

Factors Associated With Preference for Long-Acting Injectable Versus Daily Oral Antiretroviral Therapy Among People With HIV: Findings From the SELIGO Study

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Background: HIV outcomes in people with HIV (PWH) are suboptimal and inequitably distributed in the United States. Long-acting injectable antiretroviral therapy (LAI-ART) has potential to make important contributions to improving HIV outcomes and quality of life for PWH.

Methods: The SELIGO Study used a 1-time, 20-minute survey of 801 PWH from the Center for AIDS Research Network of Integrated Clinical Systems cohort in 3 US cities (Boston, MA; Chapel Hill, NC; San Diego, CA) that included 54 items. Using multinomial and binary logistic regression, we assessed factors associated with LAI-ART versus daily oral ART preferences.

Results: Most participants were cisgender men (82.3%); 57.0% identified as racial and/or ethnic minorities; mean years of age, 52.2; mean years living with HIV, 18.1; 2.8% were using LAI-ART. Compared with daily oral ART, 56.9% preferred LAI-ART administered monthly, and 68.0% preferred LAI-ART administered every 2 months. Factors associated with greater odds of LAI-ART preference included medication/contraception injection experience, pill burden, no medication other than ART, 4 or more clinic visits per year, detectable viral load, reporting a higher number of HIV treatment considerations, and identifying as Black. Factors associ-

ated with decreased odds of LAI-ART preference included older age, identifying as neither gay nor straight, living > 1 hour from the clinic, and considerable/extreme needle fear.

Conclusions: Findings demonstrate that although there is considerable interest in LAI-ART, HIV treatment modality preferences are multifaceted. Shared decision making can ensure that conversations about ART options consistently address specific factors across diverse groups to facilitate equitable LAI-ART uptake.

Key Words: HIV, antiretroviral therapy, long-acting injectable, treatment, modalities, preferences

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INTRODUCTION

As of 2022, only 65% of the approximately 1.2 million people with HIV (PWH) in the United States were virally suppressed.¹ Both US and global HIV objectives aim for 95% viral suppression among PWH by 2025 and 2030, respectively, to improve HIV-associated health outcomes, quality of life, and reduce transmission.^{2,3} Intensified efforts to engage, retain, and treat PWH with antiretroviral therapy (ART) are ongoing cornerstones of public health initiatives, including increasing equitable access to evolving HIV treatment options to address the varied preferences of PWH.^{2,3}

In 2021, the US Food and Drug Administration (FDA) approved long-acting injectable antiretroviral therapy (LAI-ART) in the form of a combined injection of cabotegravir and rilpivirine, administered monthly, as treatment for HIV in those who are virally suppressed.⁴ A year later, the same LAI-ART medication administered every 2 months was approved.⁵ LAI-ART is a potential “game changer” in addressing patient needs by reducing daily oral ART adherence barriers such as treatment fatigue and HIV-related stigma.⁶ LAI-ART has been associated with higher treatment satisfaction than daily oral ART in clinical trials^{7,8} and routine care.^{9,10} Treatment satisfaction has been linked to better HIV outcomes, including retention in care, ART adherence, and viral suppression.¹¹

Advantages associated with LAI-ART as indicated by PWH in prior research include greater perceived convenience, ease of use, ability to be adherent, increased privacy and

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confidentiality, reduced internalized HIV stigma (eg, less of a daily reminder of HIV), and a lower perceived risk of inadvertent disclosure of HIV status (eg, someone seeing pills).^{12–17}

Potential disadvantages related to LAI-ART indicated by PWH include concerns related to needles and injection site reactions, questions about effectiveness in terms of viral suppression, and concerns associated with more frequent clinic visits (eg, logistical and cost barriers related to getting to the clinic, having to take additional time off from work to attend injection appointments, and anticipated and enacted HIV stigma related to being seen in clinic for HIV treatment-related injections), and medical mistrust related to receiving injections.^{12–17}

To date, LAI-ART uptake has been slow, with only 1.44% of all PWH¹⁸ or approximately 15,000 people¹⁹ in the United States on LAI-ART after 2 years since its availability in routine clinical settings.²⁰ Cost and navigating insurance coverage can impede uptake of LAI-ART, and these, combined with a lack of awareness of this treatment option among PWH and their providers, as well as bias influencing the offering of the medication, may also play a role.^{21,22} Given ongoing inequities in viral suppression rates across sociodemographic and behavioral subgroups of PWH, increasing attention is being paid to who is able to access and benefit from LAI-ART.²³

The Shared Decisions When Choosing Between Long-Acting Injecting or Oral Therapy (SELIGO) Study²⁴ explored ART modality preferences among PWH in HIV care and the factors influencing preferences for LAI compared with daily oral ART to inform interventions aimed at improving HIV treatment satisfaction and outcomes.

METHODS

Study Design and Sampling

The SELIGO Study enrolled 801 PWH from a large observational cohort of PWH through the Centers for AIDS Research (CFAR) Network of Integrated Clinical Systems (CNICS) research network.²⁵ CNICS integrates longitudinal clinical data and treatment management of PWH and gathers HIV-associated clinical, social, and behavioral outcomes data collected from 10 CFAR clinical sites across the United States among PWH aged 18 years or older. Approximately 40,000 PWH are enrolled in the CNICS cohort. At CNICS clinics, cohort participants complete patient-reported outcomes (PROs) surveys at each routine clinic visit. Clinical data, including laboratory results and medications, are reported by clinical sites and included in the CNICS database.²⁶

The SELIGO Study²⁴ (R01MH118955) partnered with investigators from 3 CNICS sites to conduct a mixed-methods observational study focused on characterizing perceptions and preferences related to daily oral versus LAI-ART among PWH. The 3 participating CNICS sites were Chapel Hill, NC; Boston, MA; and San Diego, CA. The NC site is an academic institution serving a diverse clientele across rural and urban settings. The MA site is a community health center, predominantly serving cis-men, gay, and White clients. The CA

site is an academic institution that serves a diverse population, including many Latiné individuals.

A one-time survey was conducted between May 2022 and February 2023. Inclusion criteria for the survey included participants in the CNICS cohort who were 18 years of age or older, received care at 1 of the 3 participating CNICS clinics (defined as having received care at a participating clinic during the recruitment period or 30 days prior), and were able to provide informed consent. CNICS clinics were selected for the SELIGO study based on geographic location and the populations served to include diverse participants and experiences.

Data Collection Procedures

We recruited PWH, currently enrolled in CNICS, 18 years of age and older, and able to complete surveys in English or Spanish to participate in the SELIGO survey before, during, or after routine clinic visits. Across CNICS sites, cohort participation of patients receiving clinical care approaches or exceeds 90%. Participants at the 3 clinics were recruited using flyers announcing the survey posted in the clinic waiting areas and examination rooms. CNICS participants attending their regular clinic visits were also approached by clinic research staff when available. This often occurred when participants were asked to complete CNICS patient-reported outcome (PRO) surveys routinely administered at clinic visits. Clinic staff training included a script to follow when offering or discussing study participation. Participants provided informed consent for the SELIGO survey and were counseled that the survey would cover HIV treatment, last approximately 20 minutes, and that their responses would be linked to their data in the CNICS repository, including patient demographics, sociobehavioral, and clinical data. Interested patients could enroll in the study and complete the survey before or after their clinic visit using a link to the electronic survey programmed in Qualtrics through a tablet provided onsite. All participants were compensated \$35 for survey completion.

The protocol, including data collection instruments and informed consent forms in English and Spanish, and recruitment materials for the SELIGO study received institutional review board (IRB) approval from the University of North Carolina (UNC); partner site IRBs deferred to the UNC IRB. All recruitment, data collection, and data handling processes throughout this study were conducted in strict adherence to the Health Insurance Portability and Accountability Act (HIPAA) regulations, emphasizing the safeguarding of sensitive participant information to foster patient confidence in the confidentiality of their data.

Measures

We assessed demographic, psychosocial, logistical, clinical, and behavioral factors related to HIV treatment preferences as identified in prior research,^{12–17} as well as factors identified through formative qualitative work conducted as part of the first phase of the SELIGO study.¹² The final survey consisted of 54 items, was translated into

Spanish, and was pilot tested with a convenience sample of 25 PWH from the NC site in English and Spanish. Cognitive debriefing interviews²⁷ were used in both languages to gather feedback from PWH on survey questions and response scale options in terms of content validity, including clarity and intended meaning.

The primary dependent (outcome) variables of the current analysis focused on HIV treatment modality preferences. Using a 4-point response Likert scale, participants were asked whether they had a 1= Strong preference for taking HIV pills every day; 2= Some preference for taking HIV pills every day; 3= Some preference for an injectable HIV medication given every month; 4= Strong preference for an injectable HIV medication given every month. This question was posed in relation to an injectable HIV medication delivered monthly and every 2 months, respectively.

Key independent variables included internalized stigma and HIV treatment considerations, measured by 2 scales. One is a brief internalized HIV stigma scale, from the CNICS patient-reported outcomes data, which contains 4 items (eg, Having HIV makes me feel like I am a bad person) and response options of strongly disagree, disagree, neither disagree or agree, agree and strongly agree.²⁸ In this analysis, the measure had a mean score of 16.23 (range 4–20) and Cronbach $\alpha > 0.92$. The other scale is a HIV treatment considerations measure, developed based on SELIGO formative work and measured through the SELIGO survey. It contains 8 items asking participants “when considering a choice of HIV treatment, how important are the following” (response options were not important at all, somewhat important, important, and very important): fits well into your life, easy to take as directed, keeps virus undetectable, not a frequent reminder of HIV, how often come to clinic, does not increase risk of others finding out have HIV, convenience, and manageable side effects. The HIV treatment considerations scale had a mean score of 27.55, a range of 8–32, and Cronbach $\alpha > 0.88$ in the analysis. Higher scores indicate that a greater number of factors considered important by participants when deciding on HIV treatment options.

The survey also assessed other variables including demographics (eg, age, gender, race/ethnicity, sexual orientation), psychosocial (eg, perceived HIV pill burden, fear of needles), logistical (eg, frequency of clinic visits, and time and mode of transport to get to their HIV clinic), and clinical (eg, the number of HIV and other medicines taken daily, experiences with injectable medications/contraceptives). Additional behavioral (eg, ART adherence in the past 7 days, substance use) and clinical outcomes (eg, viral load) leveraged data collected through CNICS.

Data Analysis

Descriptive analyses were performed on all survey variables to assess frequencies and distributions and explore potential outliers, including the primary outcomes regarding preference for daily oral vs. LAI-ART, delivered monthly or every 2 months. In this initial phase, we also identified and explored covariates of interest, including demographic, clinical, behavioral, psychosocial, and logistical variables.

In addition, we examined the reliability of the aggregate measures included in the survey: the internalized HIV stigma and HIV treatment considerations scales.

Subsequent analyses explored factors associated with preference for ART modality. We first conducted bivariate analyses, including χ^2 tests of independence between the outcome variables and all independent variables. We then developed both multivariate multinomial and binary logistic regression models. Multinomial models examined factors associated with ART modality preferences (considering both LAI-ART delivered monthly and every 2 months), including the odds of strong preference for LAI, some preference for LAI, and some preference for oral compared with the reference category of strong preference for daily oral ART. Binary logistic regression modeled factors associated with a strong preference for LAI-ART vs. all other options (also considering LAI-ART delivered monthly and every 2 months). We included binary logistic regression, dichotomizing the Likert scale for ART modality preferences, to examine how statistical associations may vary when specifically comparing those individuals with strong preferences for LAI-ART versus all others, as well as to assist in terms of ease of interpretation.

Multiple imputations by chained equations were used to account for missing data in multivariable regression.²⁹ Statistical associations are expressed as odds ratios (ORs) with 95% confidence intervals (CI). The final multivariable models also controlled for the CNICS clinical care facility from which the SELIGO participants were recruited. Statistical analyses were performed using STATA 17.

RESULTS

Demographic Characteristics of the Sample

Across the 3 participating clinics, 801 PWH provided informed consent for the SELIGO survey, of whom 795 completed key demographic and primary outcome questions and were included in the current analysis. As shown in Table 1, the mean age was 52.2 years (range 19.7–88.9 years). Most identified as cisgender male (82.3%), 59.0% identified as gay, 27.5% straight, and 13.5% other (queer, questioning, pan-sexual, etc). Based on self-reported race and ethnicity, 43.0% identified as White, 32.8% as Black, 15.4% as Latiné, and 8.8% as multiracial or belonging to other racial groups. Most participants (67.2%) did not have a college education and had a household annual income of <\$50,000 per year (66.2%). Almost half of the sample was recruited from the Chapel Hill, NC clinic (48.9%), with approximately 1 quarter each from the Boston, MA (26.2%) and San Diego, CA (24.9%).

HIV-Related Characteristics, Behaviors, and Experiences of the Sample

The vast majority (94.2%) of participants had an undetectable viral load at the time of the survey (Table 2). Approximately one quarter (22.0%) missed at least 1 dose of their daily oral ART medicines in the past 7 days. Most

TABLE 1. Self-Reported Sociodemographic Characteristics of Participating PWH (N = 795)

Variables	N	Percentage (%) or Mean/Range (SD)
Age in years	795	52.2 (18.72–88.89; SD 12.48)
Gender	785	
Male	646	82.3%
Female	109	13.9%
Transgender—female	14	1.8%
Queer	14	1.8%
Transgender—male	2	0.3%
Sexual orientation	754	
Gay	445	59.0%
Straight	207	27.5%
Other	102	13.5%
Race/ethnicity	795	
White	342	43.0%
Black	261	32.8%
Latiné	122	15.4%
Multiracial	43	5.4%
Other (Native American and Asian/Pacific Islander)	27	3.4%
Geographical location of clinic	795	
Chapel Hill, North Carolina	389	48.9%
Boston, Massachusetts	208	26.2%
San Diego, California	198	24.9%
Highest level of formal education	792	
High school degree/GED or less	244	30.8%
Some college/associate's degree/technical degree	288	36.4%
Bachelor's or graduate degree	260	32.8%
Average yearly household income	786	
\$0–\$27,000	366	46.6%
\$27,001–\$50,000	154	19.6%
\$50,000 or more	266	33.8%

(74.0%) were on a single tablet ART regimen and <3% (2.8%) were on LAI ART at the time of the survey. Almost all took at least 1 non-HIV medication daily (90.5%). In terms of HIV pill burden, 12.8% felt that their HIV pills were a burden in their daily lives. Almost a quarter of the sample (24.5%) spent >1 hour to reach their HIV clinic for appointments. Almost a third of participants (29.3%) had 4 or more HIV-related clinical care visits per year. Experience with injectable medications (including injectable contraceptives) was common (93.6%), while only 16.8% had a history of IDU. In addition, 12.5% reported being considerably or extremely fearful of needles.

HIV Treatment Modality Preferences

Figure 1 presents the distribution of our primary study outcomes: preference for ART modality in the context of LAI-ART being delivered monthly and delivered every 2 months. When considering LAI-ART delivered monthly, 30.7% of participants had a strong preference for an LAI-ART, 26.2% had some preference for LAI-ART, 21.6% had

TABLE 2. HIV-Related Characteristics of Participating PWH (N = 795)

Variables	N	Percentage (%) or Mean/Range (SD)
HIV viral load status: Detectable (>200 copies/mL)	36/792	4.6%
Missed 1 or more doses of ART in the past 7 Days	159/721	22.1%
No. of HIV pills taken daily	774	
0	10	1.3%
1	573	74.0%
2	98	12.7%
3	34	4.4%
4 or more	37	4.8%
Currently on LAI ART	22/774	2.8%
No. of Non-HIV-related pills taken daily	774	
0–1	170	22.0%
2–3	187	24.2%
4 or more	192	53.9%
Feel burdened by number of HIV pills taken everyday	95/742	12.8%
HIV clinic travel time: > 60 minutes	195/795	24.5%
# Of HIV clinic visits per year: 4 or more times/year	233/795	29.3%
Has experience with injectable medications	722/771	93.6%
Prior injection drug use	129/770	16.8%
Fear of needles: considerably/extremely afraid	96/770	12.5%

some preference for daily oral ART, and 21.5% had a strong preference for daily oral ART. In comparison, when considering LAI-ART delivered every 2 months, 45.0% of the sample had a strong preference for LAI-ART, 23.0% had some preference for LAI-ART, 14.3% had some preference for daily oral ART, and 17.6% had a strong preference for daily oral ART.

Multinomial Regression Models

Table 3 gives factors associated with some or strong preference for LAI-ART in multinomial models that considered LAI-ART delivered monthly and every 2 months, separately.

In multinomial models for LAI-ART delivered monthly, factors positively associated with *some interest* in monthly LAI-ART included having medication/contraceptive injection experience (aOR 2.91; 95% CI: 1.02 to 8.31) and having 4 or more HIV care clinic visits per year (aOR 2.28; 95% CI: 1.27 to 4.11). Factors negatively associated with some interest in monthly LAI-ART included age, with each increasing year of age being associated with lower odds of some LAI-ART preference (aOR 0.96; CI: 95% 0.94 to 0.99). Each unit increase on the HIV treatment considerations scale (aOR 0.96; CI: 95% 0.92

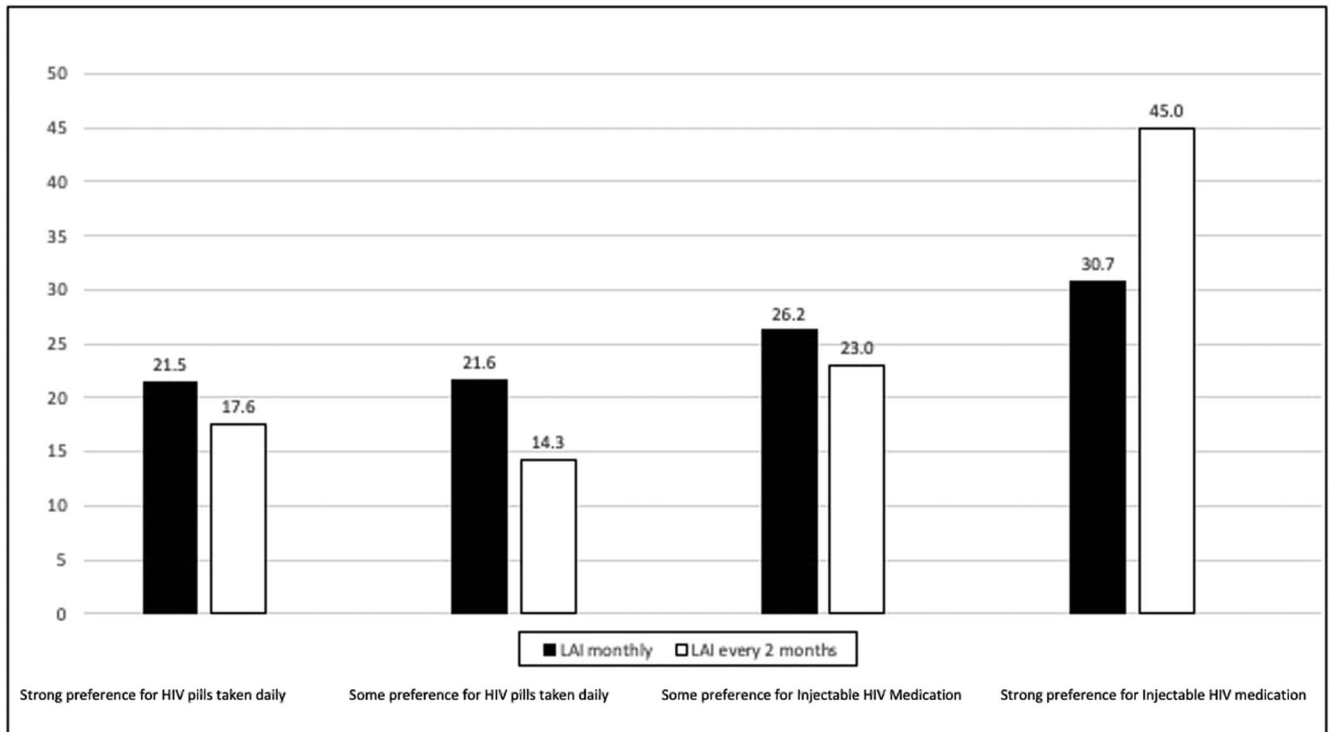


FIGURE 1. ART modality preference among participating PWH (n = 795).

to 0.99) was marginally associated with a lower odds of some interest in monthly LAI-ART.

Factors positively associated with *strong interest* in LAI-ART when delivered monthly included perceived HIV pill burden (aOR 5.92; 95% CI: 2.58 to 13.61), having >4 HIV care clinic visits per year (aOR 3.05; 95% CI: 1.71 to 5.44), and a detectable viral load (aOR 4.55; 95% CI: 1.16 to

17.81). Needle fear was negatively associated with strong interest in monthly LAI-ART (aOR 0.27; 95% CI: 0.13 to 0.57).

In multinomial models considering LAI-ART delivered every 2 months, only age was associated with *some preference* for LAI-ART, with each increasing year of age associated with lower odds of some preference in LAI-ART

TABLE 3. Multivariate Multinomial Models Related to ART Modality Preference Among PWH (N = 782)*

[Ref=Strong Preference for Daily Oral] Independent Variables	Some Preference for Taking HIV Pills			Some Preference for an Injectable HIV Medication			Strong Preference for an Injectable HIV Medication		
	aOR	95% CI	P	aOR	95% CI	P	aOR	95% CI	P
When considering LAI ART, monthly									
HIV treatment considerations scale	0.96	0.92 to 1.00	0.06	0.96	0.92 to 0.99	0.05	1.01	0.97 to 1.06	0.59
Age in years	1.00	0.97 to 1.02	0.77	0.96	0.94 to 0.99	0.01	0.98	0.96 to 1.01	0.18
Medical/contraceptive injection experience	1.70	0.65 to 4.42	0.28	2.91	1.02 to 8.31	0.05	1.28	0.54–3.00	0.57
Viral load: detectable	3.72	0.89 to 15.61	0.07	2.81	0.68 to 11.67	0.15	4.55	1.16 to 17.81	0.03
Needle fear: considerably/extremely afraid	0.96	0.48 to 1.92	0.90	0.54	0.27 to 1.08	0.08	0.27	0.13 to 0.57	0.00
Feel HIV pills taken each day is burden	1.13	0.41 to 3.11	0.81	2.12	0.89 to 5.08	0.09	5.92	2.58 to 13.61	0.00
HIV clinic visits per year: 4 or more per year	1.31	0.70 to 2.48	0.40	2.28	1.27 to 4.11	0.01	3.05	1.71 to 5.44	0.00
When considering LAI ART, every 2 months									
Age in years	0.98	0.95 to 1.01	0.19	0.97	0.94 to 0.99	0.02	0.97	0.95 to 0.99	0.02
Needle fear: considerably/extremely	0.77	0.32 to 1.85	0.56	1.12	0.55 to 2.27	0.75	0.36	0.18 to 0.73	0.00
Feel HIV pills taken each day is burden	1.04	0.34 to 3.18	0.95	1.05	0.40 to 2.76	0.92	3.66	1.60 to 8.39	0.00
HIV clinic visits per year: 4 or more per year	1.18	0.57 to 2.44	0.66	1.39	0.74 to 2.63	0.31	2.24	1.26 to 4.00	0.01

*Response options included: 1= Strong preference for taking HIV pills every day; 2= Some preference for taking HIV pills every day; 3= Some preference for an injectable HIV medication given every month (or every 2 months); 4= Strong preference for an injectable HIV medication given every month (or every 2 months).

(aOR 0.97; 95% CI: 0.94 to 0.99). Those factors positively associated with a *strong interest* in LAI-ART included perceived pill burden (aOR 3.66; 95% CI: 1.60 to 8.39) and having 4 or more HIV care clinic visits per year (aOR 2.24; 95% CI: 1.26 to 4.00). Age (aOR 0.97; CI: 95% 0.95 to 0.99) and needle fear (aOR 0.36; 95% CI: 0.18 to 0.73) were negatively associated with *strong interest* in LAI-ART when delivered every 2 months.

Binary Logistic Regression Models

As given in Table 4, we also assessed factors associated with a strong preference for LAI-ART (reference: all other response options) using binary logistic regression, considering LAI-ART delivered monthly and every 2 months, respectively.

In these binary logistic regression models, the following variables were positively associated with increased odds of *strong preference* for LAI-ART: having a higher score on the HIV treatment considerations scale (aOR 1.04 for each unit increase in score; 95% CI: 1.01 to 1.08 monthly); sexual orientation identification as “other” than gay or straight, for example, queer, questioning, and pan-sexual (aOR 0.50; 95% CI: 0.29 to 0.87 every 2 months); identifying as Black (aOR 1.84; 95% CI: 1.17 to 2.93 monthly; aOR 1.85; 95% CI: 1.22 to 2.82 every 2 months), having a greater perceived HIV pill burden (aOR 4.03; 95% CI: 2.38 to 6.80 monthly; aOR 3.50; 95% CI: 2.08 to 5.93 every 2 months), and having >4 HIV care clinic visits per year (aOR 1.95; 95% CI: 1.30 to 2.96 monthly; aOR 1.82; 95% CI: 1.24 to 2.69 every 2 months).

Taking non-HIV medications daily (aOR 0.55; 95% CI: 0.26 to 0.120 monthly; aOR 0.42; 95% CI: 0.21 to 0.83 every 2 months) and considerable/extreme needle fear (aOR 0.36; 95% CI: 0.28 to 0.55 monthly; aOR 0.37; 95% CI: 0.22 to 0.63 every 2 months) were associated with a lower odds of *strong interest* in LAI ART, as was having to travel more than an hour to get to the clinic from one’s home (aOR 0.48; 95% CI: 0.23 to 0.99 months; aOR 0.47; 95% CI: 0.24 to 0.94 every 2 months).

DISCUSSION

Because ART modality options grow beyond daily oral regimens, this study of HIV treatment modality preferences

among a sample of 801 PWH from an established clinical cohort, recruited from 3 clinical care sites representing diverse geographic regions and populations in the United States, offers important insights into HIV treatment preferences of PWH and the factors shaping these preferences.

In descriptive analyses, we found, similar to other published studies, that a higher percentage of participating PWH preferred LAI-ART over daily oral ART,³⁰ particularly if they could receive LAI-ART every 2 months versus monthly delivery. Although LAI-ART was approved by the US FDA in 2021, we found that a low (<3%) percentage of participating PWH were using LAI-ART in the context of ongoing care at the time of the survey (2022–2023), which is also consistent with the literature.^{18,20} This large gap between expressed preferences and LAI-ART use indicates the importance of further exploring structural (eg, insurance coverage, eligibility assumptions, and clinic capacity), provider perceptions, and patient profiles and dynamics.

Our multivariable regression findings first expand on prior research on the demographic and psychosocial profile of PWH with a greater interest in LAI-ART.³⁰ In particular, our results underscore the important role LAI-ART could play in supporting the needs of marginalized groups. Black participants had greater odds of preferring LAI-ART. Prior qualitative research helps to contextualize how and why LAI-ART may be particularly appealing to Black PWH, including the potential for greater confidentiality and privacy related to LAI in terms of not having to worry about pills being seen by others, and in turn less internalized and anticipated HIV stigma.^{31–33} Our survey responses build on prior qualitative findings that indicate the salience of LAI-ART to PWH who experience greater HIV pill burden and fatigue, as highlighted in other recent studies from both the United States and sub-Saharan Africa, expanding these findings through larger-scale quantitative data.¹³

We also found that persons with a detectable viral load had 4.55 times greater odds of having a strong LAI-ART preference when delivered monthly. Prior research with health care providers has documented their concerns about providing LAI-ART to patients who are not currently adherent to ART or not virally suppressed.³⁴ Now that clinical guidelines allow for LAI-ART in persons with viremia on a case-by-case basis,³⁵ it will be critical to assess

TABLE 4. Multivariate Binary Logistic Models Related to ART Modality Preference Among PWH (n = 782)

[Ref = All Other Response Options] Independent Variables	Strong Preference for an Injectable HIV Medication Given Every Month (N = 779)			Strong Preference for an Injectable HIV Medication Given Every 2 Months (N = 782)		
	aOR	95% CI	P	aOR	95% CI	P
HIV treatment considerations scale	1.04	1.01 to 1.08	0.023	1.00	0.97 to 1.03	0.876
Sexual orientation: identifies as “other”	0.65	0.37 to 1.14	1.14	0.55	0.33 to 0.91	0.019
Race/ethnicity: Black	1.84	1.17 to 2.93	0.009	1.85	1.22 to 2.82	0.004
Need fear: considerably/extremely afraid	0.36	0.28 to 0.65	<0.001	0.37	0.22 to 0.63	<0.001
Feel HIV pills taken each day is burden	4.03	2.38 to 6.80	<0.001	3.50	2.08 to 5.93	<0.001
“0” Non-HIV pills each day	1.78	0.83 to 3.85	0.138	2.40	1.20 to 4.80	0.013
HIV clinic visits per year: 4 or more per year	1.95	1.30 to 2.96	0.002	1.82	1.24 to 2.69	0.002
Time in minutes to get to HIV clinic	0.48	0.23 to 0.99	0.049	0.47	0.24 to 0.94	0.033

and communicate with patients who may have adherence challenges with current HIV treatment regimens but are otherwise deemed clinically appropriate candidates for LAI-ART through shared decision making. Our study offers evidence that viremic patients have strong interest in LAI-ART.

PWH with medication and contraception injection experiences had greater interest in LAI-ART, which while not surprising, this underscores the importance of considering strategies to reach and inform PWH about new HIV treatment options in diverse clinical settings, including family planning, reproductive and women's health clinics, substance use treatment facilities, and primary health care clinics. Increased awareness and dissemination of information about LAI-ART may require additional training and support outside of providers who are not strictly HIV specialists.

In this study, we developed an HIV treatment considerations scale that was shown to be reliable and valid. PWH who had a greater number of consideration factors (convenience, stigma, etc.) that they considered important when deciding on an HIV treatment modality had a greater likelihood of preferring LAI-ART. This scale may be useful in future work regarding HIV treatment preferences and adapted as new ART modalities evolve, both for treatment and prevention. Our team also demonstrated the reliability and validity of an adapted version of this aggregate measure in relation to HIV pre-exposure prophylaxis (PrEP) modality preferences among cisgender women.³⁶

We also documented factors associated with lower interest in LAI-ART, which are consistent with the literature, including considerable or extreme fear of needles, travel time to clinic, and taking concomitant medications.³⁰ Finally, we found that having a sexual orientation outside of the gay-straight binary, measured as "other" (queer, questioning, pansexual, etc), was significantly associated with a lower odds of having a strong preference for LAI-ART every 2 months. This is 1 of few studies to identify lower LAI-ART preference among people outside the gay-straight binary. These findings may indicate unique experiences of invisibility, mistrust, or stigma in health care settings in this group, meriting further exploration in future research.

Overall, study results point to the need to approach LAI-ART as an opportunity for many PWH, including those who may not always be recognized by health care providers as likely to prefer injections over pills. The development and application of tools to support shared decision making that incorporate key domains for discussion, such as injection experiences and perceptions, populations with particular interest in LAI-ART, and potential barriers to uptake, can reduce such bias and identify PWH for whom LAI-ART is a good fit. Such tools should be assessed in terms of their effectiveness in facilitating meaningful and equitable opportunities for patient-provider communication regarding ART options, and their impact on HIV treatment satisfaction, quality of life, and health outcomes.

Limitations of this analysis include the cross-sectional nature of the one-time survey that does not allow for causal inference or an understanding of shifts in HIV treatment modality given the dynamic nature of preferences over time.

Although not a focus of the current analysis, further research should explore additional structural and logistical factors that may shape interest and pose a potential barrier for the uptake of LAI-ART, including medication cost and insurance coverage for LAI-ART among PWH, and challenges navigating complex health care systems. In addition, given the small percentage of participants surveyed here who were not virally suppressed, we acknowledge that as a limitation, as well as the wide conference interval around our finding regarding the significant role of detectable viral load as a factor associated with strong preference for LAI-ART specifically in the case of monthly delivery.

In conclusion, this study of PWH engaged in routine clinical care in the United States found that more than half preferred LAI-ART over daily oral ART and identified key factors shaping preferences that should be considered when this HIV treatment option is offered. As LAI-ART and other innovations in the delivery of HIV treatment become available, it is critical to develop interventions, including shared decision-making tools, to facilitate treatment that reflects the preferences of PWH and reduces inequities in HIV treatment access, uptake, and outcomes.

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