

## ABSTRACT

### **Background**

Despite expanded programs for prevention of mother-to-child HIV transmission (PMTCT), HIV-infected infants may not be diagnosed until they are ill. Comparing HIV prevalence and outcomes in infants diagnosed in PMTCT programs to those in hospital settings may improve pediatric HIV diagnosis strategies.

### **Methods**

HIV-exposed infants <12 months old were recruited from 9 PMTCT sites in public maternal child health (MCH) clinics or from an inpatient setting in Nairobi, Kenya and tested for HIV using HIV DNA assays. A subset of HIV-infected infants <4.5 months of age was enrolled in a research study and followed for 2 years. HIV prevalence, number needed to test, infant age at testing, and turnaround time for tests were compared between PMTCT programs and hospital sites. Among the enrolled cohort, baseline characteristics, survival, and timing of antiretroviral therapy (ART) initiation were compared between infants diagnosed in PMTCT programs versus hospital.

### **Results**

Among 1,923 HIV-exposed infants, HIV prevalence was higher among infants tested in hospital than PMTCT early infant diagnosis (EID) sites (41% vs. 11%,  $p < 0.001$ ); the number of HIV-exposed infants needed to test to diagnose one infection was 2.4 in the hospital vs. 9.1 in PMTCT. Receipt of HIV test results was faster among hospitalized infants (7 vs. 25 days,  $p < 0.001$ ). Infants diagnosed in hospital were older at the time of testing than PMTCT diagnosed infants (5.0 vs. 1.6 months, respectively,  $p < 0.001$ ).

In the subset of 99 HIV-infected infants <4.5 months old followed longitudinally, hospital-diagnosed infants did not differ from PMTCT-diagnosed infants in time to ART initiation; however, hospital-diagnosed infants were >3 times as likely to die (HR = 3.1, 95% CI = 1.3-7.6).

### **Conclusions**

Among HIV-exposed infants, hospital-based testing was more likely to detect an HIV-infected infant than PMTCT testing. Because young symptomatic infants diagnosed with HIV during hospitalization have very high mortality, every effort should be made to diagnose HIV infections before symptom onset. Systems to expedite turnaround time at PMTCT EID sites and to routinize inpatient pediatric HIV testing are necessary to improve pediatric HIV outcomes.