

Adherence to antiretroviral therapy among HIV-1 patients across regions in the United States

Grace A McComsey,¹ MD, FIDSA; Prina Donga,² MS; Melissa Lingohr-Smith,³ PhD; Rachel Rogers,² PharmD, BCPS, AAHIVP; Jay Lin,³ PhD, MBA

¹ University Hospitals of Cleveland and Case Western Reserve University, Cleveland, OH; ² Janssen Scientific Affairs LLC, Titusville, NJ; ³ Novosys Health, Green Brook, NJ

INTRODUCTION

- In 2018 there were approximately 1.2 million people living with HIV (PLWH) in the US.¹
- To achieve sustained optimal viral suppression, HIV patients on antiretroviral therapies (ARTs) should maintain a high level of adherence (≥90%).²
- A previous US study by Benson et al examined adherence to ART of PLWH treated between January 2015 and September 2017 and found an average adherence level of 72%.³
- Benson et al additionally examined HIV-1 drug resistance (ie, viral resistance to ≥1 HIV-1 medication) rates and found that they were exceptionally high in most states, ranging between 20% and 54%, with some of the states with the highest rates of HIV drug resistance also having relatively high rates of poor adherence to ART.³
- Since 2017, several ART medications, including single tablet regimens (STRs), have been developed and approved by the US Food & Drug Administration for the treatment of HIV-1; such changes in the treatment landscape of HIV-1 could potentially affect medication adherence.

OBJECTIVES

- In this study we examined adherence to ART regimens among PLWH across the US stratified by US geographic region and state between July 2017 and September 2019.

METHODS

Study design and data source

- We conducted a retrospective observational study using data from the Symphony Health Solution Integrated Dataverse® (IDV) database from July 1, 2016 through September 30, 2019.

Study population

- Patients (≥18 years of age) diagnosed with HIV-1, treatment naïve or experienced, who initiated ART between July 2017 and September 2018 (identification period; first claim: index date) and had ≥1 medical/pharmacy ART claim ≥12 months after their index date in the IDV database were included in the study population.
 - ART was defined as a combination regimen of 1 core ART medication (dolutegravir, elvitegravir, darunavir, atazanavir, efavirenz, or rilpivirine) and ≥1 other ART medication within a 14-day period following the pharmacy record of the core ART medication (multi tablet regimen [MTR]), or 1 STR (Biktarvy, Triumeq, Juluca, Dovato, Genvoya, Stribild, Atripla, Symfi, Delstrigo, Odefsey, Complera/Eviplera, or Symtuza).
- Patients were excluded from the study population if they had a diagnosis of HIV-2 during anytime of the study period or if they had missing gender, age, or US state information.
- Patient characteristics were examined during a 12-month pre-index period.

Adherence to ART

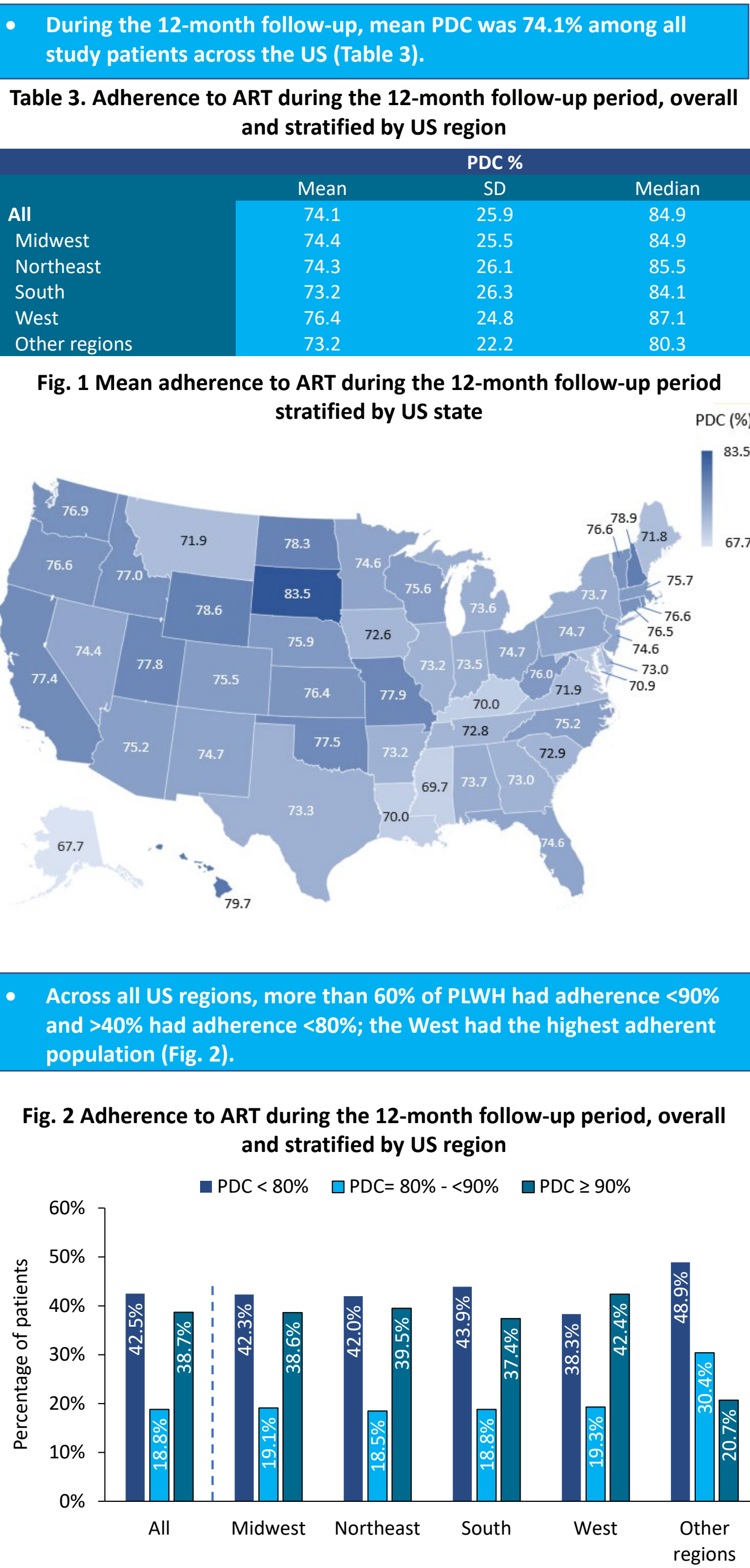
- During a 12-month follow-up period, ART adherence, measured as proportion of days covered (PDC), was evaluated for all patients and stratified by US geographic region and state.
 - The PDC was calculated as the sum of days during the follow-up period that were covered by either ≥2 ARTs (per defined MTR regimen above) or 1 STR, divided by the number of days in the follow-up period (i.e., 365 days).
- A sensitivity analysis was also conducted on ART adherence that only included PLWH who were without prior treatment in the baseline period (treatment naïve).

RESULTS

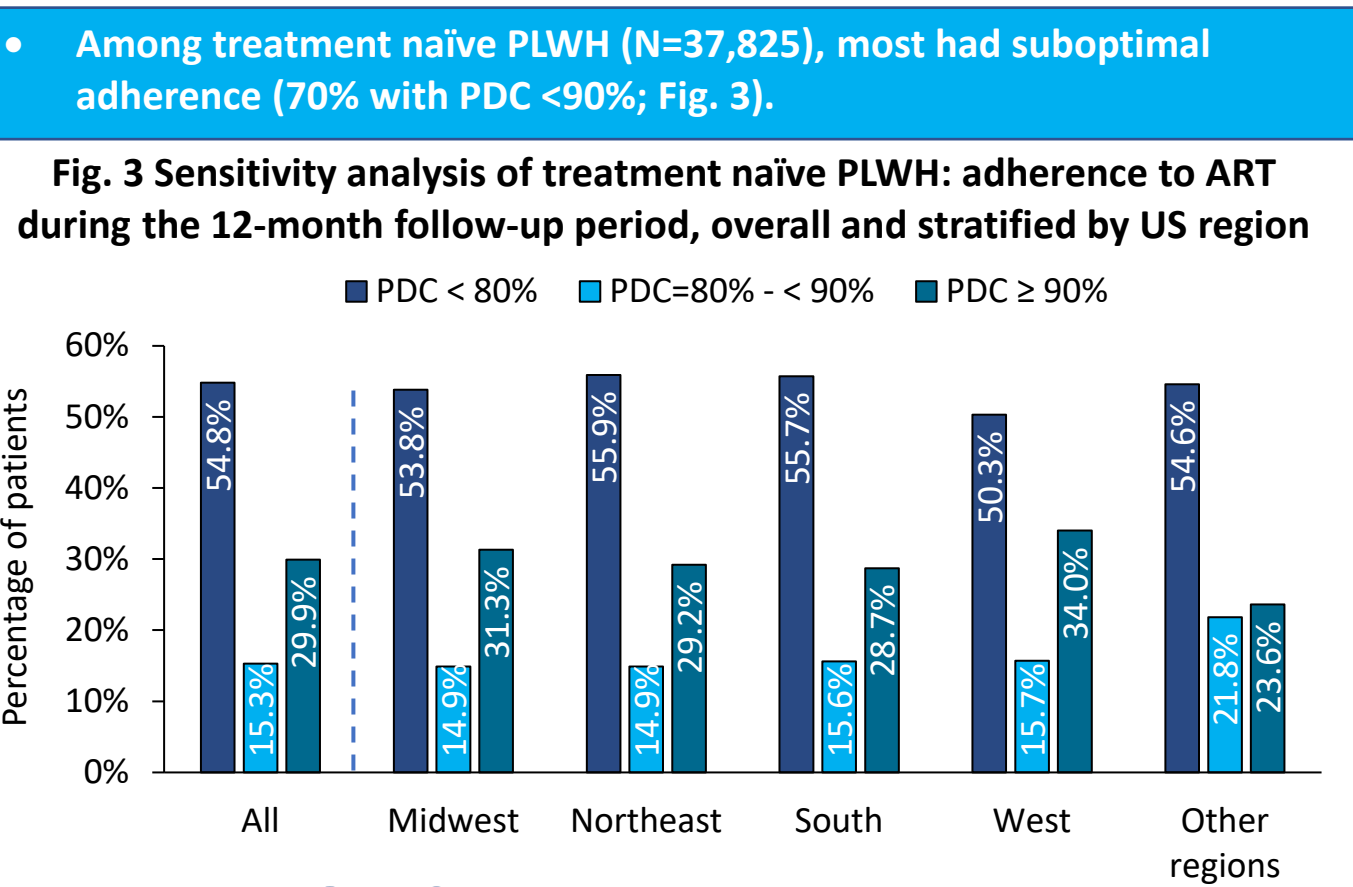
- The overall study population included 206,474 PLWH treated with ART; 17.5% resided in the Midwest, 27.9% in the Northeast, 43.1% in the South, 11.3% in the West, and 0.1% in other regions (Table 1).
- Among the overall study population, mean age was 47.9 years, 73.4% were male, 30.0% Caucasian, 26.6% Black/African American, 10.6% Hispanic, 0.6% Asian, and 32.3% other/unknown race/ethnicity (Table 1).
- Most (81.7%) had at least one prior ART treatment in the baseline period (ART experienced) and a majority (68.8%) used an STR as their index ART.
- The most prevalent comorbid conditions were hyperlipidemia (25.1%), depressive disorders (14.8%), and type 2 diabetes (12.1%) (Table 1).

Table 1. Demographic and clinical characteristics of study population, overall and stratified by US region						
	All	Midwest	Northeast	South	West	Other regions ^a
Characteristic	N=206,474	N=36,169	N=57,628	N=89,066	N=23,302	N=309
Age (years), mean (SD)	47.9 (12.7)	45.9 (12.7)	48.9 (12.6)	48.0 (12.6)	48.3 (12.7)	49.5 (11.7)
Age group, N %						
18-44 years	75,678 (36.7)	15,441 (42.7)	19,237 (33.4)	32,487 (36.5)	8,420 (36.1)	93 (30.1)
45-54 years	61,924 (30.0)	10,559 (29.2)	17,303 (30.0)	27,013 (30.3)	6,943 (29.8)	106 (34.3)
55-64 years	51,920 (25.2)	8,070 (22.3)	15,722 (27.3)	22,254 (25.0)	5,791 (24.9)	83 (26.9)
≥ 65 years	16,952 (8.2)	2,099 (5.8)	5,366 (9.3)	7,312 (8.2)	2,148 (9.2)	27 (8.7)
Gender, N %						
Female	54,938 (26.6)	7,903 (21.9)	17,638 (30.6)	25,845 (29.0)	3,431 (14.7)	121 (39.2)
Male	151,536 (73.4)	28,266 (78.2)	39,990 (69.4)	63,221 (71.0)	19,871 (85.3)	188 (60.8)
Race/ethnicity, N %						
Caucasian	61,829 (30.0)	12,798 (35.4)	14,450 (25.1)	25,272 (28.4)	9,307 (39.9)	2 (0.7)
Black/African American	54,849 (26.6)	10,453 (28.9)	14,266 (24.8)	29,164 (32.7)	966 (4.2)	0 (0)
Hispanic	21,813 (10.6)	1,676 (4.6)	9,092 (15.8)	8,413 (9.5)	2,631 (11.3)	1 (0.3)
Asian	1,256 (0.6)	167 (0.5)	385 (0.7)	411 (0.5)	293 (1.3)	0 (0)
Unknown/other	66,727 (32.3)	11,075 (30.6)	19,435 (33.7)	25,806 (29.0)	10,105 (43.4)	306 (99.0)
Insurance type, N %						
Commercial	78,996 (38.3)	15,227 (42.1)	17,683 (30.7)	38,264 (43.0)	7,776 (33.4)	46 (14.9)
Medicaid	63,020 (30.5)	12,139 (33.6)	22,683 (39.4)	20,685 (23.2)	7,271 (31.2)	242 (78.3)
Medicare	40,927 (19.8)	6,224 (17.2)	10,201 (17.7)	19,833 (22.3)	4,655 (20.0)	14 (4.5)
Other/unspecified	23,531 (11.4)	2,579 (7.1)	7,061 (12.3)	10,284 (11.6)	3,600 (15.4)	7 (2.3)
CCI score, ^b mean (SD)	0.8 (1.5)	0.7 (1.4)	0.9 (1.5)	0.9 (1.5)	0.7 (1.3)	0.9 (1.3)
Comorbid condition, N (%)						
Depressive disorders	30,499 (14.8)	5,659 (15.7)	9,344 (16.2)	12,378 (13.9)	3,092 (13.3)	26 (8.4)
Anxiety disorders	23,297 (11.3)	4,436 (12.3)	6,539 (11.4)	9,611 (10.8)	2,691 (11.6)	20 (6.5)
Hyperlipidemia	51,907 (25.1)	7,228 (20.0)	14,732 (25.6)	24,412 (27.4)	5,423 (23.3)	112 (36.3)
Type 2 diabetes	24,926 (12.1)	3,515 (9.7)	8,037 (14.0)	11,157 (12.5)	2,167 (9.3)	50 (16.2)
Substance abuse	22,513 (10.9)	3,979 (11.0)	8,338 (14.5)	7,768 (8.7)	2,414 (10.4)	14 (4.5)

CCI: Charlson Comorbidity Index; SD: Standard deviation.
^a "Other regions" included military bases not in the US census regions, etc.
^b CCI calculated without HIV/AIDS diagnoses.



RESULTS cont.



LIMITATIONS

- Adherence to ART was calculated based on prescription fills and pharmacy records. Because it is not possible to confirm whether a patient actually took their medication as prescribed, adherence to ART may have been overestimated in this study.
- Although our study population included patients from all US Census Bureau designated geographic regions and all major US insurance types were well represented, our study findings may not be generalizable to HIV-1 patient populations defined by more specific demographics, such as those residing in rural areas, or those who are uninsured or have interrupted coverage.
- Additionally, this study examined adherence to ART regimens among PLWH prior to the COVID-19 pandemic, which may have affected adherence levels.

CONCLUSIONS

- In this large nationwide US study, including over 200,000 PLWH treated with ART during July 2017 through September of 2019, we found that the average adherence to therapy was approximately 74%; those in the West had the highest mean adherence (76%) and those in the South, the lowest (73%).
- Across the US, the majority (approximately 60%) of PLWH had suboptimal adherence (PDC <90%) to ART and about 43% had poor adherence (PDC <80%).
- PLWH who were treatment naïve had lower adherence levels; approximately 70% had suboptimal adherence (PDC <90%) and 55% poor adherence (PDC <80%)
- Implementation of strategies to improve ART adherence are needed in the US, including clinical consideration of ARTs with high genetic barriers to resistance.

REFERENCES

- Centers for Disease Control and Prevention. HIV surveillance report. <https://www.cdc.gov/hiv/statistics/overview/index.html>. Accessed April 28, 2021.
- Altice F, Euvuarherhe O, Shina S, et al. *Patient Prefer Adherence*. 2019;13:475-490.
- Benson C, Wang X, Dunn KJ, et al. *AIDS Behav*. 2020;24:3562-3573.

DISCLOSURES

This research and preparation of this poster were sponsored by Janssen Scientific Affairs, LLC. Grace McComsey is a consultant to Janssen Scientific Affairs, LLC., Gilead, Merck, Theratechnologies, GSK/ViiV, and has received research grants from Tetrphase, Roche, Astellas, Genentech, Vanda, and RedHill. Prina Donga and Rachel Rogers are employees of Janssen Scientific Affairs, LLC and may be stockholders in Johnson & Johnson. Melissa Lingohr-Smith and Jay Lin are employees of Novosys Health, which received research funds from Janssen Scientific Affairs, LLC in connection with conducting this study and preparation of this poster.