SUPPLEMENTARY TABLES

Supplementary Table 1. Inclusion/exclusion criteria for publications and abstracts

Parameter	Inclusion criteria	Exclusion criteria
Population	All ages and sexes; confirmed HIV positive status; on any regimen of lifelong antiretroviral treatment	Pregnant women in PMTCT programs; on ART for HIV prevention (PEP or PrEP)
Geographic region	Sub-Saharan Africa	None
Intervention	Delivery of lifelong ART that differs from standard or conventional care in terms of at least one of population, location, frequency, or provider cadre	Report solely about standard or conventional model for delivering ART, absent any differentiation based on population, location, frequency, or provider cadre
Study design	Reports primary, patient-level data from retrospective or prospective cohorts collected under any study design (trial, observational) with or without a comparison group	Systematic or other reviews, case series or reports, treatment guidelines, mathematical models, editorials, commentaries
Required descriptive data about model	Describes all of patients, location, frequency, provider, provider cadre, and services provided (see below for further explanation of this criterion)	Insufficient description of all the characteristics needed to define the model
Comparator	Not required; single arm evaluations are eligible	None
Outcomes	Reports at least one of coverage of population in need, uptake of ART, clinical outcomes, costs/resource utilization, acceptability to patients or providers, or feasibility of implementation	Insufficient detail provided to estimate at least one outcome
Timing	A majority of follow up data report on the delivery of antiretroviral treatment on or after January 1, 2016	A majority of data accrued before January 1, 2016
Sector	Services provided to the public sector through government-managed public health infrastructure or through NGO/private programs or facilities that serve the uninsured sector	Services or programs for privately (commercially) insured patients

Supplementary Table 2. Search strategy

Web of science	
#1	TS=(Africa South of the Sahara OR Sub-Saharan Africa OR Subsaharan Africa OR Africa, Sub- Saharan)
#2	TS=(HIV Seropositiv* OR Seropositiv* HIV OR Seropositiv*, HIV OR AIDS Seropositiv* OR Seropositiv*, AIDS OR Anti-HIV Positiv* OR Anti HIV Positiv* OR HTLV-III Seropositiv* OR HTLV III Seropositiv* OR HIV Seroconversion* OR Seroconversion*, HIV OR HTLV-III Seroconversion* OR HTLV III Seroconversion* OR Seroconversion*, HTLV-III OR AIDS Seroconversion* OR Seroconversion*, AIDS OR HIV Antibody Positivity OR Antibody Positivities, HIV OR Antibody Positivity, HIV OR HIV Antibody Positivities OR Positivities, HIV Antibody OR Positivity, HIV Antibody OR HIV Infections OR HIV Infection OR Infection, HIV OR Infections, HIV OR HTLV-III-LAV Infections OR HTLV III LAV Infections OR HTLV-III-LAV Infection OR Infection, HTLV-III-LAV OR Infections, HTLV-III-LAV OR T-Lymphotropic Virus Type III Infections, Human OR T Lymphotropic Virus Type III Infections, Human OR HTLV-III Infections OR HTLV III Infections OR HTLV-III Infection OR Infection, HTLV-III OR Infections, HTLV-III OR HIV Coinfection OR Coinfection, HIV OR Coinfections, HIV OR HIV Coinfections)
#3	TS=(Anti-HIV Agents OR Agents, Anti-HIV OR Anti HIV Agents OR Anti-AIDS Agents OR Agents, Anti-AIDS OR Anti AIDS Agents OR Anti-HIV Drugs OR Anti HIV Drugs OR Drugs, Anti-HIV OR AIDS Drugs OR Drugs, AIDS OR Anti-AIDS Drugs OR Anti AIDS Drugs OR Drugs, Anti-AIDS OR antiretroviral therap* OR Antiretroviral Therap*, Highly Active OR Highly Active Antiretroviral Therapy OR HAART)
#4	#3 AND #2 AND #1
#5	TS=(Drug Evaluation OR Drug Evaluations OR Evaluation, Drug OR Evaluations, Drug OR Evaluation Studies, Drug OR Drug Evaluation Studies OR Drug Evaluation Study OR Evaluation Study, Drug OR Studies, Drug Evaluation OR Study, Drug Evaluation OR Drug Approval OR Approval, Drug OR Approvals, Drug OR Drug Approvals OR Food and Drug Administration Drug Approval OR Drug Approval Process OR Approval Process, Drug OR Approval Processes, Drug OR Drug Approval Processes OR Process, Drug Approval OR Processes, Drug Approval OR New Drug Approval Process OR New Drug Approval OR Approval, New Drug OR Approvals, New Drug OR Drug Approval, New OR Drug Approvals, New OR New Drug Approvals OR Food and Drug Administration Drug Approval Process OR "Clinical Trials" OR "Clinical Trial")
#6	#4 NOT #5
#7	#4 NOT #5 Timespan=2016-2018

Embase	
#1	'africa south of the sahara'/exp OR 'africa south of the sahara' OR 'black africa' OR 'sub saharan africa' OR 'subsaharan africa'
#2	'human immunodeficiency virus infection'/exp OR 'hiv infection' OR 'hiv infections' OR 'human immunodeficiency virus infection' OR 'hiv seropositivity' OR 'human immunodeficiency virus encephalopathy'
#3	'anti human immunodeficiency virus agent'/exp OR 'anti hiv agent' OR 'anti hiv agents' OR 'anti human immunodeficiency virus agent' OR 'anti-hiv agents' OR 'highly active antiretroviral therapy'/exp OR 'haart' OR 'antiretroviral therapy, highly active' OR 'highly active antiretroviral theraphy'
#4	'drug screening'/exp OR 'assay, subrenal capsule' OR 'drug evaluation' OR 'drug scanning' OR 'drug screening' OR 'drug screening assays, antitumor' OR 'drug screening assays, antitumour' OR 'drug testing' OR 'drug trial' OR 'pharmaceutical screening' OR 'screening, drug' OR 'testing, drug' OR 'tumour stem cell assay' OR 'xenograft model antitumor assays' OR 'xenograft model antitumour assays'
#5	#1 AND #2 AND #3
#6	#4 NOT #5
#7	#5 NOT #4
#8	#5 NOT #4 AND [2016-2018]/py

Pubmed
(((("Africa South of the Sahara"[Mesh] OR Sub-Saharan Africa OR Subsaharan Africa OR Africa, Sub-Saharan)) AND ((((("HIV Seropositivity"[Mesh] OR HIV Seropositivities OR Seropositivities, HIV OR Seropositivity, HIV OR AIDS Seropositivity OR AIDS Seropositivities OR Seropositivities, AIDS OR Seropositivity, AIDS OR Anti-HIV Positivity OR Anti HIV Positivity OR Anti-HIV Positivities OR Positivities, Anti-HIV OR Positivity, Anti-HIV OR HTLV-III Seropositivity OR HTLV III Seropositivity OR HTLV-III Seropositivities OR Seropositivities, HTLV-III OR Seropositivity, HTLV-III OR HIV Seroconversion OR HIV Seroconversions OR Seroconversion, HIV OR Seroconversions, HIV OR HTLV-III Seroconversion OR HTLV III Seroconversion OR HTLV-III Seroconversions OR Seroconversion, HTLV-III OR Seroconversions, HTLV-III OR AIDS Seroconversion OR AIDS Seroconversions OR Seroconversion, AIDS OR Seroconversions, AIDS OR HIV Antibody Positivity OR Antibody Positivities, HIV OR Antibody Positivity, HIV OR HIV Antibody Positivities OR Positivities, HIV Antibody OR Positivity, HIV Antibody)) OR ("HIV Infections" [Mesh] OR HIV Infection OR Infection, HIV OR Infections, HIV OR HTLV-III-LAV Infections OR HTLV III LAV Infections OR HTLV-III-LAV Infection OR Infection, HTLV-III-LAV OR Infections, HTLV-III-LAV OR T-Lymphotropic Virus Type III Infections, Human OR T Lymphotropic Virus Type III Infections, Human OR HTLV-III Infections OR HTLV III Infections OR HTLV-III Infection OR Infection, HTLV-III OR Infections, HTLV-III OR HIV

Coinfection OR Coinfection, HIV OR Coinfections, HIV OR HIV Coinfections))) AND ((("Anti-HIV Agents"[Mesh] OR Agents, Anti-HIV OR Anti-HIV Agents OR Anti-AIDS Agents OR Agents, Anti-AIDS OR Anti AIDS Agents OR Anti-HIV Drugs OR Anti HIV Drugs OR Drugs, Anti-HIV OR AIDS Drugs OR Drugs, AIDS OR Anti-AIDS Drugs OR Anti AIDS Drugs OR Drugs, Anti-AIDS OR "antiretroviral therapy"[TIAB])) OR ("Antiretroviral Therapy, Highly Active"[Mesh] OR Highly Active Antiretroviral Therapy OR HAART))))) NOT (((("Drug Evaluation"[Mesh] OR Drug Evaluations OR Evaluation, Drug OR Evaluations, Drug OR Evaluation Studies, Drug OR Drug Evaluation Studies OR Drug Evaluation Study OR Evaluation Study, Drug OR Studies, Drug Evaluation OR Study, Drug Evaluation)) OR ("Drug Approval"[Mesh] OR Approval, Drug OR Approvals, Drug OR Drug Approvals OR Food and Drug Administration Drug Approval OR Drug Approval Process OR Approval Process, Drug OR Approval Processes, Drug OR Drug Approval Processes OR Process, Drug Approval OR Processes, Drug Approval OR New Drug Approval Process OR New Drug Approval OR Approval, New Drug OR Approvals, New Drug OR Drug Approval, New OR Drug Approvals, New OR New Drug Approvals OR Food and Drug Administration Drug Approval Process)) OR ("Clinical Trials as Topic"[Mesh] OR Clinical Trial as Topic

Conferences for which abstracts were searched
- International AIDS Society (IAS) 2016, 2017, 2018, 2019
- Conference on Retroviruses and Opportunistic Infections (CROI) 2016, 2017, 2018, 2019
- South African AIDS Conference (SAAIDS) 2017
- Southern African HIV Clinicians Society (SAHIVSOC) 2016, 2018
- European AIDS Conference (EACS) 2017
- INTEREST Conference 2016, 2017, 2018
- Zambia Health Research Conference (ZHRC) 2018
- Asia Pacific AIDS & Co-infections Conference (APACC) 2016, 2017
- International Conference on AIDS and STIs in Africa (ICASA) 2017

Supplementary Table 3. Reasons for exclusions after full-text review

Reason for exclusion, n (%)	Manuscripts (n=94)		Abstracts (n=105)		Total (n=199)	
Study time period (majority of data from before 2016)	55	(60%)	18	(20%)	73	(40%)
Incomplete model description	2	(2%)	30	(33%)	32	(18%)
Study population type	4	(4%)	24	(27%)	28	(15%)
Study design	11	(12%)	3	(3%)	14	(8%)
Not a DSD model	11	(12%)	3	(3%)	14	(8%)
Publication type	7	(8%)	0	(0%)	7	(4%)
Study setting	0	(0%)	6	(7%)	6	(3%)
Abstract already published as full manuscript	0	(0%)	4	(4%)	4	(2%)
Duplicate data	0	(0%)	2	(2%)	2	(1%)
Study retracted	1	(1%)	0	(0%)	1	(1%)
No clinical outcome reported	3	(3%)	15	(14%)	18	(9%)

Supplementary Text 1. PRISMA checklist

Section and topic	Item No	Checklist item	(Page No.#)
ADMINISTRATIVE INFORMATION			
Title:			
Identification	1a	Identify the report as a protocol of a systematic review	1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	1
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	2
Authors:			
Contact	3a	Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author	1
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	8
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	7
Support:			
Sources	5a	Indicate sources of financial or other support for the review	8
Sponsor	5b	Provide name for the review funder and/or sponsor	
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	
INTRODUCTION			
Rationale	6	Describe the rationale for the review in the context of what is already known	3
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	3-4
METHODS			
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	4-5
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	5
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	5 and Appendix-A
Study records:			
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	6
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	6
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	7
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	7
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	4

Section and topic	Item No	Checklist item	(Page No.#)
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	7
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	7
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)	
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	7
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	7

* The page numbers in this table reference the systematic review protocol published at PROSPERO CRD42019118230

Supplementary Table 4. Original source documents and models

Model codes	Source	Country	Models reported	Study Design	Follow-up period	Cohort Size	Population eligible
OFBIM5	Avong 2018	Nigeria	Community pharmacy ART dispensing	Cohort	12	295	Stable,≥18
HCWLG6	Pahad 2018	South Africa	Youth care clubs	Cohort	12	589	No restriction, 12-24
HCWLG9 HCWLG10 FBIM4	Cassidy 2018	South Africa	Quick pick-up model (QPUP); Community club; Facility club	Cohort	12	4,753	Stable, not specified
OFBIM11	Chibesakunda 2019	Zambia	Community ART centres	Cohort	28	7037	No restriction, all ages
HCWLG3	Finci 2018	Mozambique	Adherence clubs	Cohort	24	687	Stable, not specified
HCWLG11	Fox 2018	South Africa	Adherence clubs	RCT	4	569	Stable,≥18
HCWLG11 OFBIM7	Fox 2019	South Africa	Adherence clubs and decentralized medication delivery	RCT	18	1,147	Stable,≥18
OFBIM8	Geldsetzer 2018	Tanzania	ARV community delivery	RCT	17	2,172	Stable, not specified
FBIM2	Havlir 2019	Kenya and Uganda	Patient-centered streamlined care	RCT	36	186,354	No restriction, all ages
CLG4	Kagimu 2018	Uganda	Community client led ART delivery (CCLAD)	Cohort	12	14	Stable, not specified
FBIM5	Kaimal 2017	Uganda	Pharmacy refill plus program (PRPP)	Cross-sectional	NA	624	Stable, not specified
OFBIM2 FBIM1 HCWLG1	Kamerhe 2018	DRC	ART support group; Community-based point of ART distribution (PoDi+); Fast-track ART refill circuit	Cohort	12	974	Stable,≥18
HCWLG7 HCWLG8	Lebelo 2018	South Africa	6 month-refill adherence clubs; 2 month-refill adherence clubs	RCT	28	2,150	Stable, not specified
OFBIM12 HCWLG13	Limbada 2019	Zambia	Home-based delivery; Adherence clubs	RCT	18	2,493	Stable,≥18
HCWLG4	Manganye 2018	South Africa	Adherence club	Cohort	18	141,269	Stable,≥18
FBIM3	Mdala 2018	Namibia	Nurse-initiated management of ART	Cohort	24	18,367	No restriction, all ages
HCWLG5	Meehan 2018	South Africa	Community based adherence club	Cohort	24	465	Stable,≥18

Model codes	Source	Country	Models reported	Study Design	Follow-up period	Cohort Size	Population eligible
OFBIM3	Mothibi 2018	DRC	Community-based individual drug distribution (PODI)	Cohort	10	1,484	Stable,≥18
OFBIM9	Mulenga 2019	Zambia	Community pharmacy dispensation	Cohort	6	237	Stable, not specified
CLG5	Mwamba 2018	Zambia	Community adherence groups (CAG) & VL clinic	Cohort	12	386	Unstable, ≥14
OFBIM10	Mwanda 2018	Zambia	DSD model for prisoners	Cohort	48	241	Stable, not specified
FBIM7	Mwila 2018	Zambia	FBO based community ART delivery	Cohort	24	5,014	No restriction, all ages
FBIM6	Nsumba 2019	Uganda	Treatment failure management service	Cohort	NA	862	Unstable, not specified
OFBIM6	Nwabueze 2018	Nigeria	Out-of-facility ARV delivery	Cohort	12	283	Stable, not specified
CLG3	Okechukwu 2018	Tanzania	Community ART refill groups	Cohort	6	13,372	Stable, not specified
HCWLG2 CLG1 HCWLG2	Pasipamire 2018	Swaziland	Community ART groups; Comprehensive outreach; Treatment clubs	Cohort	18	918	Stable, ≥16
HCWLG12	Roy 2018	Zambia	Urban adherence groups (UAG)	Cohort	12	1,096	Not specified, ≥14
OFBIM1	Tchissambou 2018	DRC	Community ART distribution center (PODI)	Cohort	12	2,027	Stable, ≥15
CLG2	Van Rompaey 2019	Mozambique	Community adherence groups	Cohort	NA	15,457	Stable, not specified

Supplementary Table 5. Characteristics of source documents

Characteristic	Articles	Abstracts	Total
By source documents			
Total source documents included	5 (100%)	24 (100%)	29 (100%)
Reported conventional care comparison, in addition to DSD model	3 (60%)	7 (29%)	10 (34%)
Study type			
Cohort	2 (40%)	20 (83%)	22 (76%)
Randomized control trial	3 (60%)	3 (13%)	6 (21%)
Cross-sectional	0 (0%)	1 (4%)	1 (3%)
By models			
Total DSD models included (excludes conventional care)	8 (100%)	29 (100%)	37 (100%)
Study location*			
DRC	0 (0%)	5 (17%)	5 (14%)
Kenya	1 (13%)	0 (0%)	1 (3%)
Mozambique	0 (0%)	2 (7%)	2 (5%)
Namibia	0 (0%)	1 (3%)	1 (3%)
Nigeria	1 (13%)	1 (3%)	2 (5%)
South Africa	2 (25%)	8 (28%)	10 (27%)
Swaziland	3 (38%)	0 (0%)	3 (8%)
Tanzania	1 (13%)	1 (3%)	2 (5%)
Uganda	1 (13%)	3 (10%)	4 (11%)
Zambia	0 (0%)	8 (28%)	8 (22%)
Model classification			
Facility based individual (FBIM)	1 (13%)	6 (21%)	7 (19%)
Out of facility based individual (OFBIM)	4 (50%)	8 (28%)	12 (32%)
Client led groups (CLG)	1 (13%)	4 (14%)	5 (14%)
Healthcare worker led groups (HCWLG)	2 (25%)	11 (38%)	13 (35%)

*One study reported the same model in both Kenya and Uganda and was thus counted twice.

Supplementary Table 6. Characteristics of service delivery models

Characteristic (n, %)	Facility based individual (FBIM) (N=7)	Out of facility individual (OFBIM) (N=12)	Client led group (CLG) (N=5)	Healthcare worker led group (HCWLG) (N=13)	Total (N=37)
Provider					
Clinical care provider					
Medical doctor/medical officer	2 (29%)	1 (8%)	0 (0%)	0 (0%)	3 (8%)
Nurse	3 (43%)	1 (8%)	0 (0%)	2 (15%)	6 (16%)
Community health worker	0 (0%)	0 (0%)	0 (0%)	1 (8%)	1 (3%)
Non-specified clinician	1 (14%)	5 (42%)	1 (20%)	8 (62%)	15 (41%)
Unclear/not reported	1 (14%)	5 (42%)	4 (80%)	2 (15%)	12 (32%)
ART dispenser					
Pharmacist	3 (43%)	2 (17%)	0 (0%)	1 (8%)	6 (16%)
Nurse	3 (43%)	0 (0%)	0 (0%)	0 (0%)	3 (8%)
Community health worker	0 (0%)	3 (25%)	0 (0%)	3 (23%)	6 (16%)
Designated patient	0 (0%)	0 (0%)	2 (40%)	2 (15%)	4 (11%)
Lay counselor	0 (0%)	4 (33%)	1 (20%)	6 (46%)	11 (30%)
Unclear/not reported	1 (14%)	3 (25%)	2 (40%)	1 (8%)	7 (19%)
Location					
All clinic-based	7 (100%)	0 (0%)	1 (20%)	7 (54%)	15 (41%)
Mixed	0 (0%)	7 (58%)	4 (80%)	6 (46%)	17 (46%)
All community-based	0 (0%)	5 (42%)	0 (0%)	0 (0%)	5 (14%)
Services provided					
C/A/L*	5 (71%)	10 (83%)	4 (80%)	10 (77%)	29 (78%)
C/A/L + health education	0 (0%)	0 (0%)	0 (0%)	1 (8%)	1 (3%)
C/A/L + index HIV testing	0 (0%)	1 (8%)	0 (0%)	0 (0%)	1 (3%)
C/A/L + reproductive counseling	0 (0%)	0 (0%)	1 (20%)	2 (15%)	3 (8%)
C/A/L + NCD care	1 (14%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
C/A/L + antenatal and childcare	0 (0%)	1 (8%)	0 (0%)	0 (0%)	1 (3%)
Not reported	1 (14%)	0 (0%)	0 (0%)	0 (0%)	1 (3%)
Frequency of healthcare system interactions/year					
≤3	1 (14%)	1 (8%)	0 (0%)	3 (23%)	5 (14%)
4-8	3 (43%)	7 (58%)	0 (0%)	6 (46%)	16 (43%)
8-12	0 (0%)	1 (8%)	1 (20%)	3 (23%)	5 (14%)
>12	0 (0%)	1 (8%)	1 (20%)	0 (0%)	2 (5%)
Not reported	3 (43%)	2 (17%)	3 (60%)	1 (8%)	9 (24%)

*C/A/L = Basic clinical care, ARVs, and laboratory monitoring

Supplementary Table 7. Details of treatment outcomes reported in the source documents

Source	Model ID	Country	Model name	DSD (%)			Conventional care (%)
				Timing unknown or cross-sectional	≤ 12 months	12-24 months	
RETENTION (%)							
Facility based individual model							
Kamerhe 2018	FBIM1	DRC	Fast-track ART refill		96.0 (312/325)[a]		60.0 (NA)
Cassidy 2018	FBIM4	South Africa	Quick pick-up model		91.0 (224/246)[a]		86.0 (731/850)[a]
Kaimal 2018	FBIM5	Uganda	Pharmacy refill plus program		99.3 (286/288)[a]		
Nsumba 2019	FBIM6	Uganda	Treatment failure management service	47.3 (106/224)			
Out of facility based individual model							
Mothibi 2018	OFBIM3	DRC	Community-based individual drug distribution		96.5 (336/348)[c]		
Tchissambou 2018	OFBIM1	DRC	Community ART distribution center		86.1 (1,745/2,027)		
Kamerhe 2018	OFBIM2	DRC	Community-based point of ART distribution		96.0 (577/601)[a]		60.0 (NA)
Pasipamire 2019	OFBIM4	Eswatini	Comprehensive outreach		98.0 (88.0/98.0)[a]		
Avong 2018	OFBIM5	Nigeria	Community pharmacy ART dispensing		97.2 (287/295)[b]		
Nwabueze 2018	OFBIM6	Nigeria	Out-of-facility ART Delivery		92.5 (262/283)		
Fox 2019	OFBIM7	South Africa	Decentralized medication delivery		81.5 (189.1/232)[a]		87.2 (300.9/345)[a]
Mulenga 2019	OFBIM9	Zambia	Community pharmacy dispensation		100 (237/237)		
Chibesakunda 2018	OFBIM11	Zambia	Community ART centers		83 (NA)		
Limbada 2019	OFBIM12	Zambia	Home-based delivery			84.9 (715/842)	
Healthcare worker led group							
Kamerhe 2018	HCWLG1	DRC	ART support group		93.7 (45/48)[a]		60.0 (NA)
Pasipamire 2019	HCWLG2	Eswatini	Treatment clubs		94.4 (272.9/289)[a]		
Finci 2018	HCWLG3	Mozambique	Adherence club			84.4 (578/685)[e]	
Cassidy 2018[ƒ]	HCWLG9	South Africa	Community club		89.9 (402/447)		86.0 (731/850)[a]
Cassidy 2018[ƒ]	HCWLG10	South Africa	Facility club		85.1 (114/134)		86.0 (731/850)[a]
Meehan 2018a	HCWLG5	South Africa	Community based adherence club			82.5 (66/80)[a]	
Pahad 2018	HCWLG6	South Africa	Youth care clubs		80.9 (477/589)[a]		84.0 (NA)
Manganye 2018	HCWLG4	South Africa	Adherence club			94.9 (134,205/141,269)	
Fox 2019	HCWLG11	South Africa	Adherence clubs		89.5 (246.1/275)[a]		81.6 (195.8/240)[a]
Limbada 2019	HCWLG13	Zambia	Adherence clubs			92.6 (743/802)	

Source	Model ID	Country	Model name	DSD (%)			Conventional care (%)
				Timing unknown or cross-sectional	≤ 12 months	12-24 months	
Roy 2018	HCWLG12	Zambia	Urban adherence groups		71.0 (421.7/594)[a]		42.0 (210.9/502)[a]
Lebelo 2019[§]	HCWLG7 and HCWLG8	South Africa	6 month-refill adherence clubs		97.0 (NA)		98.0 (NA)
Client led group							
Pasipamire 2019	CLG1	Eswatini	Community ART groups		94.4 (501.3/532)[a]		
Kagimu 2018	CLG4	Uganda	Community client led ART delivery		100.0 (14/14)		
VL<1000 (%)							
Facility based individual model							
Havlir 2019	FBIM2	Kenya and Uganda	Patient-centered streamlined care	79.0 (5,372/6,800)[a]			68.0 (4114.7/6,051)[a]
Mdala 2018	FBIM3	Namibia	Nurse-initiated management of ART	86.0 (15,796/18,367)[c]			
Cassidy 2018[‡]	FBIM4	South Africa	Quick pick-up model			96.0 (579/603)[a]	91.0 (1,369/1,504)[a]
Kaimal 2018	FBIM5	Uganda	Pharmacy refill plus program		98.8 (83/84)		
Nsumba 2019	FBIM6	Uganda	Treatment failure management service	79.3 (518/653)			
Mwila 2018	FBIM7	Zambia	FBO based community ART delivery			89.1 (4,472/5,014)[a]	83.8 (NA)[d]
Out of facility based individual model							
Mothibi 2018	OFBIM9	DRC	Community-based individual drug distribution		98.5 (1,025/1,040)[c]		
Nwabueze 2018	OFBIM13	Nigeria	Out-of-facility ART delivery		100.0 (283/283)		
Fox 2019	OFBIM5	South Africa	Decentralized medication delivery		77.2 (179.1/232)[a]		74.3 (190.9/257)[a]
Geldsetzer 2018	OFBIM6	Tanzania	ARV community delivery		90.3 (851.5/943)[a]		89.1 (776.9/872)[a]
Mwanda 2018	OFBIM11	Zambia	DSD model for prisoners	91.7 (221/241)			
Chibesakunda 2019	OFBIM2	Zambia	Community ART centres		90.4 (NA)		84.8 (NA)
Health care worker led group							
Finci 2018	HCWLG3	Mozambique	Adherence club			81.0 (543/670)[e]	
Pahad 2018	HCWLG6	South Africa	Youth care clubs		75.0 (442/589)[a]		
Cassidy 2018[‡]	HCWLG9	South Africa	Community club			98.0 (1,091/1,113)[a]	91.0 (1,369/1,504)[a]
Cassidy 2018[‡]	HCWLG10	South Africa	Facility club			94.9 (357/376)[a]	91.0 (1,369/1,504)[a]
Lebelo 2019[¥§]	HCWLG7 and HCWLG8	South Africa	6 month-refill adherence clubs		97.8 (NA)		96.5(NA)

Source	Model ID	Country	Model name	DSD (%)			Conventional care (%)
				Timing unknown or cross-sectional	≤ 12 months	12-24 months	
Fox 2019	HCWLG11	South Africa	Adherence clubs		80.0 (220/275)[a]		79.6 (234/294)[a]
Client led group							
Van Rompaey	CLG2	Mozambique	Community adherence groups	uOR=1.16			
Kagimu 2018	CLG4	Uganda	Community client led ART delivery		100.0 (14/14)		
Mwamba 2018	CLG5	Zambia	Community adherence groups and dedicated VL clinic for unstable patients	27.8 (27/97)			
ADHERENCE (%)							
Kagimu 2018	CLG4	Uganda	Community client led ART delivery		95.0 (13/14)[a]		
PRESCRIPTION REFILL (%)							
Avong 2018	OFBIM5	Nigeria	Community pharmacy ART dispensing		100.0 (295/295)		-
Fox 2018	HCWLG11	South Africa	Adherence clubs		92.0 (244/264)		88.0 (250/284)
Okechukwu 2018	CLG3	Tanzania	Community ART refill groups		97.9 (1,553/1,585)[a]		87.0 (11,973/13,762)[a]

a. Numerator calculated by authors

b. Rate was author calculated

c. Both numerator and denominator were author calculated based on other available data

d. National average

e. Cumulative incidence

ɫ Updated data shared by the author

¥ Suppression defined as <400copies/mL

§ The comparator is a 2-month pick-up model in adherence clubs which is counted as a DSD model, rather than a SOC. However this manuscript was reported as having a comparator in the text.

Supplementary Table 8. Risk of bias assessment for cohort studies (Newcastle-Ottawa Scale*)

Source	Model codes	Selection				Comparability	Outcome			Score	Quality
		1	2	3	4	1	1	2	3		
Avong 2018	OFBIM5	*	-	*	-	-	*	*	*	5	Moderate
Pasipamire 2018	HCWLG2 CLG1 HCWLG2	*	-	*	*	**	*	*	*	8	High
Pahad 2018	HCWLG6	-	-	*	-	-	*	*	-	3	Low
Cassidy 2018	HCWLG9 HCWLG10 FBIM4	*	*	*	*	-	*	*	*	7	High
Chibesakunda 2019	OFBIM11	*	-	*	-	-	*	*	-	4	Moderate
Finci 2018	HCWLG3	-	-	*	*	-	*	*	-	4	Moderate
Kagimu 2018	CLG4	-	-	-	-	-	-	-	-	0	Low
Kamerhe 2018	OFBIM2 FBIM1 HCWLG1	*	-	*	*	-	*	*	*	6	Moderate
Manganye 2018	HCWLG4	*	-	-	*	-	-	*	-	3	Low
Mdala 2018	FBIM3	-	-	-	-	-	-	*	-	1	Low
Meehan 2018	HCWLG5	*	-	*	*	-	*	*	-	4	Moderate
Mothibi 2018	OFBIM3	*	-	-	*	-	-	*	*	4	Moderate
Mulenga 2019	OFBIM9	*	-	-	*	-	-	-	*	3	Low
Mwamba 2018	CLG5	-	-	*	*	-	*	*	-	4	Moderate
Mwanda 2018	OFBIM10	-	-	-	-	-	-	*	*	2	Low
Mwila 2018	FBIM7	-	-	-	-	-	-	*	-	1	Low
Nwabueze 2018	OFBIM6	*	-	-	*	-	-	*		3	Low
Okechukwu 2018	CLG3	*	*	-	*	-	-	*	*	5	Moderate
Roy 2018	HCWLG12	*	*	*	*	-	*	*	-	6	Moderate
Tchissambou 2018	OFBIM1	*	-	*	*	-	*	*	*	6	Moderate
Nsumba 2019	FBIM6	-	-	-	*	-	-	*	-	2	Low
Van Rompaey 2019	CLG2	*	-	*	*	-	*	*	-	5	Moderate

*The assessment was conducted using the Newcastle Ottawa Scale for cohort studies (http://www.ohri.ca/programs/clinical_epidemiology/nosgen.pdf). The items marked with a star (*) for each category are counted as one ("1") and factored into the final scoring which ranges from zero to nine (lowest to highest). To simplify interpretation those studies that scored 7 or above were categorized as high quality, those scoring between 4-6 were of moderate quality, and those scoring below 4 were considered low quality.[17]

Supplementary Table 9. Risk of bias assessment for cluster randomized trials (Cochrane Collaboration's tool)

Source	Bias arising from the randomization process	Bias arising from the timing of identification and recruitment of individual participants in relation to timing of randomization	Bias due to deviations from intended interventions	Bias due to missing outcome data	Bias in measurement of the outcome	Bias in selection of the reported result	Overall bias
Fox 2019 and Fox 2018	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Geldsetzer 2018	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Havlir 2019	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk	Low risk
Lebelo 2019	Low risk	Some concern	Some concern	Low risk	Low risk	Low risk	Some concern
Limbada 2019	Low risk	Low risk	Low risk	Some concern	Low risk	Low risk	Some concern