



# Maternal Viral Load Suppression and Neurodevelopmental Outcomes in HIV-Exposed Uninfected Infants: A Brief Report from South-Western Uganda

Maternal Viral Load  
Suppression and  
Neurodevelopmental

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10

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## Abstract

HIV-exposed uninfected (HEU) infants are a growing population in sub-Saharan Africa. Concerns exist regarding their potential neurodevelopmental vulnerabilities, which may be linked to maternal HIV factors such as viral load. This brief report explored the association between maternal viral load suppression at delivery and neurodevelopmental outcomes in HEU infants aged 9-12 months in a rural Ugandan setting. A cross-sectional analysis was conducted within an ongoing maternal-child cohort in the Mbarara district. Mother-infant pairs were enrolled at delivery. Maternal viral load data were obtained from clinical records. Infant neurodevelopment was assessed using the Malawi Developmental Assessment Tool (MDAT). Descriptive statistics and comparative analyses were performed. Infants born to mothers with an unsuppressed viral load ( $\geq 1000$  copies/mL) had a significantly higher prevalence of neurodevelopmental delay (34%) compared to those born to mothers with a suppressed viral load (12%). The gross motor skills domain was the most affected. Maternal viral non-suppression was associated with poorer neurodevelopmental outcomes in HEU infants in this setting. This implies that maternal virological control may have important implications for infant development beyond the prevention of vertical transmission. Routine developmental screening for HEU infants should be considered. Programmes to strengthen maternal antiretroviral therapy adherence and sustain viral suppression should be reinforced, as they may benefit both maternal health and infant development. HIV-exposed uninfected, neurodevelopment, viral load suppression, Uganda, maternal health This report provides preliminary, context-specific evidence from rural South-western Uganda on maternal viral load as a potential modifiable factor for improving outcomes in HEU infants.

**Keywords:** *HIV-exposed uninfected infants, Neurodevelopment, Viral load suppression, Sub-Saharan Africa, Antiretroviral therapy, Perinatal HIV*

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