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## Virologic Testing in Infants With Perinatal Exposure to HIV Receiving Multidrug Prophylaxis

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### To the Editors

Updated guidelines released by the Panel on Antiretroviral Therapy and Medical Management of HIV-Infected Children<sup>1</sup> recommend virologic testing in infants with known perinatal HIV exposure at ages 14–21 days, 1–2 months and 4–6 months. The report cites data indicating sensitivity of a single HIV DNA polymerase chain reaction (PCR) increases to greater than 90% by 2–4 weeks of age, whereas sensitivity of HIV RNA assays increases to 90–100% by 2–3 months of age. At the same time, guidelines from the Panel on Prevention of Perinatal Transmission<sup>2</sup> recommend multidrug postpartum prophylaxis for infants at increased risk of perinatal infection. A recent case at our clinic raises important questions regarding timing for HIV tests in infants receiving multidrug prophylaxis.

Our patient was born to a mother discovered to be HIV-positive during her third trimester. She initiated highly active antiretroviral therapy, received intrapartum zidovudine and had a viral load of 184,000 and CD4 of 400 at time of term cesarean delivery. The infant received 2 doses of nevirapine and was started on zidovudine and lamivudine, which were stopped after 5 weeks due to neutropenia and anemia. Tests with the Gen-Probe Aptima HIV-1 RNA Qualitative assay (Hologic Gen-Probe, San Diego, CA) at 2 and 5 weeks of age were negative. However, a repeat RNA qualitative HIV test inadvertently ordered a week after cessation of prophylaxis was positive. Confirmatory RNA testing revealed an HIV viral load of >600,000 counts per minute, and no further testing was pursued. The patient's family reported feeding the infant only formula and denied offering breast milk or pre-masticated food.

The fact that this HIV-infected infant had 2 false negative HIV PCR tests raises the question of whether multidrug prophylaxis increases the risk of a false negative test. In the January

2012 issue of *Pediatrics*, Burgard et al<sup>3</sup> compared HIV-1 DNA and HIV-1 RNA tests in detecting perinatal HIV-1 infection among infants receiving antiretroviral prophylaxis for 4–6 weeks postpartum. Sensitivity for DNA and RNA testing among 56 infected infants at 1 month of age was 89%. A second study from the July 2012 issue of *Journal of Clinical Microbiology* by Lilian et al<sup>4</sup> showed similar results for DNA-only testing. At 4 weeks of age, the Amplicor HIV DNA PCR assay (Roche Diagnostics Ltd, Basel, Switzerland) had a sensitivity of 87.5% among 24 infected infants, whereas the Gen-Probe Aptima RNA assay (Hologic Gen-Probe) and the Roche COBAS HIV assay (HIV-1 RNA and DNA; Roche Diagnostics Ltd, Basel, Switzerland) had sensitivities of 96%. In both studies, the majority of infants were receiving single-drug prophylaxis. When testing infants at high risk for infection who are receiving multidrug prophylaxis, sensitivities might be even lower due to increased viral suppression, leading to a higher rate of false negative test results during the prophylaxis period.

Had we followed the national guidelines and obtained the third PCR test at 4–6 months of age, diagnosis would have been delayed, possibly allowing for the rapid clinical decline that can be seen in untreated infected infants.<sup>5</sup> Based on our experience, we suggest that repeat testing be considered earlier than 4–6 months for high-risk infants who have completed multidrug prophylaxis.

## References

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