

Supporting information

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Table 1. Cluster-level fidelity to HIV self-testing intervention

	Population N	CBDAs N	HIVST kits distributed N	N	Endline survey		
					Heard of self- testing n (%)	Ever self-tested n (%)	Self-tested in the last 12 months n (%)
HIVST							
Chifunga	3933	9	7357	251	233 (92.8%)	87 (34.7%)	76 (30.3%)
Chikowa	6918	24	22697	251	224 (89.2%)	70 (27.9%)	64 (25.5%)
Chikweo	6471	51	90582	265	239 (90.2%)	115 (43.4%)	106 (40.0%)
Kunenekude	2947	15	14145	254	223 (87.8%)	92 (36.2%)	82 (32.3%)
Luwani	2638	8	5769	188	147 (78.2%)	71 (37.8%)	54 (28.7%)
Madziabango	2434	13	10579	228	211 (92.5%)	105 (46.1%)	100 (43.9%)
Magareta	3544	9	11864	233	218 (93.6%)	131 (56.2%)	114 (48.9%)
Mangamba	3752	21	20159	290	236 (81.4%)	75 (25.9%)	69 (23.8%)
Mpemba	5801	18	19994	229	192 (83.8%)	104 (45.4%)	96 (41.9%)
Namanja	2122	22	53402	272	258 (94.9%)	185 (68.0%)	160 (58.8%)
Soche Maternity	3830	13	17181	121	113 (93.4%)	62 (51.2%)	53 (43.8%)
Total	44390	203	273729	2582	2294 (88.8%)	1097 (42.5%)	974 (37.7%)
SOC							
Dziwe	6244			232	60 (25.9%)	3 (1.3%)	2 (0.9%)
Ligowe	6649			300	60 (20.0%)	2 (0.7%)	2 (0.7%)
Lirangwe	7972			252	29 (11.5%)	3 (1.2%)	1 (0.4%)
Makata	3283			267	38 (14.2%)	2 (0.7%)	1 (0.4%)
Mbonechera	3526			181	40 (22.1%)	1 (0.6%)	1 (0.6%)
Mkwepere	3021			243	186 (76.5%)	112 (46.1%)	105 (43.2%)
Nayuchi	3298			332	255 (76.8%)	69 (20.8%)	63 (19.0%)
Ngokwe	4914			256	146 (57.0%)	43 (16.8%)	33 (12.9%)
Pensulo	5532			250	46 (18.4%)	4 (1.6%)	3 (1.2%)
Thambani	3915			288	24 (8.3%)	1 (0.3%)	0 (0.0%)
Tulonkhondo	3134			307	33 (10.7%)	0 (0.0%)	0 (0.0%)
Total	51488			2908	917 (31.5%)	240 (8.3%)	211 (7.3%)

CBDAs, community-based distribution agents; HIVST, HIV self-testing; SOC, standard of care.

Table 2. Household and individual response rates at baseline and endline

	Households enumerated N	Households sampled n/N (%)	Individuals in sampled households N	Individuals \geq 18 years surveyed and included in primary analysis		
				Overall n/N (%)	Males n/N (%)	Females n/N (%)
Baseline						
HIVST	2286	1633/2286 (71.4%)	3577	2809/3577 (78.5%)	1170/1676 (69.8%)	1639/1901 (86.2%)
SOC	2349	1643/2349 (69.9%)	3567	2664/3567 (74.7%)	1085/1617 (67.1%)	1579/1950 (81.0%)
Endline						
HIVST	1951	1525/1951 (78.2%)	3355	2582/3355 (77%)	1075/1546 (69.5%)	1507/1809 (83.3%)
SOC	1782	1489/1782 (83.6%)	3699	2908/3699 (78.6%)	1264/1746 (72.4%)	1644/1953 (84.2%)

HIVST, HIV self-testing; SOC, standard of care.

Table 3. Comparison of baseline population characteristics by study arm

	HIVST	SOC
	n (%)	n (%)
Household characteristics	(N=1467)	(N=1426)
Adults (median/range) *	2 (1-8)	2 (1-7)
Children (median/range) *	2 (0-8)	2 (0-10)
Household wealth index †		
Lowest	590 (40.4%)	717 (50.3%)
Middle	382 (26.1%)	332 (23.3%)
Highest	489 (33.5%)	376 (26.4%)
Individual characteristics	(N=2809)	(N=2664)
Age (median/range)	31 (16-96)	31 (16-96)
Male	1170 (41.7%)	1085 (40.7%)
Age group		
16-19 years	445 (15.8%)	407 (15.3%)
20-24 years	507 (18.0%)	476 (17.9%)
25-39 years	971 (34.6%)	934 (35.1%)
≥ 40 years	886 (31.5%)	847 (31.8%)
Marital status ‡		
Married or living together	1938 (69.0%)	1744 (65.5%)
Separated, divorced or widowed	382 (13.6%)	461 (17.3%)
Never married	488 (17.4%)	458 (17.2%)
Educational attainment §		
None	602 (21.4%)	665 (25.0%)
Primary	1740 (62.0%)	1661 (62.4%)
Secondary or higher	465 (16.6%)	337 (12.7%)
Literate	1864 (66.4%)	1660 (62.3%)
Resident in last 12 months	2736 (97.4%)	2612 (98.0%)
Self-rated health status		
Very good	814 (29.0%)	699 (26.2%)
Good	1163 (41.4%)	1191 (44.7%)
Fair	627 (22.3%)	617 (23.2%)
Poor	204 (7.3%)	157 (5.9%)

HIVST, HIV self-testing; SOC, standard of care.

* 3 missing values in the HIVST arm and 1 missing value in the SOC arm.

† 6 missing values in the HIVST arm and 1 missing value in the SOC arm.

‡ 1 missing values in the HIVST arm and 1 missing value in the SOC arm.

§ 2 missing values in the HIVST arm and 1 missing value in the SOC arm.

|| 1 missing value in the HIVST arm and 1 missing value in the SOC arm.

¶ 1 missing value in the HIVST arm.

Table 4. Post-hoc outcomes by study arm

	HIVST		SOC		Risk difference (95% CI)	Adjusted risk difference (95% CI)	Risk ratio (95% CI)	Adjusted risk ratio (95% CI)
	n/N (%)	GM	n/N (%)	GM	GM	p-value	p-value	p-value
HIV testing in the last 12 months								
Stratified by age group *								
16-19 years	252/366 (68.9%)	69.5%	185/439 (42.1%)	39.2%	27.5% (13.4-41.5%) <0.001	26.1% (12.9-39.2%) <0.001	1.77 (1.31-2.41) <0.001	1.78 (1.33-2.38) <0.001
20-39 years	1062/1400 (75.9%)	75.8%	897/1556 (57.6%)	56.3%	18.6% (8.7-28.6%) <0.001	15.0% (4.7-25.3%) 0.007	1.35 (1.14-1.59) 0.001	1.27 (1.06-1.51) 0.01
≥ 40 years	454/816 (55.6%)	54.0%	340/913 (37.2%)	37.4%	15.2% (4.5-25.9%) 0.008	13.9% (2.0-25.7%) 0.03	1.44 (1.14-1.83) 0.005	1.38 (1.06-1.8) 0.02
Lifetime HIV testing								
Stratified by age group †								
16-19 years	280/366 (76.5%)	77.0%	239/439 (54.4%)	53.5%	21.7% (9.5-33.8%) 0.001	18.6% (7.3-29.9%) 0.003	1.44 (1.16-1.78) 0.002	1.38 (1.13-1.7) 0.004
≥ 20 years	1963/2216 (88.6%)	88.9%	2044/2469 (82.8%)	82.8%	6.1% (2.5-9.7%) 0.002	4.4% (0.5-8.2%) 0.03	1.07 (1.03-1.12) 0.002	1.05 (1.01-1.1) 0.03
Stratified by sex ‡								
Male	898/1075 (83.5%)	83.7%	908/1264 (71.8%)	72.2%	11.6% (5.3-18.0%) 0.001	10.2% (3.1-17.2%) 0.007	1.16 (1.07-1.26) 0.001	1.14 (1.04-1.25) 0.007
Female	1345/1507 (89.3%)	89.8%	1375/1644 (83.6%)	83.5%	6.4% (2.4-10.4%) 0.004	3.4% (-0.9-7.7%) 0.12	1.08 (1.03-1.13) 0.004	1.04 (0.99-1.09) 0.13
Stratified by household wealth index								
Lowest	612/723 (84.6%)	84.5%	669/902 (74.2%)	73.8%	10.8% (4.5-17.1%) 0.002	9.2% (3.0-15.4%) 0.006	1.15 (1.06-1.24) 0.002	1.12 (1.04-1.21) 0.005
Middle	721/829 (87.0%)	87.2%	717/868 (82.6%)	82.60%	4.7% (0.6-8.9%) 0.03	1.6% (-3.2-6.3%) 0.49	1.06 (1.01-1.11) 0.03	1.02 (0.96-1.08) 0.53
Highest	846/961 (88.0%)	89.2%	801/1013 (79.1%)	79.5%	9.5% (3.7-15.3%) 0.003	7.9% (3.2-12.5%) 0.002	1.12 (1.05-1.2) 0.003	1.1 (1.04-1.17) 0.002
ART initiation per 100,000 population across intervention period								

Stratified by period ¶									
0-5 months	214/44390 (482.1)	439.2	185/51488 (359.3)	282.1	173.8 (-77.6-425.2) 0.17	142.6 (-81.5-366.7) 0.20	1.56 (0.79-3.05) 0.19	1.42 (0.8-2.52) 0.22	
6-11 months	198/44390 (446.0)	448.1	147/51488 (285.5)	241.9	211.0 (39.8-382.2) 0.02	194.8 (31.4-358.1) 0.02	1.85 (1.1-3.13) 0.02	1.75 (1.08-2.82) 0.03	
12-16 months	115/44390 (259.1)	221.4	136/51488 (264.1)	199.6	-17.9 (-176.4-140.6) 0.82	-28.3 (-186.5-129.9) 0.72	1.11 (0.59-2.09) 0.74	1.07 (0.57-2.01) 0.84	

ART, antiretroviral therapy; GM, geometric mean (of cluster-level proportions); HIVST, HIV self-testing; k, coefficient of variation in health facility-defined clusters; SOC, standard of care.

HIV testing outcomes adjusted for cluster-level baseline outcomes (testing in the last 12 months) and individual-level covariates (age, sex, marital status). Sub-group analysis by age group adjusts for the same covariates except for age group. Sub-group analysis by sex adjusts for the same covariates except for sex. ART initiation outcome adjusted for cumulative incidence of ART initiations in 12-month pre-intervention period.

* P-value for interaction (20-39 years versus 16-19 years), p=0.13. P-value for interaction (≥ 40 years versus 16-19 years), p=0.40.

† P-value for interaction, p=0.02.

‡ P-value for interaction, p=0.07.

§ P-value for interaction (middle versus lowest), p=0.005. P-value for interaction (highest versus lowest), p=0.51.

|| Denominator for ART initiations is the estimated cluster population of adults ≥ 16 years, which was estimated using village and health facility registers.

¶ P-value for interaction (6-11 months versus 0-5 months), p=0.38. P-value for interaction (12-16 months versus 0-5 months), p=0.42.

Figure 1. Cluster risks for primary and secondary HIV testing outcomes

ART, antiretroviral therapy; HIVST, HIV self-testing; SOC, standard of care. Comparison of cluster risks for primary and secondary outcomes by study arm, with blue circles indicating cluster risks and red triangles indicating geometric means of cluster risks.

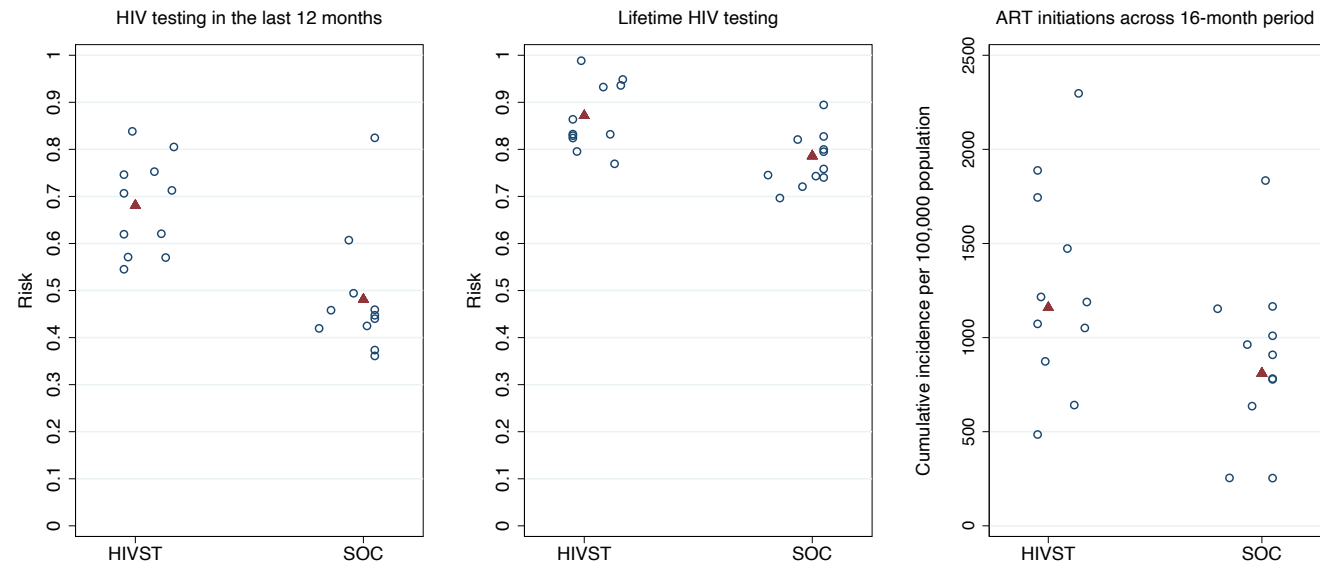


Figure 2. Fidelity to HIV self-testing intervention by sex and age group

HIVST, HIV self-testing; SOC, standard of care. The proportion ever self-testing and 95% CI adjusted for clustering following the HIVST intervention. Data are stratified by study arm, sex and age group.

