A Quality Assessment of the Impact of Serum Centrifugation Speeds When Performing HIV 5th Generation Testing on the BioPlex 2200

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Background

Diagnostic procedures for serological detection of antibodies to HIV-1 and HIV-2 require pre-analytical specimen centrifugation to separate serum from red blood cells.

Centrifugation guidelines in the “Specimen Preparation” section of the BioPlex HIV Ag-Ab® assay requires specimen centrifugation at speeds of 10,000 relative centrifugal force (RCF) or greater, for ten minutes.

Additionally, the package insert requires that frozen specimens, after thawing, also be centrifuged at ≥10,000 RCF before testing. As per manufacturer’s guidelines, specimens which require repeat testing (e.g. initially reactive specimens) should be re-centrifuged at ≥10,000 RCF to ensure optimal quality in test results.

Established “best practices” of the Houston Health Department HIV/Serology laboratory section questioned the efficacy of the high centrifugation speed, and decided to perform a quality assessment of this parameter to determine how critical the ≥ 10,000 RCF centrifugation speed is to quality of test results.

Methods

Specimens properly submitted to HHD laboratory for HIV screening using the BioPlex HIV Ag-Ab® assay were initially tested according to manufacturer’s package insert.

The pre-analytical and repeat test centrifugation steps were performed using Beckman Coulter Allegra 6R and Eppendorf 5430R centrifuges.

Specimens were tested after undergoing centrifugation at: ≥10,000 RCF, at a reduced speed of centrifugation, and with no centrifugation performed. Results were placed in a table for direct comparison of outcomes.

Results

There was 100% correlation in results for 44/44 negative specimens at centrifugation speeds ≥10,000 RCF, and at a reduced speed. There was also 100% correlation among the negative specimens after one freeze thaw cycle and no centrifugation. There was 100% agreement for 10/10 reactive specimens at ≥10,000 RCF, at a reduced speed and after one freeze thaw without centrifugation. Lastly, there was 88% correlation for 7/8 specimens with a combination of reactive and discordant results upon initial and repeat testing.

Conclusions

It is our assessment that centrifugation at ≥10,000 RCF is not critical to producing quality results using the BioPlex HIV Ag-Ab® assay.

In-house assessment of assay quality assurance parameters should be performed when efficacy is questioned. Additionally, the findings should be shared with colleagues and manufacturers for review and consideration.