

Compiled by Dr. A. Glass - December 2010

Introduction

HIV-1/2 is diagnosed either by detecting HIV-specific antibodies or the virus itself. In individuals >18 months old the detection of HIV-specific antibodies remains the recommended method for routine diagnosis.

Antibody Detection

- 4th generation HIV-1/2 ELISA
Detects HIV-specific antibodies and p24 antigen (a component of the virus) simultaneously
Window period: \pm 18 days
- 3rd generation HIV-1/2 ELISA
Detects HIV-specific antibodies
Window period: \pm 24 days
- Rapid HIV-1/2
Detects HIV-specific antibodies
There are many different rapid tests available. Only those with high sensitivity and specificity, and FDA/CE marking should be used.
Window period: \pm 24-28 days

According to WHO guidelines, all positive HIV results should be confirmed with:

- A second test on the same specimen.
- Repeat testing on a second specimen.

Although the ELISA has a sensitivity of close to 100% and specificity of \pm 99.6%, the serious nature of HIV warrants confirmatory testing.

p24 Antigen Detection

The p24 antigen is detectable from approximately 2 weeks after infection. During the seroconversion phase it is detected in the majority of patients. However, when high levels of HIV-specific antibodies develop, the p24 antigen usually becomes undetectable. A negative p24 result does not exclude HIV infection. Specific p24 antigen testing may be used to detect an acute infection, but should

not be used for routine diagnosis.

HIV-1 DNA PCR

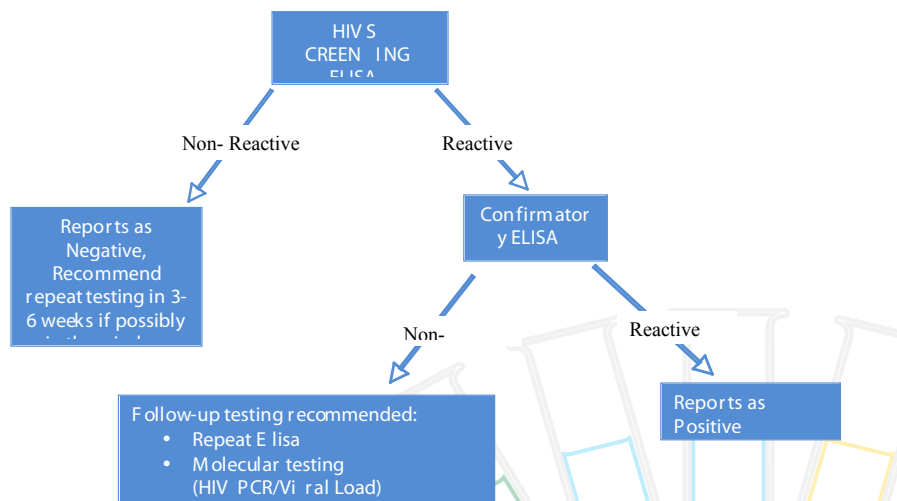
The HIV-1 DNA PCR detects the HIV genome that has integrated into the CD4+ cells. It provides a qualitative result (positive/negative). The HIV-1 DNA is detectable from approximately 2 weeks after infection. It is more expensive than the HIV ELISA and only detects HIV-1, but it can be used to detect acute infection or to resolve discrepant ELISA results.

HIV-1 Viral Load

The HIV-1 viral load quantifies the amount of viral RNA in plasma. It should not be used for diagnosis of HIV infection for the following reasons:

- The HIV-1 viral load only detects HIV-1.
- An undetectable HIV-1 viral load does not mean that the patient is HIV negative.
- Due to the nature of the test, a low level viral load is not considered to be diagnostic of HIV infection.

Viral RNA can be detected in the plasma as early as 11 days after infection. In cases where acute seroconversion is suspected, an HIV-1 viral load of >10 000 copies/ml is considered diagnostic of HIV infection.



Note: The HIV-1/2 ELISA and rapid tests detect HIV-1 and HIV-2. The HIV-1 DNA PCR and the HIV-1 viral load only detect HIV-1. If infection with HIV-2 is suspected, an HIV-2 PCR or Western blot can be done.

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