

Growth at 12 and 24 months-of-age among PROMISE (HIV & ARV) exposed uninfected versus unexposed children in Malawi and Uganda

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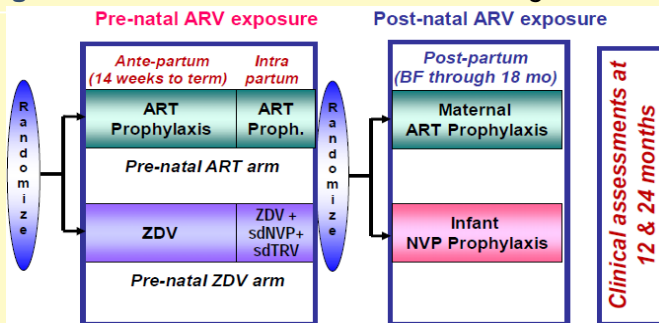
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A) Background: There are concerns that prolonged *in-utero* and postnatal exposure to antiretroviral (ARV) drugs during breastfeeding may affect growth and development of HIV exposed uninfected (HEU) children. This study compares anthropometric measures at 12 and 24 months-of-age among HEU vs 'HIV uninfected unexposed' (HUU) children in Malawi and Uganda.

B) Materials and Methods

- Prospective cohort study in Malawi and Uganda.
- Enrollment period (09/2013-10/2014). HEU were co-enrolled from the PROMISE ARV randomized trial at 12 months of age along with age-and-gender-matched HUU controls from child-well clinics. (see Figure 1)

Figure 1: PROMISE Randomized Trial Design



Analysis: We did group comparisons by exposure (HEU vs. HUU) & by site, at 12 and 24 months of age for the following parameters:

- WHO standardized age- and gender-based Z scores for WAZ, LAZ and HCAZ using 1) *least square means* and 2) *mixed effects models for classical analysis of repeated measures*
- Proportions (WAZ<-1, LAZ<-2, HCAZ<0) using generalized mixed models for the repeated measures of binary data.

C) Results

- Sample size at 12 and 24 months of age, Malawi n=367 (HUU) & n=417 (52% HEU) and Uganda n=407 (HUU) & 434 (51% HEU), respectively.
- Significantly lower anthropometric group mean Z scores (HEU vs. HUU) were seen among Ugandan (but not Malawian) infants at age 12 months: WAZ (-0.19 vs. 0.44, $p=0.02$); LAZ (-1.31 vs. -0.94, $p<0.01$); at 24 months: WAZ (-0.40 vs. -0.11, $p<0.01$); LAZ (-1.46 vs. -1.08, $p<0.01$) and HCAZ (0.31 vs. 0.57, $p=0.01$).
- Similar trends of increased odds of lower anthropometric measures for HEU among Ugandan infants (HEU vs HUU) using Z- score cut-offs. (see Table 1)

Table 1: Odds ratios (OR); 95% Confidence Interval (95% CI) and p-values comparing HEU and HUU anthropometric measures at 12 and 24 months-of-age

Variable	Malawi		Uganda	
	HEU versus HUU OR (95% CI)	P-value	HEU versus HUU OR (95% CI)	P-value
12 months				
WAZ (below -1.0 SD)	0.93 (0.62, 1.40)	0.74	1.68 (0.99, 2.89)	0.06
LAZ (below -2.0 SD)	0.74 (0.48, 1.13)	0.16	2.66 (1.57, 4.49)	<0.01
HCAZ (below 0 SD)	0.95 (0.59, 1.52)	0.82	1.21 (0.80, 1.81)	0.37
24 months				
WAZ (below -1.0 SD)	0.96 (0.65, 1.42)	0.84	1.72 (1.05, 2.81)	0.03
LAZ (below -2.0 SD)	1.20 (0.82, 1.76)	0.36	1.83 (1.19, 2.83)	<0.01
HCAZ (below 0 SD)	1.05 (0.66, 1.68)	0.84	1.56 (1.05, 2.33)	0.03

D) Conclusion: These data indicate that in Uganda but not Malawi, prenatal and postnatal exposures to HIV and ARVs were associated with lowered growth parameters at 12 and 24 months-of-age compared to unexposed controls. Analyses by disaggregate HIV&ARV exposure by PROMISE randomization is planned. Longer follow-up through 60 months is ongoing.