

## BACKGROUND

- The impact of maternal HIV/HBV coinfection on the risk of adverse pregnancy and infant outcomes remains understudied.
- We compared adverse pregnancy and infant outcomes among women living with HIV/HBV versus HIV alone, randomized antepartum to antiretroviral (ARV) perinatal transmission regimens in the IMPAACT PROMISE study.

## METHODS

- ARV-naïve pregnant women with HIV at 14+ weeks gestation from Africa and India were randomized to ZDV + intrapartum nevirapine, 3TC/ZDV+LPV/r, or FTC/TDF+LPV/r.
- Randomizations for women with HIV/HBV mirrored the main study and follow-up of infants for this analysis was up to 2 years<sup>1</sup>.
- Associations between HIV/HBV coinfection and pregnancy and infant outcomes were assessed by logistic (odds ratio (aOR)), linear, and Cox proportional hazards (aHR) regression, adjusted for randomized arm, baseline age, log<sub>10</sub> HIV-1 RNA, CD4 count, and geographic region.
- HBV infection was defined as HBsAg positive at screening.
- Adverse pregnancy outcome (APO) was a composite of low birth weight (<2500g), preterm delivery (<37 weeks), spontaneous abortion (<20 weeks), stillbirth (≥20 weeks) or congenital anomaly.

**TABLE 1: Maternal Baseline Characteristics**

| Variable (Median, 25 <sup>th</sup> 75 <sup>th</sup> percentile) or Proportion | Total (N=3537) | HBsAg+ (N=138)   |
|---|----------------|------------------|
| Age (years)   | 27 (23-30)     | 27 (23-30)       |
| Gestational age at entry (weeks)  | 26 (21-30)     | 27 (21-31)       |
| CD4 (cells/mm <sup>3</sup> )  | 531 (436-666)  | 505 (420-634)    |
| HIV RNA (10 Log <sub>10</sub> copies/ml)                                      | 3.9 (3.2-4.4)  | 4.0 (3.2-4.5)    |
| HBV DNA (10 Log <sub>10</sub> IU/ml)  | --             | 2.58 (1.38-5.34) |
| Detectable HBV DNA Viral Load (≥20 IU/ml)                                     | --             | 102 (76%)        |
| HB e-antigen Positive*<br>*Missing (HBsAg+) =4                                | --             | 34 (26%)         |

Maternal HBV/HIV coinfection was associated with a higher trend of adverse pregnancy outcome (APO)s and significantly higher risk of infant mortality compared to HIV infection alone.

Presence of HBeAg conferred a significantly higher risk of APOs compared to HIV alone

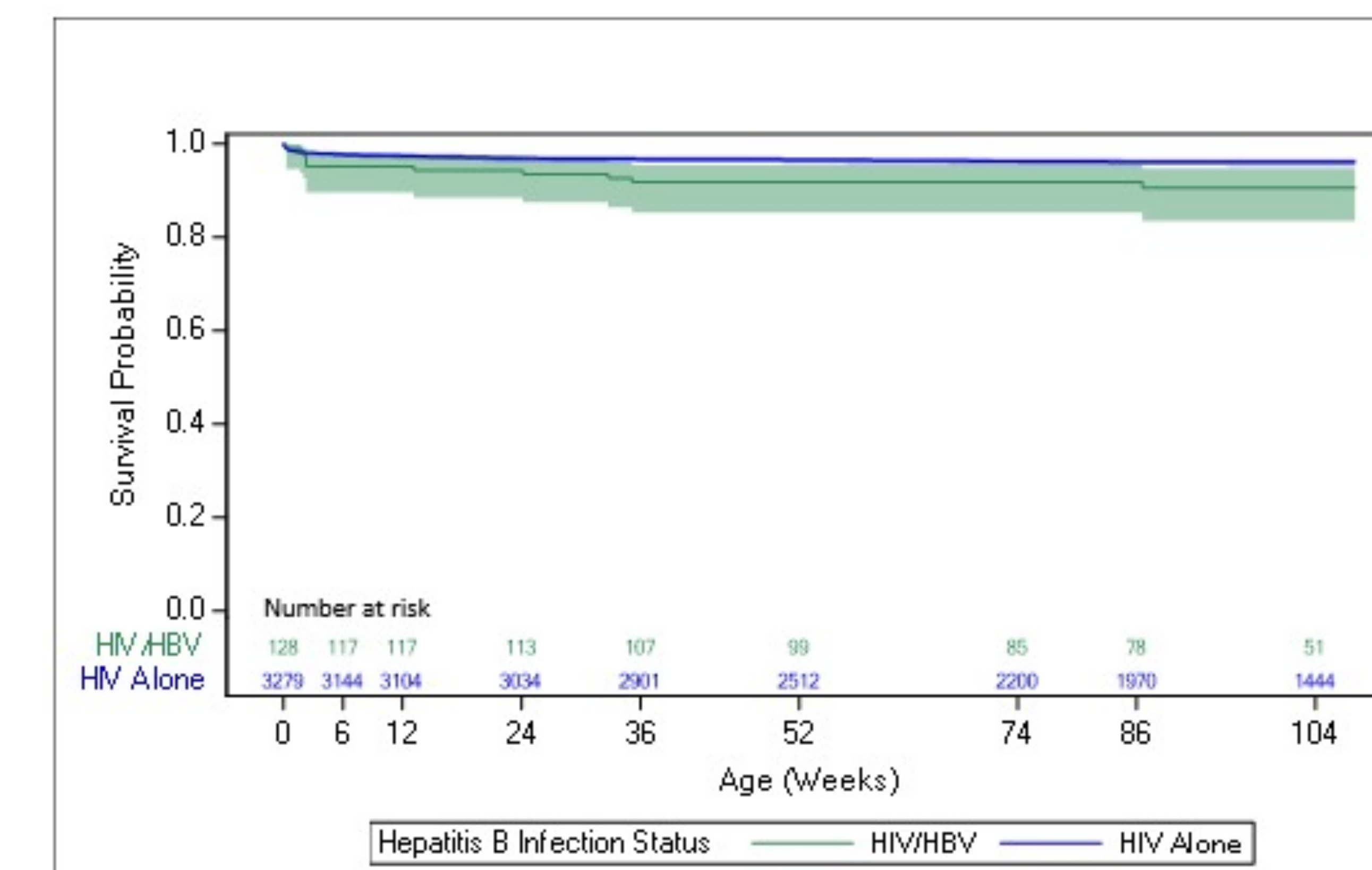
## RESULTS

- Between April 2011-October 2014, 3537 mother-infant pairs were enrolled and analyzed, of whom 138 (3.9%) women had HBV/HIV coinfection. Among women with HBV, 26% (34/131) with HBeAg results were HBeAg positive.
- APOs trended higher in the HIV/HBV group vs HIV alone (33.3% vs 28.2%; aOR 1.31, 95%CI: 0.89, 1.91), (Table 2). HIV/HBV women who were HBeAg positive had a significantly higher risk of APOs (aOR 2.65, 95% CI: 1.28, 5.47), vs HIV alone.
- Eleven (8.6% of 128) infant deaths were observed in the HIV/HBV group and 120 (3.7% of 3279) in the HIV alone groups. Infants born to women with HIV/HBV were at significantly higher risk for mortality, univariate HR 2.39 (1.21, 4.22), aHR 2.02 (1.01, 3.63) (Figure 1). Seventy-two of 131 (55%) infant deaths occurred within 28 days.
- No differences were apparent between HBV/HIV and HIV alone groups in HIV free survival, mean infant weight at birth and one year (Table 2).
- The above associations did not differ by treatment arm.

**TABLE 2: Pregnancy and Infant outcomes, HBsAg+ vs. HBsAg-**

| Outcome measure            | HBsAg+ |                      | HBsAg- |              | Association (Adjusted)     |         |
|----------------------------|--------|----------------------|--------|--------------|----------------------------|---------|
|                            | N      | n(%)                 | N      | n(%)         | Odds/Hazard Ratio (95% CI) | p-value |
| Adverse Pregnancy Outcomes | 132    | 44 (33.3)            | 3316   | 934 (28.2)   | 1.31 (0.89, 1.91)          | 0.16    |
| Time to Death              | 128    | 11 (8.6)             | 3279   | 120 (3.7)    | 2.02 (1.01,3.63)           | 0.03    |
| Time to HIV/Death          | 128    | 13 (10.2)            | 3279   | 185 (5.6)    | 1.63 (0.87, 2.78)          | 0.10    |
|                            | N      | Mean(Standard Error) | N      | Mean(SE)     | Mean Difference (95% CI)   | p-value |
| Birth hemoglobin           | 115    | 16.58 (0.20)         | 2940   | 16.14 (0.04) | 0.11 (-0.31, 0.53)         | 0.61    |
| Birth Weight (kg)          | 127    | 2.80 (0.04)          | 3149   | 2.88 (0.01)  | -0.07 (-0.17, 0.02)        | 0.11    |
| Year Weight (kg)           | 102    | 8.94 (0.11)          | 2605   | 8.94 (0.03)  | 0.03 (-0.21, 0.28)         | 0.78    |

**FIGURE 1. Time to Infant Death**



## CONCLUSIONS

- Maternal HBV/HIV coinfection, when compared to HIV infection alone, was associated with a higher risk of APOs and significantly higher risk of infant mortality.
- The risk of APOs was increased in women with HBeAg. Our findings underscore the importance of early detection of HBV and HBeAg to help manage APOs.

## REFERENCE

<sup>1</sup> Fowler MG, Qin M, Currier JS, et al. *N Eng J Med* 2016; 375:1726-37.

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