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Long-Acting Injectable Antiretroviral Therapy in Medicare-Enrolled Adults With HIV

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Introduction

Long-acting injectable antiretroviral therapy (LA-ART) represents a major advance in HIV treatment, offering sustained viral suppression without daily pill adherence dosing since its approval by the Food and Drug Administration in 2021.[1,2] However, empirical uptake in the Medicare population with HIV, including among individuals from minoritized racial and ethnic groups and across diverse regions in the country, remains poorly understood. This knowledge gap is particularly salient given that many Medicare beneficiaries are older,[3] have complex multimorbidity with increased susceptibility to bone and kidney complications from certain oral ART regimens, and may face cost-related and access barriers. We quantify use of LA-ART among Medicare beneficiaries with HIV and characterize the differences between people receiving oral ART vs LA-ART.

Methods

This cross-sectional study was approved by the Harvard institutional review board, which waived informed consent given the deidentified data. We followed the STROBE guidelines for cross-sectional studies. We used 100% Medicare data to identify people with HIV (PWH) enrolled in Medicare Parts B and D between 2021 to 2023. Prior to the year of assessing ART regimens, we applied the Chronic Conditions Warehouse algorithm with a 2-year look-back period (2019-2022) to identify HIV and other chronic conditions, such as heart failure, mental health disorders (defined as major depressive disorder, schizophrenia or related psychotic disorders, and bipolar disease), and dementia. We used Part D outpatient and carrier files to determine oral ART vs LA-ART (cabotegravir or rilpivirine). Demographics included age, sex, race and ethnicity (determined using the RTI Race Variable, which applies an algorithm on self-reported data, and classified as American Indian or Alaska Native, Asian, Black, Hispanic, White, unknown, or any other race), Medicaid dual eligibility, enrollment in Traditional Medicare vs Medicare Advantage, rurality, and state. Data on race and ethnicity are included in this study given known racial disparities in ART use.[4]

Next, we determined the number and proportion of PWH taking oral ART vs LA-ART yearly. For 2023, we reported patient demographics and calculated adjusted odds ratios (aORs) of receiving LA-ART using logistic regressions. Statistical significance was defined as 2-sided $P < .05$. Variables used in our model for adjustment included demographics, chronic conditions, rurality, and region. Data were analyzed using SAS version 8.5 (SAS Institute, Inc) from October 2025 to April 2026.

Results

The sample included 638 PWH (0.4%) taking LA-ART vs 162 495 (99.6%) taking oral ART in 2021, 3202 (1.9%) taking LA-ART vs 165 059 (98.1%) taking oral ART in 2022, and 5162 (3.0%) taking LA-ART vs 167 836 (97.0%) taking oral ART in 2023. PWH taking LA-ART were younger (aged <55 years, 1719 PWH [33.3%] vs 30 499 PWH [18.2%]; standardized mean difference [SMD] = 0.351), more likely to be dual eligible for Medicaid (3828 PWH [74.2%] vs 110 964 PWH [66.0%];

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SMD = 0.180), and less likely to live in the South (2070 PWH [41.1%] vs 76 480 PWH [45.6%]; SMD = 0.111) vs those taking oral ART (**Table 1**). In adjusted analyses (**Table 2**), older PWH were less likely to receive LA-ART (aged, 55-64 years, aOR, 0.60 [95% CI, 0.56-0.65]; aged ≥65 years, aOR, 0.40 [95% CI, 0.37-0.43) than PWH younger than 55 years. American Indian or Alaska Native individuals were also less likely to receive LA-ART than White PWH (aOR, 0.52; 95% CI, 0.29-0.92);

Table 1. Characteristics of Medicare Beneficiaries With HIV Receiving Oral ART vs LA-ART

Characteristic	Total No. of patients	Patients, No. (%)		SMD[a]
		Oral ART	LA-ART	
Year[b]				
2021	163 133	162 495 (99.6)	638 (0.4)	NA
2022	168 261	165 059 (98.1)	3202 (1.9)	NA
2023	172 998	167 836 (97.0)	5162 (3.0)	NA
Characteristics of patients in 2023[c]				
Age, y				
<55	32 218	30 499 (18.2)	1719 (33.3)	0.351
55-64	52 403	50 709 (30.2)	1694 (32.8)	0.056
≥65	88 377	86 628 (51.6)	1749 (33.9)	0.364
Sex				
Female	47 528	46 095 (27.5)	1433 (27.8)	0.007
Male	125 470	121 741 (72.5)	3729 (72.3)	
Race and ethnicity[d]				
American Indian or Alaska Native	637	625 (0.4)	12 (0.2)	0.025
Asian	1991	1941 (1.2)	50 (1.0)	0.018
Black	73 019	70 803 (42.2)	2216 (42.9)	0.015
Hispanic	24 472	23 718 (14.1)	754 (14.6)	0.014
White	69 653	67 617 (40.3)	2036 (39.5)	0.017
Any other race or unknown	3226	3132 (1.9)	94 (1.8)	0.003
Medicare insurance type[e]				
Medicare Advantage	111 932	108 514 (64.7)	3418 (66.2)	0.033
Traditional Medicare	61 066	59 322 (35.3)	1744 (33.8)	
Dual eligibility for Medicaid				
Yes	114 522	110 964 (66.0)	3828 (74.2)	0.180
No	58 476	57 142 (34.0)	1334 (25.8)	
Region				
Midwest	21 146	20 326 (12.1)	820 (15.9)	0.109
Northeast	39 892	38 735 (23.1)	1157 (22.4)	0.016
South	78 550	76 480 (45.6)	2070 (41.1)	0.111
West	33 410	32 295 (19.2)	1115 (21.6)	0.059
Rurality[f]				
Rural	16 796	16 408 (9.8)	388 (7.5)	0.080
Urban	156 202	151 428 (90.2)	4774 (92.5)	
Chronic conditions[g]				
Acute myocardial infarction or ischemic heart disease	36 740	35 779 (21.3)	961 (18.6)	0.066
Asthma or chronic obstructive pulmonary disease	54 592	52 826 (31.5)	1766 (34.2)	0.061
Alzheimer dementia and related disorders	8729	8572 (5.1)	157 (3.0)	0.104
Cancer	16 223	15 810 (9.4)	413 (8.0)	0.049
Chronic kidney disease or kidney failure	55 238	53 850 (32.1)	1388 (26.9)	0.112
Diabetes	57 876	56 301 (33.5)	1575 (30.5)	0.063
Heart failure or nonischemic heart disease	24 126	23 528 (14.0)	598 (11.6)	0.072
Mental health disorders	73 216	70 798 (42.0)	2718 (52.7)	0.215
Stroke disorders	12 305	12 013 (7.2)	292 (5.7)	0.061
Substance use disorders	38 807	37 399 (22.3)	1408 (27.3)	0.116

Abbreviations: ART, antiretroviral therapy; LA-ART, long-acting antiretroviral therapy; NA, not applicable; SMD, standardized mean difference.

[a] SMDs are considered negligible if greater than 0.10.

[b] The percentages for these variables reflect row percentages.

[c] The percentages for these variables reflect column percentages.

[d] Race and ethnicity was determined using the RTI Race Variable, which applies an algorithm on self-reported data.

[e] Medicare insurance type was defined as the primary insurance that beneficiaries were in for the majority of the year.

[f] Rurality was determined using the 2020 Rural-Urban Commuting Area Codes of the beneficiary's zip codes; codes 1 to 3 were designated as urban, and codes 4 to 10 were designated as rural.

[g] Chronic conditions were identified using the Chronic Conditions Warehouse algorithms. Alzheimer dementia and related disorders includes Alzheimer dementia, vascular dementia, dementia with Lewy bodies, frontotemporal dementia, senile dementia, and other unspecified dementias. Mental health disorders included major depressive disorder, bipolar disorder, and schizophrenia or related psychotic disorders. Substance use disorders included alcohol use disorder and opioid use disorders.

there were no significant differences for other racial and ethnic groups or by sex. PWH in rural areas and the South were significantly less likely than their counterparts to receive LA-ART. Dual-eligible individuals (aOR, 1.12; 95% CI, 1.04-1.20) and Medicare Advantage beneficiaries (aOR, 1.07; 95% CI, 1.00-1.13) were more likely to receive LA-ART than their respective counterparts. Notably, PWH with Alzheimer disease and related dementias, stroke disorders, heart failure, and chronic kidney disease or kidney failure were less likely to receive LA-ART, whereas people with mental health disorders were more likely to receive LA-ART.

Table 2. Likelihood of Receiving Long-Acting Antiretroviral Therapy by Patient Characteristics, 2023

Characteristic	Unadjusted OR (95% CI)[a]	*P* value	Adjusted OR (95% CI)[b]	*P* value
Age, y				
<55	1 [Reference]	NA	1 [Reference]	NA
55-64	0.59 (0.55-0.63)	<.001	0.60 (0.56-0.65)	<.001
≥65	0.36 (0.33-0.38)	<.001	0.40 (0.37-0.43)	<.001
Sex				
Female	1.01 (0.95-1.08)	.64	0.96 (0.90-1.03)	.28
Male	1 [Reference]	NA	1 [Reference]	NA
Race and ethnicity				
American Indian or Alaska Native	0.64 (0.36-1.13)	.12	0.52 (0.29-0.92)	.03
Asian	0.86 (0.64-1.14)	.28	0.82 (0.62-1.10)	.19
Black	1.04 (0.98-1.10)	.22	1.03 (0.96-1.10)	.47
Hispanic	1.06 (0.97-1.15)	.21	1.00 (0.92-1.10)	.92
White	1 [Reference]	NA	1 [Reference]	NA
Any other race or unknown	1.00 (0.81-1.23)	.98	1.04 (0.84-1.29)	.71
Medicare insurance type				
Medicare Advantage	1.07 (1.01-1.14)	.02	1.07 (1.00-1.13)	.04
Traditional Medicare	1 [Reference]	NA	1 [Reference]	NA
Dual-eligible for Medicaid				
Yes	1.48 (1.39-1.58)	<.001	1.12 (1.04-1.20)	.002
No	1 [Reference]	NA	1 [Reference]	NA
Region				
Midwest	1.49 (1.37-1.62)	<.001	1.42 (1.30-1.54)	<.001
Northeast	1.10 (1.03-1.19)	.008	1.18 (1.10-1.27)	<.001
West	1.28 (1.18-1.37)	<.001	1.41 (1.30-1.52)	<.001
South	1 [Reference]	NA	1 [Reference]	NA
Rurality				
Rural	0.75 (0.68-0.83)	<.001	0.73 (0.66-0.82)	<.001
Urban	1 [Reference]	NA	1 [Reference]	NA
Chronic conditions[c]				
Acute myocardial infarction or ischemic heart disease	0.85 (0.79-0.91)	<.001	1.05 (0.97-1.14)	.23
Asthma or chronic obstructive pulmonary disease	1.14 (1.07-1.21)	<.001	1.09 (1.02-1.16)	.007
Alzheimer dementia or Alzheimer dementia related disorder	0.58 (0.50-0.69)	.001	0.64 (0.54-0.75)	<.001
Cancer	0.84 (0.76-0.93)	<.001	1.01 (0.91-1.12)	.89
Chronic kidney disease or kidney failure	0.78 (0.73-0.83)	<.001	0.93 (0.87-0.99)	.03
Diabetes	0.87 (0.82-0.93)	<.001	0.98 (0.92-1.05)	.62
Heart failure or nonischemic heart disease	0.81 (0.74-0.88)	<.001	0.85 (0.78-0.94)	.002
Mental health disorders	1.54 (1.45-1.62)	<.001	1.32 (1.25-1.41)	<.001
Stroke	0.78 (0.69-0.88)	<.001	0.87 (0.77-0.99)	.03
Substance use disorders	1.31 (1.23-1.39)	<.001	1.05 (0.99-1.13)	.12

Abbreviations: NA, not applicable; OR, odds ratio.

[a] Unadjusted ORs were calculated using univariate logistic regressions with long-acting antiretroviral therapy use as the dependent variable and each characteristic as the independent variable.

[b] Adjusted ORs were calculated using a single multivariable logistic regression with long-acting antiretroviral therapy use as the dependent variable, and all of the characteristics listed in this table as independent variables.

[c] The reference group for each chronic condition is the group of beneficiaries without that condition.

Discussion

In this national cross-sectional study, uptake of LA-ART among Medicare PWH was low, reaching only 3.0% by 2023. Early diffusion appeared uneven, with lower use among American Indian or Alaska Native beneficiaries and people living in rural areas or the South—patterns that mirror longstanding disparities in HIV care delivery and access to specialty services.[4-7] In addition, despite potentially greater benefit from reduced daily adherence burden and lower risk of potential adverse effects of oral tenofovir–based regimens, older beneficiaries and people with complex chronic conditions, including Alzheimer disease and related dementias and chronic kidney disease or kidney failure, were less likely to receive LA-ART, possibly reflecting clinician concerns about drug-drug interactions.[7,8] Conversely, dual-eligible beneficiaries, who automatically qualify for subsidized drug coverage under the Part D Low-Income Subsidy,[9] and people enrolled in Medicare Advantage, who receive financial protections through out-of-pocket maximum caps and reduced cost-sharing, were more likely to receive LA-ART, suggesting that differences in structural access, system-level factors, and affordability may be barriers to LA-ART. Finally, higher use among beneficiaries with mental health disorders is encouraging, given LA-ART's potential to mitigate adherence challenges in this population,[7] and additional consideration for those with substance use disorders remains critical.

This study has limitations. This descriptive study cannot establish causal reasons for different ART prescription patterns, including from logistical challenges, patient selection, and access to physicians. Other limitations included lack of clinical detail in data, inability to capture patient or physician-level factors associated with treatment choice (including affordability), limited generalizability to people enrolled in Medicaid and commercial insurance, and lack of data from 2024 and beyond. We could not quantify lenacapavir use because its billing code was introduced mid-2023. Nonetheless, these early patterns suggest the need for strategies that ensure equitable access to LA-ART through affordability protections, outreach to marginalized populations, and an improved understanding of treatment decisions for older PWH with complex multimorbidity.

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SUPPLEMENT.

Data Sharing Statement