Virological dynamics in HIV-infected infants following very early antiretroviral treatment

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Background

• Initiation of very early ART in primary HIV infection may alter the pathogenesis of HIV and possibly result in HIV remission in some individuals.

• Rapid decline in viral load is postulated as being the first step along the pathway by which early treatment of primary infection may lead to remission.

• Data are limited
Study Context

- HIV testing offered to all HIV-exposed newborns at Rahima Moosa Mother and Child Hospital, Johannesburg, South Africa
  - HIV PCR test done through the National State Laboratory
    AND (for subset)
  - HIV PCR Point of Care (Xpert HIV-1 Qual) done on weekdays, during working hours
- Infants with positive PCR results are actively traced for confirmatory testing and inclusion onto the **LEOPARD** Clinical Trial protocols - **Latency and Early neonatal Provision of Anti-Retroviral Drugs** -
Flow diagram of LEOPARD participants

75
Birth-identified HIV-infected

33
Started ART <48hrs after birth

22
Started ART >48hrs-7 days

20
Started ART >8days after birth

3 died
3 no follow-up
Objective

• Comparison of virological response over the first year of life among infants initiating ART:
  ➢ within 48 hours of birth,
  ➢ after 48 hours but within 7 days of birth,
  ➢ and more than 8 days after birth.
Pre-treatment viral load (copies/ml)

**ART initiated <48hr (n=33)**
- **Median**: 30,000
- **IQR**: 5,370 - 224,515

**ART initiated >48hr to 7d (n=22)**
- **Median**: 30,530
- **IQR**: 1,124 - 465,085

**ART initiated 8d - 148d (n=20)**
- **Median**: 5,119
- **IQR**: 380 - 62,967
Drug regimen at ART Initiation

**ART start <48hrs**
Median 25.5 hours
IQR 16 to 40 hours

**ART start >48hrs-7d**
Median 4.5 days
IQR 4 to 6 days

**ART start 8-148d**
Median 19 days
IQR 9 to 50 days

- NVP/3TC/AZT
- LPVr/3TC/AZT
- LPVr/3TC/ABC
- NVP/3TC/d4T
Maternal ART during pregnancy

- Infant ART started <48hrs
  - Didn't know HIV status: 11%
  - No ART until delivery: 9%
  - <12 wks of ART: 7%

- Infant ART started >48hrs-7d
  - Didn't know HIV status: 4%
  - No ART until delivery: 4%
  - <12 wks of ART: 1%

- Infant ART started 8-148d
  - Didn't know HIV status: 8%
  - No ART until delivery: 4%
  - <12 wks of ART: 1%
VL <20 cpm by 12 months after ART start

Age at starting ART

- < 48 hours: 63.3%
- >48h to 7 days: 63.6%
- 8 to 148 days: 45%
Sustained VL <20 cpm to 12 months

Age at starting ART

Percent %

< 48 hours: 40%
>48h to 7 days: 36.4%
8 to 148 days: 30%
Negative diagnostic HIV DNA PCR

Age at starting ART

- < 48 hours: 16.7%
- > 48h to 7 days: 13.6%
- 8 to 148 days: 0.0%
Time to VL “target not detected” (TND)

- <48 hours
- >48 h – 7 days
- 8 -148 days

Probability

Time after ART start (days)
Conclusions

• Subtle differences in virological response between those treated <48 hours after birth vs. slightly later.

• ART initiation and treatment adherence influenced by clinical and social factors – complicates interpretation.

• More sensitive virological markers may be required to discern whether very early ART influences the likelihood of viral remission.
Thank you

• Funding sources: Supported by U01HD080441

• Acknowledgments: LEOPARD study children and caregivers, clinical and laboratory-based study teams