Multi-Test Strategies for the Determination of HIV Serostatus without the Use of Western Immunoblotting

Abstract Category:	Laboratory-based Algorithms Using Combinations of Screening Assays
Primary Author:	Jane Feldman
Affiliation:	Centers for Disease Control and Prevention, Atlanta, GA
Co-Authors:	S. Wells, T. Granade, M. Owen

OBJECTIVE

To determine the effectiveness of a combination of serological tests to determine HIV serostatus without the use of Western immunoblotting.

METHODS

Specimens (N=236) submitted to the CDC HIV reference laboratory in 2006/2007 were tested by two different commercially available enzyme immunoassays (EIA) (Bio-Rad HIV-1/2 plus O; Abbott HIV-1,HIV-2 (rDNA). Western immuno-blotting (Maxim Biomedical or Bio-Rad Laboratories) and a rapid test (RT) (Multi-spot [MS], Bio-Rad) were also performed on initially reactive specimens. Multi-test algorithms were analyzed using various combinations of assays and these results were compared to the standard algorithm strategy (Bio-rad HIV-1/2/O EIA + Western blot).

RESULTS

The standard algorithm identified 155 specimens as HIV negative, 62 HIV-1 reactive and 19 as indeterminate and required 104 WB for completion. Dual EIA screening by Biorad and Abbott (indeterminates removed, n=209) identified 62 specimens as reactive and 146 as non-reactive with 1 false positive and 1 false negative specimen as compared to EIA/WB (sensitivity = 98.4%, specificity = 99.3%). These data were unchanged regardless of the order of EIA testing. Further testing of the false negative specimen by MS did not resolve the discrepancy. EIA followed by MS resulted in a similar performance (sensitivity = 98.4%, specificity = 98.6%).

CONCLUSIONS

Dual EIA or EIA/RT algorithms provide good performance and can reduce the amount and cost of HIV testing. Sensitivity and specificity for dual EIA or EIA/RT algorithms were slightly reduced when compared to the EIA + WB strategy due to a change in seroreactivity of a few specimens.