# IMPROVED HEMATOLOGICAL OUTCOMES WITH NEVIRAPINE FOR INFANT HIV POST- NATAL PROPHYLAXIS

P004

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***Background:***
With combination antiretroviral therapy (cART) in HIV-infected women, mother-to-child transmission rates declined to less than 1%. For post-natal infant prophylaxis, in situations of low risk of perinatal HIV transmission, high income countries use Zidovudine (ZDV), whereas low income countries use either Nevirapine (NVP) or ZDV. Given the low transmission risk and the concerns about the toxicities of ZDV in newborns, French national guidelines recommend since 2015 the use of NVP as an alternative to ZDV for post-natal prophylaxis in full term babies born to HIV1-infected mothers with suppressed viral load and no history of NVP resistance. We compared hematological outcomes between ZDV-exposed and NVP-exposed infants.

***Methods:***
In the French prospective national Perinatal Cohort Study, we compared hematological outcomes (blood cell counts and differentials) at birth, 1 and 3 months among the infants born in 2016-2017 , at >= 37 weeks gestation. We included only infants of mothers treated with cART without ZDV, and who did not receive IV-ZDV at delivery to exclude a potential impact of maternal treatment on infant outcomes. ZDV was prescribed for 4 weeks, NVP for 2 weeks; mothers did not breastfeed.

With current PMTCT strategies allowing the eradication of HIV mother-to-child transmission, attention must be focussed on **reducing toxicity** in infants exposed to antiretroviral therapy.

Switching post-natal prophylaxis from Zidovudine to Nevirapine resulted in **better hematological outcomes in Nevirapine-exposed infants at one month of age.**

Median hemoglobin level was higher: 11,7 g/dl (IQR 10.7-13.1) in NVP-exposed versus 11 g/dl (IQR 10.1-12.2) in ZDV-exposed, p=0.003.

**Grade 2-4 anemia was reduced**: 1.2% in NVP-exposed versus 9.4% in ZDV-exposed, p=0.014.

***Results*:**
137 infants were exposed to NVP and 251 to ZDV. None became infected. 68% of mothers were born in sub-Saharan Africa (79.4% in NVP group, 62.9% in ZDV group). Median hemoglobin levels were respectively 17.4 g/dL vs 17.0 at birth (p=0.49), 11.7 vs 11 g/dL at 1 month (p=0.003) and 11.4 vs 11.2 g/dL at 3 months(p=0.02).Anemia grade >=2 was observed in 0.8% vs 1.7 % of infants at birth (p=0.66), **1.2% vs 9.4% at 1 month** (p=0.014), 3.6% vs 7.3% at 3 months (p=0.40). Median neutrophil counts were similar, grade >=2 neutropenia was found in 4.2% vs 2.7% infants at birth(p=0.53),15.9% vs 13.1% at 1 month(p=0.56), and 12.2 vs 13.4% at 3 months(p=0.84). No difference was found in platelets counts.

***Conclusions:***
In this population of HIV-exposed uninfected infants, post-natal prophylaxis with NVP, compared to ZDV was associated with higher hemoglobin levels at 1 and 3 months and a 9-fold lower incidence of anemia at 1 month of age. These findings support the use of Nevirapine as a first choice for single drug post-natal prophylaxis in low risk situations in a context of low prevalence of resistance to Nevirapine.

**Table 1: Mothers and Infants characteristics**

| | NEVIRAPINE (NVP) | | | Zidovudine (ZDV) | | | |
|---|---|---|---|---|---|---|---|
| | *N* | *% or Median* | *Range* | *N* | *% or Median* | *Range* | *P* |
| Gestational age (weeks) | 137 | 39 | 37-42 | 251 | 39 | 37-42 | 0.83 |
| Maternal origine<br>- France<br>- Subsaharan Africa<br>- Other | 12<br>108<br>16 | 8.8<br>79.4<br>11.8 | | 30<br>156<br>62 | 12.1<br>62.9<br>25.0 | | 0.002 |
| % Maternal VL at delivery <50 c/ml | 130 | 98.5 | | 198 | 94.3 | | 0.13 |
| Median Maternal CD4 at delivery (cells/mm3) | 124 | 636 | 83-1291 | 162 | 580 | 96-1534 | 0.99 |
| Median Maternal Hemoglobin at delivery (g/dl) | 118 | 11.1 | 6-14.9 | 90 | 11 | 7.1-13.6 | 0.49 |
| Median Hemoglobin<br>- At birth<br>- 1 month<br>- 3 months | 123<br>83<br>83 | 17.4<br>11.7.<br>11.4 | 11.4 – 23.3<br>9-17.1<br>9.6-16 | 237<br>171<br>165 | 17<br>11<br>11.2 | 9-22.8<br>7.8-17<br>7.8-13.3 | 0.49<br>0.003<br>0.002 |
| Anemia Grade ≥ 2<br>- At birth<br>- 1 month<br>- 3 months | 1<br>1<br>3 | 0.8<br>1.2<br>3.6 | | 4<br>16<br>12 | 1.7<br>9.4<br>7.3 | | 0.66<br>0.014<br>0.39 |
| Median Corpuscular Volume<br>- At birth<br>- 1 month<br>- 3 months | 111<br>74<br>75 | 97<br>93<br>80 | 78-121<br>78-107<br>66-89 | 95<br>71<br>68 | 97<br>94<br>81 | 75-113<br>70-107<br>62-92 | 0.65<br>0.52<br>0.77 |
| Median Neutrophil counts (cells/mm3)<br>- At birth<br>- 1 month<br>- 3 months | 119<br>82<br>82 | 4010<br>1700<br>1875 | 970-14710<br>500-8400<br>610-18730 | 220<br>169<br>164 | 3730<br>1660<br>1835 | 430-21580<br>90-8490<br>490-6100 | 0.7<br>0.98<br>0.42 |
| Neutropenia grade ≥ 2<br>- At birth<br>- 1 month<br>- 3 months | 5<br>13<br>10 | 4.2<br>15.9<br>12.2 | | 6<br>22<br>22 | 2.7<br>13<br>13.4 | | 0.52<br>0.56<br>0.84 |

**Fig. 1: Comparison of Hemoglobin levels at birth, 1 and 3 months in infants exposed to Nevirapine (NVP) vs Zidovudine (ZDV)**

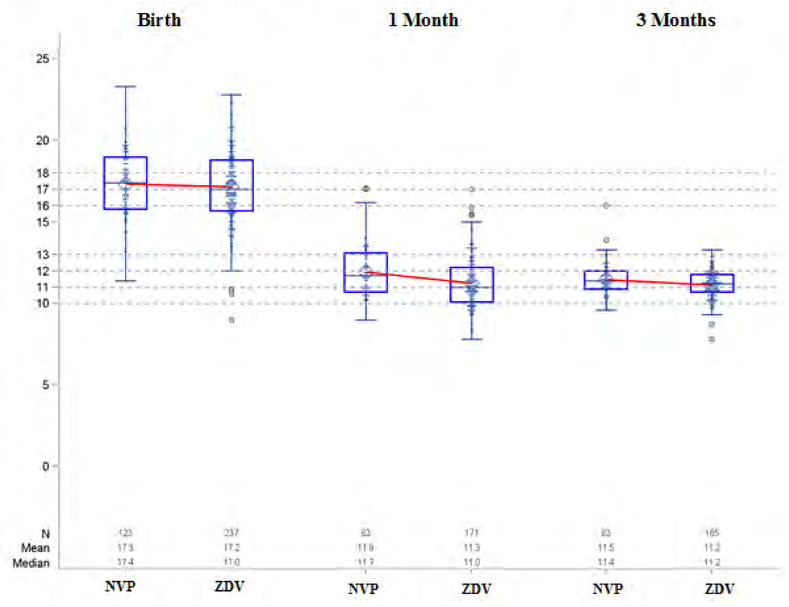



**Fig. 2: Comparison of grades of anemia at birth, 1 and 3 months in infants exposed to Nevirapine (NVP) vs Zidovudine (ZDV)**

