



## False-positive results in antenatal HIV screening

We read with interest the article by Lindy Samson and Susan King on evidence-based guidelines for HIV screening in pregnancy.<sup>1</sup> Along with Proffitt and Yen-Lieberman,<sup>2</sup> they offer reassurance with respect to low rates of false-positive and false-negative results with the use of enzyme-linked immunosorbent assay (EIA) and Western blot analysis in combination (sensitivity  $\geq 99.0\%$ , specificity  $\geq 99.9\%$ ). However, we recently became aware of the particular risk that pregnant women bear for false-positive results.

We cared for a woman initially seen because of Rhesus isoimmunization who consented to routine HIV screening at 20 weeks' gestation. The initial EIA result was reactive, as was the result of a repeat test 2 weeks later, at which time a supplemental EIA test (nonreactive) and Western blot analysis (indeterminate) were requested. One week later, the result of a third screening EIA test was nonreactive. A month later, another screening EIA test gave a reactive result, a supplemental EIA test result was nonreactive, and a Western blot analysis result was indeterminate for all 3 determinants of HIV-1; the patient's HIV viral load was  $< 500$  copies/mL. At 34 weeks' gestation (when all results were finally to hand) the patient was reassured that she was HIV negative. Twelve weeks had passed since the first positive test result. Understandably, the patient was under considerable stress during this time.

Although false-negative results with EIA screening tests are well recognized, false-positive results are less so. We had been unaware that multiparity, multiple previous transfusions and autoimmune disorders are all risk factors for false-positive reactions (in non-pregnant populations) because of anti-HLA-DR or other antibodies.<sup>3-6</sup> Pregnant women are often multiparous, may have a prior history of ante- or post-partum hemorrhage requiring transfusion, and belong to the gender and age groups in which auto-

immune phenomena are most common.

Physicians who provide antenatal care should be aware of the occurrence, impact and causes of false-positive HIV screening test results to better counsel pregnant women before testing and to deal more effectively with "borderline" results.

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### References

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### [The authors respond]:

The concerns laid out by Dr. Magee and colleagues bring to our attention the important issue of the possibility of false-positive results of HIV screening in an otherwise healthy pregnant population.

Although the case they describe certainly led to a high level of anxiety for the patient, it is unclear how the testing and results were actually reported. Every time there is a positive screening EIA test result, a second EIA test is performed in duplicate on the same sample. If the result of either of these tests

is positive, a confirmatory Western Blot test is also done. Only then should a result be forwarded to the ordering physician. If the report is positive it is likely that the patient is infected, and the test should be repeated just for confirmation. If the result is negative, then despite the first EIA result being positive the patient is not infected and no further testing needs to be done. If the result is indeterminate, which we assume was the case, the test should be repeated. The reason for indeterminate test results are either that the patient has recently been infected and not yet developed sufficient HIV antibodies or that non-HIV antibodies are cross-reacting with the HIV antigens, yielding nonspecific Western blot bands that cannot be interpreted as HIV negative.

Although the combination of the present generation of HIV EIA screening and Western blot confirmatory tests has a high sensitivity and specificity, with previous generations of tests indeterminate results were more likely in patients with multiple previous blood transfusions and autoimmune disorders. It is likely that the newer generation tests have lower rates of indeterminate results in pregnant women.

It is imperative that we develop a national surveillance system to determine whether there is indeed a higher rate of indeterminate results among pregnant women. In the meantime, we recommend that women with indeterminate results undergo a repeat test immediately. A phone call to the local public health laboratory performing the test should enable a result within 24 hours in most places in the country. It is also important that the requisition state that the woman is pregnant. HIV viral load testing has not yet been licensed for HIV diagnosis and is not recommended.

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