

Supplementary Digital Content 1: Table of Minimum Requirements for Health Facilities to Graduate as ART Initiator Clinics (Hubs) or Spokes in Swaziland during 2004–2010*

	ART Initiator Clinic (Hubs)	Spokes
Human resources	• Doctor visit at least once in two weeks • At least three nurses/nursing assistants should have IMAI training • Case load per nurse per day (for all visits) below 40 patients per nurse per day • Presence of at least one trained support staff (Expert Client or Phlebotomist) • All clinical staff trained on data entry systems (paper-based or computerized, as appropriate, to ensure adequate accountability for drugs and clinical care) • Availability of a dispenser (nurse dispenser or appropriately trained dispenser)	• Doctor or Nurse visit at least once in a month (for supportive supervision and mentoring and to manage referred cases) • At least two nurses/nursing assistants should have IMAI training • All clinical staff trained on data entry systems (paper-based or computerized, as appropriate, to ensure adequate accountability for drugs and clinical care)
Infrastructure	• At least two consultation rooms • Well ventilated waiting area • Laboratory/Phlebotomist area • Sample/Specimen transport system (at least once/week) • Data room/ Record storage • Functioning wash rooms for staff and patients • Dispensing area (integrated with all other medications) • Bulk drug storage area (fortified and air conditioned) • Individual counseling area	• At least two consultation rooms • Well ventilated waiting area • Sample/Specimen transport system (at least once/week) • Data room/ Record storage • Functioning wash rooms for staff and patients • Dispensing area (integrated with all other medications) • Bulk drug storage area (fortified and air conditioned) • Individual counseling area
Health management information system	• Stock keeping record/ system • Data capturing system (Manual Registers or Computers) • For Electronic registers, must use the National HMIS system for HIV reporting. • Patient files	• Stock keeping record/ system • Data capturing system (Manual Registers or Computers). • Patient files
Standard operational procedures	• Documented evidence of a monthly MDT meeting at the facility • Communication forms (referral forms, ART ordering forms) • Reporting mechanisms (Written procedure how to report) • Provider resources (National guidelines)	• Communication forms (referral forms, ART ordering forms) • Reporting mechanisms (Written procedure how to report) • Provider resources (National guide lines)

Abbreviations: IMAI, integrated management of adult illness; HMIS, health management information system; MDT, multi-disciplinary team; ART, antiretroviral therapy

*Items in bold represent differences between criteria for ART initiator clinics and refill clinics

Supplementary Digital Content 2: Sub-population Analysis of Predictors of Death and LTFU among Adults Starting ART at Central Facilities Capable of Down-referral (N=1,516) — Swaziland, 2004–2010

		LTFU								Death							
		Original	Following Multiple Imputation (N=1,516)								Following Multiple Imputation (N=1,516)						
		Rate/ 100PY	HR	(95% CI)	p	AHR*	(95% CI)	p	Rate/ 100PY	HR	(95% CI)	p	AHR*	(95% CI)	p		
Down-referred																	
	No	1,149	13.6	1.00	--	1.00	--	--	1.36	1.00	--	--	1.00	--	--		
	Yes	367	3.1	0.41	(0.31-0.53)	<0.001	0.41	(0.30-0.57)	0.001	2.57	1.65	(0.26-10.53)	0.511	2.15	(0.39-11.81)	0.294	
Age at enrolment																	
	Per 10-year increase	1,516	--	0.88	(0.77-1.01)	0.056	0.92	(0.78-1.07)	0.201	--	1.15	(0.98-1.36)	0.077	1.19	(0.96-1.48)	0.086	
Sex																	
	Female	939	11.0	1.00	--	1.00	--	--	1.71	1.00	--	--	1.00	--	--		
	Male	577	13.7	1.17	(0.96-1.42)	0.090	1.23	(1.01-1.48)	0.041	3.62	2.00	(1.56-2.57)	0.001	1.91	(1.18-3.10)	0.020	
Marital Status																	
	Married	635	9.9	1.00	--	1.00	--	--	1.66	1.00	--	--	1.00	--	--		
	Single widowed divorced	714	13.9	1.36	(0.96-1.92)	0.059	1.20	(0.91-1.58)	0.108	3.07	1.76	(1.05-2.98)	0.040	1.92	(0.96-3.85)	0.058	
Year of ART Start																	
	Per 1-year increase	1,516	--	1.09	(0.94-1.26)	0.192	1.16	(1.00-1.33)	0.046		0.80	(0.62-1.04)	0.084	0.85	(0.69-1.05)	0.106	
WHO Stage																	
	Stage I/II	490	9.4	1.00	--	1.00	--	--	0.72	1.00	--	--	1.00	--	--		
	Stage III	727	10.7	1.23	(0.89-1.71)	0.158	1.06	(0.80-1.41)	0.582	2.27	3.50	(1.20-10.19)	0.031	1.72	(0.59-5.03)	0.232	
	Stage IV	214	25.9	2.56	(1.71-3.85)	0.002	1.74	(1.24-2.44)	0.013	8.02	10.28	(3.61-29.26)	0.003	2.87	(0.95-8.72)	0.058	
Functional Status																	
	Per 1-unit worsening in functional status	1,302	--	1.91	(1.44-2.55)	0.004	1.62	(1.26-2.10)	0.008	--	4.63	(2.72-7.87)	0.002	3.00	(1.80-4.99)	0.006	
Weight																	
	Per 10 Kg increase	1,360	--	0.80	(0.70-0.93)	0.013	0.89	(0.80-0.98)	0.027	--	0.61	(0.46-0.80)	0.010	0.86	(0.62-1.20)	0.245	
CD4 Count																	
	≥200 cells/μL	418	11.0	1.00	--	1.00	--	--	1.11	1.00	--	--	1.00	--	--		
	50-<200 cells/μL	739	10.2	1.06	(0.85-1.34)	0.486	1.01	(0.77-1.33)	0.927	2.04	2.21	(1.16-4.18)	0.030	1.28	(0.52-3.10)	0.296	
	<50 cells/μL	282	19.1	1.86	(1.46-2.38)	0.002	1.32	(0.98-1.76)	0.059	5.29	5.24	(2.94-9.35)	0.002	1.68	(0.72-3.92)	0.118	
Hemoglobin																	
	≥8 g/dL	981	11.0	1.00	--	1.00	--	--	1.85	1.00	--	--	1.00	--	--		
	<8 g/dL	86	25.3	2.08	(0.92-4.69)	0.058	1.55	(0.69-3.50)	0.129	10.09	4.87	(1.98-11.98)	0.015	3.31	(0.51-21.39)	0.087	
Co-trimoxazole																	
	Prescribed CTX	1,068	10.7	1.00	--	1.00	--	--	2.33	1.00	--	--	1.00	--	--		
	Not prescribed CTX	448	15.3	1.35	(1.03-1.78)	0.035	1.36	(1.08-1.71)	0.019	2.51	0.98	(0.51-1.88)	0.934	1.16	(0.59-2.29)	0.581	
Treatment Supporter																	
	Yes	1,345	11.7	1.00	--	1.00	--	--	2.32	1.00	--	--	1.00	--	--		
	No	25	25.2	2.04	(0.72-5.74)	0.122	2.27	(0.84-6.11)	0.080	5.33	2.15	(0.38-12.15)	0.204	1.34	(0.10-17.26)	0.714	

Abbreviations: LTFU, loss to follow-up; HR, hazards ratio; AHR, adjusted hazards ratio; CI, confidence interval; ART, antiretroviral therapy; WHO, World Health Organization; CTX, co-trimoxazole.

*All variables in this table were included in the multivariable model.

Supplementary Digital Content 3: Analysis of Predictors of Attrition (Death or LTFU) among Adults Starting ART in Swaziland during 2004–2010

		Full model (N=2,510) to Assess Predictors of Attrition								Sub-population analysis (N=1,516) to Assess Predictors of Attrition							
		Original # patients	Rate/ 100PY	HR	(95% CI)	p	AHR*	(95% CI)	p	Restricted # patients	Rate/ 100PY	HR	(95% CI)	p	AHR*	(95% CI)	p
Down-referred																	
	No	2150	14.7	1.00	--	--	1.00	--	--	1,149	16.18	1.00	--	--	1.00	--	--
	Yes	360	4.5	0.55	(0.38-0.80)	0.005	0.50	(0.34-0.76)	0.003	367	4.48	0.52	(0.29-0.94)	0.037	0.56	(0.33-0.93)	0.034
Site of ART Initiation																	
	Hub only	483	14.7	1.00	--	--	1.00	--	--	--	--	--	--	--	--	--	--
	Hub with Spokes	1,516	14.3	1.02	(0.66-1.60)	0.908	0.90	(0.62-1.29)	0.521	--	--	--	--	--	--	--	--
	Spoke	511	10.1	0.62	(0.44-0.87)	0.009	0.54	(0.40-0.73)	0.001	--	--	--	--	--	--	--	--
Age at enrolment			0.0														
	Per 10-year increase	2,510	--	0.93	(0.87-0.99)	0.024	0.94	(0.87-1.01)	0.068	1,516	--	0.92	(0.83-1.03)	0.110	0.96	(0.85-1.08)	0.378
Sex																	
	Female	1,621	12.4	1.00	--	--	1.00	--	--	939	12.72	1.00	--	--	1.00	--	--
	Male	889	16.2	1.28	(1.11-1.47)	0.002	1.28	(1.11-1.47)	0.003	577	17.29	1.28	(1.10-1.48)	0.009	1.31	(1.12-1.55)	0.010
Marital Status																	
	Married	1,000	11.9	1.00	--	--	1.00	--	--	635	11.56	1.00	--	--	1.00	--	--
	Single widowed divorced	1,126	15.5	1.24	(1.06-1.46)	0.018	1.19	(0.99-1.42)	0.055	714	16.98	1.41	(1.13-1.76)	0.019	1.30	(1.00-1.69)	0.052
Year of ART Start																	
	Per 1-year increase	2,510	--	1.07	(0.97-1.20)	0.168	1.18	(1.05-1.32)	0.008	1,516	--	1.03	(0.86-1.22)	0.712	1.09	(0.94-1.28)	0.193
WHO Stage																	
	Stage I/II	960	10.0	1.00	--	--	1.00	--	--	490	10.14	1.00	--	--	1.00	--	--
	Stage III	967	13.3	1.49	(1.20-1.85)	0.002	1.17	(0.96-1.43)	0.098	727	13.02	1.39	(0.96-2.01)	0.072	1.10	(0.80-1.50)	0.452
	Stage IV	293	30.1	2.99	(2.18-4.10)	<0.001	1.91	(1.49-2.45)	<0.001	214	33.73	3.08	(1.88-5.06)	0.003	1.82	(1.24-2.69)	0.014
Functional Status																	
	Per 1-unit worsening in functional status	2,072	--	2.09	(1.73-2.51)	<0.001	1.73	(1.48-2.04)	<0.001	1,302	--	2.25	(1.63-3.12)	0.002	1.84	(1.42-2.38)	0.003
Weight																	
	Per 10 Kg increase	2,232	--	0.79	(0.73-0.85)	<0.001	0.88	(0.84-0.93)	0.001	1,360	--	0.77	(0.67-0.89)	0.007	0.88	(0.80-0.96)	0.019
CD4 Count																	
	≥200 cells/μL	746	12.1	1.00	--	--	1.00	--	--	418	12.27	1.00	--	--	1.00	--	--
	50-<200 cells/μL	1,167	12.2	1.16	(1.01-1.34)	0.041	1.03	(0.90-1.19)	0.636	739	12.16	1.15	(0.92-1.44)	0.163	1.01	(0.83-1.23)	0.874
	<50 cells/μL	383	22.0	2.01	(1.70-2.38)	<0.001	1.30	(1.12-1.51)	0.003	282	24.34	2.14	(1.65-2.78)	0.001	1.33	(1.01-1.74)	0.044
Hemoglobin																	
	≥8 g/dL	1,497	12.6	1.00	--	--	1.00	--	--	981	12.94	1.00	--	--	1.00	--	--
	<8 g/dL	115	30.3	2.35	(1.81-3.06)	0.001	1.73	(1.27-2.35)	0.008	86	33.92	2.38	(1.20-4.69)	0.035	1.74	(0.75-4.01)	0.087
Co-trimoxazole																	
	Prescribed CTX	1,709	12.6	1.00	--	--	1.00	--	--	1,068	13.04	1.00	--	--	1.00	--	--
	Not prescribed CTX	801	16.3	1.22	(0.99-1.50)	0.055	1.28	(1.06-1.54)	0.016	448	17.77	1.29	(0.98-1.70)	0.065	1.33	(1.04-1.69)	0.031
Treatment Supporter																	
	Yes	2,078	13.5	1.00	--	--	1.00	--	--	1,345	14.03	1.00	--	--	1.00	--	--
	No	39	25.6	1.85	(0.96-3.56)	0.062	1.98	(1.02-3.85)	0.046	25	30.27	2.06	(0.82-5.14)	0.090	2.19	(0.80-5.99)	0.091

Abbreviations: LTFU, loss to follow-up; HR, hazards ratio; AHR, adjusted hazards ratio; CI, confidence interval; ART, antiretroviral therapy; WHO, World Health Organization; CTX, co-trimoxazole.

*All variables in this table were included in the multivariable model.