Supplementary Materials

Supplemental file 1: PRISMA Checklist

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Supplemental File 1: PRISMA Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1, 2
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	3
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	Supplemental file 1 CRD42019140828
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	4
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	4
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Supplemental file 2
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	5
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	5
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	5
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	5
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	5

Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	6
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	Supplemental file 3
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	6
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	17
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Supplemental file 4
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	18
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	18
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	18
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	19
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	8
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	6
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	10
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	8-9
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	11

Supplemental File 2: The systematic review protocol

1.0 Background

Infectious diseases such as malaria, syphilis, and tuberculosis (TB) still remain key contributors to global mortality rates and caused over 2.8million estimated deaths by December 2017.[1] Integrated modes of health services delivery were therefore developed as part of interventional efforts to reduce mortality rates and improve the overall quality of life of affected populations.[2,3] Improving availability and accessibility to routine screening under the integrated modes of services delivery has proven effective in prevention strategies for infectious disease transmission.[4] However, most people, particularly in Low and Middle Income Countries (LMICs), still face delays in early diagnosis due to various reasons including inaccessibility of health care centres and high cost of diagnostic testing services.[5,6] Compounding this challenge is the impact of limited availability of skilled human resources, and inadequate healthcare and diagnostics infrastructure in these LMICs due to limited resources. [7,8]

In global efforts to improve population health, rapid diagnostics have become the fastest growing diagnostics approach adopted for screening in settings with limited laboratory infrastructure and services globally. [9,10] Rapid diagnostics since their introduction have contributed immensely to early detection of infectious diseases making it vital in the expansion and provision of diagnostic testing services worldwide. Currently, first point testing for many infectious diseases is rapidly moving out of the clinical laboratory-based system and into people's lives as the need to improve access becomes more imperative. Researching impact, a recent scoping review evaluating the field use of rapid diagnostic tests for some infectious diseases found that rapid diagnostic tests being used in the urban context demonstrated viable impact on early case detection. Another systematic review investigating new approaches on improving access to healthcare for maternal

and child health outcomes in LMICs proposed the adoption of a framework that is centered on decentralized testing services using rapid diagnostics[10,11]. This new direction alters the context of testing in profound ways, with important implications for medicine and public health and requires further research.

The purpose of this study is to identify research and documented experiences on decentralized testing (which in this study is being defined as any form of testing or diagnostics sample acquisition performed outside of an established health center with laboratory services) through a systematic review.

1.1 Study Aim

This systematic review seeks to summarize the existing and piloted models of decentralized testing for various infectious diseases as well as identify the advantages and limitations associated with each model type.

2.0 Method

We will perform a systematic literature review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist.

2.1 Search strategy and Approach

Literature will be searched and retrieved from PubMed, Science Direct, Web of Knowledge databases, MEDLine, Global Health, CINAHL, and Health Systems Evidence. The Cochrane Library will also be systematically searched for manuscripts retrieval. Searches will combine key terms relating to infectious disease in vitro diagnostics with terms related to self-testing (home-test, self-test, etc.); community-based testing and self-sample collection.

2.2a Inclusion criteria and Selection

Criteria for articles selection is as follows:

1. Peer-reviewed publications including published literature from a wide range of disciplines within public health and social science including epidemiology, sociology, and clinical practice.
2. Studies with sufficient description of decentralized testing methods (detailed methodology)
3. Studies on decentralized testing model with a comparator group (facility/laboratory-based testing).
4. Studies written in English without date restrictions.
5. Studies that focus on decentralized in vitro testing (oral, blood, or other specimen) for infectious diseases (see appendix for list of disease to be included). *In vitro diagnostics is defined in this study as tests done on biological samples such as blood or tissue that have been obtained from the human body.*

2.2b Exclusion Criteria

- Studies that focus on monitoring tests such as CD4, viral load, or other related tests.
- Studies that focus on decentralized testing for non-infectious diseases such as blood sugar tests, blood pressure, other chronic diseases, and pregnancy.
- Publications with full text in languages other than English
- Comments, all reviews, opinion pieces and letters to the editor.

2.3 Data extraction

Endnote will be used as reference reviewing and management software for the duration of the project. References review will follow these steps:

Step 1: Title only

Step 2: Abstracts

Step 3: Full text, this will be reviewed in duplicate and reasons for exclusion will be stated

Full texts will be coded as EITHER eligible for inclusion OR ineligible, or they will be put in a third category labeled "Unsure" for a second opinion. (If it is not possible to ascertain whether a study is eligible based on title and abstract, the full text will be obtained). Results from both researchers will be reconciled. Where disagreements exist, resolution by full-text screening by both researchers will be employed. If disagreement persists, a third member of the study team will undertake a full-text review and provide an opinion.

Studies which are eligible for inclusion will be coded by study design, type of disease, year of publication, testing distribution mode and reported outcome of decentralized model in an Excel spreadsheet. Additional column on reported limitations and challenges in relation to the decentralization model will also be populated. Full text screening of eligible articles will be carried out considering the following criteria:

1. Does the study answer a focused question on decentralized testing/screening for any of the listed infectious diseases of interest?
2. Does the study comprehensively discuss the use of decentralized testing distribution models compared to facility/laboratory based testing?
3. Did the study use valid methods to address the question of interest?

If the answer to any of these questions is "no", the study will be excluded from the review process but kept on aside for consideration during the discussion of study findings.
Following this coding, two team members will be tasked to ensure all studies undergo a data extraction process, whereby key data will be extracted and input into the designed spreadsheet.

Data extraction will be done from full text where available and abstract will only be used when full manuscripts cannot be sourced. Data to be extracted will include country of study, target population, aims, research date, study design, sample size, key results and summary of findings. Detailed information on the outcomes will also be included

We will search references of published systematic reviews for published articles that the inclusion criteria of this study for consideration and inclusion

2.4 Data analysis

The study will focus on the strengths and limitations as well as the outcomes in the use of various models of decentralized testing and their mode of distribution in varying settings. Insights around the following will also be extracted whenever possible: type of model adopted, settings of use, as well as type of population targeted, observed rate of first-time self-testers after adoption of model and utilisation rate among targeted population after intervention (if available). Besides the extraction of these data, each study will be reviewed for various qualitative aspects of decentralized testing systems. A meta-analysis will be performed subsequently if articles with comparable outcomes are obtained.

2.4 Quality appraisal

During the systematic review process, a formal quality appraisal of studies will be completed using the GRADE approach and the 'Users' guides to the medical literature VI: How to use an overview'.

3.0 Expected Outcomes

Primary Outcomes

- To identify various decentralized infectious diseases testing models

- Uptake of decentralized testing compared to uptake of testing in the comparator arm.

Secondary Outcomes

- Adverse events associated with decentralized testing (e.g. coerced testing)
- Linkage to care and retention in care rates
- Cost effectiveness of decentralized testing methods
- Treatment uptake rates

4.0 Pre- Specified Sub analysis

We anticipate the following sub - analysis

1. Individual infectious diseases (e.g. HIV versus others) and integration across diseases (e.g., integrated HIV/syphilis self-testing)
2. Compare outcomes based on type of test approach
3. Decentralized approaches (especially home-based, school, pharmacy, small clinic, etc)
4. Self – collection versus self – testing
5. Who did the testing (self-testing versus lay/health worker testing)

Appendix: List of Infectious disease considered under decentralised testing models
Human Immunodeficiency Virus (HIV)
Human Papilloma Virus (HPV)
Hepatitis B Virus (HBV)
Hepatitis C Virus (HCV)
Syphilis
Chlamydia
Tuberculosis (TB)
Gonorrhoea

References

1. Hannah R, Max R. "Causes of Death". Published online at OurWorldInData.org. [Online Resource]. 2019. Retrieved from: https://ourworldindata.org/causes-of-death. Accessed 30th March, 2020.
2. World Health Organization. New report shows that 400 million do not have access to essential health services. 2015. Available at: http://www.who.int/mediacentre/news/releases/2015/uhc-report/en/ Accessed 30th March, 2020.
3. Price CP, Kricka LJ. Improving healthcare accessibility through point-of-care technologies. *Clinical chemistry* 2007; **53**(9): 1665-75.
4. Comino EJ, Davies GP, Krastev Y, et al. A systematic review of interventions to enhance access to best practice primary health care for chronic disease management, prevention and episodic care. *BMC Health Services Research* 2012; **12**(1): 415.
5. MacKinney, A., Coburn, A., Lundblad, J., McBride, T., Mueller, K., & Watson, S. (2014). Access to rural health care–a literature review and new synthesis. *Policy Report. Rupri: Rural Policy Research Institute.* Available at https://www.rupri.org/?library=access-to-rural-health-care-a-literature-review-and-new-synthesis-report-prepared-by-the-rupri-health-panel-august-2014 Accessed 30th March, 2020.
6. Brundisini F, Giacomini M, DeJean D, Vanstone M, Winsor S, Smith A. Chronic disease patients' experiences with accessing health care in rural and remote areas: a systematic review and qualitative meta-synthesis. *Ont Health Technol Assess Ser* 2013; **13**(15): 1-33.
7. Sayed S, Cherniak W, Lawler M, et al. Improving pathology and laboratory medicine in low-income and middle-income countries: roadmap to solutions. *Lancet (London, England)* 2018; **391**(10133): 1939-52.
8. Strasser R. Rural health around the world: challenges and solutions. *Family practice* 2003; **20**(4): 457-63.
9. Kuupiel D, Bawontuo V, Mashamba-Thompson TP. Improving the Accessibility and Efficiency of Point-of-Care Diagnostics Services in Low- and Middle-Income Countries: Lean and Agile Supply Chain Management. *Diagnostics (Basel, Switzerland)* 2017; **7**(4).
10. Katoba J, Kuupiel D, Mashamba-Thompson TP. Toward Improving Accessibility of Point-of-Care Diagnostic Services for Maternal and Child Health in Low- and Middle-Income Countries. *Point of Care* 2019; **18**(1): 17-25.
11. Osorio L, Garcia JA, Parra LG, et al. A scoping review on the field validation and implementation of rapid diagnostic tests for vector-borne and other infectious diseases of poverty in urban areas. *Infectious Diseases of Poverty* 2018; **7**(1): 87.

Supplemental file 3: Search terms and Boolean connectors

Testing:- (point-of-care-test[tiab] OR point-of-care-testing[mesh] OR point-of- care-testing[tiab] OR point-of-care-tests[tiab] OR self-test[tiab] OR self- testing[tiab] OR self-tests[tiab] OR self-tested[tiab] OR decentralized- testing[tiab] OR bedside-test[tiab] OR bedside-testing[tiab] OR bedside- tests[tiab] OR self-screening[tiab] OR self-collect[tiab] OR self-collected[tiab] OR self-collecting[tiab] OR self-sample[tiab] OR self-samples[tiab] OR self- sampling[tiab] OR self-sampled[tiab] OR direct-to-consumer-screening-and-testing[mesh] OR direct-to-consumer-screening-and-testing[tiab] OR direct- to-consumer-screening[tiab] OR direct-to-consumer-testing[tiab] OR diagnostic-tests,-routine[mesh] OR routine-diagnostic-test[tiab] OR routine- diagnostic-tests[tiab] OR routine-diagnostic-testing[tiab] OR screening- test[tiab] OR screening-tests[tiab] OR in-vitro-diagnostics[tiab] OR rapid- diagnostics[tiab] OR mass-screening[mesh] OR mass-screening[tiab] OR mass-screenings[tiab] OR workplace-testing[tiab] OR workplace-tests[tiab] OR pharmacy-based-testing[tiab] OR door-to-door-testing[tiab] OR home- based-testing[tiab] OR home-test[tiab] OR home-tests[tiab] OR home- testing[tiab] OR home-based-test[tiab] OR home-based-tests[tiab] OR self- implemented[tiab] OR community-based-testing[tiab] OR community-based- HIV-testing[tiab])

AND

Disease:- (HIV[mesh] OR HIV[tiab] OR Human-immunodeficiency-virus[tiab] OR Acquired-Immunodeficiency-Syndrome[mesh] OR Acquired- Immunodeficiency-Syndrome[tiab] OR Acquired-Immune-Deficiency- Syndrome[tiab] OR Acquired-Immuno-Deficiency-Syndrome[tiab] OR Acquired-Immuno-Deficiency-Syndrome[tiab] OR Acquired-Immuno- Deficiency-Syndromes[tiab] OR Acquired-Immunodeficiency-Syndromes[tiab] OR chlamydia[mesh] OR chlamydia[tiab] OR trachoma[mesh] OR trachoma[tiab] OR trachomas[tiab] OR mycobacterium-tuberculosis[mesh] OR mycobacterium-tuberculosis[tiab] OR hepatitis-B[mesh] OR hepatitis- B[tiab] OR type-b-hepatitis[tiab] OR viral-hepatitis-type-B[tiab] OR leprosy[mesh] OR leprosy[tiab] OR leprosies[tiab] OR hansen-disease[tiab] OR hansen's-disease[tiab] OR hansens-disease[tiab] OR hepatitis-C[mesh] OR hepatitis-C[tiab] OR gonorrhea[mesh] OR gonorrhea[tiab] OR gonorrhoeae [tiab] OR gonorrhoea[tiab] OR gonococcal-infection[tiab] OR gonococcal-infections[tiab] OR gonococcus-infection[tiab] OR gonococcosis[tiab] OR filariasis[mesh] OR filariasis[tiab]OR dengue[mesh] OR dengue[tiab] OR syphilis[mesh] OR syphilis[tiab] OR mycobacterium- infections[mesh] OR mycobacterium-infections[tiab] OR paratuberculosis[mesh] OR paratuberculosis[tiab] OR communicable- diseases[mesh] OR communicable-diseases[tiab] OR communicable- disease[tiab] OR Infectious-Diseases[tiab] OR Infectious-Disease[tiab])

Supplemental File 4: Summary of studies included

No	First Author	Country	Testing site	Study design	Disease	Type of test (self-testing/self-sampling)	Sample size
1	Novak, D. P.	Sweden	university	cross sectional	CT	self-collection	200 (100 males, 100 females)
2	Jones, H. E.	South Africa	Wellness Center	RCT	NG, CT and TV	self-collection and self-testing	626
3	Graseck, A. S 1	USA	Home, Clinic	RCT	CT and NG	self-collection, clinical testing	558
4	Jenkins, W. D.	USA	University	RCT	CT,	self-collection	175
5	Jurgensen, M.	Zambia	Home, Clinic	mixed methods	HIV	homebased testing	1694
6	Mulogo, E. M.	Uganda	Home, Clinic	Mixed methods	HIV	Home testing/facility testing	994
7	Falk, L.	Sweden	Home, Clinic	RCT	CT	self-collection	660 (Home) clinic (445).
8	MacPherson, P.	Malawi	Home, Clinic	RCT	HIV	Self-testing	16,660
9	Wood, M.	UK	Sauna, Home, clinic	RCT	CT, NG, HIV, syphilis, hep. B and C	self-collection, self-testing	90
10	Bassett, I. V.	South Africa	Mobile community based, clinic	cross sectional	HIV	Lay counsellor testing	4,701
11	Haskew, J.	Kenya	community		HIV	community based testing	1,752
12	Parker, L. A.	Swaziland	community	cross sectional	HIV	community-based HIV testing	9 060
13	Crawford, N. D.	USA	Pharmacy	cohort study	HIV	In-pharmacy HIV testing	688

14	Kadede, K.	Uganda and Kenya	Mobile community based, Home	Cross-sectional	HIV	hybrid Mobile testing and homebased testing	Total: 116326 Kenya (41,633) Uganda (74,693)
15	Thirumurthy, H.	Kenya	Home	cohort study	HIV	self-testing	277 (60 ANC, 116 PPC, 101 FSW)
16	Chanda, M. M.	Zambia	Home, Clinic	cluster RCT	HIV	self-testing	Total: 965 Standard testing (320) Direct delivery (316); HIV self-test (329)
17	Kersaudy-Rahib, D.	France	Home, Clinic	RCT	Chlamydia trachomatis	self- sampling	Total: 11 075 Intervention: 5531 control: 5544
18	Li, S.	China	Dental Hospital	case–control study	HIV	Point of care testing	Total: 1574 Routine PITC:758 Oral rapid HIV testing: 816
19	Miller, R. L.	USA	community, clinic	observational study	HIV	Mobile and community Point of care testing	Total: 3301
20	Ortblad, K.	Uganda	Home, Clinic	cluster-RCT	HIV	Self-testing	Total: 960 Standard testing: 34% (328); Direct delivery: 31% (296) Facility collection: 35% (336)
21	Gichangi, A.	Kenya	Home, Clinic	RCT	HIV	Self-testing	Total: 1410 (standard-of-care: 471, improved card: 467, HIVST:472)
22	Guy, R. J.	Australia	home, clinic	Cluster RCT crossover trial	chlamydia and gonorrhoea	self-collection	860 (Intervention (n=455) Standard care (n=405))
23	Katz, D. 2018	USA	Home, Clinic	RCT	HIV	Self-testing	230 (self-test arm: 116; control arm: 114)
24	Green, K. E.	Vietnam	Home, CBO	descriptive analysis	HIV	self-testing, lay counsellor testing	Total: 1351 (548 HIV lay provider testing and 803 HIVST)
25	Kelvin, E. A.1	Kenya	Home, Clinic	RCT	HIV	self-testing	Total: 305 (SOC arm 155 (50.8%), Choice arm150 (49.2%))

26	Lightfoot, M. A.	USA	Home, Clinic	comparative study	HIV	self-testing	County Program (N = 1205), Self-Testers (N = 114)
27	Merchant, R. C.	USA	Home, Clinic	Randomized Trial	HIV	self-testing, clinic testing	Total: 425
28	Oldenburg, C. E.	Zambia	Home, Clinic	Randomized Trial	HIV	self-testing, clinic testing	Total: 965 Standard testing (320); Direct delivery (316); HIV self-test coupon (329)
29	Choko, A. T.	Malawi	Home, Clinic	cluster randomised trial	HIV	self-testing, clinic testing	Total: 2,349 Standard testing, (408); Self-test only (442); Self-Test + $3 (380); ST + $10 (512); ST + reminder (452)
30	Harichund, C.	South Africa	Home, Clinic	cross-over study	HIV	self-testing, clinic testing	40
31	Lebina, L.	South Africa	Home, community testing	prospective study	HIV	self-testing	1618
32	Mulubwa, C.	Zambia	home	cluster-randomised trial	HIV	self-testing, lay counsellor testing	Total: 26973 (HIV self-testing =13 267; Non-HIV self-testing =13 706)
33	Ortblad, K. F.	Uganda	Home, Clinic	RCT	HIV	self-testing, clinic testing	Total: 960 Standard testing: 34% (328); Direct delivery: 31% (296); Facility collection: 35% (336)
34	Domeika, M.	Sweden	Home, Clinic	cohort study	CT	Self-sampling	94
35	Cook, R. L.	USA	Home, Clinic	RCT	CT, NG, STIs	Self-sampling, clinician sampling	403 (intervention group 197, control group 191)
36	Lippman, S. A.	Brazil	Home, Clinic	RCT	CT and NG	Self-sampling, self-testing	818 (home = 410; clinic = 408)
37	Graseck, A. S.	USA	Home, Clinic	RCT	CT and NG	self-collection, clinic testing	462
38	Tabana, H et al	South Africa	Home, Clinic	Cluster RCT	HIV	No	Intervention=22,099; Control=23,864

39	Syred, J et al	UK	Clinic	quasi-experimental	HIV, Syphilis, CT, NG, Hep B and C	Self-sampling	Before=7550 orders; After=9785 orders
40	Weidle, P J et al	US	Community pharmacies, clinic	Cohort	HIV	No	1540
41	Reddy, E et al	Tanzania	3 community-based centres; health facility	Cohort	HIV		1188
42	Huppert et al	US	Home; clinic	RCT	Trichomoniasis	Self-testing	247
43	Meehan et al	South Africa	Stand-alone community centre; mobile services	RCT	HIV	No	5031
44	Kelvin, E A et al	Kenya	Home, clinic	RCT	HIV	Self-testing	2196
45	Morano et al	US	POC and standard HCV testing	RCT	HCV	No	1,345
46	Johnston et al	Canada	POCT and standard screening	Cross sectional	HIV	No	3204. 2205(POCT) and 999(Standard screening)
47	Barnabas et al	South - Africa and Uganda	Community based; clinic	RCT	HIV	No	1,325
48	Des Marais et al,	USA	Home, Clinic	observational	HPV and other STIs	Self-collected vs clinician-collected samples	284
49	Fylkesnes et al,	Zambia	Home, Clinic/Community	Cluster-randomized trial	HIV	Home-based VCT plus standard care vs standard care only	Total: 1694 intervention arm: 836 (394 men, 442 women), control arm: 858 (386 men, 472 women
50	Hook et al,	USA	STI clinic	Prospective cross-over trial	Chlamydia	Rapid diagnostic assay CT screening	3788
51	Jamil et al,	Australia	sexual health clinics and community-based organisations	RCT	HIV	HIV self-testing versus standard facility-based testing	Total: 362 (174in the standard care group (162 person-years).
52	Jani et al	Mozambique	primary healthcare centres	Cluster-randomized trial	HIV	POC device	Total: 3910 (POC arm: 2034, SOC arm: 1876)

53	Mabey et al,	Tanzania, Uganda, China, Peru, Zambia, Brazil	ANC clinics, health facilities and community-based	(before-after design)	Syphilis	POC test	Pre-POCT introduction: 46,760, Post-POCT introduction: 217,665
54	Master et al,	Kenya	Self-test vs clinic	Randomized clinical trial	HIV	HIV self-test vs HIV testing at clinic	Total: 600 (HIVST group) 570 (control group)
55	Banerjee, P.	UK	Home, Clinic	retrospective analysis	CT and NG	self-collection, clinician sampling	28,451 (Home test = 9258, clinic tested= 19,193)
56	Bradshaw, C. S.		street clinic	cross sectional study	STI	self-collection, clinician sampling	314
57	Chin-Hong, P. V.	USA	Home, Clinic	Cross-sectional study.	HPV	self-collection, clinician sampling	126
58	Fisher, M.	UK	Home, Clinic	Observational Study	STI	home self-testing, clinic-based testing	433
59	Francis, S. C.	Uganda	school	Mixed method	bacterial vaginosis,	Self-sampling	155
60	Guenter, D.	Canada	point of care	prospective cohort study	HIV	Point of care	1610
61	Gupte, S.	India	clinic	NA	Syphilis	Point of care	31,395
62	Hanrahan, C. F.	South Africa	primary care clinic	prospective cohort study	TB	clinician sampling	1861
63	Holland-Hall, C.M.	USA	Detention center	comparison study	NG, CT	Self-collection	133
64	Kersaudy-Rahib, D.	France	Home, Clinic	RCT	Chlamydia	self-collection, clinician sampling	11 075
65	Lawton, B.A.	New Zealand	primary care practices	RCT	Chlamydia, Trichomonas	self-sampling	2404
66	Lee E.	Australia	Community-based service & Traditional Clinical setting	Surveillance study	HIV	NA	9944
67	Lessells R. J	South Africa	Health subdistrict	Cluster-RCT	TB	clinician sampling	1297enrolled/1526 screened
68	Shifu Li,	China	Dental Clinic	Case-Control Study	HIV	Clinician sampling	1574; 758 for routine and 816 for oral rapid test

69	Lemoine M.,	Gambia	communities; central hospital (blood bank)	Observational study	HBV	clinician sampling	8170
70	Xiaofang, Z	China	NA-Online Platform-M health	RCT	HIV	self-sampling	100
71	Tyler B.W.	U.S.	NA	RCT	HIV	self-sampling; clinician sampling	65
72	Smith K.S.,	Australia	NA	RCT	Chlamydia	Self-sampling; clinician sampling	600 (200 women, 200 200 MSM)
73	Kenneth J. Smith,	USA	NA	RCT	CT and NG	self-sampling; clinician sampling	398
74	Samuel Muhula	Kenya	NA	RCT	HIV	NA	18591
75	Hendramoorthy Maheswaran	Malawi	primary health clinics	RCT	HIV	Self-sampling; clinician sampling	1, 241
76	Hendramoorthy Maheswaran	Malawi	NA	Cluster-RCT	HIV	NA	Not stated

Supplemental File 5: GRADE Tables and quality of evidence

Certainty assessment							Summary of findings				
							Study event rates (%)			Anticipated absolute effects	
№ of participants (studies) Follow-up	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Overall certainty of evidence	Control	Intervention	Relative effect (95% CI)	Risk with Facility-based testing	Risk difference with Self-testing
Self- testing VS facility-based testing for HIV											
50979 (10 RCTs) (1 NRS)	serious [a]	serious [b]	not serious	not serious	all plausible residual confounding would reduce the demonstrated effect	⨁⨁⨁◯ MODERATE	15775/25930 (60.8%)	16450/25049 (65.7%)	**OR 1.41** (1.36 to 1.46)	608 per 1,000	**78 more per 1,000** (from 70 more to 86 more)
STI self-sampling VS Facility-based testing											
13525 (6 RCTs) (0 NRS)	not serious	serious [c]	not serious	not serious	none	⨁⨁⨁◯ MODERATE	1123/6668 (16.8%)	2518/6857 (36.7%)	**OR 3.60** (3.28 to 3.96)	168 per 1,000	**253 more per 1,000** (from 231 more to 277 more)
Digital VS Conventional approaches for infectious diseases testing (Non-HIV)											
25934 (2 RCTs) (1 NRS)	serious [a]	not serious	not serious	serious [d]	none	⨁⨁◯◯ LOW	2946/12973 (22.7%)	4595/12961 (35.5%)	**OR 1.87** (1.77 to 1.98)	227 per 1,000	**128 more per 1,000** (from 115 more to 141 more)

CI: Confidence interval; **OR:** Odds ratio; **RCT:** Randomized Controlled Trials; **NRS:** Non-Randomized Studies

Explanations

a. One of the studies is an observational study

b. Some of the study results are not consistent with each other

c. One of the included studies has the same results for the same group and the result is not estimable.

d. The sample size of one of the included studies is very small