

Risk factors for being lost to treatment within the first six months following HAART initiation: a pooled analysis of data from 18 antiretroviral treatment programmes in low income countries

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Abstract # 60

Objective

To estimate the short-term incidence and the risk factors for loss to treatment (LTT) in HAART programmes in resource-limited settings.

Methods

Pooled analysis of data provided by 18 antiretroviral treatment programmes (Southern Africa 5, West Africa 6, East Africa 2, North Africa 1, Brazil 2, India 1, Thailand 1) within the Antiretroviral Therapy in Low-Income Countries (ART-LINC) collaboration.

Inclusion criteria for this analysis were : (i) HAART initiation < March 1st 2003 ; (ii) no history of previous antiretroviral treatment at HAART initiation; (iii) age ≥16 years ; (iv) at least one contact with the programme after HAART initiation; (v) available gender and initial HAART regimen.

Baseline was the date of HAART initiation. The date of study termination was baseline+6 months. Patients were defined as "lost to treatment" if: (i) their last contact with the programme was prior to the date of study termination ; (ii) they were not known to have died before the date of study termination ; (iii) no further information on their vital status had been obtained up to March 1st 2004 (ie: at least 6 months after the date of study termination for the last patient included in the analyses).

The probability of death, the probability of LTT, and the probability of being dead or lost to treatment were estimated using the Kaplan Meier method. Univariate and multivariate Cox proportional hazards regression models were used to study the association between LTT and : gender, initial HAART regimen, baseline age and CD4+ cell count, year of HAART initiation, free provision of antiretroviral (vs. not free), and existence in the programme of tracing procedures to investigate the vital status of patients lost to treatment. A second set of analyses was then performed to study the association between death and the same variables.

Results

1. Patients and follow-up

4445 of the 8659 patients recorded in the ART-LINC database were included in the analyses. The remaining 4214 were excluded for at least one of the following reasons: history of previous antiretroviral treatment (n=1044), HAART initiation ≥ March 1st 2004 (n=1990), unknown initial HAART regimen (n=174), unknown gender (n=16), age < 16 or unavailable (n=453), no contact with the programme after HAART initiation (n=942), and unknown date of HAART initiation (n=16).

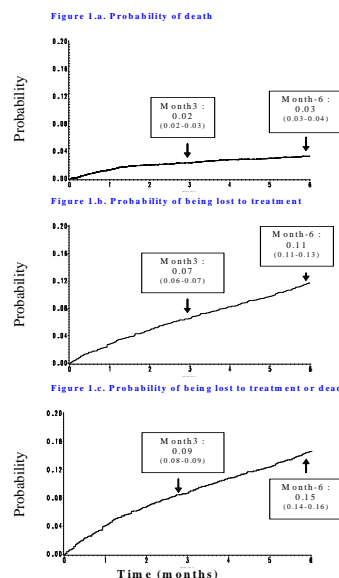
Patients characteristics are detailed in table 1.

Table 1 : baseline characteristics and status at study termination

	N=4445	Missing data %
Baseline characteristics		
Age (years), median (IQR)	35 (30-42)	none
Men, number (%)	2484 (56)	none
Year of HAART initiation, number (%)		
1998-2001	1583 (36%)	none
2002-2003	2862 (64%)	none
Initial HAART regimen, number(%)		
2 NRTIs + 1 PI	1115 (25%)	none
2 NRTIs + 1 NNRTI	2943 (66%)	none
Other	387 (9%)	none
HAART free of charge	2424 (55%)	none
Tracing procedures in the programme		
None	2315 (52%)	none
Telephone only	928 (21%)	none
Telephone and home visits	1202 (27%)	none
CD4 cell count (mm ³), median (IQR)	111 (37-217)	25%
WHO stage IV or CDC stage C, number (%)	1258 (28%)	48%
Total lymphocyte count (mm ³), median (IQR)	1350 (918-1925)	55%
Hemoglobin (g/L), median (IQR)	112 (96-130)	62%
Viral load (log ₁₀ copies/ml), median (IQR)	5.2 (4.6-5.7)	64%
Body Mass Index (kg/m ²), median (IQR)	20.9 (18.3-23.6)	77%
Status at Month-6		
Dead	140 (3.1%)	none
Lost to treatment	510 (11.5%)	none
Alive under treatment	3795 (85.4%)	none

PI: Protease inhibitor; NRTI: nucleoside reverse transcriptase inhibitor; NNRTI: non-nucleoside reverse transcriptase inhibitor; IQR: interquartile range

2. Probability of death or LTT



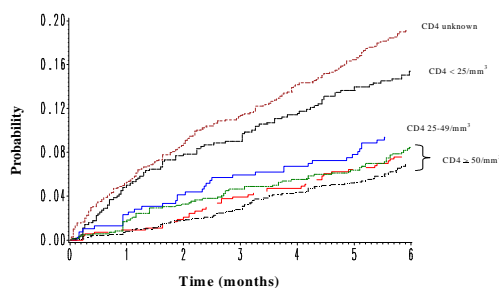
3. Factors associated with death or LTT

Table 2. factors associated with death and loss to treatment (multivariate analysis)

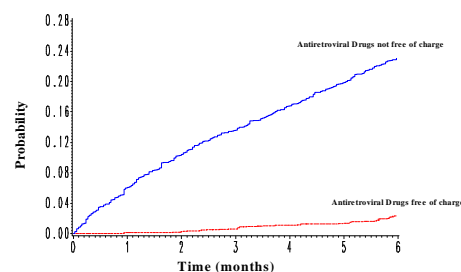
	Loss to treatment			Death		
	HR	95%CI	p	HR	95%CI	p
Sex						
Women	Ref	-	-	Ref	-	-
Men	1.02	(0.84-1.23)	0.85	0.75	(0.53-1.08)	0.12
Age						
< 30	Ref	-	-	Ref	-	-
30-35	0.74	(0.57-0.97)	0.03	1.35	(0.82-2.24)	0.24
35-40	0.92	(0.71-1.20)	0.53	1.47	(0.89-2.44)	0.14
> 40	0.98	(0.77-1.24)	0.85	0.97	(0.58-1.64)	0.92
Year of HAART Initiation						
< 1998	Ref	-	-	Ref	-	-
1998-2001	2.65	(0.64-10.98)	0.18	1.49	(0.91-2.46)	0.11
2002-2003	5.02	(1.21-20.87)	0.03	-	-	-
Initial HAART regimen						
2 NRTIs + 1 PI	Ref	-	-	Ref	-	-
2 NRTIs + 1 NNRTI	1.05	(0.69-1.60)	0.83	1.29	(0.63-2.63)	0.49
Other	0.62	(0.35-1.11)	0.11	1.14	(0.65-1.99)	0.64
HAART free of charge						
Yes	Ref	-	-	Ref	-	-
No	7.32	(5.36-10.00)	<0.001	1.32	(0.89-1.97)	0.17
Tracing procedures						
None	Ref	-	-	Ref	-	-
Telephone only	1.11	(0.86-1.44)	0.43	1.76	(1.09-2.84)	0.02
Telephone and home visits	0.64	(0.47-0.87)	0.01	2.37	(1.52-3.69)	<0.001
Baseline CD4 count						
≥ 200/mm ³	Ref	-	-	Ref	-	-
100-199/mm ³	0.96	(0.69-1.35)	0.83	2.77	(1.08-7.11)	0.03
50-99/mm ³	0.75	(0.51-1.10)	0.14	4.70	(1.85-11.93)	0.001
25-49/mm ³	0.93	(0.61-1.40)	0.71	5.27	(2.01-13.79)	<0.001
< 25/mm ³	1.41	(1.02-1.94)	0.04	12.51	(5.34-29.34)	<0.001
missing	1.12	(0.82-1.51)	0.48	4.95	(2.01-12.17)	<0.001

HR : Hazard Ratio; CI: confidence interval

4. Probability of LTT, by baseline CD4 count



5. Probability of LTT in patients, by free provision of antiretroviral drugs



Discussion

1) LTT was three times more frequent than death. Two results suggest that some patients considered as lost to treatment may have died : (i) the association of LTT with baseline CD4 count < 25/mm³ ; (ii) the association of existing tracing procedures in the programme with a lower risk of LTT and a higher risk of death.

LTT should therefore be taken into account when comparing survival probabilities between HAART programmes in low income countries.

2) There was a striking lower risk of LTT in patients with free access to antiretroviral drugs, and in patients from programmes with tracing procedures. Scaling up the access to HAART in low resource countries require adequate financial resource for drugs and human staff.

Acknowledgements

The ART-LINC collaboration is jointly funded by ANRS, France and NIH Office of AIDS Research (OAR), USA. We are grateful to Brigitte Bazin, Michel Kazatchkine, ANRS; Paolo Miotti, NIH, Washington and the ART-LINC collaborators and their patients. * The ART-LINC collaborators are by alphabetical order: Xavier Anglaret, Abidjan; Franck-Olivier Ba-Gomis, Abidjan; Andrew Boule, Cape Town; Kumar Kumarasamy, Chennai; Christian Laurent, Yaounde; Kamal Marhoum El Filali, Casablanca; James McIntyre, Johannesburg; Diana Dickinson, Gaborone; Ernest Ekong, Lagos; Hakima Himmich, Casablanca; Mina Hosseinipour, Lilongwe; Charles Kabugo, Kampala; Mana Khongphattayanayothin, Bangkok; Henriette Meilo, Douala; Steven Miller, Johannesburg; Adama Ndir, Dakar; Jessica Oyugi, Kampala; Mauro Schechter, Rio de Janeiro; Catherine Seyler, Abidjan; John Sidle, Eldoret; Eduardo Sprinz, Porto Alegre; Allou Sylla, Bamako; Besijn Tonwe-Gold, Abidjan; Stefaan van der Borgh, Amsterdam; and Robin Wood, Cape Town.