The contribution of Maternal Malaria Exposure and Metabolic Markers to Change in Blood Pressure (BP) in Nigerian Children over the first 3 Years of Life.

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Background
- Malaria is endemic in Nigeria and hypertension is common.
- Exposure to maternal malaria results in smaller babies.
- These babies have lower BP at birth but a greater change (Δ) in BP to 12 months of age.

We now present BP measurements out to 3 years of age.

Methods
- Height, weight and BP were measured on 164 babies (75 male: 89 female) at birth, 12, 24 and 36 months.
- Blood samples collected at 12 months were analysed for IGF-I, lipids (triglyceride, high and low density lipoprotein, cholesterol, insulin, adiponectin and leptin).
- The effect of malaria on systolic BP and change in systolic BP (ΔsBP) over 0-12 and 0-36 months was compared by T-Tests.
- Backward regression analysis was used to assess the association of malarial exposure, sex and biochemical variables on ΔsBP over time (variables excluded at p>0.1).

Results

Figure 1. The effect of malarial exposure in utero on change in systolic Blood Pressure (ΔsBP) over time (years).
- ΔsBP over 0-12 months was higher in babies exposed to maternal malaria.
- This effect persisted to 36 months.

Table 1 Effect of Gender on ΔsBP 0-36m.
- Overall ΔsBP 0-36 months was lower in females (Δ20mmHg) than males (Δ23mmHg).
- However, the impact of malaria was more pronounced in females (+8.7mmHg with malaria; p=0.003) than males (+5.0mmHg; p=0.15).

Table 2. Factors associated with ΔsBP 0-12m.
- Backward linear regression identified leptin and LDL as negative factors and malarial exposure and HDL as weaker positive factors.

Table 3. Factors associated with ΔsBP 0-36m.
- Leptin, gender and LDL were negative factors whilst malarial exposure and IGF-I were positive.

Conclusion
- Changes in systolic BP are greater in children exposed to maternal malaria.
- Changes are more pronounced in females than males.
- This increased change in systolic BP is independently associated with lower leptin and LDL levels.