

Genotypic and Phenotypic Resistance Tests: Update

Douglas G. Fish, M.D., Albany Medical College, Albany, New York, EE.UU.

Resistance testing for HIV infection continues to evolve and expand in its role to assist in the design of treatment regimens for our patients. Drug resistance is becoming an increasing problem as antiretroviral drugs undergo more widespread usage. The principal causes of treatment failure will be reviewed.

Genotypic resistance testing measures the major mutations a patient's virus has acquired, and is an indirect measure of antiretroviral resistance. Phenotypic resistance testing measures the fold change in susceptibility, and is a direct measure of antiviral resistance. Resistance is not an all-or-none phenomenon, but rather a measure of the decreased susceptibility of a patient's virus to a given drug. Similarly, enhanced susceptibility, known as hypersusceptibility, can be detected by phenotypic testing. The definition and role of the *Virtual Phenotype*TM will also be presented. The strengths and weaknesses of these tools will be reviewed, and sample reports shown.

A number of clinical studies have been done to try to validate resistance testing, with generally favorable results. Several of these studies will be presented. Other factors, such as viral fitness and levels of antiretroviral drugs in the blood, play an important role in the success or failure of a therapeutic regimen.

How are these resistance assays best applied in clinical practice? Which patients might benefit, and are they cost-effective? Various national and international committees and expert panels have developed guidelines to assist clinicians in usage of resistance testing in the management of their HIV-infected patients. These tools are gaining a strong foothold in therapeutic strategies, and will likely become increasingly user-friendly and hopefully, increasingly cost-effective, over time.