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Community-based ART programs in resource-limited settings can facilitate long-term program retention and low mortality: The example of The AIDS Support Organization (TASO)– Jinja, Uganda

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Background

- Participants in ART programs in rural African settings are challenged by the high costs of transportation which can lead to high rates of loss-to-follow-up (LTFU) and death
- We examined program retention among long-term participants of an ART program in rural Uganda which has used a community-based distribution of ART and satellite clinics since its inception in 2004

Methods

- We conducted a retrospective cohort analysis of all patients >18 years who initiated ART at TASO-Jinja between January 1, 2004 and July 31, 2009
- We identified all clients in community and facility-based ART delivery arms using an electronic clinical monitoring database. The catchment area included participants in villages up to 75km away from Jinja town
- Enrollees were expected to attend regular clinic or outreach visits every one- to-three months. CD4 cell count testing was offered every six months
- We calculated the proportion of participants who had at least one recorded clinic or outreach visit in the six months before June 1, 2013 and examined associations with the combined outcome of LTFU or death using Cox proportional hazards model.
- P-values were calculated using chi-square test for categorical variables and Wilcoxon's rank sum test for continuous variables

Results

- A total of 3340 participants began ART during 2004 – 2009 and the median time on ART in June 2013 was 5.7 years (IQR=4.1-7.2)
- 2379(71%) were females the median age was 40 years (IQR= 34- 46) and the median CD4 count at initiation was 184 cells/µL (IQR= 95 – 298)
- 1335 (40%) were residents of Jinja district and 2005 (60%) resided in outlying districts. Of these,-2317(69%) were retained in care, 577 (17%) died, 161 (5%) transferred out, 285 (9%) were LTFU
- The mortality rate was 3.22/100 and LTFU rate were 1.59/100 person years respectively

Table 1:

Bivariate analysis of participants who initiated ART between 2004 and 2009 categorized on the basis of their participation status in 2013

		Active or transferred out (N=2478)		Dead or Lost to follow-up (N=862)		P-value
	Total N	N/Median	(%)/(IQR)	N/Median	(%)/(IQR)	
Gender	3340					<0.001
Female		1839	(77)	540	(23)	
Male		639	(66)	322	(34)	
CD4 at ART initiation	3094					<0.001
<50		253	(52)	230	(48)	
50-199		936	(76)	298	(24)	
>=200		1212	(88)	165	(12)	
Hemoglobin count of participant at ARV initiation or clinical visit	2219					<0.001
<8		53	(63)	31	(37)	
>=8		1717	(80)	418	(20)	
WHO stage	2824					<0.001
Stage 1		38	(76)	12	(24)	
Stage 2		1142	(85)	205	(15)	
Stage 3		950	(77)	280	(23)	
Stage 4		140	(71)	57	(29)	
District of residence at ART initiation	3340					0.152
Iganga		370	(77)	113	(23)	
Jinja		960	(72)	375	(28)	
Kamuli		233	(73)	88	(27)	
Buikwe		438	(76)	136	(24)	
Mayuge		332	(76)	103	(24)	
Other		145	(76)	47	(24)	
Occupation	2915					0.045
Casual Labourer		189	(72)	72	(28)	
Paid Employee		178	(76)	57	(24)	
Peasant		907	(75)	299	(25)	
Vendor/Business person		322	(77)	96	(23)	
Other		220	(72)	86	(28)	
None		336	(69)	153	(31)	
Education level	2915					0.798
None/Preprimary/Other		352	(73)	129	(27)	
Some Primary		1186	(73)	429	(27)	
Some secondary		541	(75)	178	(25)	
Higher education		73	(73)	27	(27)	
First ARV regimen	3071					0.065
Efavirenz /zidovudine/lamivudine		259	(80)	63	(20)	
Efavirenz/stavudine/lamivudine		151	(76)	49	(25)	
Nevirapine/stavudine/lamivudine		715	(75)	234	(25)	
Nevirapine/zidovudine/lamivudine		1086	(80)	273	(20)	
Other ARV regimen		191	(79)	50	(21)	
Age at ART initiation	3340	40	(34-46)	39	(33-47)	0.344
CD4 at ART initiation	3094	201	(120-332)	110	(28-196)	<0.001
Year of ART initiation	3340	2006	(2005-2008)	2006	(2006-2008)	0.581

Table 2:

Multivariate analysis to time to morality and/or lost-to-follow-up

	HR (95% CI)	P-value		HR (95% CI)	P-value
Age at ART initiation	1.00 (0.99, 1.01)	0.720	**Year of ART initiation**	1.32(1.2, 1.46)	<0.001
Gender			**first ARV regimen**		
Female	1.00 (-)	<0.001	NVP/ AZT/ 3TC	1.00 (-)	0.003
Male	1.6(1.3, 1.97)		EFV/D4T/3TC	0.87(0.53, 1.44)	
CD4 at ART initation			EFV/ AZT/ 3TC	0.74(0.51, 1.09)	
>=200	1.00 (-)	<0.001	NVP/D4T/ 3TC	1.38(1.08, 1.76)	
50-199	1.86(1.46, 2.37)		Other ARV regimen	1.41(1.00, 1.99)	
<50	4.11(3.13, 5.4)		**Education level**		
WHO stage			None/Preprimary	1.00 (-)	0.400
Stage 1 & 2	1.00 (-)	0.002	Higher education	0.73(0.39, 1.38)	
Stage 3	1.36(1.1, 1.67)		Some secondary	0.81(0.58, 1.12)	
Stage 4	1.72(1.21, 2.43)		Some Primary	0.97(0.74, 1.28)	
District of residence at ART initiation			**Occupation**		
Jinja	1.00 (-)	0.562	Peasant	1.00 (-)	0.065
Buikwe	0.92(0.69, 1.22)		Casual Labourer	1.13(0.81, 1.58)	
Iganga	0.77(0.58, 1.03)		None	1.34(1.02, 1.74)	
Kamuli	0.92(0.66, 1.28)		Other	1.13(0.8, 1.58)	
Mayuge	0.95(0.7, 1.28)		Paid Employee	0.92(0.61, 1.39)	
Other	0.77(0.5, 1.19)		Vendor/Business person	0.79(0.57, 1.08)	

Conclusion

- Among participants enrolled in an ART program for a median of over 5 years, rates of mortality and LTFU were very low and did not differ based on the geographic residence of program participants.
- This suggests that community-based distribution systems can effectively mitigate the time and cost constraints associated with transportation to ART clinic sites

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