# Neurodevelopmental Assessments to Screen for HIV Encephalopathy in Newly Diagnosed Infants not on ART in Mozambique

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## Background

- Encephalopathy represents a common and serious manifestation of pediatric HIV infection. Approximately **18%** of HIV-infected children have HIV-associated encephalopathy (HIVE).[1]
- HIVE has not been extensively described in infected infants less than 12 months of age.[2]
- Children with HIVE have worse outcomes, including increased morbidity and mortality.[3]

## Aims

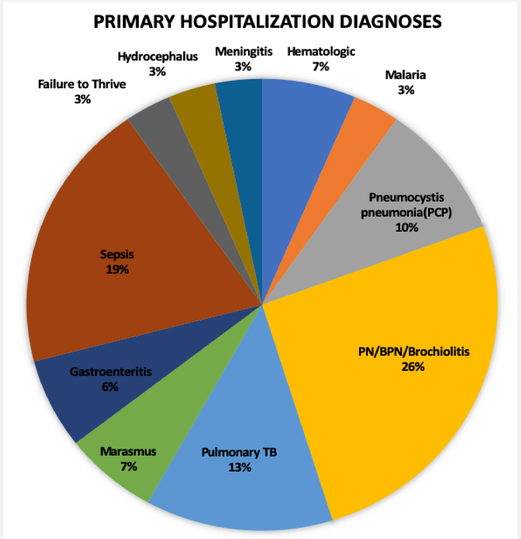
1. Describe the baseline clinical and demographic profile of a cohort of HIV-infected infants diagnosed during hospital admission and not yet on ART.
2. Assess their neurodevelopmental clinical presentation
3. Determine the prevalence of presumptive HIVE
4. Determine clinical and demographic variables associated with HIVE

## Methods

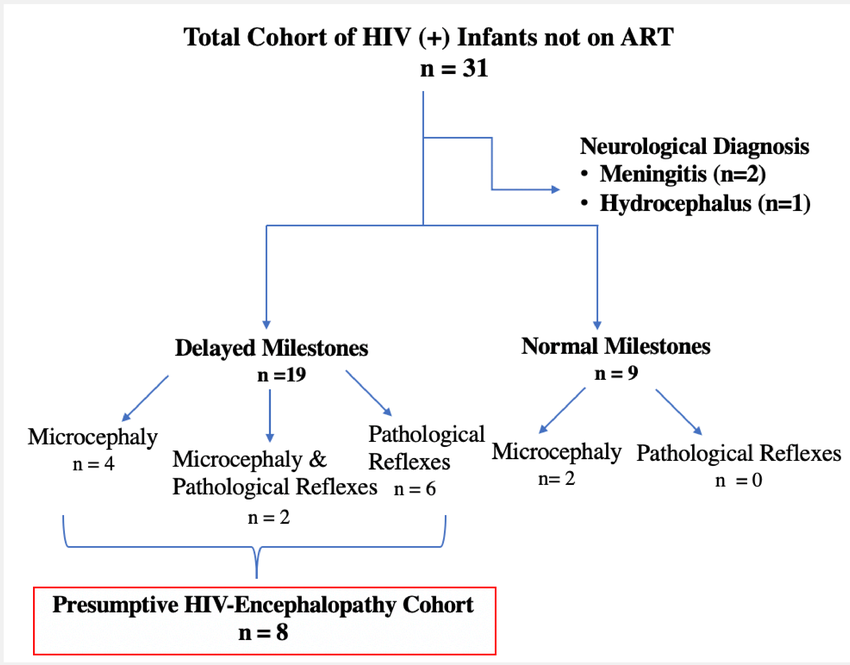
- Retrospectively analyzed routine, standard of care hospitalization data from the Lactentes wards at Hospital Central de Maputo (HCM) and Hospital Central de Beira (HCB)
  - Both sites have point-of-care DNA PCR for timely, definitive infant HIV diagnosis
- **Criteria for inclusion:**
  a) HIV-infected children aged <12 months
  b) not currently on ART
  c) admitted between Jan 1, 2019 - June 30, 2019
- Assessments of development were made using WHO Integrated Management of Childhood Illness (IMCI) milestone tables[4]
- **WHO Criteria for HIVE Diagnosis**[5]
  - One of the following clinical events progressing over at least two months in the absence of another illness:
    a) failure to attain, or loss of developmental milestones, OR
    b) progressive impaired brain growth demonstrated by stagnation of head circumference, OR
    c) acquired symmetrical motor deficit accompanied by two or more of the following: paresis, pathological reflexes, ataxia and gait disturbance
  - These criteria were adapted for a **presumptive HIVE** diagnosis for this inpatient study without post-discharge follow-up
- Statistical analyses were performed in Excel® and SPSS®

## Results

- A total of **31 patients** were included in the study.
- Mean age was **5 months**, with **15 females and 16 males.**
- **Pneumonia/ Bronchopneumonia/ Bronchiolitis (26%)** and **Sepsis (19%)** were the most common primary hospitalization diagnoses.
- Respiratory illnesses accounted for approximately **50%** of the diagnoses.



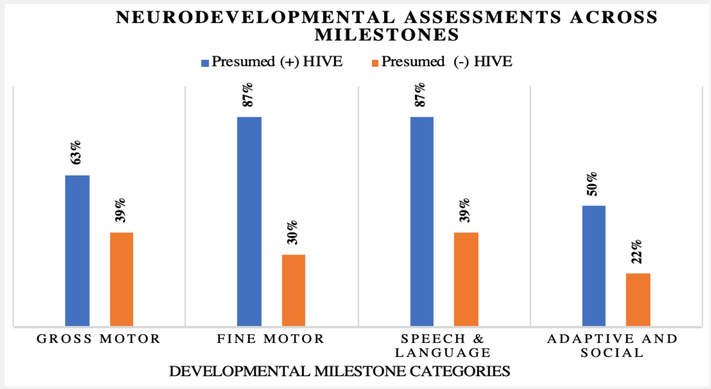

- **8 patients** were diagnosed with presumptive HIVE. These patients had delayed or lost milestones as well as microcephaly or pathological reflexes




- Delayed maternal HIV diagnosis (**p=0.035**), delayed or no maternal ART (**p=0.007**), and the infant not having received postnatal nevirapine PMTCT prophylaxis (**p=0.011**) were all significantly associated with the HIVE

| | (+) HIVE (n=8) | (-) HIVE (n=20) | P-value |
|---|---|---|---|
| ***Sex*** | | | |
| *Male* | 6 (75%) | 9 (43%) | .22 |
| *Female* | 2 (25%) | 11 (55%) | |
| ***Age at Admission*** | | | |
| *< 2 months* | 0 (0%) | 2 (10%) | .18 |
| *2 - 4 months* | 4 (50%) | 4 (20%) | |
| *4 - 6 months* | 3 (38%) | 6 (30%) | |
| *6 - 9 months* | 0 (0%) | 7 (35%) | |
| *9 - 12 months* | 1 (12%) | 1 (5%) | |
| ***Prior Hospitalization*** | | | |
| *Yes* | 3 (38%) | 4 (20%) | .37 |
| *No* | 5 (62%) | 16 (80%) | |
| ***Maternal HIV Diagnosis*** | | | |
| *Pre-Pregnancy* | 1 (12%) | 3 (15%) | .035 |
| *Pregnancy* | 2 (25%) | 14 (75%) | |
| *Post-Partum* | 5 (63%) | 3 (15%) | |
| ***Maternal ART Start*** | | | |
| *Pre-Pregnancy* | 0 (0%) | 3 (15%) | .007 |
| *Pregnancy* | 2 (25%) | 14 (70%) | |
| *Post-Partum* | 1 (12%) | 1 (5%) | |
| *None* | 5 (63%) | 2 (10%) | |
| ***Postnatal Prophylaxis*** | | | .011 |
| *NVP* | 2 (25%) | 16 (80%) | |
| *None* | 6 (75%) | 4 (20%) | |
| ***Previous (-) PCR*** | | | .49 |
| *Yes* | 0 (0%) | 5 (25%) | |
| *No* | 8 (100%) | 15 (75%) | |

- Delayed milestones were seen in **70% patients** included
- HIVE(+) were, on average, delayed in **2.75** categories vs **1.21** in the HIVE (-) group.
- The prevalence of delayed milestones was approximately **2x higher** in the HIVE(+) group across all milestone categories.




## Limitations

- Lack of serial assessments – presumptive HIVE diagnosis
- No CD4 reagents for immunologic assessments
- Baseline viral load testing not part of Mozambique guidelines
- Data collection at HCB were interrupted by Cyclone Idai

## Conclusions

- HIVE prevalence is high in newly diagnosed infants (**28.5%**), particularly in those with risk factors for in-utero transmission
- Infants with HIVE need comprehensive care that includes ART and physical/occupational therapy where available

**References**

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