

Annex 5. Systematic review of HIV testing costs in high and low income settings

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5.1 Introduction

According to WHO Global Reporting, nearly 600 million adults received HIV testing services HIV tests were performed between 2010 and 2014 in 122 low- and middle-income countries reporting in this period.⁴ During nearly the same period, from 2009 to 2013, there was a 33% increase in the number of people who received HIV testing, across 77 countries (1). Despite these advances in the scale-up of HIV testing, it is currently estimated that only half of all people with HIV infection have been diagnosed (2). Awareness of HIV status is an essential step in linking people to prevention, care and treatment services, in reducing transmission, and in decreasing mortality and morbidity of people with HIV infection. The renewed focus on HIV testing through the global fast track targets including identifying 90% of persons who have HIV infection by 2020 will require commitment and resources to expand current HIV testing services (HTS) to reach those who remain undiagnosed.

Antenatal clinic HIV testing programs have successfully reached pregnant women (3), and provider-initiated testing has made testing more accessible in health facilities, particularly to those with conditions associated with HIV such as tuberculosis and sexually-transmitted infections (4). HTS now need to expand through a strategic mix of facility- and community-based approaches to reach those who are infected but are unaware of their status either because they appear healthy, don't perceive that they are at risk, or don't often access health services (such as men, adolescents, and key populations). Additionally, social, cultural, structural, legal and health system barriers may limit access to and uptake of HTS, and enrolment in HIV care and treatment services (5).

In an environment with limited-resources, there are growing questions about how to identify and select the optimal combination of HTS approaches while also reaching the HIV testing fast track target. We conducted a systematic literature review to compile information on the types of HIV testing services provided and their associated costs for different approaches across different settings, populations and contexts.

5.2 Methods

We conducted a systematic literature review for studies on HIV testing costs by searching PubMed, Cochrane, WHO global index medicus, IAS Abstracts, Google Scholar and EMBASE from Jan 2001 to May 18 2015. We identified other studies through four other systematic reviews on HIV testing services: one of which was published, (6) and three were unpublished (7-9). We included studies if they reported at a minimum the proportion of people who were diagnosed HIV-positive, the cost per person tested, and information about how these costs were calculated. Studies where mathematical modelling was used to estimate or project the cost per person tested and conduct cost-effectiveness analyses were excluded. There were no geographic limitations to the search.

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⁴ Data based on annual HIV testing numbers reported through Global AIDS Response Progress Reporting as of 12 July 2015.

Search strategy

We used the following MeSH terms in our search: HIV or human immunodeficiency virus, HIV OR HIV OR HIV-1 OR HIV-2 OR HIV infect OR human immunodeficiency virus] OR human immune deficiency virus OR human immunodeficiency virus OR human immune-deficiency virus AND (deficiency virus) AND (screen OR screening) OR (test OR testing OR HIV test) OR (counselling OR counseling OR counsel) AND (cost OR costing OR cost-effect OR cost-effectiveness OR economic cost OR financial cost); community or home or house or door or mobile or campaign or bar or workplace or business or church or temple or active or school or highway or brothel or bathhouse or festival or outreach or van or bicycle (note for PubMed search bicycle and van were not found as MeSH terms). Search was also conducted with additional key words for key populations: men who have sex with men or homosexual* or MSM or people who inject drugs or injecting drug use* or sex work* or transgender or transsexual or transvestite or prison*.

Database	Publication dates searched
Pubmed	4/3/2013 to 18/05/2015
Embase and WHO global index medicus	2012 to 2015 (a specific day cannot be specified in these search engines)
Cochrane library	2012 to 2015 (a specific day cannot be specified in this search engine)

Costing calculations

We extracted explicitly stated costs in USD for the year noted in the study, and grouped them under the standard categories listed in Fig.5.1A. We then converted all costs into the local currency of the country where the study took place for the year of the study using the World Bank provided currency exchange rates (<http://data.worldbank.org/indicator/PA.NUS.FCRF?page=1>) and local GDP deflator (<http://data.worldbank.org/indicator/NY.GDP.DEFL.ZS>) (both accessed 23 April 2015) (7). All local currency costs were then converted into USD 2013 dollars to allow cross-country comparisons.

Definitions

- The **cost per person tested** was defined as the cost of the HIV testing services reported by a specific programme, divided by the number of people who received HIV testing services.
- The **cost per case detected** was defined as the cost of the HIV testing services reported by a specific programme divided by the number of people who were diagnosed HIV-positive.
- **Linkage to HIV care and treatment** was defined as enrolment into care and treatment rather than intermediary steps such as provision of referral cards. Any cost incurred for providing an intervention to facilitate enrolment in care and treatment were included. Other costs for referral or point-of-care CD4 that did not end in enrolment in care or treatment were noted and but not included as contributing to enrolment.

Prevalence estimates

We used national HIV prevalence estimates from UNAIDS data in AIDSinfo.org (accessed 25 March 2015) for each study corresponding to the year the study was published. Since USA data were not available for 2009, we used HIV prevalence data reported in the US Centers for Disease Control and Prevention Morbidity and Mortality Report (10). All background prevalence data included in the table was based on general population prevalence estimates.

Income Groups

Countries were categorized by income group using World Bank definitions as of July 2014:
<http://data.worldbank.org/about/country-and-lending-groups/>.

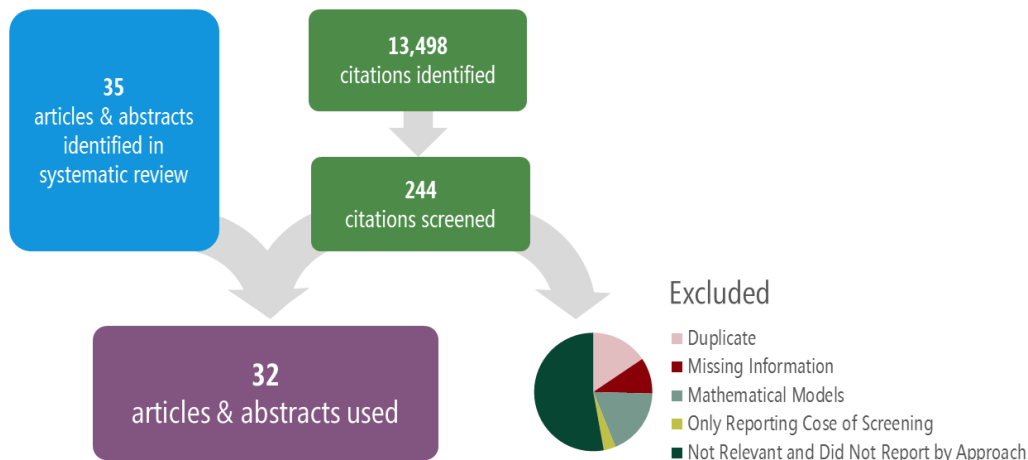
Fig. 5.1A. Categories of reported costing data

Costing data from studies were extracted and categorised into the following groups:	
1.	<u>Personnel costs</u> (e.g. cost of staff or volunteer, including salaries, stipends, per diem, cell phones, and benefits).
2.	<u>Facility & Infrastructure costs</u> (e.g. building and facility operating costs, maintenance and rents)
3.	<u>Vehicles & Other transport</u> (e.g. purchase and operation of mobile vans for outreach testing, vehicles or other transport for staff including mileage)
4.	<u>Equipment & Durables</u> (e.g. CD4 machine, Printers, Refrigerator)
5.	<u>Test kits & Consumables</u> (e.g. rapid test kits, gloves, cotton swabs, lancets, reagents)
6.	<u>Training</u> for staff and volunteers
7.	<u>Promotion materials</u> (e.g. brochures, handouts, advertising campaigns)
8.	<u>Administrative costs</u> (e.g. overheads, office supplies, record keeping, data management and analysis support, logistics, planning, supervision, quality assurance, laboratory fees)
9.	<u>Referral & Assessment</u> (e.g. referral cards, transport voucher, point-of-care CD4)
10.	<u>Facilitated linkage ending in enrolment</u> (e.g. active case management, patient navigator, home-based ART initiation)
11.	<u>Other specialty costs</u> (e.g. pay for performance incentives, incentives for participation, participant recruitment, additional travel costs, and research costs)

5.3 Results

A total of 29 articles and 2 abstracts were identified and included in this review.

Figure 5.2A. Deposition of studies identified



Tables 5.1A and 5.2A summarise the literature on the costs of different HIV testing service approaches, including facility-based and community-based settings. Figures 5.3A and 5.4A present data by income group and HTS approach. Table 5.3A details studies conducted among general populations. Table 5.4A details studies among key populations, and table 5.5A details studies which reported on the proportion of people with HIV who were enrolled in HIV care and treatment.

Table 5.1A Summary of the Cost per Person Tested by population type and HTS approach

	Low- to upper-middle income countries		High-income countries			All studies
	General population	Key population	General population	Key population	Other at-risk populations ¹	
Mobile	Median: \$20 Range: \$7–\$46 (5 studies)	Median: \$5 Range: \$3–\$6 (1 study)		Median: \$231 Range: \$96–\$709 (4 studies)	Median: \$999 Range: \$520–\$1529 (1 study) ²	Median: \$114 Range: \$3–\$1529 (11 studies)
Facility	Median: \$10 Range: \$2–\$58 (6 studies)	Median: \$11 Range: \$6–\$43 (3 studies)	Median: \$56 Range: \$20–\$115 (4 studies)	Median: \$177 Range: \$93–\$209 (3 studies)	Median: \$109 Range: \$90–\$129 (2 studies)	Median: \$16 Range: \$2–\$209 (16 studies)
VCT standalone	Median: \$50 Range: \$26–\$147 (4 studies)	Median: \$7 Range: \$4–\$9 (1 study)				Median: \$31 Range: \$4–\$147 (5 studies)
Home-based	Median: \$11 Range: \$7–\$19 (7 studies)					Median: \$11 Range: \$7–\$19 (7 studies)
Other³				Median: \$67 Range: \$34–\$160 (1 study)	Median: \$803 Range: \$52–\$1642 (2 studies)	Median: \$83 Range: \$34–\$1642 (2 studies)
Totals	Median: \$13 Range: \$2–\$147 (15 studies)	Median: \$6 Range: \$3–\$43 (4 studies)	Median: \$56 Range: \$20–\$115 (4 studies)	Median: \$123 Range: \$34–\$709 (6 studies)	Median: \$803 Range: \$52–\$1642 (5 studies)	Median: \$28 Range: \$2–\$1642 (31 studies)

Low- to upper-middle income countries include China, India, Viet Nam and countries of sub-Saharan Africa; high-income countries include Denmark and USA.

¹ Other refers to additional populations including: people identified to be at high risk for HIV but not specifying key population group (25, 27, 40), index patients (partners and/or family members) (11, 41, 42), and homeless (veterans & non-veterans) population (42). See Table 5.5A.

² Medians and ranges are derived from the measurements reported by studies. Many studies report multiple measurements with different levels. Thus one study reports multiple measurements and therefore a median is reported.

³ Other refers to the following additional approaches: HIV testing in jail settings (30), HIV testing in homeless shelter setting (42), partner notification and index patient testing including partners and/or family members (11, 41, 42). See Tables 5.3A, 5.4A and 5.5A.

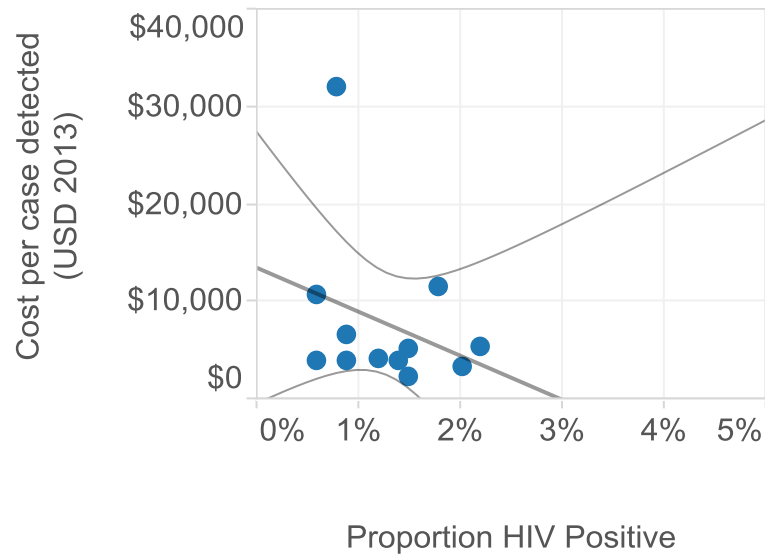
Table 5.2A Summary of the cost per HIV positive case detected by population type and HTS approach in 2013 US dollars (USD 2013)

	Low- and Middle-Income Countries		High Income Countries			Totals
	General population	Key Population	General population	Key Population	Other at-risk populations	
Mobile	Median: \$212 \$206 to \$217 (2 studies)			Median: \$11,101 \$4,059 to \$19,703 (4 studies)	Median: \$15,749 \$12,694 to \$18,022 (1 study)	Median: \$11,458 \$206 to \$19,703 (7 studies)
Facility	Median: \$60 \$14 to \$252 (6 studies)	Median: \$334 \$324 to \$15,308 (2 study)	Median: \$4,581 \$2,171 to \$31,830 (4 studies)	Median: \$13,744 \$4,219 to \$17,005 (3 studies)	Median: \$8,417 \$6,276 to \$10,558 (2 studies)	Median: \$165 \$14 to \$31,830 (15 studies)
VCT standalone	Medium: \$186 \$140 to \$248 (3 studies)	Median: \$29 \$16 to \$42 (1 study)				Median: \$140 \$16 to \$248 (4 studies)
Home-based	Median: \$193 \$72 to \$413 (7 studies)					Median: \$193 \$72 to \$413 (7 studies)
Other				Median: \$6,526 \$2,843 to \$29,334 (1 study)	Median: \$8,136 \$6,098 to \$25,026 (2 studies)	Median: \$8,136 \$2,843 to \$29,334 (2 studies)
Totals	Median: \$113 \$14 to \$413 (11 studies)	Median: \$324 \$16 to \$15,308 (3 studies)	Median: \$4,581 \$2,171 to \$31,830 (4 studies)	Median: \$9,505 \$2,843 to \$29,334 (6 studies)	Median: \$12,694 \$6,098 to \$25,026 (5 studies)	Median: \$2,171 \$14 to \$31,830 (26 studies)

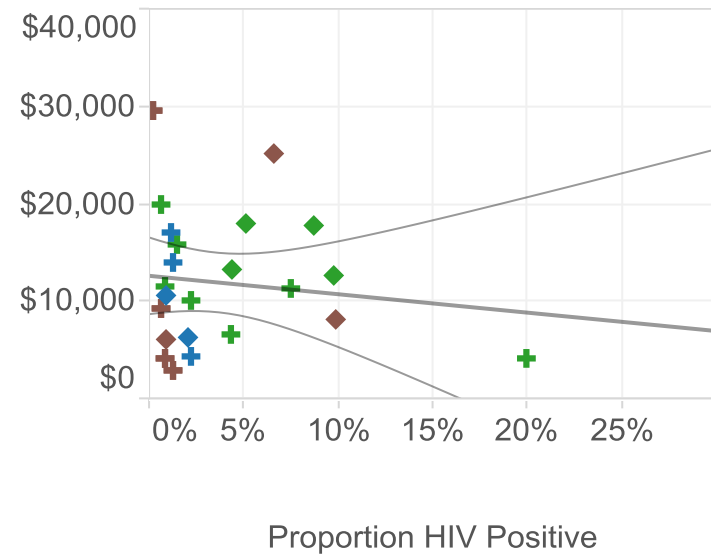
* Low to Upper Middle Income Includes China, Vietnam, India and Sub-Saharan Africa
High Income includes USA, Denmark

Figure 5.3A. Cost per case detected and proportion of HIV-positive cases identified by HIV testing service approach in studies in high-income countries¹

General Population



Key Populations and Other



Approach

- Facility
- Mobile
- Other

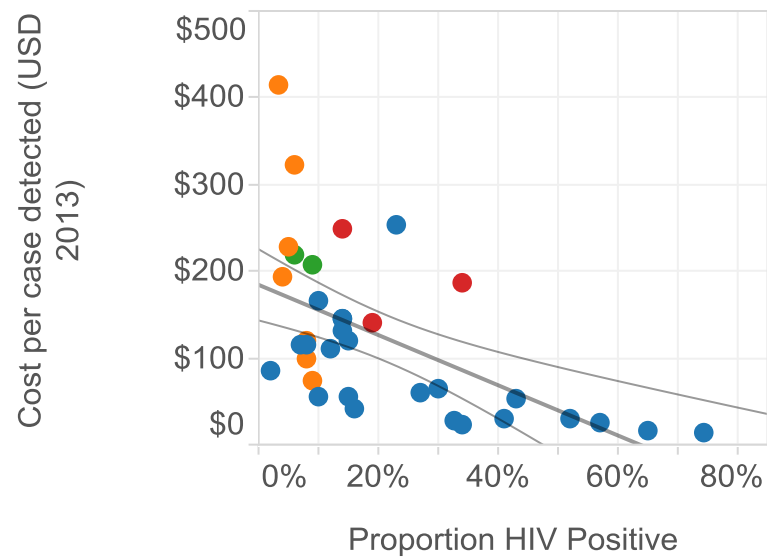
Population

- ✦ Key Population
- ◆ Other

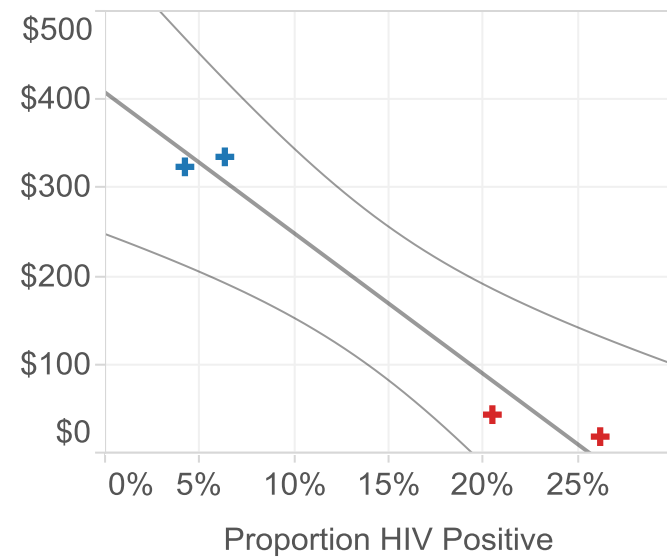
¹ In this figure, "other" refers to HIV testing in jail settings, HIV testing in homeless shelter settings, and index case/ partner notification. Other populations include: homeless population, populations identified as at high risk of HIV but not specifically from key population groups and index cases (partners of people diagnosed with HIV).

Figure 5.4A. Cost per case detected and proportion of HIV-positive cases identified by HIV testing service approach in studies in low- and middle-income countries

General Population



Key Populations



Approach

- Facility
- Home-based
- Mobile
- VCT standalone

*One cost per case detected measurement not presented on chart due to scale: China, Yan, 2014 facility-based with key population: \$15,308 at 0.04% HIV-positive

Table 5.3A. Cost summary of providing HIV testing to the general population by approach

Country / Author/ Year	Approach	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly Named Costs
Uganda, Menzies, 2009 (11)	VCT standalone	6.8%	9,579	19.1%	\$26	\$140	<ul style="list-style-type: none"> • Personnel • Equipment & Durables • Test kits & Consumables • Building & Infrastructure • Vehicles & Other transport • Training
	Facility		22,482	27.2%	\$17	\$60	
	Home-based ¹		2,011	6.0%	\$19	\$322	
	Home-based		49,470	5.1%	\$11	\$227	
Uganda, Tumwesigye, 2010 (12)	Home-based	7.0%	264,953	4.3%	\$11	\$193	<ul style="list-style-type: none"> • Personnel • Test kits & consumables • Vehicles & Other transport
Uganda, Chamie, 2012 (13)	Mobile ²	7.4%	2,282	7.8%	\$46	NR	<ul style="list-style-type: none"> • HIV cost within multi-disease campaign • Personnel • Equipment & Durables • Building & Infrastructure • Referral & Assessment
			2,282	7.8%	\$10	NR	<ul style="list-style-type: none"> • HIV only costs • Personnel • Equipment & Durables • Building & Infrastructure • Referral & Assessment
Uganda, Mulogo, 2013 (14)	Home-based	7.4%	494	9.0%	\$7	\$71	<ul style="list-style-type: none"> • Personal • Building & Infrastructure • Training • Administrative costs • Test kit & Consumables • Vehicles & Other transport
	Facility		500	7.0%	\$8	\$112	
Kenya, Negin, 2009 (15)	Home-based	6.0%	1984	8.2%	\$7	\$98	<ul style="list-style-type: none"> • Personnel • Training (only 3 days) • Vehicles & Other transport • Test kits & Consumables
Kenya, Grabbe, 2010 (16)	Mobile	6.0%	47,539	9.0%	\$20	\$206	<ul style="list-style-type: none"> • Building & Infrastructure • Personnel

¹ Index case HIV testing

² Multi-disease campaign

Country / Author / Year	Approach	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly Named Costs
	VCT standalone	6.0%	14,634	14.1%	\$35	\$248	<ul style="list-style-type: none"> • Equipment & Durables • Test kits & Consumables • Building & Infrastructure • Vehicles & Other transport
Kenya, Obure, 2012 (17)	Facility	6.1%	PITC: 3094 VCT: 3042	PITC: 16% VCT: 30%	PITC: \$6.31 VCT: \$18.84	PITC: \$40.23 VCT: \$62.79	<ul style="list-style-type: none"> • Building & Infrastructure • Equipment & Durables • Training • Personnel • Test kits & Consumables
	Facility	6.1%	PITC: 934 VCT: 2411	PITC: 15% VCT: 8%	PITC: \$5.77 VCT: \$13.92	PITC: \$55.20 VCT: \$115.01	
	Facility	6.1%	PITC: 418 VCT: 664	PITC: 10% VCT: 10%	PITC: \$6.83 VCT: \$13.72	PITC: \$53.59 VCT: \$165.99	
	Facility	6.1%	PITC: 771 VCT: 514	PITC: 14% VCT: 14%	PITC: \$5.64 VCT: \$5.93	PITC: \$129.60 VCT: \$145.14	
	Facility	6.1%	PITC: 269 VCT: 2374	PITC: NR VCT: 12%	PITC: \$7.17 VCT: \$8.62	PITC: NR VCT: \$109.35	
Malawi, HELLERINGER, 2013 (18)	Home-based	10.3%	1,183	Round 1: 8.0%; Round 2: 7.7%	\$9	\$119	<p>Note: 2 rounds (one general, 2nd targeted and with more repeat testers)</p> <ul style="list-style-type: none"> • Personnel • Vehicles & Other Transport • Equipment & Durables • Test kits & consumables • Training (2 day refresher course) • Administrative costs • Other: community meetings & sensitization
Lesotho, Labhardt, 2014 (19)	Mobile	22.9%	1207	6.2%	\$14	\$217.18	<ul style="list-style-type: none"> • Personnel • Vehicles & Other transport • Referral & Assessment
	Home-based	22.9%	1083	3.6%	\$15	\$413.48	
South Africa, McConnel, 2005 (20)	VCT standalone ³	18.5%	693	48%	\$147	NR	<ul style="list-style-type: none"> • Personnel (volunteers and staff were paid "below national average") • Test kits & consumables • Promotion • Building & Infrastructure
South Africa, Bassett, 2007 (21)	Facility ⁴	19.0%	1414	32.70%	\$9	\$26.37	<ul style="list-style-type: none"> • Test kit & consumable • Personnel • Building & Infrastructure • Other: OPD patients paid 12.41 for CD4 test, 4.06 if referred from OPD or 8.02 self-referral
	Facility		137	74.50%	\$9	\$13.77	

³ Church-based VCT site

⁴ Routine facility-based HIV testing in the outpatient department (OPD).

Country / Author/ Year	Approach	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly Named Costs
South Africa, Bassett, 2014 (22)	Mobile	19.1%	18,870	6.60%	HIV negative: \$26 HIV positive: \$28	NR	<ul style="list-style-type: none"> Personnel Vehicles & Other transport Administrative costs Building & Infrastructure Referral & Assessment
South Africa, Sharma, 2015 (7) ⁵	Mobile	19.1%	2,689	19.60%	\$7	NR	<ul style="list-style-type: none"> Personnel Test kits & consumables Vehicles & Other transport Equipment & Durables Building & Infrastructure Administrative costs Referral & Assessment (POC CD4) Other: scale-up costs, recurring meetings, research data capture
	Home-based	19.1%	4,223	26.50%	\$10	NR	
Swaziland, Obure, 2012 (17)	Facility	27.4%	PITC: 1657 VCT: 2818	PITC: 52% VCT: 43%	PITC: \$15.01 VCT: \$21.96	PITC: \$28.70 VCT: \$51.55	<ul style="list-style-type: none"> Personnel Building & infrastructure Equipment & durables Training Test kits & consumables
	Facility	27.4%	PITC: 303 VCT: 1289	PITC: 57% VCT: 41%	PITC: \$13.40 VCT: \$11.26	PITC: \$23.73 VCT: \$27.87	
	Facility	27.4%	PITC: 1976 VCT: 887	PITC: 34% VCT: 65%	PITC: \$7.86 VCT: \$9.86	PITC: \$23.03 VCT: \$15.10	
	Facility	27.4%	PITC: 936 VCT: 597	PITC: 14% VCT: 15%	PITC: \$15.35 VCT: \$13.29	PITC: \$144.22 VCT: \$118.07	
Vietnam, Minh, 2012 (23)	Facility	0.4%	452	23%	\$58.39	\$252	<ul style="list-style-type: none"> Personnel Building & infrastructure Equipment & durables Test kits & consumables Note: does not include land
	Standalone VCT	0.4%	1111	34%	\$64	\$186	
India, Minz, 2014 (24)	Facility	0.26%	6521	2.1%	\$1.75	\$84	<ul style="list-style-type: none"> Personnel Test kits & consumables
USA, Haukoos, 2013 (25)	Facility	0.28%	6702	1.80%	\$20.28	\$11,324	<ul style="list-style-type: none"> Administrative costs Equipment & durables Test kits & consumables Other: scale-up costs

⁵ Unpublished data

Country / Author / Year	Approach	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly Named Costs
USA, Hsieh, 2011 (26)	Facility ⁶	0.28%	453	2.21%	\$114.95	\$5,206	<ul style="list-style-type: none"> • Personnel • Test kits & consumables • Equipment & durables • Administrative costs
	Facility ⁷		1173	0.60%	\$41.13	\$3,716	
	Facility ⁸		1332	2.03%	\$91.75	\$3,203	
USA, Torres, 2011 (27)	Facility ⁹	0.28%	1300	0.80%	\$106.45	\$31,830	<ul style="list-style-type: none"> • Personnel • Test kits & consumables
	Facility ¹⁰		7569	0.90%	\$53.07	\$3,771	
	Facility ¹¹		3623	0.90%	\$72.11	\$6,546	
India, Dadona, 2008 (28)	VCT standalone ¹²	0.32%	32413	21%	\$8.92	\$42	<ul style="list-style-type: none"> • Personnel • Test kits & consumables • Promotion • Training • Building & Infrastructure • Administrative costs • Other: male condoms and IEC materials
	VCT standalone ¹³	0.32%	6644	26.2%	\$4.31	\$16	
USA, Mehta, 2008 (29)	Facility ¹⁴	0.27%	6632	1.5%	\$33.21	\$2,171	<ul style="list-style-type: none"> • Personnel
	Facility ¹⁵		2920	2.0%	\$75.37	\$5,100	
	Facility ¹⁶		1516	1.4%	\$51.73	\$3,717	
	Facility ¹⁷		4253	1.0%	\$48.22	\$4,061	
	Facility ¹⁸		1427	0.6%	\$59.77	\$10,661	

⁶ Using indigenous staff

⁷ Exogenous staff

⁸ Hybrid staff

⁹ Non-targeted

¹⁰ Non-targeted

¹¹ Universal emergency department staff

¹² Reporting in the 2002-2003 fiscal year

¹³ Reporting during 2005-2006 fiscal year

¹⁴ Urgent care centre

¹⁵ Drop-in centre

¹⁶ Primary care

¹⁷ Inpatient centre

¹⁸ Emergency department

Table 5.4A. Cost summary of providing HIV testing services for key populations by approach

Country / Author/ Year	Approach	Population	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly named costs
USA, Keenan, 2001 (30)	Mobile ¹	MSM, PWID, SW	0.2%	735	0.95%	\$97	\$11,458	<ul style="list-style-type: none"> • Personnel • Test kits & Consumables • Administrative costs • Vehicles & Other transport
USA, Golden, 2006 (31)	Mobile ²	MSM	1.7%	270	4.40%	\$229	\$6,436	<ul style="list-style-type: none"> • Personnel • Building & Infrastructure • Administrative costs • Vehicles & Other transport • Other: cost for peer recruiter training and referral incentives
	Mobile	MSM	1.7%	857	2.30%	\$231	\$9,876	
	Facility	MSM	1.7%	1083	1.30%	\$177	\$13,744	
USA, Shrestha, 2008 (32)	Mobile	MSM, PWID, SW	0.3%	703	0.70%	\$131	\$19,703	<ul style="list-style-type: none"> • Personnel • Facilities & Infrastructure • Equipment & Durables • Administrative costs • Training • Vehicles & Other Transport • Test kits & Consumables • Other: travel costs
	Facility ³	MSM, PWID, SW	0.3%	855	2.30%	\$93	\$4,219	
	Mobile	MSM, PWID, SW	0.3%	976	1.50%	\$233	\$15,600	
USA, Shrestha, 2009 (33)	Other ⁴	People in prison or closed settings	0.27%	6463	1.3%	HIV negative: \$34.17 HIV positive: \$87.42	\$2,843	<ul style="list-style-type: none"> • Personnel • Administrative costs • Training • Test kits & consumables • Equipment & durables • Other: travel
	Other ⁵	People in prison or closed settings	0.27%	4662	0.9%	HIV negative: \$35.81 HIV positive: \$82.79	\$3,917	
	Other ⁶	People in prison or closed settings	0.27%	4163	0.6%	HIV negative: \$52.18 HIV positive: \$114.92	\$9,134	
	Other ⁷	People in prison or closed settings	0.27%	2185	0.2%	HIV negative: \$52.03 HIV positive: \$159.76	\$29,334	

¹ Also included outreach testing at harm reduction clinic

² Also included peer-referral and outreach in bathhouses

³ STI clinic

⁴ Facility within a jail

⁵ Facility within a jail

⁶ Facility within a jail

⁷ Facility within a jail

Country / Author/ Year	Approach	Population	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly named costs
USA, Shrestha, 2011 (34)	Mobile ⁸	MSM, TG	0.3%	195	20.00%	\$709	\$4,059	<ul style="list-style-type: none"> • Personnel • Facilities & Infrastructure • Equipment & Durables • Administrative costs • Training • Vehicles & Other Transport • Test kits & Consumables • Other: travel costs quality assurance
	Mobile ⁹	MSM, TG	0.3%	106	7.50%	\$666	\$11,101	
China, Yan, 2014 (35)	Facility ¹⁰	MSM	0.3%	17,091	4.30%	\$13.91	\$324	<ul style="list-style-type: none"> • Annual cost of HIV testing reported to government • Other: performance based incentives for HIV testing, diagnosis of people with HIV and linkage/enrolment.
	Facility ¹¹	MSM	0.3%	3,126,341	0.04%	\$5.81	\$15,308	
Nigeria, Adebajo, 2013 & Ukwuije, 2013 (36, 37)	Facility	MSM & PWID	3.2%	1988	9%	\$43.45	NR	<ul style="list-style-type: none"> • Capital & Recurrent costs • No additional information provided
	Mobile	MSM & PWID	3.2%	14726	3%	\$6.36	NR	
	Mobile ¹²	MSM & PWID	3.2%	14895	13%	\$3.18	NR	
Denmark, Qvist et al 2014 (38)	Facility ¹³	MSM	0.16%	3012	1.2%	\$208.89	\$17,005	<ul style="list-style-type: none"> • Other: annual budget divided by the cost per HIV case identified
Viet Nam, Nguyen, 2015 (39)	Facility	Key populations	0.4%	1475	6.4%	\$7.92	\$334	<ul style="list-style-type: none"> • Personnel • Facilities & Infrastructure • Equipment & Durables • Administrative costs • Training (in service) • Vehicles & Other Transport • Test kits & Consumables • Other: confirmatory testing, investment costs, and travel

⁸ Included venue-based, social network, and HIV testing at a CBO centre

⁹ Included venue-based, social network, and HIV testing at a CBO centre

¹⁰ CBO clinic

¹¹ Government clinic

¹² Peer-led mobile

¹³ CBO clinic

Table 5.5A. Cost summary of providing HIV testing services for other populations by approach

Country / Author / Year	Approach	Population	National HIV Prevalence	Total Number Tested	Proportion HIV Positive	Cost per person tested (USD 2013)	Cost per case detected (USD 2013)	Explicitly Named Costs
USA, Haukoos, 2013 (25)	Facility-based	High risk ¹	0.28%	243	2.06%	\$129.13	\$6,276	<ul style="list-style-type: none"> • Administrative costs • Equipment & durables • Test kits & consumables • Other: scale-up costs
USA, Anaya, 2012 (42)	Other ²	Index patient/partner, homeless population	0.28%	817	0.86%	\$52.24	\$6,098	<ul style="list-style-type: none"> • Test kits & consumables • Personnel • Other: travel vouchers
USA, Torres, 2011 (27)	Facility ³	High risk ⁴	0.28%	2937	0.9%	\$89.87	\$10,558	<ul style="list-style-type: none"> • Personnel • Test kits & consumables
USA, Shrestha, 2010 (40)	Mobile	High risk /minority populations	0.28%	136	9.80%	\$1,084.35	\$12,694	<ul style="list-style-type: none"> • Personnel • Equipment & Durables • Test kits & Consumables • Building & Infrastructure • Other: travel, incentives
	Mobile		0.28%	330	4.4%	\$519.70	\$13,305	
	Mobile		0.28%	228	5.10%	\$913.31	\$18,022	
	Mobile		0.28%	123	8.70%	\$1,529.49	\$17,653	
USA, Shrestha, 2009 (41)	Other ⁵	Partners of index patients	0.27%	43	6.6%	\$1,641.55	\$25,026	<ul style="list-style-type: none"> • Personnel • Equipment & Durables • Test kits & Consumables • Building & Infrastructure • Other: travel
	Other ⁶			83	9.9%	\$803.34	\$8,136	
Uganda, Menzies, 2009 (11)	Home-based	Index patients/partner/family	6.8%	2,011	6.0%	\$19	\$322	<ul style="list-style-type: none"> • Personnel • Equipment & Durables • Test kits & Consumables • Building & Infrastructure • Vehicles & Other transport • Training

¹ High risk based on risk-based screening and targeted HIV testing

² Index partner and partner notification

³ Targeted, high risk

⁴ High risk based on risk-based screening and targeted HIV testing

⁵ Includes partner notification, facility, mobile & home-based

⁶ Includes partner notification, facility, mobile & home-based

Table 5.6A. Cost of referral, linkage and enrolment in HIV care and treatment

Country/ Author/Year	Approach	Population	Number tested	Cost per case referred (USD 2013)	Proportion diagnosed HIV positive	Proportion enrolled in care and treatment	Cost per case enrolled (USD 2013)	Costing notes
Lesotho, Labhardt, 2014 (19)	Home-based	General population	1083		3.6%	25.6%	\$1,614	<ul style="list-style-type: none"> Referral (POC CD4) Cost per person who tested HIV-positive and enrolled in care within 1 month
	Mobile		1207		6.2%	25.3%	\$858	
South Africa, Bassett, 2014 (22)	Mobile	General population	18,870	\$4.87	6.6%	NR	NR	<ul style="list-style-type: none"> Referral (POC CD4): 4.87 (USD 2013)
China, Yan, 2014 (35)	Facility	MSM	17,091		4.3%	5.2%-83.5%	NR	Other: performance based incentives for HIV testing, diagnosis of people with HIV and linkage/enrolment.
	Facility		3,126,341		0.04%		NR	
Uganda, Chamie, 2012 (13)	Mobile	General population	2,282	HIV test: \$20.17 Multi-disease campaign: \$32.78	7.8%	31.7%	NR	Referral <ul style="list-style-type: none"> POC CD4: 16.42 (USD 2013) Travel Stipend: 26.69 (USD 2013)
Uganda, Tumwesigye, 2010 (12)	Home-based	General population	264,953		4.3%	11.8%	NR	
Denmark, Qvist, 2014 (38)	Facility	MSM	3012		1.2%	97%	NR	
India, Minz, 2014 (24)	Facility	General population	6521	\$84	2.1%	NR	NR	<ul style="list-style-type: none"> Test kits & consumables Personnel All HIV-positive clients were referred for care
USA, Torres, 2011 (27)	Facility ¹	General population	1300		0.8%	50%	\$13,889	<ul style="list-style-type: none"> Test kits & consumables Personnel
	Facility ²	General population	7569		0.9%	92%	\$11,526	
	Facility ³	General population	3623		0.9%	79%	\$9,718	
	Facility ⁴	Other (high risk)	2937		0.9%	100%	\$11,526	
USA, Anaya, 2012 (42)	Other ⁵	Homeless population	817			71%	NR	<ul style="list-style-type: none"> Test kits & consumables Personnel Other: travel vouchers

¹ Non-targeted

² Non-targeted

³ Universal emergency department staff

⁴ Targeted, high risk

⁵ Testing in homeless shelter

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