Large Review of Tenofovir Studies Finds Modest Impact on Kidneys

August 16, 2010

An analysis of 17 studies, involving nearly 11,000 patients, found that while tenofovir (found in Viread, Truvada and Atripla) can negatively impact kidney function, the long-term clinical impact is quite modest. This analysis was published in the September 1 issue of the journal *Clinical Infectious Diseases*.

A number of studies have found that tenofovir can reduce kidney function, with some individual case reports describing severe kidney disease. Tenofovir can damage the energy-producing mitochondria of kidney tubules, ultimately preventing the organs' abilities to filter waste. This can lead to serious health problems if not remedied.

Unfortunately, the various studies exploring the incidence and prevalence of kidney damage among tenofovir users have not been consistent in their methods or results. In turn, it has been difficult to determine the actual risk of kidney toxicity among people starting the drug. Moreover, because current U.S. Food and Drug Administration (FDA) labeling for tenofovir suggests regular monitoring of kidney function, researchers have been concerned about rolling-out the drug in resource poor countries where regular kidney function tests aren't feasible.

To better characterize the risk of kidney problems in tenofovir takers, Ryan Cooper, MD, MPH—from the University of Alberta, in Edmonton, Canada—and his colleagues, conducted a search of seven clinical databases for studies that included tenofovir. In all, Cooper's team selected 17 studies, with 10,889 participants, to review.

Nine of the studies were controlled trials, where people were randomized to receive tenofovir or another drug. Seven studies were observational, meaning that researchers simply recorded the medical status of people who took tenofovir in real-world settings. One study was from an registry that recorded side effects in people with HIV. The number of people in the studies varied from 49 to more than 3,000, but the median was 519.

All of the studies measured the glomerular filtration rate (GFR), the gold-standard kidney function test. However, 11 studies measured it using one method (Cockcroft-Gault calculation of creatinine clearance [CG-GFR]), whereas the remaining six measured GFR by another method (modification of diet in renal disease calculation [MDRD-GFR]). In more severe cases of kidney dysfunction, both methods are roughly equal. For people with milder forms of kidney dysfunction, CG-GFR tens to

identify more cases than MDRD-GFR.

Cooper's study found that people on tenofovir had significantly reduced CG-CFR compared with people on other regimens. There was a trend toward decreased MDRD-GFR as well, though the result was not statistically significant, meaning that it could have occurred by chance.

These reductions in kidney function were not associated with kidney failure or end-stage kidney disease, however, nor were they associated with loss of bone density—another tenofovir side effect that researchers have reported. Cooper's team hypothesized that their study might have differed in this regard from other studies, because the population they studied was generally younger, had less advanced HIV disease upon starting tenofovir, and was less likely to combine tenofovir with a Norvir (ritonavir)-boosted protease inhibitor.

"Although our review identified a statistically significant loss of renal function associated with TDF use, the clinical magnitude of this effect was modest," concluded the authors, "Our findings do not support the need to restrict tenofovir use in jurisdictions where regular monitoring of [kidney] function…is difficult or impractical."

© 2026 Smart + Strong All Rights Reserved.
http://beta.docker.poz.com/article/hiv-tenofovir-kidney-18959-1654