

Good immune restitution but unsatisfactory viral suppression in children on ART in a remote Western Kenyan area

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for MSF-F / Epicentre

Context

In 2007, 33.2 million persons with HIV-AIDS

=> 2.5 million (7.5%) children aged under 15 years

=> 90% in Sub-Saharan Africa

Only 10% of children in need receiving ART (UNICEF)

Need of simplification of ART f/u in areas with limited laboratory facilities (WHO, 2006)

Few data on long term outcomes in children followed on ART in a simplified manner

ART program of MSF-F in Homa-Bay

Homa-Bay district

- 350,000 inhabitants
- 35% of HIV prevalence in district hospital
(Oyieke 2002, Int Conf AIDS 2002)



Prescription of ART

- Every day, in **Homa-Bay district hospital**

- Once per week in **mobile clinics located in 3 peripheral HC**

From 2001 to 28 March 2007,

- 5138 patients had initiated ART
- 3755 patients still followed on ART

Strategy of care for children on ART in Homa-Bay (1)

1. Criteria for initiating ART

- WHO stage 3 or 4 and/or according to age specific CD4 cut-off:
 - 2001 criteria: 20% (0-17 months), 15% (18-59 months), 200 cells/mm³ (> 5 years)
 - 2006 criteria: 25% (0-11 months), 20% (12-35 months), 15% (36-59 months), 200 cells/mm³ (> 5 years)

2. First line regimens recommended by WHO

3. Fixed Dose Combination (FDC) were prescribed whenever possible:

- >25kg : Adult Triviro tablet
- 10-25kg : Half adult Triviro tablet
- < 10kg : Syrup formulation

Strategy of care for children on ART in Homa-Bay (2)

4. **Clinic attendance :**

- Consultation once per month during the first 6 months
- Consultation every 2-3 months when stabilized on ART

5. **Adherence support:**

- Designation of a caregiver
- Counseling sessions pre-ART initiation (minimum 2)
- Adherence sessions after ART initiation (4 in the first 6m, then every 6m)
- Other sessions when needed

6. **Biological monitoring:** CD4 count every 12 months

7. **Daily cotrimoxazole prophylaxis**

8. **Nutritional support for acute malnutrition**

Objectives

Main objective :

To assess the long-term outcomes in children followed in a remote sub-Saharan area

Specific objectives :

To describe the outcomes at 24 and 36 months on ART in children followed in Homa-Bay program in terms of :

- Survival
- Immuno-restitution
- Viral failure

Methods (1)- Retrospective analysis

- *Recall period:* 19 Dec 2001- 28 Mar 2007
- *Target population :* All children under 15 years starting ART in the Homa-Bay program
- Data collected in the Fuchia software (Epicentre, Paris, France)
- Probabilities of remaining in care: death and loss to follow-up as combined endpoint

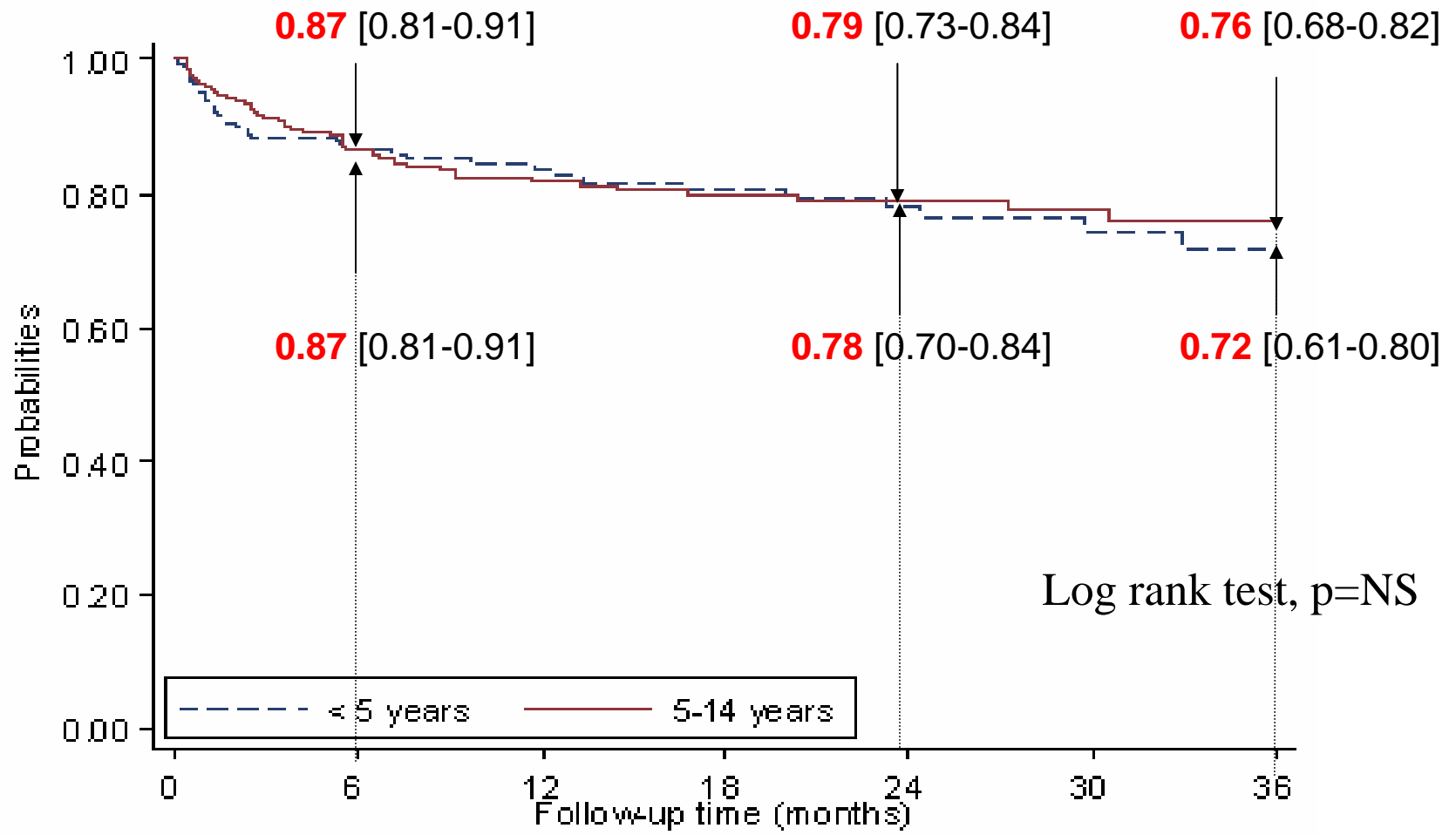
Results – Retrospective analysis

Baseline characteristics of children on ART

Population	432 children	
Age : < 5 years	204	(47%)
5-14 years	228	(53%)
WHO Stage 3:	173	(40%)
Stage 4:	89	(21%)
ART regimen at initiation		
d4T-3TC-NVP	213	(49%)
AZT-3TC-NVP	120	(28%)
d4T-3TC-EFV	71	(16%)
Other	28	(7%)

Results – Retrospective analysis

Probabilities of remaining in care by age group



Total children

N=317

N=137

N=47

Methods (2)- Second Analysis

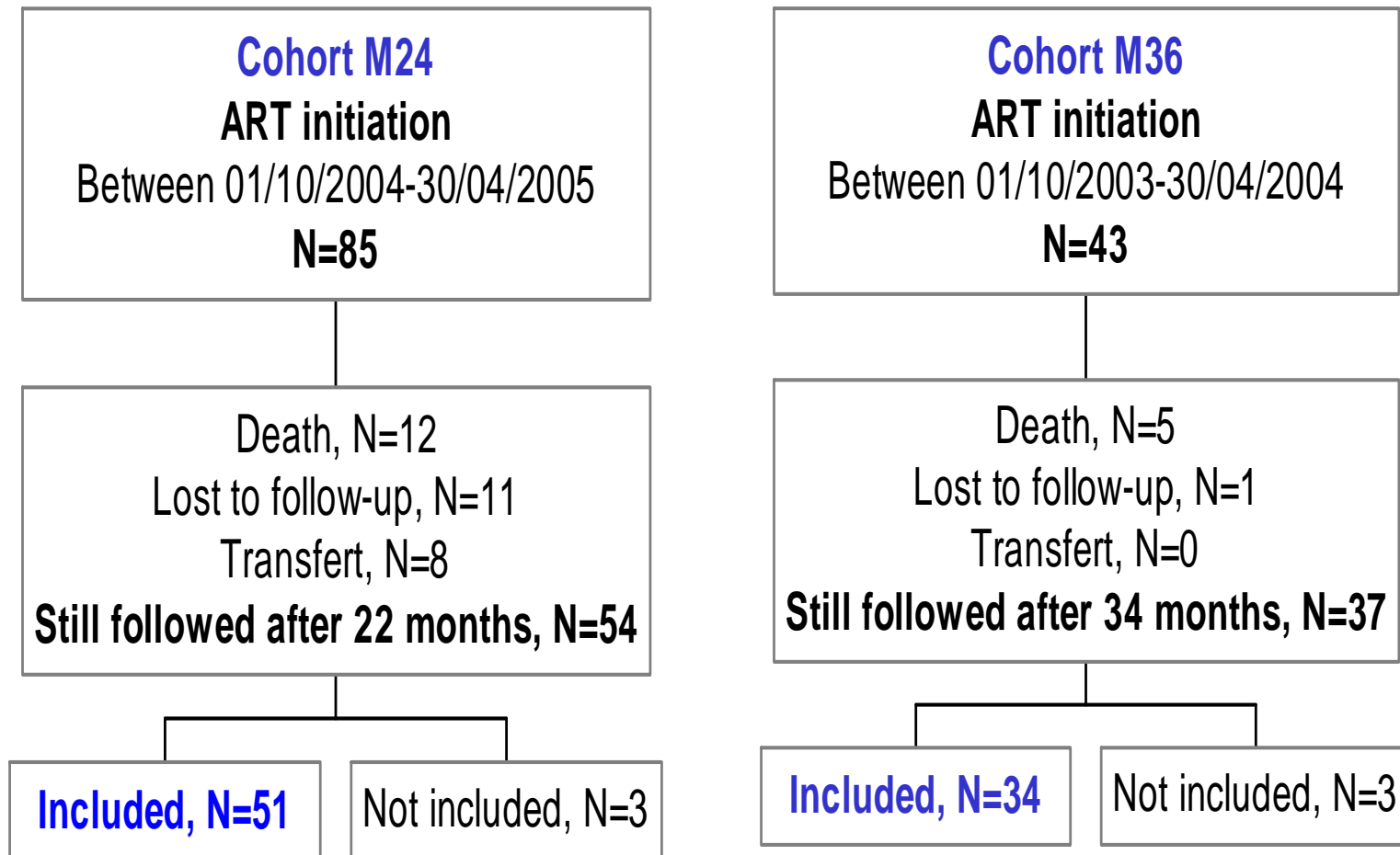
Cross-sectional evaluation

Cross sectional evaluation of viral load at 24 and 36 months on ART

- *Study period* : 01 Oct 2006 – 30 April 2007
- *Target population* : All children under 15 years receiving ART for 24 or 36 months +/- 2 months
- Clinical and biological evaluation including HIV viral load (VL) (detection threshold: 300 copies/ml)
- Factors associated with a $VL_{\geq} 10\ 000$ copies/ml studied by logistic regression

Results – Cross-sectional evaluation

Study population



Results – Cross-sectional evaluation

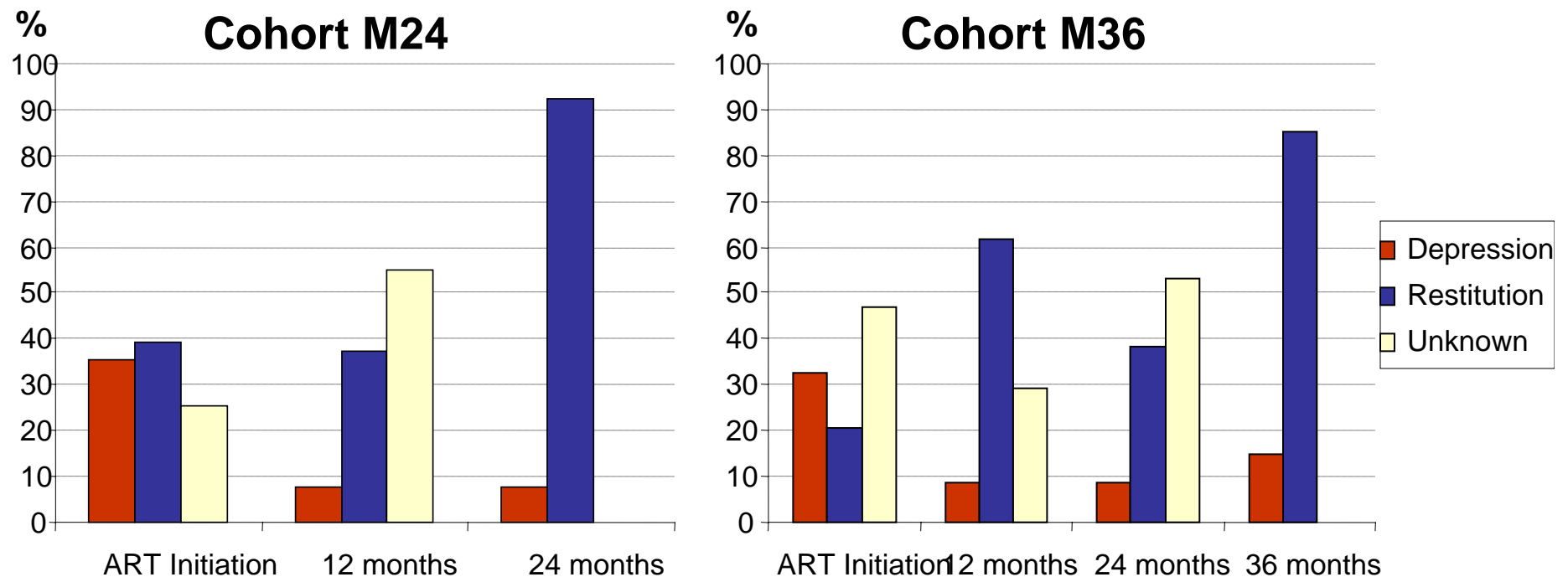
Characteristics of children surveyed

	Cohort M24 n=51	Cohort M36 n=34
Median age at ART initiation [IQR]	4 years [3-4]	4 years [3-4]
Male, n (%)	26 (51.0)	17 (50.0)
d4T-3TC-NVP at initiation, n (%)	36 (70.6)	20 (58.8)
Orphans, n (%)	17 (33.3)	9 (26.5)
Compliance in last 4 days (%)	50 (98.0)	31 (91.2)

Results – Cross-sectional evaluation

Immune restitution at M24 and M36

Immuno-depression at different time on ART, by cohort



At the time of the study

Median CD4 count [IQR] (cells/mm³) :

Immuno-depression :

M24, n=51

992 [525-1413]

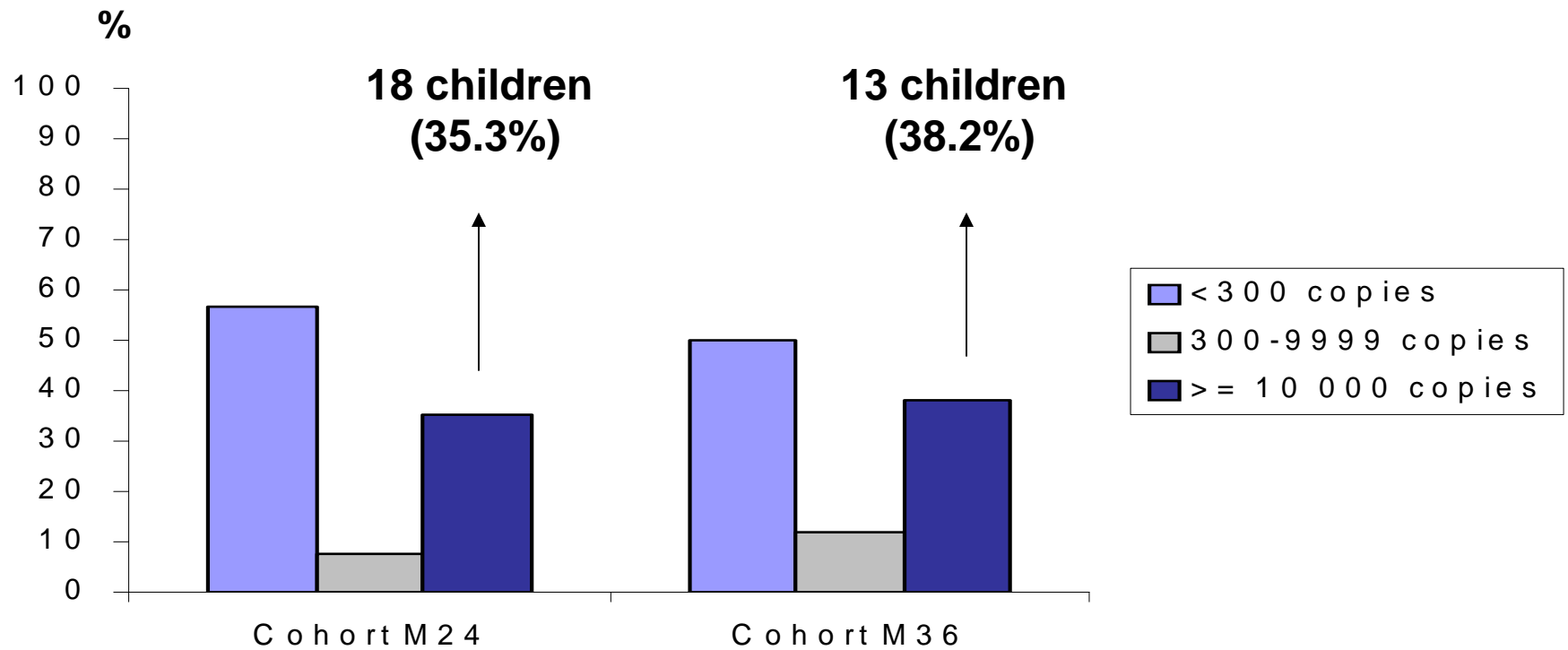
4 (7.8%)

M36, n=34

921 [604-1215]

3 (14.7%)

Results – Cross-sectional evaluation Viral load at M24 and M36



Results – Cross-sectional evaluation

Associated factors to viral load > 10,000 copies

Cohorts	VL<10 000 copies n=54	VL \geq 10 000 copies n=31	OR adjusted [IC95%]
M24 and M36 combined			
Age <5 years at ART initiation	18 (33.3)	15 (48.4)	3.2 [1.1-9.5]
CD4 < 700 cells/mm ³	15 (27.8)	15 (48.4)	4.0 [1.3-11.6]
Male	23 (42.3)	20 (64.5)	2.9 [1.1-7.7]

Discussion and Conclusions

Retrospective analysis 2001-07:

1. Survival of children was similar to that reported in adults living in remote areas
2. The highest mortality was found in the first 6 months of treatment

Cross sectional analysis 24m and 36m:

1. Good immune restitution
2. Only 50% of children had an undetectable viral load
3. High viral load associated with age < 5 years at ART initiation

Discussion and Conclusions

1. It is possible to treat children well, but children-specific challenges need to be considered
2. Better context-adapted treatment and adherence strategy needed
3. Late access to the clinic for young children: need for better link between PMTCT/MCH programs and ART programs
4. Late diagnosis in absence of point-of-care testing: symptom based diagnosis difficult → increased morbidity and mortality
5. Pediatric formulations need to be:
 - Easy to take (FDC): adherence and under-overdosing issues
 - Easy to store (no syrups): stigmatization, adherence, practicalities

Thank you ..

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