

Supplemental materials

Table S1. Sub-distribution hazard ratios (SHR) for tracing outcomes death, stop of combination antiretroviral therapy (cART), silent transfer, and retention on cART. Analysis based on 3508 patients with complete CD4-cell count, clinical stage, age and time on cART.

	Death SHR (95% CI)	Stop of cART SHR (95% CI)	Silent Transfer SHR (95% CI)	Retained on cART SHR (95% CI)
Sex				
Male	1	1	1	1
Female	0.48 (0.31-0.74)	0.99 (0.86-1.15)	1.36 (1.13-1.63)	1.01 (0.83-1.22)
CD4* (cells/ μ l)				
< 50	1	1	1	1
50-99	0.79 (0.66-0.94)	1.46 (1.14-1.87)	1.16 (0.87-1.55)	0.89 (0.62-1.27)
\geq 100	0.41 (0.35-0.48)	1.82 (1.50-2.21)	1.14 (0.91-1.42)	1.57 (1.22-2.01)
WHO clinical stage*				
I-II	1	1	1	1
III	1.17 (0.83-1.64)	0.72 (0.58-0.90)	0.75 (0.58-0.98)	0.64 (0.47-0.89)
IV	1.30 (0.91-1.87)	0.62 (0.48-0.80)	0.56 (0.41-0.77)	0.62 (0.43-0.90)
Last clinic visit				
< 2009	1	1	1	1
\geq 2009	0.75 (0.61-0.92)	1.02 (0.84-1.23)	1.62 (1.28-2.05)	0.36 (0.27-0.49)
Age** (year)				
< 16	1	1	1	1
16-29	1.39 (0.31-6.34)	1.78 (0.82-3.87)	0.57 (0.17-1.97)	1.65 (0.90-3.02)
30-39	1.67 (0.37-7.62)	1.62 (0.74-3.57)	0.60 (0.17-2.08)	1.97 (1.03-3.78)
\geq 40	2.16 (0.47-9.86)	1.51 (0.68-3.33)	0.66 (0.19-2.30)	1.78 (0.92-3.46)
Time on cART** (year)				
< 1	1	1	1	1
1-2	0.51 (0.42-0.64)	1.39 (1.16-1.67)	0.87 (0.68-1.11)	1.58 (1.25-1.99)
\geq 2	0.48 (0.37-0.64)	1.26 (1.04-1.54)	1.07 (0.77-1.48)	1.63 (1.17-2.26)
Interaction				
Female*clinical stage I-II	1			
Female*Clinical stage III	1.79 (1.13-2.84)			
Female*Clinical stage IV	2.76 (1.69-4.50)			

* at cART initiation, ** at last clinic visit

Supplementary Table S2: Cumulative probabilities for each tracing outcome at one to four years after cART initiation. Fitted on a subset of the data, excluding the study from Tweya et al [1].

	Year 1	Year 2	Year 3	Year 4
Died	19.1 (17.6 - 20.5)	21.9 (20.3 - 23.4)	23.2 (21.6 - 24.7)	23.2 (21.6 - 24.8)
Stopped cART	8.3 (7.2 - 9.3)	18.9 (17.5 - 20.4)	24.1 (22.5 - 25.6)	24.2 (22.6 - 25.8)
Transferred	7.1 (6.1 – 8.0)	10.9 (9.7 – 12.0)	12.5 (11.3 - 13.7)	12.6 (11.3 - 13.8)
Retained on cART	4.3 (3.5 – 5.0)	7.1 (6.1 – 8.0)	8.3 (7.2 - 9.3)	9.4 (8.3 - 10.4)
LTFU	61.3 (59.5 - 63.1)	41.3 (39.5 - 43.1)	32 (30.3 - 33.7)	30.6 (28.9 - 32.4)
Patients followed	1734	1166	903	893

Supplementary Table S3: Sub-distribution hazard ratios (SHR) for tracing outcomes death, stop of combination antiretroviral therapy (cART), silent transfer, and retention on cART. Model fitted on a subset of the data, excluding the study of Tweya et al [1].

	Death SHR (95% CI)	Stop of cART SHR (95% CI)	Silent transfer SHR (95% CI)	Retained on cART SHR (95% CI)
Sex				
Male	1	1	1	1
Female	0.65 (0.46-0.91)	0.92 (0.78-1.08)	1.32 (1.05-1.66)	0.96 (0.73-1.26)
CD4* (cells/ μl)				
< 50	1	1	1	1
50-99	0.72 (0.57-0.9)	1.46 (1.07-2)	1.5 (0.97-2.31)	0.56 (0.29-1.09)
\geq 100	0.41 (0.34-0.51)	1.83 (1.42-2.35)	1.72 (1.21-2.45)	1.9 (1.24-2.93)
WHO clinical stage*				
I-II	1	1	1	1
III	1.17 (0.84-1.63)	0.8 (0.65-0.98)	0.82 (0.63-1.06)	0.8 (0.58-1.1)
IV	1.46 (1.04-2.06)	0.66 (0.5-0.88)	0.61 (0.43-0.88)	0.56 (0.35-0.91)
Last clinic visit				
< 2009	1	1	1	1
\geq 2009	1.00 (0.54-1.83)	2.45 (1.56-3.86)	1.11 (0.66-1.86)	0.33 (0.2-0.53)
Age** (year)				
< 16	1	1	1	1
16-29	1.65 (0.89-3.05)	0.97 (0.67-1.39)	0.97 (0.48-1.94)	2.19 (1.16-4.12)
30-39	1.86 (1.01-3.42)	0.99 (0.7-1.42)	1.02 (0.5-2.09)	1.93 (0.95-3.9)
\geq 40	2.75 (1.5-5.05)	0.75 (0.52-1.08)	1.06 (0.51-2.19)	1.17 (0.55-2.49)
Time on cART** (year)				
< 1	1	1	1	1
1-2	0.64 (0.5-0.82)	1.8 (1.47-2.19)	1.36 (1.04-1.78)	1.46 (1.04-2.06)
\geq 2	0.54 (0.4-0.73)	1.5 (1.24-1.82)	1.55 (0.98-2.45)	0.96 (0.59-1.57)
Interaction				
Female*clinical stage I-II	1			
Female*clinical stage III	1.53 (1-2.34)			
Female*clinical stage IV	1.71 (1.09-2.68)			

* at cART initiation, ** at last clinic visit

Supplementary Table S4. Comparison of tracing studies included and excluded from the individual patient data (IPD) meta-analysis, by region in sub-Saharan Africa. Excluded studies were identified in a previous systematic review by Zurcher et al [2].

Included	Study / Region	Country	Setting	Age group	LTFU definition	Tracing method	Study period	No. traced This study/ Zürcher 2017
East Africa								
Yes	Geng 2015[3]	Kenya, Uganda, Tanzania	Urban	Adults	Missed appointment >90 days	Home visit	2009-2012	579/991*
Yes	Rachlis 2015[4]	Kenya	Urban	Adults and children	No visit >3 months	Home visit	2009-2011	881/851
Yes	Kiragga 2013[5]	Uganda	Urban	Adults	No visit for >3 months	Telephone, home visit	2005-2007	163/406**
No	Mekuria 2015[6]	Ethiopia	Urban	Adults	No visit for >1 month,	Telephone	2009-2012	116
No	Wubshet 2013[7]	Ethiopia	Urban	Adults	Missed appointment >3 months	Home visit	2005-2010	551
No	Makunde 2012[8]	Tanzania	Urban	Adults	No visit for >3 months	Home visit	2006-2008	89
No	Alamo 2012[9,10]	Uganda	Urban	Adults	No visit for >90 days	Home visit, buddy contact	2001-2010	164
No	Geng 2008[11]	Uganda	Rural	Adults	No visit for >6 months	Home visit	2004-2007	128
West Africa								
Yes	Mben 2012[12]	Cameroon	Urban	Adults	Missed appointment >1 month	Telephone, home visit, relatives	2006-2007	238/238
No	Saka 2013[13]	Togo	Mostly urban	Adults	Not reported	Telephone	2008-2011	1004
No	Onoka 2012[14]	Nigeria	Mostly urban	Adults	Missed ≥ 3 appointments	Telephone, home visit	2007-2007	150
Southern Africa								
Yes	Ardura-Garcia 2015[15]	Malawi	Urban	Children	Missed appointment ≥ 3 weeks	Home visit	2006-2010	201/201
Yes	Tweya 2013[1]	Malawi	Urban	Adults	Missed appointment >3 weeks	Telephone, home visit	2006-2010	4558/4467

Yes	Caluwaerts 2009[16]	Mozambique	Urban	Adults	No visit for >60 days	Home visit	2002-2007	594/594
No	Weigel 2011[17]	Malawi	Urban	Adults and children	Missed appointment >2 weeks	Telephone, home visit	2002-2005	659
No	Henriques 2012[18]	Malawi	Rural	Adults	Missed appointment >1 month	Home visit	2004-2007	305
No	Peltzer 2011[19]	South Africa	Mostly urban	Adults	Missed appointment \geq 2 months	Telephone, home visit	2007-2008	169
No	McGuire 2010[20]	Malawi	Rural	Adults	Missed appointment >1 month	Home visit	2004-2007	624
No	McGuire 2010[20]	Malawi	Rural	Children	Missed appointment >1 month	Home visit	2004-2007	32
No	Bisson 2008[21]	Botswana	Urban	Adults	Missed appointment >1 month	Telephone, home visit	2003-2003	68
No	Krebs 2008[22]	Zambia	Urban	Adults	Missed appointment	Home visit	2005-2005	654
No	Dalal 2008[23]	South Africa	Urban	Adults	Missed appointment for \geq 6 weeks	Telephone, home visit	2004-2005	267
No	Maskew 2007[24]	South Africa	Urban	Adults	Missed appointment	Telephone	2006-2007	154
No	Yu 2007[25]	Malawi	Rural	Mostly adults	No visit for >3 months	Home visit	2004-2006	253

Included studies are shaded in grey.

* 579 patients with tracing outcomes were communicated.

**243 patients cART non-naïve at program enrolment were excluded from our analysis.

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