THE FUTURE OF HIV TREATMENT

Roy M. Gulick, MD, MPH
Rochelle Belfer Professor in Medicine
Chief, Division of Infectious Diseases
Weill Cornell Medicine, New York City, USA

Currently, there are 31 antiretroviral drugs approved for the treatment of HIV infection in 6 broad mechanistic classes. ART guidelines worldwide recommend an initial 3-drug treatment regimen consisting of a combination of 2 nucleoside analogue reverse transcriptase inhibitors (NRTIs) and a third drug, either a non-nucleoside reverse transcriptase inhibitor (NNRTI), a boosted protease inhibitor (PI), or increasingly, an integrase inhibitor (II). Current ART regimens are highly potent, safe, tolerable, and convenient. Current virologic suppression rates can exceed 90% in clinical trials and cohort studies and one pill, once-daily regimens are widely available. Newer strategies, formulations, and investigational antiretroviral agents continue to move HIV treatment forward.

Although a 3-drug ART regimen is standard, newer potent 2-drug regimens demonstrate efficacy and safety in clinical studies. Long-acting antiretroviral compounds are under study, including an injectable investigational formulation of the approved NNRTI, rilpivirine, and an investigational integrase inhibitor, cabotegravir, that can be dosed together monthly or less frequently. Other investigational formulations of current drugs include implantable devices that provide sustained drug release, and other newer technologies. The investigational antiretroviral pipeline contains new agents in existing classes (NRTI, NNRTI, PI, II) and some of these have longer half-lives (e.g. MK-8591) or are associated with less toxicity (e.g. doravirine) than current drugs. Three newer mechanistic antiretroviral classes are the CD4 attachment inhibitors, including both small molecules (e.g. fostemsavir) and monoclonal antibodies, the HIV maturation inhibitors, and the HIV capsid inhibitors and candidate drugs in each class are in development.

We currently can control HIV infection long-term with potent, safe, and convenient antiretroviral treatment that leads to prolonged healthy survival in our patients -- further innovations are anticipated.