug	*Dosage*	*Dose form*	*Cost**
Emtricitabine/tenofovir (Truvada)	One tablet daily	Tablet containing emtricitabine (200 mg) and tenofovir (300 mg)	$1,258

**—Estimated retail price of one month's treatment based on information obtained at http://www.lowestmed.com (accessed June 27, 2013).*

SAFETY

Few severe adverse effects were associated with the use of emtricitabine/tenofovir in studies of preexposure prophylaxis.[2-4] The drug must not be prescribed if the patient's creatinine clearance is less than 60 mL per minute per 1.73 m^2 (1.00 mL per second per m^2) because its use has been associated with renal failure and Fanconi syndrome.[5] Although rare and not reported in premarketing studies, lactic acidosis and severe hepatomegaly with steatosis are possible in patients at risk of liver disease, according to the drug's manufacturer.[5] Because both emtricitabine and tenofovir are active against hepatitis B virus, and because of the risk of rebound hepatitis following discontinuation of therapy, this combination should be used with caution in patients coinfected with hepatitis B virus.[5] No major drug-drug interactions have been reported with commonly prescribed medications. However, the manufacturer recommends caution with coadministration of potentially nephrotoxic medications. Emtricitabine/tenofovir is a U.S. Food and Drug Administration pregnancy category B drug, and should not be given to mothers who are breastfeeding.[5] The use of emtricitabine/tenofovir as preexposure prophylaxis is not known to increase high-risk behaviors.[6]

TOLERABILITY

Emtricitabine/tenofovir is generally well tolerated. When it is used for preexposure prophylaxis in persons without HIV infection, headache, nausea, vomiting, abdominal pain, and weight loss may occur infrequently.[2-4] Nausea and vomiting affect about one in six patients at the start of treatment, but these effects often subside within the first month.[3]

EFFECTIVENESS

Based on studies conducted primarily outside the United States,[2-5] emtricitabine/tenofovir has been shown to reduce the risk of acquiring HIV infection in several subgroups of patients when used daily in combination with a comprehensive HIV prevention strategy, including safer sex practices.[2-4] Among high-risk men who have sex with men, emtricitabine/tenofovir reduced the absolute risk of acquiring HIV infection from 5.3% to 2.9% (number needed to treat [NNT] = 43 over a median 12 months of treatment; 95% confidence interval [CI], 25 to 134).[3] Among heterosexual men and women in high-prevalence regions of Botswana, it reduced ▶

the absolute risk of infection from 4.3% to 1.6% (NNT = 38; 95% CI, 21 to 135; median follow-up = 1.1 years).[2] Among heterosexual couples in Kenya in which one partner was HIV positive and the other was HIV negative, the risk decreased from 3.3% to 1.1% (NNT = 44; 95% CI, 29 to 85; median follow-up = 1.9 years).[4] Effectiveness depends on adherence to daily administration.[1,3]

Emtricitabine/tenofovir will not prevent other sexually transmitted diseases.

PRICE

A one-month supply of emtricitabine/tenofovir for preexposure prophylaxis costs approximately $1,258.[7] Only some insurance plans currently provide coverage for use of emtricitabine/tenofovir as preexposure prophylaxis.

SIMPLICITY

Although emtricitabine/tenofovir requires only a single daily dose, strict adherence is essential. It may be taken without regard to mealtimes. Because of the risk of developing drug resistance, all patients must be confirmed HIV negative before initiation of treatment. In persons with signs or symptoms of acute HIV-1 infection or those reporting potential exposure to HIV within the previous month, HIV infection should be ruled out by repeat testing before starting prophylaxis. Once a patient begins taking the medication, repeat screening for HIV infection, risk-behavior assessment, and counseling must occur every two to three months, and adherence must be assessed at every visit with a physician. Screening for sexually transmitted infections should be performed at least every six months. Renal function must be checked three months after initiation of therapy, and at least annually thereafter.[1]

Bottom Line

When used with a comprehensive HIV prevention strategy, emtricitabine/tenofovir effectively prevents HIV-1 infection in high-risk patients. Adherence to daily dosing is important to maintain protection. The cost of therapy may limit access, and not all insurance companies currently cover its use for HIV prophylaxis.

Address correspondence to Barry Coutinho, MBBS, at coutinhobv@upmc.edu. Reprints are not available from the authors.

Author disclosure: No relevant financial affiliations.

REFERENCES

1. Centers for Disease Control and Prevention (CDC). Interim guidance for clinicians considering the use of preexposure prophylaxis for the prevention of HIV infection in heterosexually active adults. *MMWR Morb Mortal Wkly Rep.* 2012;61(31):586-589.
2. Thigpen MC, Kebaabetswe PM, Paxton LA, et al.; TDF2 Study Group. Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana. *N Engl J Med.* 2012;367(5):423-434.
3. Grant RM, Lama JR, Anderson PL, et al.; iPrEx Study Team. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *N Engl J Med.* 2010; 363(27):2587-2599.
4. Baeten JM, Donnell D, Ndase P, et al.; Partners PrEP Study Team. Antiretroviral prophylaxis for HIV prevention in heterosexual men and women. *N Engl J Med.* 2012;367(5):399-410.
5. Highlights of prescribing information. Truvada (emtricitabine/tenofovir disoproxil fumarate) tablets for oral use. Foster City, Calif.: Gilead Sciences, Inc. Revised June 2013. http://www.gilead.com/pdf/truvada_pi.pdf. Accessed June 28, 2013.
6. Liu AY, Vittinghoff E, Chillag K, et al. Sexual risk behavior among HIV-uninfected men who have sex with men (MSM) participating in a tenofovir pre-exposure prophylaxis (PrEP) randomized trial in the United States [published ahead of print March 11, 2013]. *J Acquir Immune Defic Syndr.* http://journals.lww.com/jaids/Abstract/publishahead/Sexual_risk_behavior_among_HIV_uninfected_men_who.98249.aspx (subscription required). Accessed August 1, 2013.
7. Lowestmed.com. http://www.lowestmed.com. Accessed June 27, 2013. ■