# Distance to Care Measures Predict Injection Visit No-Shows Among Cabotegravir/Rilpivirine Recipients

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## Background

- While long acting injectable (LAI) cabotegravir/rilpivirine (CAB/RPV) has been a welcome addition to the antiretroviral armamentarium, non-adherence to injections visits has emerged as an issue in real-world clinical settings.[1]
- Several distance to care measures (mileage, driving time, etc) have been associated with poor health outcomes.[2]
- Among the various distance to care measures, it is not clear which most accurately predicts LAI CAB/RPV injection visit adherence for persons with HIV.

## Objectives

- To identify which distance to care (DTC) measures, if any, were independently associated with injection visit no-shows (IVNS) among persons with HIV and receiving LAI CAB/RPV
- Compare the strength of association of each DTC measure when evaluated as an independent predictor of IVNS among recipients of LAI CAB/RPV.

## Methods

- A retrospective, cohort study was performed among adults with HIV who received LAI CAB/RPV between 5/2021 and 8/2023 at an urban HIV medicine clinic in southern California.
- Inclusion criteria were i) age ≥ 18 years, ii) received LAI CAB/RPV for at least 6 months, and iii) availability of address in electronic medical records.
- Persons whose address was a post office box were excluded from the analyses. Analyses were restricted to those with a door-to-door mileage of <15 miles as the non-driving DTC measures would not be realistic without a motor vehicle.
- Five DTC measures were calculated using the address in the electronic medical records and the clinic address: i) door-to-door mileage, ii) driving time, iii) public transit time, iv) walking time and v) biking time.
- The outcome of interest was IVNS.
- Classification and regression tree (CART) analyses were performed to identify breakpoints in each of these continuous DTC measures associated with no shows. Each of these DTC variables were entered into a Cox proportional hazards regression model to determine the strength of association after controlling for other potential predictor variables identified in our previous publication.[1]

## Results

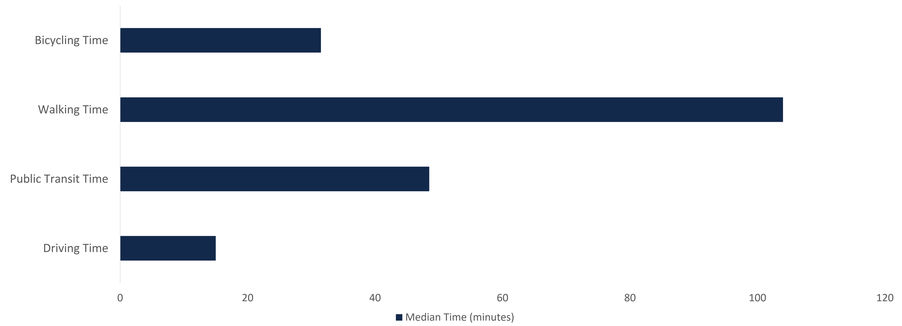
- Of the 287 individuals who received LAI CAB/RPV between 5/2021 and 8/2023, there were 202 with an address listed in the electronic medical record within 15 miles of the clinic address.

**Table 1: Clinical and demographic characteristics of study population**

| Characteristics | Result |
|---|---|
| Age, median (IQR) | 43 (34 – 54) |
| Sex assigned at birth | |
| • Male | 183 (90.6) |
| • Female | 19 (9.4) |
| Race | |
| • White | 90 (44.6) |
| • Black | 42 (20.8) |
| • Asian | 7 (3.5) |
| • Mixed | 52 (25.7) |
| • Unknown | 7 (3.5) |
| • American Indian/Alaskan Native | 4 (2.0) |
| Gender identity | |
| • Female | 19 (9.4) |
| • Male | 177 (87.6) |
| • Transgender | 2 (1.0) |
| • Non-binary | 4 (2.0) |
| Active substance use | 34 (16.8) |
| Dosing frequency | |
| • Entirely q2months | 158 (78.2) |
| • Started q1month then switched to q2months | 43 (21.3) |
| • Entirely q1month | 1 (0.5) |
| Duration of LAI CAB/RPV use (days), median (IQR) | 451 (356 – 552) |

- IQR: interquartile range. All data presented as n (%) or median (interquartile range).

**Figure 1: Distribution of Time-Bound Distance to Care Measures**




## Results

**Figure 2: Relationship between IVNS and CART-derived breakpoints in DTC measures**

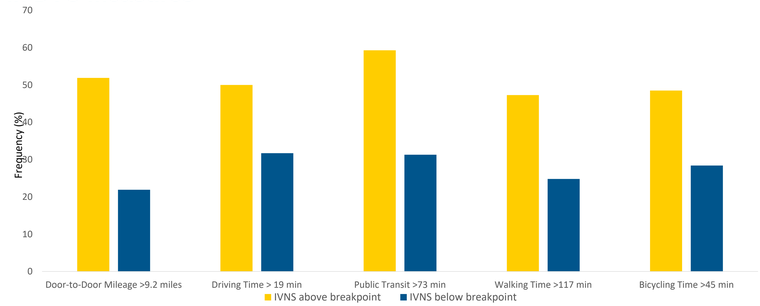



**Table 2: Results of multivariable Cox proportional hazards regression models evaluating each DTC measure as an independent predictor of IVNS**

| Covariate | Hazard Ratio | 95% Confidence Interval | P-value |
|---|---|---|---|
| Mileage >9.2 miles | 2.05 | 1.27 – 3.31 | 0.003 |
| Driving >19 min | 1.64 | 0.97 – 2.78 | 0.07 |
| Public Transit >73 min | 2.05 | 1.12 – 3.76 | 0.02 |
| Walking >117 min | 2.33 | 1.43 – 3.79 | <0.001 |
| Bicycling >45 min | 1.88 | 1.18 – 3.01 | 0.008 |

*Variables at model entry were those with a p<0.25 from previous publication by Hill et al[1]

## Conclusions

- Among persons with HIV receiving LAI CAB/RPV, CART was a useful tool to define breakpoints associated with IVNS in each DTC measure.
- Nearly all DTC measures were significantly associated with IVNS in both univariate and multivariate analyses with door-to-door mileage, public transit time and walking time having the strongest measures of association.
- Future studies should consider interventions aimed at reducing the effect of DTC on adherence and other clinical outcomes.

## References

1. Hill L, Kenney S, Patel N, et al. Predictors of Post-switch Viremia in People With HIV on Injectable Cabotegravir/Rilpivirine. *J Acquir Immune Defic Syndr*. 2024;95(1):90-96. doi:10.1097/QAI.0000000000003320
2. Kelly C, Hulme C, Farragher T, Clarke G. Are differences in travel time or distance to healthcare for adults in global north countries associated with an impact on health outcomes? A systematic review. BMJ Open. 2016 Nov 24;6(11):e013059. doi: 10.1136/bmjopen-2016-013059. PMID: 27884848; PMCID: PMC5178808.