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Cisgender women with HIV in the United States: how have HIV care continuum outcomes changed over time? 2015–2020

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Abstract

Objective: To evaluate HIV care continuum trends over time among women with HIV (WWH).

Design: The Medical Monitoring Project (MMP) is a complex sample survey of adults with diagnosed HIV in the United States.

Methods: We used 2015–2019 MMP data collected from 5139 adults with diagnosed HIV infection who identified as cisgender women. We calculated weighted percentages with 95% confidence intervals (CIs) for all characteristics and estimated annual percentage change (EAPC) and the associated 95% CI to assess trends. EAPCs were considered meaningful from a public health perspective if at least 1% with *P* values less than 0.05.

Results: Among cisgender women with diagnosed HIV infection during 2015–2019, 58.8% were Black or African American (95% CI 54.4–63.3), 19% were Hispanic/Latina (95% CI 14.7–23.2), and 16% were Non-Hispanic White (95% CI 14.1–17.9) persons. There was a meaningful increase in the percentage who ever had stage 3 HIV disease from 55.8% (95% CI 51.0–60.5) in 2015 to 61.5% (95% CI 58.1–64.8) in 2019 (EAPC 1.7%; CI 1.5–1.9; *P* < 0.001). There were no meaningful changes over time among women, overall, in retention in care, antiretroviral therapy (ART) prescription, ART adherence, missed appointments, or recent or sustained viral suppression.

Conclusion: The HIV care continuum outcomes among WWH did not meaningfully improve from 2015 to 2019, raising a concern that Ending the HIV Epidemic in the US (EHE) initiative goals will not be met. To improve health and reduce transmission of HIV among WWH, multifaceted interventions to retain women in care, increase ART adherence, and address social determinants of health are urgently needed.

Keywords

cisgender women; HIV; HIV care continuum; HIV care outcomes; women with HIV

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Conflicts of interest
There are no conflicts of interest.

Introduction

Approximately 1.2 million people in the United States have HIV infection (PWH) with 35 000 new HIV infections occurring annually [1]. Although new diagnoses of HIV among cisgender women (hereafter referred to as women) have declined in recent years, women still account for almost 20% of new HIV diagnoses in the United States [1]. In addition, because of longstanding systemic inequities, marked racial disparities among women persist – 73% of new HIV infections among women occurred in Black/African American (55%) and Hispanic/Latina (18%) women [1]. Compared with all people with diagnosed HIV infection, women also have lower viral suppression rates [1].

The National HIV/AIDS Strategy (NHAS) prioritizes efforts to reduce disparities and improve HIV outcomes among populations disproportionately affected by HIV, including Black women [2]. The NHAS seeks to reduce the overall number of new HIV infections by 90% and to increase viral suppression among Black women with diagnosed HIV infection to 95% from a baseline of 59.3% by 2030 [2]. Although some progress has been made toward these national prevention goals, gaps remain.

Improving the overall health of women with HIV (WWH) is a public health priority in the NHAS and Ending the HIV Epidemic in the US (EHE) initiative [2,3]. However, women are often not the focus of HIV-related research. Limited published reports have addressed recent disparities along the continuum of care among women [4]. This article seeks to evaluate HIV care continuum trends over time among WWH. These data could ultimately help inform EHE's efforts and move the nation closer to meeting HIV prevention and care goals for all people with HIV, regardless of race/ethnicity or gender.

Methods

Study design and population

MMP is a national surveillance system that collects annual, cross-sectional data on social determinants of health and behavioral and clinical characteristics of adults 18 years or older in the United States and Puerto Rico [5]. MMP used a two-stage sampling method in which, during the first stage, 16 states and 1 territory were sampled from all US states, the District of Columbia, and Puerto Rico. During the second stage, simple random samples of persons with diagnosed HIV infection aged 18 years and older were drawn for each participating state/territory from the National HIV Surveillance System (NHSS), a census of persons with diagnosed HIV infection in the United States.

We analyzed data from the available MMP cycles (2015–2019); data were collected from the beginning of June of each cycle through the following May. Trained interviewers administered standardized face-to-face or telephone interviews, and medical records at the participant's most frequent source of HIV care were abstracted. Data were weighted based on known probabilities of selection at state or territory and person levels. Data were also weighted to adjust for nonresponse and poststratified to known population totals by age, race/ethnicity, and sex at birth from NHSS following established methods. All sampled

states and the sampled territory participated. Response rates at the person-level varied by year: 40% in 2015, 44% in 2016, 46% in 2017, 45% in 2018, and 45% in 2019. Jurisdictions received approval from their local institutional review boards, and informed consent was obtained from all participants.

Participant characteristics, demographics, and clinical outcomes

Demographic characteristics, social determinants of health, and behavioral characteristics of participants were self-reported during the interview. Demographic factors and social determinants of health included education level, homelessness, incarceration, intimate partner violence (IPV), and household income at or below federal poverty guidelines. Health behaviors and outcomes included current cigarette smoking, binge drinking in the past 30 days, any injection or noninjection drug use, symptoms of major or other depression, and symptoms of generalized anxiety disorder in the past 2 weeks (definitions in Table 1) [6,7]. All characteristics were ascertained based on the past 12 months unless otherwise indicated. Clinical characteristics included medical record documentation during the past 12 months of retention in care, antiretroviral therapy (ART) prescription, ART adherence, one or more missed appointments, viral suppression at most recent test, and sustained viral suppression (definitions in Table 2) [8].

Statistical analyses

The analysis was limited to adults with diagnosed HIV infection who identified as cisgender women during the 2015–2019 data collection cycles ($N=5139$). Weighted percentages with 95% confidence intervals (CIs) were reported for all characteristics. The estimated annual percentage change (EAPC) and the associated 95% CI was used to assess trends from 2015 to 2019 among WWH. EAPCs indicate the relative annual change in the weighted percentages of HIV outcomes. EAPCs were considered meaningful from a public health perspective if at least 1% with P values less than 0.05. All analyses were conducted using SAS and SAS-callable SUDAAN.

Results

Demographic characteristics, social determinants of health, and behavioral characteristics

During 2015–2019, overall, 58.8% of cisgender women with diagnosed HIV infection were Black (95% CI 54.4–63.3), 19% were Hispanic/Latina (95% CI 14.7–23.2), and 16% were White (95% CI 14.1–17.9) persons (Table 1). Trend analysis for sociodemographic characteristics varied. At the time of the MMP interview, 49.5% (95% CI 48.0–51.0) were at least 50 years of age, 69.6% (95% CI 67.9–71.4) had been living with HIV for at least 10 years, 28.5% (95% CI 27.1–30.0) had less than high school level education, 30.8% (95% CI 29.1–32.4) had a high school diploma or equivalent educational attainment, 61.1% (95% CI 58.6–63.7) were in a household living at or below poverty level, and 8.3% (95% CI 7.4–9.2) were homeless at any time in the past 12 months. Additionally, 66.4% (95% CI 64.2–68.7) had public insurance only, 23.7% (95% CI 22.0–25.4) had any private insurance, 8.0% (95% CI 6.6–9.5) had RWHAP only, and 1.9% (95% CI 1.2–2.5) were uninsured. Overall, 23.7% (95% CI 22.3–25.2) had symptoms of depression, 20.5% (95% CI 18.9–22.0) had symptoms

of generalized anxiety disorder, 19.4% (95% CI 17.9–20.9) used injection or noninjection drugs, and 9.9% (95% CI 8.9–10.9) reported binge drinking.

Trends in HIV outcomes

According to the Centers for Disease Control and Prevention (CDC) stage of disease classification for HIV infection, an estimated 55.8% (95% CI 51.0–60.5) of women ever had stage 3 disease (AIDS) in 2015 and 61.5% (95% CI 58.1–64.8) in 2019 [9]. Additionally, 14.1% (95% CI 11–17.2) of women with diagnosed HIV infection had advanced disease in 2015 and 15.2% (95% CI 13.3–17.2) in 2019. Of all WWH, 77.8% (95% CI 73.4–82.2) were retained in care in 2015 and 79.8% (95% CI 75.8–83.7) in 2019. In total, 81.5% (95% CI 78.1–84.8) had a current ART prescription in 2015 as did 83.2% (95% CI 80.3–86.1) in 2019. Among those currently taking ART, 59.4% (95% CI 54.7–64.1) reported perfect dose adherence in 2015 as did 61.9% (95% CI 57.8–66) in 2019. Overall, 26.9% (95% CI 24–29.8) reported missed appointments in 2015 as did 25.9% (95% CI 22.6–29.2) in 2019. Further, 67.0% (95% CI 63.9–70.1) were virally suppressed at their last viral load in 2015 as were 66.0% (95% CI 62.5–69.4) in 2019. An estimated 60.1% (95% CI 56.4–63.8) had sustained viral suppression in 2015 as did 59.2% (95% CI 55.8–62.5) in 2019 (Table 2).

Trend analyses of data between 2015 and 2019 indicated that the prevalence of persons whose HIV infection had ever been classified as stage 3 meaningfully increased (EAPC 1.7%; CI 1.5–1.9; $P < 0.001$). Other trend analyses between 2015 and 2019 indicated that the prevalence of current advanced disease (EAPC: 0.8%; CI 0.4–1.1; $P < 0.001$), retention in care (EAPC: 0.0%; CI –0.1 to 0.2; $P = 0.91$), current ART prescription (EAPC: –0.1; CI –0.2 to 0.1; $P = 0.23$), perfect adherence to ART (EAPC: 0.8%; 95% CI 0.6–0.9; $P < 0.001$), missed appointments (EAPC: 0.3%; CI 0.1–0.6; $P = 0.01$), viral suppression based on last test (EAPC –0.8%; CI –1.0 to –0.7; $P < 0.001$), and sustained viral suppression (EAPC: –0.6%; CI –0.8 to –0.4; $P < 0.001$) did not meaningfully change over time among women with diagnosed HIV infection (Table 2).

Discussion

During 2015 to 2019, HIV care continuum outcomes did not meaningfully improve among WWH. Further, the prevalence of persons whose HIV infection had ever been classified as stage 3 meaningfully increased, possibly reflecting poorly controlled HIV among WWH. The HIV care continuum estimates among WWH continue to be suboptimal, including viral suppression, which falls short of the national goal of 95% of people with diagnosed HIV infection being virally suppressed. These suboptimal outcomes may slow progress towards ending the HIV epidemic.

Women represent nearly a quarter of the people with HIV in the United States [1]. Structural factors, such as stigma, racism, and misogyny –which influence access to educational and economic opportunities, while reducing community standing and social capital – harm outcomes in WWH [10,11]. In contrast to our findings for viral suppression among WWH (EAPC: –0.8%), analyses from other national datasets from 2014 to 2018 indicate greater improvements among all adults and MSM (EAPCs >6%), suggesting WWH may be disproportionately affected by HIV [12,13]. Our study suggests that WWH were more likely

to live at or below the federal poverty threshold and have less than high school educational attainment compared with people in the pooled gender analyses [14]. To reach national HIV goals, more research is needed to understand and address barriers to HIV care and medication adherence among women, including structural forces and social determinants of health that may contribute to the lack of improvement in the HIV care continuum trends, such as unemployment, lack of childcare, and transportation support, which might result from family caretaking [15].

The Health Resources and Services Administration (HRSA), HIV/AIDS Bureau, is investing in multimodal integrated strategies to improve HIV outcomes among women, such as bundled interventions that produce better health outcomes when implemented together versus separately [16]. These packages may include enhanced patient navigation and case management, which provides support and addresses barriers to accessing HIV care, in addition to interventions that address stigma reduction, IPV, health literacy and resiliency, behavioral health needs, and the use of trauma-informed care [16]. Other interventions to improve HIV outcomes among WWH include adopting a shared decision-making model using clear, respectful, positive communication without stigma while sharing information that considers patient health literacy level [10,17–20]. Training providers on techniques for promoting trust in patient–provider relationships, addressing structural discrimination and racism in clinical settings, and implementing CDC-recommended high-impact HIV prevention and treatment methods for women may help to increase ART adherence and viral suppression [20,21].

Our analysis has several limitations. The findings are partially based on self-reported information, including medication adherence, and therefore are subject to recall and desirability biases. Suboptimal response rates were observed in the years surveyed. However, the study estimates are adjusted for nonresponse. Despite suboptimal response rates, results obtained from the sampling strategy can still yield useful results and provide much needed population-based data on WWH [9].

In conclusion, HIV care continuum outcomes among WWH did not meaningfully improve from 2015–2019, suggesting more attention is needed to achieve the National HIV/AIDS Strategy goal of Ending the HIV Epidemic in the United States. To improve the health of WWH and reduce onward transmission of HIV, multifaceted interventions to retain women in care, increase ART adherence, and enhanced efforts to address social determinants of health that influence HIV clinical outcomes in this important population are needed.

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Disclaimer:

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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Table 1.

Selected demographic, social determinants of health and behavioral health characteristics of women diagnosed with HIV by year – Medical Monitoring Project, United States 2015–2019.

Characteristics ^a	2015–2019			2015			2016			2017			2018			2019			EAPC	P value
	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	N	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)		
Overall	5139		967		1045		1037		1048		1042									
Country at birth																				
United States	4372	85.5 (83.7–87.2)	820	84.9 (80.6–89.2)	881	85.2 (80.9–89.6)	882	86.3 (82.8–89.9)	892	85.4 (82.1–88.6)	897	85.4 (81.5–89.3)						0.1 (–0.0 to 0.3)	0.088	
All other countries	720	14.5 (12.8–16.3)	136	15.1 (10.8–19.4)	151	14.8 (10.4–19.1)	142	13.7 (10.1–17.2)	148	14.6 (11.4–17.9)	143	14.6 (10.7–18.5)						–0.7 (–1.0 to –0.4)	<0.001	
Length of time since HIV diagnosis																				
<5 years	602	11.8 (10.7–12.8)	134	13.5 (11.3–15.6)	122	11.9 (9.7–14.0)	118	11.3 (9.1–13.4)	120	12.6 (10.2–15.0)	108	9.7 (7.2–12.2)						–5.6 (–5.9 to –5.2)	<0.001	
5–9 years	906	18.6 (17.1–20.1)	207	23.3 (18.6–28.0)	212	20.8 (17.7–24.0)	173	17.2 (13.5–20.8)	165	15.8 (13.7–17.9)	149	16.1 (13.6–18.7)						–9.9 (–10.1 to –9.6)	<0.001	
10 years	3622	69.6 (67.9–71.4)	623	63.3 (58.6–67.9)	707	67.3 (63.6–70.9)	744	71.6 (67.5–75.6)	763	71.6 (68.8–74.4)	785	74.1 (70.9–77.3)						3.8 (3.7–4.0)	<0.001	
Race/ethnicity																				
White, non-Hispanic	751	16.0 (14.1–17.9)	132	15.8 (11.1–20.5)	169	17.2 (13.4–20.9)	137	14.9 (11.2–18.7)	145	16.1 (11.4–20.7)	168	16.2 (11.9–20.4)						–0.3 (–0.6 to 0.1)	0.111	
Black, non-Hispanic	3078	58.8 (54.4–63.3)	591	58.1 (48.4–67.9)	609	58.3 (48.3–68.3)	615	58.7 (49.7–67.6)	636	59.7 (50.4–69.1)	627	59.3 (48.1–70.5)						0.7 (0.5–0.8)	<0.001	
Hispanic/Latina ^b	995	19.0 (14.7–23.2)	195	20.6 (10.8–30.4)	201	17.9 (8.1–27.7)	211	19.3 (10.8–27.8)	206	18.8 (10.9–26.8)	182	18.3 (7.3–29.4)						–1.9 (–2.1 to –1.6)	<0.001	
Other	315	6.2 (5.2–7.1)	49	5.5 (3.2–7.7)	66	6.7 (4.6–8.8)	74	7.1 (5.2–8.9)	61	5.3 (3.1–7.6)	65	6.2 (3.9–8.5)						0.1 (–0.4 to 0.7)	0.593	
Age, in years																				
18–29	331	6.9 (6.1–7.8)	77	7.7 (5.4–10.1)	72	7.3 (5.8–8.8)	60	6.6 (4.9–8.3)	56	6.7 (4.7–8.6)	66	6.4 (4.7–8.1)						–4.7 (–5.1 to –4.2)	<0.001	
30–39	758	16.3 (15.1–17.6)	166	18.4 (15.9–21.0)	146	16.2 (13.7–18.8)	170	16.7 (13.9–19.5)	139	15.5 (12.8–18.1)	137	15.0 (11.9–18.1)						–4.6 (–4.9 to –4.3)	<0.001	
40–49	1315	27.2 (25.8–28.6)	274	29.2 (25.8–32.5)	288	29.6 (27.0–32.1)	254	26.9 (24.1–29.7)	254	25.8 (22.3–29.2)	245	24.8 (21.8–27.7)						–4.5 (–4.8 to –4.3)	<0.001	
50	2735	49.5 (48.0–51.0)	450	44.7 (41.2–48.1)	539	46.9 (44.2–49.7)	553	49.8 (46.4–53.2)	599	52.1 (48.9–55.3)	594	53.9 (50.5–57.2)						4.9 (4.7–5.1)	<0.001	

Characteristics ^a	2015-2019		2015		2016		2017		2018		2019		EAPC	P value
	n	Col % (95% CI)	n	Col % (95% CI)	N	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)		
Poverty threshold ^c														
Above poverty threshold	1763	38.9 (36.3-41.4)	312	34.3 (29.7-38.9)	360	40.5 (34.0-47.0)	375	41.3 (34.3-48.2)	359	39.0 (34.0-43.9)	357	39.2 (34.7-43.7)	2.2 (1.9-2.4)	<0.001
At or below poverty threshold	2901	61.1 (58.6-63.7)	586	65.7 (61.1-70.3)	588	59.5 (53.0-66.0)	581	58.7 (51.8-65.7)	573	61.0 (56.1-66.0)	573	60.8 (56.3-65.3)	-1.3 (-1.5 to -1.2)	<0.001
Educational attainment														
<High school	1476	28.5 (27.1-30.0)	306	33.3 (29.7-36.9)	293	27.2 (24.2-30.2)	292	27.7 (24.4-30.9)	280	25.9 (22.5-29.3)	305	28.7 (25.7-31.7)	-3.6 (-3.8 to -3.3)	<0.001
High school diploma or equivalent	1573	30.8 (29.1-32.4)	279	28.2 (24.2-32.2)	313	30.0 (26.9-33.2)	316	31.1 (27.4-34.8)	338	32.6 (29.0-36.1)	327	31.8 (28.1-35.6)	3.2 (3.0-3.5)	<0.001
>High school	2073	40.7 (39.0-42.4)	373	38.5 (33.9-43.0)	436	42.7 (38.8-46.7)	426	41.2 (38.0-44.4)	429	41.6 (37.7-45.4)	409	39.4 (36.3-42.5)	0.2 (-0.0 to 0.4)	0.138
Health insurance coverage ^d														
Any private	1176	23.7 (22.0-25.4)	217	23.8 (20.7-26.9)	245	25.3 (20.5-30.0)	234	24.0 (19.0-29.0)	243	22.9 (20.1-25.8)	237	22.5 (19.8-25.1)	-2.1 (-2.4 to -1.8)	<0.001
Public only	3485	66.4 (64.2-68.7)	656	65.3 (60.7-70.0)	712	67.1 (61.5-72.8)	703	65.6 (59.2-71.9)	702	65.6 (60.8-70.4)	712	68.5 (65.1-71.8)	0.7 (0.6-0.9)	<0.001
Ryan White/ADAP only	357	8.0 (6.6-9.5)	70	8.4 (5.7-11.0)	66	6.1 (3.8-8.3)	78	8.6 (5.0-12.2)	78	9.6 (5.1-14.1)	65	7.5 (4.9-10.1)	2.1 (1.6-2.6)	<0.001
No coverage/uninsured	52	1.9 (1.2-2.5)	10	2.5 (0.1-4.8)	8	1.5 (0.5-2.5)	11	1.8 (0.5-3.1)	12	1.9 (0.6-3.2)	11	1.6 (0.2-3.0)	-7.2 (-8.0 to -6.3)	<0.001
Ryan White-funded facility														
Yes	3838	76.8 (73.1-80.6)	750	82.7 (74.6-90.8)	791	76.2 (68.5-84.0)	796	76.4 (68.8-84.0)	758	74.4 (64.4-84.4)	743	74.7 (66.3-83.2)	-2.3 (-2.4 to -2.1)	<0.001
No	1047	23.2 (19.4-26.9)	151	17.3 (9.2-25.4)	205	23.8 (16.0-31.5)	216	23.6 (16.0-31.2)	238	25.6 (15.6-35.6)	237	25.3 (16.8-33.7)	7.9 (7.6-8.2)	<0.001
Depression (major, other) ^e														
Yes	1186	23.7 (22.3-25.2)	236	27.2 (23.3-31.0)	281	26.8 (24.0-29.6)	261	25.5 (21.8-29.2)	207	20.3 (17.8-22.8)	201	19.0 (16.4-21.6)	-9.2 (-9.5 to -9.0)	<0.001
No	3866	76.3 (74.8-77.7)	712	72.8 (69.0-76.7)	750	73.2 (70.4-76.0)	758	74.5 (70.8-78.2)	820	79.7 (77.2-82.2)	826	81.0 (78.4-83.6)	3.0 (2.9-3.2)	<0.001
Generalized anxiety disorder (severe or moderate) ^f														
Yes	1022	20.5 (18.9-22.0)	205	23.0 (19.8-26.1)	237	23.4 (20.1-26.8)	202	19.7 (16.4-23.0)	193	18.5 (15.0-22.0)	185	17.8 (14.2-21.3)	-7.2 (-7.5 to -7.0)	<0.001

Characteristics ^a	2015-2019			2015			2016			2017			2018			2019			P value
	n	Col % (95% CI)	N	n	Col % (95% CI)	N	n	Col % (95% CI)	N	n	Col % (95% CI)	N	n	Col % (95% CI)	N	n	Col % (95% CI)	N	
No	4045	79.5 (78.0-81.1)	744	77.0 (73.9-80.2)	795	76.6 (73.2-79.9)	822	80.3 (77.0-83.6)	840	81.5 (78.0-85.0)	844	82.2 (78.7-85.8)	844	82.2 (78.7-85.8)	844	82.2 (78.7-85.8)	844	82.2 (78.7-85.8)	<0.001
Intimate partner violence ^e																			
Yes	240	5.0 (4.2-5.8)	52	5.5 (3.7-7.4)	57	5.8 (4.0-7.6)	46	4.8 (3.4-6.3)	45	5.2 (3.0-7.4)	40	3.7 (2.7-4.7)	40	3.7 (2.7-4.7)	40	3.7 (2.7-4.7)	40	3.7 (2.7-4.7)	<0.001
No	4765	95.0 (94.2-95.8)	894	94.5 (92.6-96.3)	955	94.2 (92.4-96.0)	965	95.2 (93.7-96.6)	974	94.8 (92.6-97.0)	977	96.3 (95.3-97.3)	977	96.3 (95.3-97.3)	977	96.3 (95.3-97.3)	977	96.3 (95.3-97.3)	<0.001
Drug use ^b																			
Yes	977	19.4 (17.9-20.9)	171	18.7 (15.0-22.5)	190	17.1 (14.4-19.8)	187	18.8 (15.8-21.7)	217	21.4 (17.3-25.4)	212	20.9 (17.8-24.1)	212	20.9 (17.8-24.1)	212	20.9 (17.8-24.1)	212	20.9 (17.8-24.1)	<0.001
No	4111	80.6 (79.1-82.1)	787	81.3 (77.5-85.0)	845	82.9 (80.2-85.6)	840	81.2 (78.3-84.2)	823	78.6 (74.6-82.7)	816	79.1 (75.9-82.2)	816	79.1 (75.9-82.2)	816	79.1 (75.9-82.2)	816	79.1 (75.9-82.2)	<0.001
Binge drinking ^f																			
Yes	513	9.9 (8.9-10.9)	91	8.4 (6.2-10.7)	99	8.7 (6.7-10.7)	94	9.7 (7.8-11.7)	124	12.7 (10.0-15.4)	105	9.9 (7.6-12.1)	105	9.9 (7.6-12.1)	105	9.9 (7.6-12.1)	105	9.9 (7.6-12.1)	<0.001
No	4556	90.1 (89.1-91.1)	862	91.6 (89.3-93.8)	929	91.3 (89.3-93.3)	934	90.3 (88.3-92.2)	906	87.3 (84.6-90.0)	925	90.1 (87.9-92.4)	925	90.1 (87.9-92.4)	925	90.1 (87.9-92.4)	925	90.1 (87.9-92.4)	<0.001
Homelessness ^f																			
Yes	423	8.3 (7.4-9.2)	74	7.9 (5.5-10.4)	75	7.3 (5.4-9.2)	88	7.8 (5.9-9.7)	95	9.6 (7.9-11.3)	91	8.8 (6.5-11.2)	91	8.8 (6.5-11.2)	91	8.8 (6.5-11.2)	91	8.8 (6.5-11.2)	<0.001
No	4702	91.7 (90.8-92.6)	886	92.1 (89.6-94.5)	968	92.7 (90.8-94.6)	947	92.2 (90.3-94.1)	951	90.4 (88.7-92.1)	950	91.2 (88.8-93.5)	950	91.2 (88.8-93.5)	950	91.2 (88.8-93.5)	950	91.2 (88.8-93.5)	<0.001
Incarceration																			
Yes	142	3.1 (2.4-3.7)	37	4.4 (2.2-6.6)	26	2.9 (1.7-4.2)	25	2.7 (1.3-4.1)	38	4.0 (2.5-5.4)	16	1.4 (0.6-2.1)	16	1.4 (0.6-2.1)	16	1.4 (0.6-2.1)	16	1.4 (0.6-2.1)	<0.001
No	4978	96.9 (96.3-97.6)	922	95.6 (93.4-97.8)	1017	97.1 (95.8-98.3)	1010	97.3 (95.9-98.7)	1004	96.0 (94.6-97.5)	1025	98.6 (97.9-99.4)	1025	98.6 (97.9-99.4)	1025	98.6 (97.9-99.4)	1025	98.6 (97.9-99.4)	<0.001

EAPC, estimated annual percentage change; CI, confidence interval; ADAP, AIDS Drug Assistance Program.

^aAll characteristics were ascertained based on the past 12 months, unless otherwise indicated.

^bHispanics or Latinos can be of any race. Persons are classified in only one race/ethnicity category.

^cPoverty guidelines as defined by HHS; the 2018 guidelines were used for persons interviewed in 2019 and the 2019 guidelines were used for persons interviewed in 2020. More information regarding HHS poverty guidelines can be found at <https://aspe.hhs.gov/frequently-asked-questions-related-poverty-guidelines-and-poverty.externalicon>.

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^pReceipt of Ryan White HIV/AIDS Program (RWHAP) assistance was defined as having RWHAP coverage for medical care or antiretroviral medicines in the past 12 months. Persons could select more than one response for health insurance or coverage for care or medications.

^eAs measured by the Patient Health Questionnaire 8 administered during the interviews; Current depression of moderate or severe intensity was defined as a total score of at least 10.

^fAs measured by the Generalized Anxiety Disorder 7 Scale administered during the interviews; Moderate anxiety was defined as scores 10–14 in the past 2 weeks, severe anxiety at least 15.

^gHaving been slapped, punched, shoved, kicked, choked, or otherwise physically hurt by a romantic or sexual partner.

^hFour alcoholic drinks among women in one sitting in the past 30days.

ⁱAny injection or noninjection drug use.

^jLiving on the street, in a shelter, in a single-room-occupancy hotel, or in a car.

Table 2.

HIV engagement in care outcomes of women diagnosed with HIV by year – Medical Monitoring Project, United States 2015–2019^a.

Overall	N	2015		2016		2017		2018		2019		EAPC	P value
		Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n	Col % (95% CI)	n		
Ever HIV disease stage 3 ^b													
Yes	575	55.8 (51.0–60.5)	634	56.5 (53.1–59.9)	590	54.2 (51.1–57.2)	610	54.6 (49.6–59.6)	665	61.5 (58.1–64.8)	1.7 (1.5–1.9)	<0.001	
No	392	44.2 (39.5–49.0)	407	43.5 (40.1–46.9)	446	45.8 (42.8–48.9)	438	45.4 (40.4–50.4)	377	38.5 (35.2–41.9)			
Current advanced disease ^c													
Yes	146	14.1 (11.0–17.2)	160	14.7 (12.6–16.8)	158	13.9 (11.7–16.1)	149	13.6 (11.8–15.3)	151	15.2 (13.3–17.2)	0.8 (0.4–1.1)	<0.001	
No	790	85.9 (82.8–89.0)	867	85.3 (83.2–87.4)	854	86.1 (83.9–88.3)	847	86.4 (84.7–88.2)	829	84.8 (82.8–86.7)			
Retention in care ^d													
Yes	815	77.8 (73.4–82.2)	883	80.7 (76.9–84.5)	865	79.7 (76.1–83.4)	834	76.8 (73.2–80.5)	824	79.8 (75.8–83.7)	0.0 (–0.1 to 0.2)	0.907	
No	129	22.2 (17.8–26.6)	146	19.3 (15.5–23.1)	152	20.3 (16.6–23.9)	167	23.2 (19.5–26.8)	162	20.2 (16.3–24.2)			
ART prescription ^e													
Yes	835	81.5 (78.1–84.8)	928	84.8 (81.1–88.6)	919	85.2 (81.8–88.6)	902	80.7 (78.1–83.4)	903	83.2 (80.3–86.1)	–0.1 (–0.2 to 0.1)	0.229	
No	132	18.5 (15.2–21.9)	117	15.2 (11.4–18.9)	118	14.8 (11.4–18.2)	146	19.3 (16.6–21.9)	139	16.8 (13.9–19.7)			
Perfect ART adherence (score of 100 on the adherence scale) during the past 30 days ^f													
Yes	516	59.4 (54.7–64.1)	573	58.8 (56.1–61.6)	583	58.6 (54.8–62.5)	576	58.0 (54.3–61.6)	615	61.9 (57.8–66.0)	0.8 (0.6–0.9)	<0.001	
No	352	40.6 (35.9–45.3)	402	41.2 (38.4–43.9)	385	41.4 (37.5–45.2)	400	42.0 (38.4–45.7)	377	38.1 (34.0–42.2)			
One or more missed appointments													
Yes	256	26.9 (24.0–29.8)	278	26.0 (23.6–28.4)	290	27.8 (24.9–30.6)	284	28.8 (24.9–32.7)	265	25.9 (22.6–29.2)	0.3 (0.1–0.6)	0.01	
No	698	73.1 (70.2–76.0)	755	74.0 (71.6–76.4)	738	72.2 (69.4–75.1)	746	71.2 (67.3–75.1)	764	74.1 (70.8–77.4)			
Viral suppression at last test ^g													
Yes	688	67.0 (63.9–70.1)	775	69.4 (64.1–74.7)	768	69.4 (64.7–74.1)	750	65.9 (62.4–69.5)	740	66.0 (62.5–69.4)	–0.8 (–1.0 to –0.7)	<0.001	
No	279	33.0 (29.9–36.1)	270	30.6 (25.3–35.9)	269	30.6 (25.9–35.3)	298	34.1 (30.5–37.6)	302	34.0 (30.6–37.5)			
Sustained viral suppression ^h													
Yes	610	60.1 (56.4–63.8)	682	61.3 (56.4–66.2)	666	60.9 (56.6–65.2)	672	59.7 (55.8–63.5)	661	59.2 (55.8–62.5)	–0.6 (–0.8 to –0.4)	<0.001	
No	357	39.9 (36.2–43.6)	363	38.7 (33.8–43.6)	371	39.1 (34.8–43.4)	376	40.3 (36.5–44.2)	381	40.8 (37.5–44.2)			

ART, antiretroviral therapy; CI, confidence interval.

^aAll outcomes are measured over the past 12 months, except where otherwise noted.

- b* Ever had been classified as stage 3 HIV based on the revised CDC stage of disease classifications for HIV infection.
- c* Advanced HIV disease was defined by CD4⁺ less than 200 cells/ml or diagnosis of an opportunistic infection in the past 12 months.
- d* Retention in care was defined as two HIV care elements at least 90 days apart including documentation in the medical record of the following: encounter with an HIV care provider (could also be self-reported), viral load test result, CD4⁺ test result, HIV resistance test or tropism assay, ART prescription, PCP prophylaxis, or MAC prophylaxis.
- e* Any ART prescription in the medical record over the past 12 months.
- f* Persons currently taking ART were asked about their adherence to ART in the 30 days before the interview using questions from a three-item scale that ranges from 0 to 100, with a score of 100 indicating perfect adherence. A person was 100% adherent if they had a score of 100.
- g* Most recent viral load that was undetectable or less than 200 copies/ml.
- h* All viral loads in the past 12 months undetectable or less than 200 copies/ml.