Drug Resistance Testing Is Effective Even With Low Virus Levels

March 30, 2010

Testing for HIV drug resistance in people taking antiretroviral (ARV) treatment is both effective and useful even when a person's viral load is low, according to a study published online March 29 in *The Journal of Infectious Diseases*.

It is standard practice for HIV care providers to test a person for drug resistance when ARV therapy either fails to reduce virus fully or when virus levels return after being undetectable. Unfortunately, genotypic HIV resistance tests have proved to be less accurate when a person's viral load is less than 1,000 copies. This makes it difficult to determine which drugs a person ought to switch to if his or her viral load is low.

It is possible for resistance testing labs to tweak the standard tests so that they are better able to detect resistant virus in people with low virus levels. Data indicate this practice is occurring more frequently now than in the past. It is not a standardized practice, however, given a paucity of research indicating whether modified genotypic testing is sensitive enough to yield conclusive results.

Hoping to answer this question, a team in London led by Nicola Mackie, MD, from the Imperial College Healthcare National Health Service Trust, examined the results of 7,861 HIV resistance tests—1,001 of which involved samples with viral loads below 1,000 copies—collected from 3,791 people.

Several major resistance mutations, including those conferring high-level resistance to protease inhibitors, non-nucleoside analogues and some of the nucleoside analogues, were as likely to be detected at viral loads below 1,000 copies as they were to be detected at viral loads above this level. Though there was a higher frequency of mutations conferring resistance to the thymidine family of nucleoside analogues—zidovudine (found in Retrovir, Combivir and Trizivir) and stavudine (found in Zerit)—at viral loads higher than 1,000, Mackie's group said this should be expected, given that thymidine analogue mutations tend to accumulate with prolonged treatment failure.

"Although data do not yet exist regarding the utility of HIV-1 genotyping at low viral load in terms of clinical outcomes, guidelines exist that recommend prompt switching among patients with detectable viremia," the authors write. "The use of HIV-1 genotypic resistance testing among

patients with low viral loads may be helpful in clinical practice to allow a timely and optimized therapeutic change and may improve outcomes.”
