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The status of adolescent testing and treatment in PEPFAR-supported programs, October 2017-September 2020

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Abstract

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Background: Adolescents have poorer outcomes across the HIV cascade compared to adults. We aimed to assess progress in HIV case-finding, antiretroviral treatment (ART), viral load coverage (VLC), and viral load suppression (VLS) among adolescents enrolled in the U.S. President's Emergency Plan for AIDS Relief (PEPFAR)-supported programs over a three-year period that included the beginning of the COVID-19 pandemic.

Methods: We analyzed PEPFAR program data in 28 countries/regions for adolescents 10–19 years between year 1 (October 2017-September 2018), year 2 (October 2018-September 2019), and year 3 (October 2019-September 2020). We calculated the number and percent change for HIV tests, HIV-positive tests, and total number on ART. Calculated indicators included positivity, percent of positives newly initiated on ART (ART linkage), VLC (percent of ART patients on ART for ≥6 months with a documented viral load result within the past 12 months), and VLS (percent of viral load tests with <1000 copies/mL).

Results: Between Years 1 and 3, the number of HIV tests conducted decreased by 44.2%, with a 29.1% decrease in the number of positive tests. Positivity increased from 1.3% to 1.6%. The number of adolescents receiving ART increased by 10.4%. Additionally, ART linkage increased (77.8% to 86.7%) as did VLC (69.4% to 79.4%) and VLS (72.8% to 81.5%).

Conclusions: Our findings demonstrate PEPFAR's success in increasing the adolescent treatment cohort. We identified ongoing gaps in adolescent case-finding, linkage, VLC, and VLS that could be addressed with a strategic mix of testing strategies, optimal ART regimens, and adolescent-focused service delivery models.

Keywords

Adolescent; HIV; treatment; testing; viral load

Background

Globally, there are an estimated 1.7 million adolescents aged 10–19 years living with HIV (ALHIV), of which 71% reside in Eastern and Southern Africa [1]. In 2020, there were 150,000 new infections among adolescents, with girls disproportionately affected, yet HIV testing coverage (defined as having been tested in past 12 months and having received a result) amongst adolescents remains low (<20%) [2]. ALHIV have poorer outcomes across the entire HIV cascade compared to adults, including awareness of HIV status, linkage to antiretroviral treatment (ART), adherence, continuity of treatment, and viral load suppression (VLS) [3–5]. This limited the ability for adolescents to achieve UNAIDS 90-90-90 goals by 2020 (90% of people living with HIV [PLHIV] diagnosed, 90% of those diagnosed on ART, and 90% on ART are virally suppressed).

The U.S. President's Emergency Plan for AIDS Relief (PEPFAR) supports HIV testing, care, and treatment in 28 country/regional programs, reaching millions of PLHIV [6]. In fiscal year 2019 (October 2019-September 2022), PEPFAR introduced minimum program requirements that included key interventions that had been introduced but not yet scaled: HIV self-testing and index testing, increasing ART coverage through same-day ART initiation and preventing interruptions in treatment through implementing differentiated service delivery (DSD) models, improving access to viral load (VL) testing, and optimizing

ART regimens to improve VLS [7]. The reach of PEPFAR programs and availability of program data disaggregated by age and sex provides a unique opportunity to understand the current status of the adolescent HIV cascade across a large number of countries/regions. This analysis assessed progress in adolescent HIV case-finding, ART use, and VL in PEPFAR programs from 2017–2020, which included the beginning of the COVID-19 pandemic.

Methods

We analyzed routinely reported program data [8] from all PEPFAR country/regional programs among adolescents aged 10–19 years across three time periods: Year 1 (October 2017-September 2018), Year 2 (October 2018-September 2019), and Year 3 (October 2019-September 2020). Figure 1 shows the countries/regions included in the analysis. All HIV care facilities reporting data from adolescents were included for each year. Due to changes in implementing partners and the expansion of the PEPFAR program over time, the number of facilities reporting varied across years. All data were downloaded from Panorama, PEPFAR's platform for sharing programmatic data, as a structured dataset in March 2021.

Descriptive statistics were used to calculate number and percent change between Years 1 and 3 for the following indicators: number of HIV tests, number of HIV-positive tests, number newly initiated on ART, total number on ART, number with a VL test result from the past 12 months, and number with a suppressed VL (<1,000 HIV copies/mL). We calculated the following indicators: positivity (percent of tests that were positive), number needed to test to find one positive (NNT) (number of tests/number of positive tests), proxy ART linkage (percent of positives newly initiated on ART), proxy VL coverage (VLC) (percent of ART patients on ART for ≥6 months with a documented viral load result within the past 12 months), and VLS (percent of viral load tests with suppressed VL). For positivity, linkage, VLC, and VLS, we calculated chi-squared P-values to determine whether the change between years 1 and 3 was statistically significant, using 0.05 as the cutoff for significance.

We also analyzed HIV testing data by testing modality (location or testing strategy), including proportion of HIV tests, HIV-positive results, positivity, and NNT for each modality. Modalities were grouped into the following categories: sick entry points (emergency ward [ER], tuberculosis [TB] clinic, inpatient, sexually transmitted infection [STI] clinic), since it is recommended to test 100% of adolescents presenting for care in these settings [9,10]; index testing (facility- and community-based), whereby the biological siblings of HIV-positive children, biological children of HIV-positive adults, sexual partners, and needle-sharing contacts of PLHIV are offered HIV testing; outpatient department (OPD); maternal care (initial antenatal care visit and follow-up visits); voluntary counseling and testing (VCT) (facility- and community-based); voluntary medical male circumcision (VMMC); and other community testing.

Analyses were done for the entire 10–19 year age band, which were then disaggregated by younger (10–14 years) and older (15–19 years) adolescents, sex (boys and girls), and geographic region (western Africa, central Africa, eastern Africa, southern Africa, western

hemisphere, and Europe/Asia) (Figure 1). Regional groupings followed World Health Organization (WHO) classification [11]. All analyses were conducted using Microsoft Excel for Office 365. This analysis was reviewed and determined to be not human subjects research by the U.S. Centers for Disease Control and Prevention.

Results

HIV Testing (Table 1)

In the most recent year of data reporting (Year 3), the overall number of HIV tests conducted among adolescents was 8,070,365, which represented 13.4% of all HIV tests conducted in PEPFAR (60,364,039). That year, 67.9% of tests were conducted among girls; 81% of tests were done among older adolescents. The largest proportion of tests were done in southern Africa (47.8%) and eastern Africa (34.1%). Most tests in adolescents in Year 3 were done in OPD (43.3%), maternal care (18.7%), and other community testing (11.7%). Index testing and testing at sick entry points accounted for 4.0% and 4.9% of tests done in Year 3, respectively. Among girls, 29.5% of tests in Year 3 were in maternal care; among boys, 25.0% of tests were in VMMC.

Compared to the first year of data reporting (Year 1 to 3), tests among adolescents decreased by 44.2%. Boys had larger percent declines in tests compared to girls (−58.3% vs. −33.6%), and younger adolescents had larger percent declines than older adolescents (−65.0% vs. −34.8%). All regions saw declines in tests for adolescents, with the largest percent declines occurring in eastern Africa (−60.2%) and southern Africa (−33.6%). The number of tests decreased across all modalities except maternal care (+18.7%). The greatest absolute decline was in OPD (−3,558,209 tests) and the largest percent declines in VCT (−68.5%), VMMC (−65.6%), index testing (−52.1%), and OPD (−50.5%). For VMMC, there was a larger percent decline in tests for younger adolescents than older adolescents (−78.1% vs. −45.8%). Testing in most modalities declined across all three years, but sick entry points and maternal care increased in year 2 and declined in year 3.

Identifying ALHIV (Table 1)

In the most recent year of data reporting (Year 3), there were 129,283 HIV-positive tests among adolescents, comprising 5.1% of all HIV-positive tests that year. Overall, 76.0% of HIV-positive tests were among girls; 82.1% of HIV-positive tests were among older adolescents. The largest proportion of positive tests were in southern Africa (57.1%) and eastern Africa (23.3%). Most positive tests in adolescents were in OPD (37.2%), index testing (19.0%), and maternal care (15.9%). Among girls, 20.9% of positive tests were in maternal care; among boys, 3.8% of positive tests were in VMMC.

Compared to the first year of data reporting (Year 1 to 3), HIV-positive tests among adolescents declined by 29.1%. Boys had a larger percent decline in positive tests compared to girls (−36.9% vs. −26.2%), and younger adolescents had a larger percent decline in positive tests than older adolescents (−39.2% vs. −26.4%). Southern and eastern Africa had the largest percent declines in positive tests among adolescents (−40.3% and −27.3% respectively), while western and central Africa and the Europe/Asia region had increased

positive tests (+53.9%, +49.3%, +41.9% respectively) (Figure 2). Several modalities had percent increases in positive tests, including index testing (+44.5%), sick entry points (+7.2%), and other community (+2.9%). However, the remaining modalities had percent declines in positive tests, including VMMC (−81.8%), VCT (−58.9%), outpatient (−42.2%), and maternal care (−14.2%). For VMMC, there were larger percent declines in positive tests in younger adolescents (−86.0%) than older adolescents (−74.1%). HIV-positive tests in most modalities followed the same trend across all three years, except sick entry points, maternal care, and VMMC (increased in year 2, declined in year 3) and other community, (declined in year 2, increased in year 3).

Overall, positivity across all modalities in Year 3 was 1.6%, an increase from 1.3% in Year 1 (P<0.001). There were larger increases in positivity in younger adolescents (0.8% to 1.5%) than in older adolescents (1.4% to 1.6%), and smaller increases in positivity in girls (1.6% to 1.8%) compared to boys (0.8% to 1.2%). Correspondingly, overall NNT decreased from 79 (Year 1) to 62 (Year 3). In Year 3, NNT was higher in younger adolescents than older (68 vs. 61) and in boys than girls (84 vs. 56). In Year 3, the modality with the highest positivity/lowest NNT was index testing (positivity 7.6%, NNT =13), followed by sick entry points (positivity 2.0%, NNT 50) and VCT (positivity 1.9%, NNT 52). The modality with the lowest positivity/highest NNT was VMMC (positivity 0.2%, NNT = 551). In Year 3, positivity/NNT among adolescents varied by region: southern Africa (positivity 1.9%, NNT 52), central Africa (positivity 1.8%, NNT 54), western Africa (positivity 1.7%, NNT 59), eastern Africa (positivity 1.1%, NNT of 91), and Europe/Asia (positivity 3.3%, NNT 31).

Treatment (Table 2)

In the most recent year of data reporting (Year 3), the number of ALHIV newly initiated on ART was 112,043 (Table 2). Most ALHIV initiated on ART were girls (78.8%), and 82.4% were older adolescents. Compared to the first year of data collection (Year 1 to 3), there was a 21.1% decrease in the number of ALHIV newly initiated on ART. There were slightly higher percent declines in girls than boys (−21.6% vs. −19.0%) and larger percent declines in younger compared to older adolescents (−31.0% vs. −18.5%). The largest percent decline in ALHIV newly initiated on treatment was in southern Africa (−33.1%), while western Africa had the largest percent increase (+95.4%).

In the most recent year of data reporting (Year 3), proxy treatment linkage in ALHIV was 86.7% and was higher in girls than boys (89.9% vs. 76.5%) and in older adolescents than younger (87.0% vs 85.1%). The western Hemisphere and Europe/Asia regions had the highest linkage (105.6% and 98.9%, respectively), while central (86.2%) and southern Africa (83.0%) regions had the lowest. Compared to the first year of data collection (Year 1 to 3), overall linkage increased from 77.8% to 86.7% (P<0.001). Linkage improved in most regions except central Africa and the Europe/Asia, where linkage declined by 2.7 and 3.7 percentage-points, respectively (Supplemental Figure 1).

The number of healthcare facilities reporting ALHIV on ART increased from 20,135 in Year 1 to 22,733 in Year 3, for an increase of approximately 13%. In the most recent year of data reporting (Year 3), the total number of ALHIV on ART was 692,272; higher proportions of ALHIV on ART were girls (57.5%) and older adolescents (55.9%). Southern and eastern

Africa had the highest numbers of ALHIV on ART (376,236 and 220,718, respectively). Compared to the first year of data collection, (Year 1 to 3), there was a 10.4% increase in total number of ALHIV on ART. There was a larger percent increase in boys than girls (+15.9% vs. +6.7%), with similar increases in total number on ART for younger and older adolescents (+9.7% and +10.9%, respectively). Central Africa had the largest percent increase in ALHIV on ART (+69.0%).

Viral load coverage and suppression (Table 3)

In the most recent year of data reporting (Year 3), VLC among adolescents on treatment was 79.4%. VLC was higher in boys than girls (83.8% vs. 76.2%), and in younger adolescents than older (84.1% vs. 75.6%). VLC was highest in eastern (89.9%) and western Africa (86.5%). Compared to the first year of data collection (Year 1 to 3), there was an increase in overall VLC from 69.4% to 79.4% ($P<0.001$). There were larger gains in VLC in boys (74.3% to 83.8%) than girls (66.1% to 76.2%) and older adolescents (63.2% to 75.6%) than younger adolescents (77.1% to 84.1%). VLC declined in Europe/Asia and the western Hemisphere from 100.2% to 74.8% and from 90.9% to 83.3%, respectively. However, VLC increased throughout Africa, with the largest gains in western (15.5 percentage-points) and southern Africa (15.0 percentage-points) and smallest gains in eastern Africa (1.0 percentage-points) (Supplemental Figure 2). Most ages, sexes, and regions saw increased VLC in Year 2 (except Europe/Asia and Western Hemisphere), but almost all saw stable or declining VLC in Year 3 during the COVID-19 pandemic (except Central Africa, Europe/Asia, and Western Hemisphere).

In the most recent year of data reporting (Year 3), VLS among adolescents on treatment was 81.5% and was higher in girls than boys (82.4% vs. 80.4%). VLS was similar in younger and older adolescents (81.0% vs. 82.0%). VLS was highest in eastern Africa (84.3%) and was lowest in the western Hemisphere (72.9%). Compared to the first year of data collection (Year 1 to 3), there was an increase in overall VLS from 72.8% to 81.5% ($P<0.001$), with larger gains in boys (70.1% to 80.4%) than girls (74.9% to 82.4%), and younger adolescents (71.7% to 81.0%) than older (74.0% to 82.0%). VLS declined in Europe/Asia by 3.6 percentage-points; however, VLS increased in all other regions, with the largest gains in western Africa (19.8 percentage-points) and western Hemisphere (18.0 percentage-points), and the smallest gains in southern Africa (5.5 percentage-points).

Discussion

Substantial progress has been made in adolescent testing and treatment in PEPFAR programs in the three-year period examined, despite disruptions from the COVID-19 pandemic in early 2020. Timing of the first wave of COVID-19 in 2020 varied across PEPFAR countries [12]. During early stages of the COVID-19 pandemic, lockdowns and other disruptions affected services across the HIV testing and treatment cascade, including reduced care-seeking resulting in reduced testing, reduced mobility to attend appointments, interruptions in supplies of ART and other critical commodities, and lack of machine availability for viral load testing [13,14].

This analysis showed an overall decrease in both the numbers of adolescents tested and positive tests, which may be due to several factors. These include an emphasis in PEPFAR guidance on testing strategies to focus on index testing [7], which resulted in an increase in number of positive tests through this modality but a decrease in these metrics across most other modalities. PEPFAR guidance recommended more targeted testing in outpatient settings [7] using risk assessment tools, which may have contributed to the large declines in adolescent testing and case-finding in OPD in Years 2 and 3. Transitions in HIV testing activities from PEPFAR to national governments may also have resulted in declines in PEPFAR reporting for testing indicators over the years [7]. COVID-19 may have further exacerbated these declines. Patients or caregivers may have been hesitant to visit facilities or faced access issues from travel restrictions, community-based testing may have been disrupted, and there may have been limited stocks of HIV test kits.

To improve adolescent case-finding in high-burden settings (>5% HIV prevalence), WHO recommends HIV testing for all adolescents with linkage to either prevention or treatment services, depending on the test result [9]. Adolescents could benefit from routine eligibility screening in outpatient settings; a study in Kenya found under-testing in adolescents presenting to OPD; however, after implementing simple eligibility assessments, HIV testing tripled and 2.7 times more ALHIV were identified [15]. In addition, innovative strategies, dedicated human resources, and sufficient commodities may be needed to expand the coverage of index testing services among adolescents. Programs can monitor testing coverage at sick entry points to ensure 100% of adolescents are offered HIV testing services. When programs increased HIV testing in Year 2 at sick entry points, they identified more ALHIV. Furthermore, programs can consider increasing use of HIVST in adolescents, which has high acceptance [16,17], leveraging online and social media platforms popular among adolescents to market the benefits of HIVST, address perceived barriers to HIVST, and link adolescents to peer-counselors and directly-assisted HIVST.

This analysis found larger declines in testing and case-finding in boys and in younger adolescents. Recent shifts in PEPFAR guidance may have contributed to these disproportionate declines. VMMC for boys younger than 15 years is no longer supported due to higher risks of adverse events. Guidance supported targeted testing approaches, moving away from universal HIV testing for all VMMC clients [7]. Disruptions in VMMC services due to COVID-19 may have further exacerbated declines in VMMC testing in Year 3. Moving forward, VMMC programs can evaluate their criteria for HIV testing/referrals and consider approaches to ensure high-risk adolescent boys receive HIV testing, potentially through risk screening approaches and use of HIVST at VMMC Sites. For boys not eligible for VMMC, other approaches are needed to engage them in health services to receive HIV testing and appropriate behavioral, biomedical, and structural prevention services. For girls, testing in maternal care settings continues to be effective. Maintaining high testing coverage in antenatal and postnatal settings remains critical for early identification of female ALHIV and prevention of transmission to their infants.

In Year 3, PEPFAR provided treatment for almost 700,000 ALHIV, or 40.7% of the estimated 1.7 million ALHIV globally [1]. There has been a focus in PEPFAR on same-day/early ART initiation [7]. Proxy linkage rates in adolescents improved over the three years,

yet remained below the 90% goal. Adolescent-friendly treatment services [18] can improve linkage rates [19–21] and should continue to be scaled. Although the numbers of new ART initiations in adolescents declined over the three years due to fewer ALHIV identified, there was an overall increase in the total number of adolescents on treatment in PEPFAR, despite potential disruptions in treatment services in Year 3 due to COVID-19. Contributors to the increase in the adolescent treatment cohort may have been the increase in the number of facilities reporting, increased focus on continuity of treatment, and evidence-based adolescent-focused DSD models [7], such as Zvandiri [22], Operation Triple Zero [23], Teen Clubs [24], and other youth-oriented clinic settings [18,25]. PEPFAR also supported scale up of multi-month dispensing (MMD), although current age disaggregation for the indicator does not allow for analysis of MMD in adolescent age bands in PEPFAR programs. Additional support to ALHIV returning to care is needed, with linkage to psychosocial support to prevent further treatment interruptions, including peer support groups and enrollment into orphan and vulnerable children's programs that provide case management and home visits. More focus is needed for younger adolescents, who had smaller gains in treatment growth compared to older adolescents. PEPFAR data reporting systems do not allow for analysis to understand the contribution of aging into/out of age bands on the growth of the younger and older adolescent cohort.

This analysis found increases in VLC and VLS across age bands, sexes, and regions. Although the improvement in VLS did not appear to be impacted by COVID-19, slight decreases were seen for VLC in Year 3 compared to Year 2. Overall, there were larger gains and higher VLC seen in boys compared to girls, which should be further investigated, particularly since girls had higher linkage and slightly higher VLS. Impressive gains in VLS for both adolescent boys and girls were seen, likely due to the inclusion of adolescents in the transition to optimal ART (dolutegravir-based regimens) [7], adherence support, and motivation through peer support and adolescent-friendly DSD models. However, VLS rates in adolescents remained below the 90% goal by 2020. To improve VLS, programs can implement interventions and monitoring systems to ensure that all ALHIV transition to optimal regimens, receive routine VL monitoring, and scale adolescent peer-led DSD models [26].

Important regional differences in testing and treatment for adolescents were noted. The largest declines in testing and case-finding were seen in southern and eastern Africa, regions with the highest burden of ALHIV. These regions may benefit from expanded and innovative HIV testing and treatment services for adolescents, even as adults in these regions approach achieving UNAIDS goals. Larger gains in percent growth of the treatment cohort, VLC, and VLS were made in western and central Africa, regions with historically lower HIV treatment coverage, compared to southern Africa. Western and central Africa had program expansion during the time period of this analysis and also implemented intensified case-finding and linkage strategies. In Europe/Asia, which have smaller numbers of ALHIV, there was an increase in case-finding, new ART initiations and the total on ART, but VLC and VLS declined; these declines require further investigation and may need specific interventions for adolescents.

This analysis had several limitations. There were changes in the countries included in several regional programs in Asia and the Americas over the time periods examined, so the countries included for each year were not the same for the regional programs. However, these regional programs represent a small proportion of adolescents within PEPFAR programs and likely had little impact on the results. In addition, due to shifting funding and implementing mechanisms over time, the data do not necessarily represent the same healthcare facilities across the three time periods and there was a net increase in healthcare facilities reporting. As these data were aggregated across countries, we were unable to review data quality or completeness, which may vary by country. PEPFAR services have differing footprints across countries and data is not meant to be nationally representative. Calculations of linkage and viral load coverage are proxy indicators because PEPFAR programs routinely report aggregate-level data and not individual-level beneficiary data. PEPFAR indicators that provide detailed data on return to treatment, treatment interruption, and mortality were not available across all time periods; further analysis of these indicators is needed once more time points are available. Finally, the degree that these trends were impacted by COVID-19 could not be determined, since timing of COVID-19 waves, service disruptions, and mitigation measures varied by country. Further country-level analyses are needed to better understand the full impact of COVID-19 including school closures and parental unemployment, and to determine the impact on programs where adolescent enrollment is primarily from key populations, whose access to services may have been disproportionately affected. Despite these limitations, this analysis has major strengths, such as the large numbers of adolescents across multiple countries/regions with data on multiple testing- and treatment-related indicators over three time periods.

Conclusion

Monitoring of testing and treatment trends by age, sex, and testing modality can reveal the impact of larger programmatic shifts in HIV testing and treatment among adolescents, identifying successes and ongoing gaps in the adolescent HIV cascade where additional focus and evaluation may be warranted. Our findings highlight important successes and gaps in adolescent testing and treatment that can inform policies and programs for adolescents. PEPFAR-supported programs have seen declines in HIV testing and positive tests among adolescents, despite slight gains in positivity and increased case-finding in index testing. An optimal mix of testing strategies is needed that identifies a high absolute number of ALHIV, including scaling index testing, monitoring testing coverage at sick entry points, and expanding HIV testing in outpatient settings. Despite gains in the treatment cohort and improved VLC and VLS, gaps remain in linkage to ART, VLC, and VLS. In order to accelerate progress to achieve the even more ambitious UNAIDS goals of 95-95-95 goals in ALHIV by 2030, these gaps can be addressed through interventions such as scaling optimal ART regimens and adolescent-friendly DSD models.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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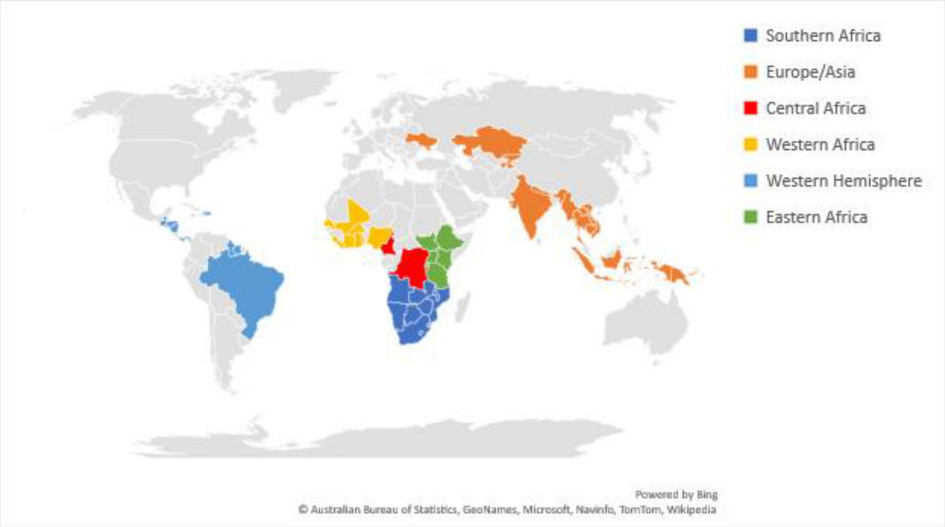

Region	Country
Central Africa	Burundi, Cameroon Democratic Republic of the Congo
Eastern Africa	Ethiopia, Kenya, Rwanda South Sudan, Tanzania, Uganda
Europe/Asia	Ukraine, Vietnam, Burma, Cambodia+ India, Indonesia, Kazakhstan, Kyrgyzstan Laos, Nepal. Papua New Guinea Tajikistan, Thailand
Southern Africa	Angola, Botswana, Eswatini, Lesotho Malawi, Mozambique Namibia South Africa, Zambia, Zimbabwe
Western Africa	Cote d'Ivoire, Nigeria, Burkina Faso Ghana, Liberia, Mali, Sierra Leone Senegal, Togo
Western Hemisphere	Dominican Republic, Haiti, Barbados Brazil, El Salvador, Guatemala Guyana, Honduras, Jamaica, Nicaragua Panama, Trinidad and Tobago, Suriname

Figure 1:

PEPFAR-supported countries and regional designations +Cambodia is included in the Asia regional program but did not contribute data to this analysis.

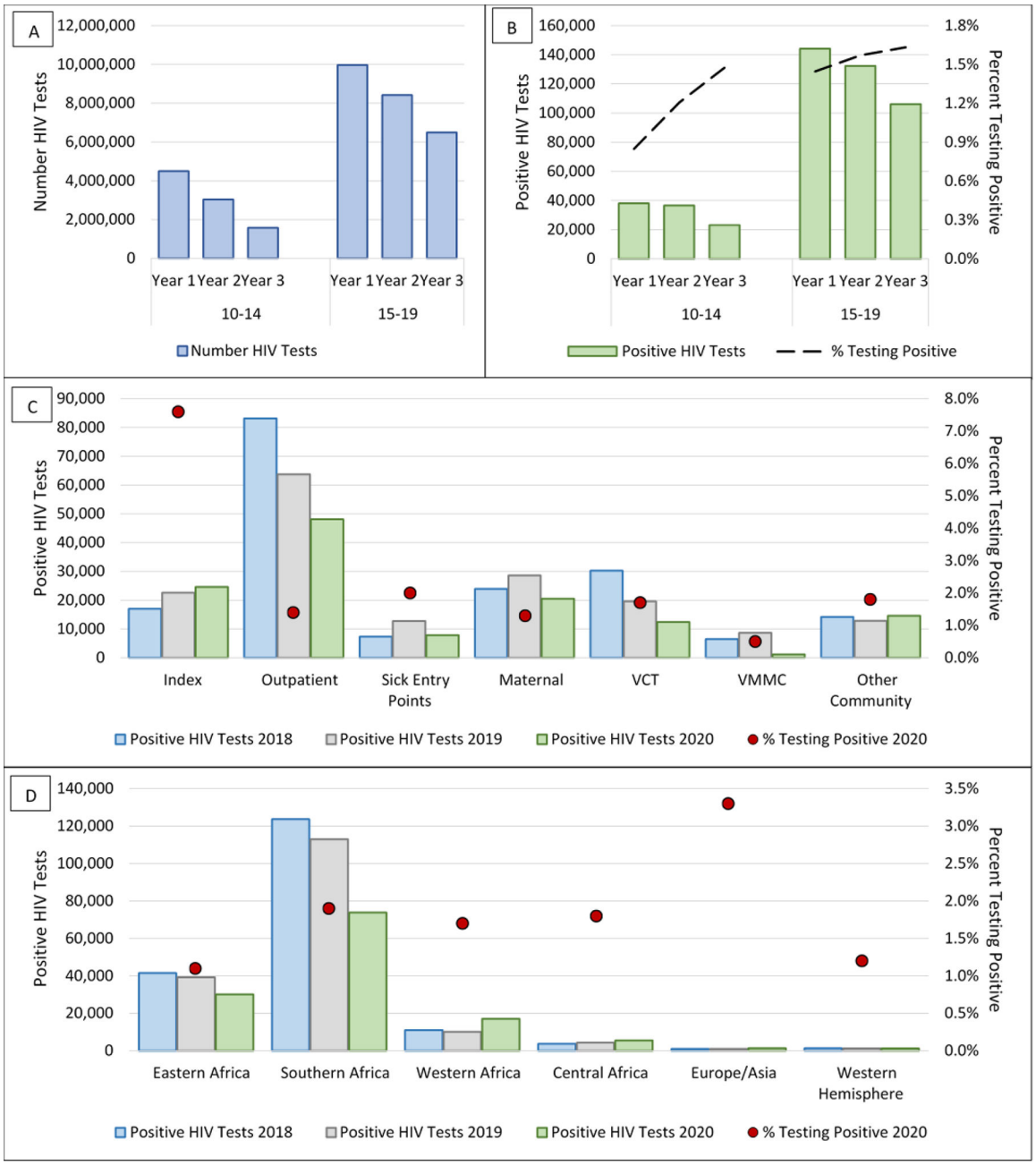

Figure 2:

Trends in A) HIV Testing, B) Case-Finding, and Percent Testing Positive (positive HIV tests/total HIV tests) by C) testing modality and D) region among Adolescents in PEPFAR-Supported Programs, October 2017-September 2020. Year 1=October 2017-September 2018, Year 2=October 2018-September 2019, Year 1=October 2019-September 2020.

Table 1:

HIV Testing, HIV-Positive Tests, Percent Testing Positive, and Number Needed to Test to Find one Positive (NNT) in Adolescents in PEPFAR-Supported Programs, October 2017-September 2020[+]

	Number of HIV Tests			Number of HIV-Positive Tests			Percent Positivity %[*]			NNT[^]		
	Year1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Total 10–19 years	**14,464,561**	**11,448,872**	**8,070,365**	**182,325**	**168,854**	**129,283**	**1.3%**	**1.5%**	**1.6%**	**79**	**68**	**62**
Age												
10–14 years	4,494,292	3,030,167	1,571,733	38,095	36,567	23,176	0.8%	1.2%	1.5%	118	83	68
15–19 years	9,970,269	8,418,705	6,498,632	144,230	132,287	106,107	1.4%	1.6%	1.6%	69	64	61
Sex												
Female	8,247,260	6,937,770	5,479,051	133,218	123,316	98,291	1.6%	1.8%	1.8%	62	56	56
Male	6,217,301	4,511,102	2,591,314	49,107	45,538	30,992	0.8%	1.0%	1.2%	127	99	84
Region												
Eastern Africa	6,926,499	4,359,601	2,755,234	41,507	39,253	30,164	0.6%	0.9%	1.1%	167	111	91
Southern Africa	5,803,380	5,748,112	3,855,533	123,622	112,959	73,854	2.1%	2.0%	1.9%	47	51	52
Western Africa	1,218,100	881,930	1,012,524	11,076	10,067	17,049	0.9%	1.1%	1.7%	110	88	59
Central Africa	347,958	289,689	303,197	3,744	4,338	5,589	1.1%	1.5%	1.8%	93	67	54
Europe/Asia	43,725	66,658	43,456	1,005	1,017	1,426	2.3%	1.5%	3.3%	44	66	31
Western Hemisphere	124,899	102,882	100,421	1,371	1,220	1,201	1.1%	1.2%	1.2%	91	84	84
Modality												
Index[1]	678,108	424,484	324,966	17,020	22,636	24,600	2.5%	5.3%	7.6%	40	19	13
Outpatient[3]	7,049,626	4,844,190	3,491,417	83,133	63,725	48,050	1.2%	1.3%	1.4%	85	76	73
Sick Entry Points[2]	429,895	606,024	394,899	7,305	12,764	7,832	1.7%	2.1%	2.0%	59	47	50
Maternal Care[4]	1,359,781	2,011,651	1,614,585	23,953	28,598	20,554	1.8%	1.4%	1.3%	57	70	79
VCT[5]	2,065,688	1,179,350	649,853	30,268	19,524	12,453	1.5%	1.7%	1.9%	68	60	52
VMMC	1,877,376	1,681,076	646,646	6,440	8,725	1,173	0.3%	0.5%	0.2%	292	193	551
Other Community	1,004,087	702,097	947,999	14,206	12,882	14,621	1.4%	1.8%	1.5%	71	55	65

NNT=number needed to test to find one positive, VCT=voluntary testing and counseling, VMMC= voluntary medical male circumcision

[+]Year 1 = October 2017-September 2018, Year 2 = October 2018-September 2019, Year 3 = October 2019-September 2020

[*] Number of HIV-Positive Tests/Number of HIV Tests;

[^] Number of HIV Tests/Number of HIV-Positive Tests

[1] Facility and community index testing;

[2] inpatient, emergency, TB clinic, STI clinic;

[3] other provider-initiated testing and counseling (PITC);

[4] Antenatal care (ANC) visit 1 and post-ANC1;

[5] facility and community VCT

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Table 2:

HIV Treatment in Adolescents in PEPFAR-Supported Programs, October 2017-September 2020[+]

	Number of HIV-Positive Tests			New Treatment initiations			Proxy Linkage to ART (%)*			Total on ART^		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Total 10–19 years	**182,325**	**168,854**	**129,283**	**141,922**	**133,500**	**112,043**	**77.8%**	**79.1%**	**86.7%**	**627,076**	**653,006**	**692,272**
Age												
10–14 years	38,095	36,567	23,176	28,592	24,779	19,726	75.1%	67.8%	85.1%	278,324	294,645	305,391
15–19 years	144,230	132,287	106,107	113,330	108,721	92,317	78.6%	82.2%	87.0%	348,752	358,361	386,881
Sex												
Female	133,218	123,316	98,291	112,642	106,433	88,331	84.6%	86.3%	89.9%	373,466	382,547	398,314
Male	49,107	45,538	30,992	29,280	27,067	23,712	59.6%	59.4%	76.5%	253,610	270,459	293,958
Region												
Eastern Africa	41,507	39,253	30,164	36,892	35,411	27,676	88.9%	90.2%	91.8%	213,130	218,410	220,718
Southern Africa	123,622	112,959	73,854	91,527	82,598	61,266	74.0%	73.1%	83.0%	346,412	363,439	376,236
Western Africa	11,076	10,067	17,049	7,988	9,180	15,605	72.1%	91.2%	91.5%	37,865	41,067	51,894
Central Africa	3,744	4,338	5,589	3,330	3,743	4,818	88.9%	86.3%	86.2%	12,835	15,030	21,685
Europe/Asia	1,005	1,017	1,426	1,031	1,253	1,410	102.6%	123.2%	98.9%	10,993	9,009	15,235
Western Hem.	1,371	1,220	1,201	1,154	1,315	1,268	84.2%	107.8%	105.6%	5,841	6,051	6,504

ART= Antiretroviral therapy

[+]Year 1 = October 2017-September 2018, Year 2 = October 2018-September 2019, Year 3 = October 2019-September 2020

*New treatment initiations/number of HIV-positive tests. Proxy calculations use aggregate numbers across different indicators and may result in results >100%.

^Total on ART represents the number of adolescents currently on treatment, including those who initiated ART in that year and those who continue to be on treatment from the previous year (excluding those who died, aged out, transferred, or were lost to follow up).

Table 3:

Viral load coverage and suppression in Adolescents in PEPFAR-Supported Programs, October 2017-September 2020[+]

	Number eligible for VL testing (on ART ≥ 6 months)			Number with a VL test result in past 12 months			Number of VL tests with a result <1000 copies/mL			Proxy VL Coverage (%)[*]			VL Suppression (%)[^]		
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
Total	**597,823**	**610,983**	**672,050**	**415,104**	**499,263**	**533,404**	**302,285**	**377,737**	**434,766**	**69.4%**	**81.7%**	**79.4%**	**72.8%**	**75.7%**	**81.5%**
Age															
10–14 years	269,245	278,345	301,037	207,559	246,016	253,080	148,797	182,939	204,915	77.1%	88.4%	84.1%	71.7%	74.4%	81.0%
15–19 years	328,578	332,638	371,013	207,545	253,247	280,324	153,488	194,798	229,851	63.2%	76.1%	75.6%	74.0%	76.9%	82.0%
Sex															
Female	355,554	356,554	391,808	235,114	281,578	298,677	176,165	217,785	246,005	66.1%	79.0%	76.2%	74.9%	77.3%	82.4%
Male	242,269	254,429	280,242	179,990	217,685	234,727	126,120	159,952	188,761	74.3%	85.6%	83.8%	70.1%	73.5%	80.4%
Region															
Eastern Africa	202,166	210,716	220,955	179,782	205,658	198,720	131,878	160,231	167,557	88.9%	97.6%	89.9%	73.4%	77.9%	84.3%
Southern Africa	340,848	336,895	369,367	196,390	244,603	268,068	146,513	184,118	214,703	57.6%	72.6%	72.6%	74.6%	75.3%	80.1%
Western Africa	35,805	34,877	44,862	24,698	30,083	38,798	14,757	19,307	30,849	69.0%	86.3%	86.5%	59.7%	64.2%	79.5%
Central Africa	11,860	14,327	20,188	7,578	9,214	14,840	5,045	6,930	11,898	63.9%	64.3%	73.5%	66.6%	75.2%	80.2%
Europe/ Asia	1,727	8,473	10,734	1,730	5,858	8,028	1,388	4,463	6,152	100.2%	69.1%	74.8%	80.2%	76.2%	76.6%
Western Hem.	5,417	5,695	5,944	4,926	3,847	4,950	2,704	2,688	3,607	90.9%	67.6%	83.3%	54.9%	69.9%	72.9%

VL = viral load, ART= Antiretroviral therapy

[+] Year 1 = October 2017-September 2018, Year 2 = October 2018-September 2019, Year 3 = October 2019-September 2020

[*] Number with a VL test result in past 12 months/Number on ART 6 months prior;

[^] Number of VL tests with a result <1000 copies/mL / Number of VL tests with a result