Quest 4th GEN HIV1/2 Algorithm

The algorithm begins with a "fourth-generation" combination assay that detects HIV p24 antigen in addition to HIV antibodies. Because HIV p24 antigen is detectable before seroconversion, fourth-generation assays can detect HIV-1 during acute infection; the inclusion of HIV-1 and HIV-2 antibodies allows detection after seroconversion, when p24 antigen becomes undetectable. Fourth-generation assays have >99.7% sensitivity and >99.3% specificity for HIV infection and can identify most (>80%) acute infections that would otherwise require nucleic acid testing for detection.6,7 In general, they can detect infection 0 to 20 days (median, 5-7 days) before third-generation immunoassays.5,8,9

Repeatedly reactive results on fourth-generation screening tests require confirmation with a supplemental test, such as an HIV-1/HIV-2 antibody differentiation assay. Differentiation between HIV-1 and HIV-2 antibodies can have treatment implications, as HIV-2 does not respond to some antiretroviral agents. Differentiation tests also tend to detect antibodies earlier than Western blots.10 But like Western blots, HIV-1/HIV-2 antibody differentiation tests do not detect acute infection. HIV RNA testing is thus needed to resolve infection status in patients with positive results on the fourth-generation assay but negative results on the antibody differentiation test.

