Predictors of Injection Visit Adherence in Those Receiving Injectable Cabotegravir/Rilpivirine

#624

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Background

- Long acting injectable (LAI) cabotegravir/rilpivirine (CAB/RPV) is given every 1 or 2 months with a recommended dosing window of +/- 7 days[1]
- Recommendations are to select patients who are expected and agree to adhere to the dosing schedule to reduce the risk of viral rebound and development of resistance, however data regarding the impact of late injections on viral suppression is limited due to a small number of late injections in clinical trials[1,2]
- Data is limited identifying objective predictors of missed or late injections, including adherence to office visits prior to switching to LAI CAB/RPV, with one study showing history of AIDS defining events associated with delayed injections[3]
- Additional consequences of missed injection visits, regardless of if they result in late injections, include additional resources needed for outreach, scheduling, and impact on appointment availability

Methods

- A retrospective cohort study was performed among adult PWH receiving care at the University of California San Diego Owen Clinic
- Inclusion criteria included treatment with LAI CAB/RPV for at least 6 months between May 2021 and August 2023
- Exclusion criteria included those who had a late injection due to COVID-19 infection or had planned/known travel leading to a late injection
- Data collected from the electronic medical record included demographics, baseline HIV RNA and CD4 count, distance from the clinic, active substance use, CAB/RPV dosing regimen, office visit no-shows one year prior to switching to LAI CAB/RPV, injection visit no-shows, injections outside the dosing window, frequency of viral load monitoring and virologic outcomes
  - No-show=missed visit that was not cancelled or rescheduled prior to the appointment time
  - Evaluated no shows to specific visit type of "Owen injectables," did not capture no shows to office visits that provided CAB/RPV
  - Dosing window for late injections calculated as calendar date from previous injection +/- 7 days
  - Distance to clinic calculated by mid point of participant's zip code to clinic address
- Cox-proportional hazards regression was performed to evaluate predictors of no-show to injection visits or late injections. Incident rate of no-shows to injection visits was compared between those with and without at least one pre-switch office visit no-show

Results

- Among 287 PWH, median (IQR) follow-up after switching to LAI CAB/RPV was 450 days (344-548 days)
- Total of 2,803 injection visits were evaluated with a median of 9 injection visits/person
- Total of 92 (32.1%) had at least one no-show injections visit and 44 (15.3%) had at least one injection outside the recommended dosing window

Table 1: Comparison of those with and without at least one no-show injection visit after switching to LAI CAB/RPV

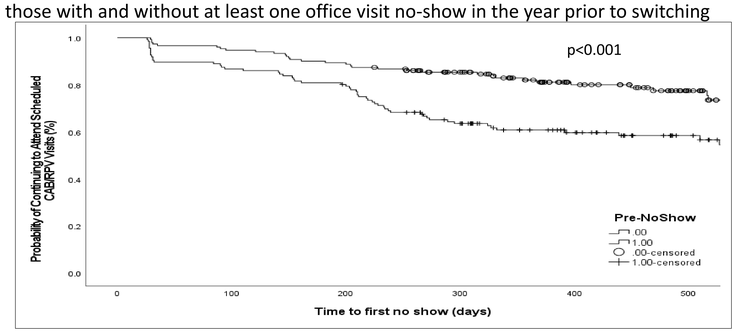
	Total (n=287)	At least one no-show (n=92)	Did not have a no-show (n=195)	p-value
Median Age (IQR)	42 (34-53)	37 (31-48)	45 (35-56)	0.0002
Race (%)				0.08
White	131 (45.6)	34 (37.0)	97 (49.7)	
Black	57 (19.9)	22 (23.9)	35 (17.9)	
Asian	8 (2.8)	2 (2.2)	6 (3.1)	
Mixed/other	82 (28.6)	33 (35.9)	49 (25.1)	
Unknown	9 (3.1)	1 (1.1)	8 (4.1)	
Ethnicity (%)				0.14
Hispanic	109 (38.0)	40 (43.5)	69 (35.4)	
Non-Hispanic	173 (60.3)	49 (53.3)	124 (63.6)	
Unknown	5 (1.7)	3 (3.3)	2 (1.0)	
SAB (%)				0.09
Female	43 (15.0)	9 (9.8)	34 (17.4)	
Gender Identity (%)				0.33
Male	235 (81.9)	79 (85.9)	156 (80.0)	
Female	42 (14.6)	9 (9.8)	33 (16.9)	
Transgender	4 (1.4)	1 (1.1)	3 (1.5)	
Genderqueer/Non-binary	6 (2.1)	3 (3.3)	3 (1.5)	
Median distance from clinic in miles (IQR)	4.8 (2.5-11.8)	5.8 (2.5-10.4)	4.7 (2.5-12.4)	0.84
VL<50cpm at switch (%)	252 (87.8)	81 (88.0)	171 (87.7)	0.93
Median CD4 count at switch (IQR)	710 (505-934)	707 (508-897)	719 (505-943)	0.98
Active substance use (%)	45 (15.7)	17 (18.5)	28 (14.4)	0.37
Oral lead-in (%)	127 (44.3)	44 (47.8)	83 (42.6)	0.40
CAB dosing regimen (%)				0.31
Every 2 month only	225 (78.4)	70 (76.1)	155 (79.5)	
Every 1 month only	1 (0.3)	1 (1.1)	0 (0.0)	
Switched from every 1 month to 2 month	61 (21.3)	21 (22.8)	40 (20.5)	
At least one pre-switch no-show (%)	136 (47.4)	59 (64.1)	77 (39.5)	<0.0001
Late injection (%)	44 (15.3)	28 (30.4)	16 (8.2)	<0.0001
Detectable VL after switch (%)				
>50cpm	50 (17.4)	15 (16.3)	35 (17.9)	0.73
>200cpm	14 (4.9)	5 (5.4)	9 (4.6)	0.76
Virologic Failure	3 (1.0)	1 (1.1)	2 (1.0)	0.96

IQR=interquartile range, SAB=sex assigned at birth, CAB=cabotegravir, cpm=copies/mL

- Younger age [HR 0.97 (95%CI 0.95-0.98)] and at least one pre-switch office visit no-show [HR 2.03 (1.32-3.12)] associated with at least one injection visit no-show
- Incident rate of injection visit no-shows in those without a pre-switch no-show was 3.3/100 visits and in those with a pre-switch no show was 9.99/100 visits for IRR of 0.33 (0.23-0.47), p<0.0001

Results (cont'd)

Figure 1: Time-to-event analysis comparing probability of attendance to CAB/RPV injection visits in those with and without at least one office visit no-show in the year prior to switching



Late Injections

- Number of late injections ranged from 1-3 per patient and from 1-59 days late
  - 42/44 were late less than 14 days, 13/44 used an oral bridge
- In the univariable analysis, those with at least one late injection (n=44) were younger, median age 38 vs. 43 (p=0.049) and less likely to be female, 2.3% vs. 17.3% (p=0.01). There was no significant difference in pre-switch no-shows between those with and without a late injection, 56.8% vs. 45.7%
- After controlling for age, variables independently associated with late injections were male SAB [HR 9.18 (1.26-66.9)] and younger age [HR 0.98 (0.95-1.0)]
- No relationship between late injection visits and having a detectable viral load after switching to IM CAB/RPV or virologic failure

Discussion

- Missed clinic visits in the year prior to switching to LAI CAB/RPV is associated with at least one no-show to injection visits, however not associated with late injections.
  - Impact of staff efforts to reschedule missed injections
- Trend toward those that are younger age having increased risk of both no-show injection visits and late injections
- Those with missed injection visits were more likely to have late injections, however missed or late injections were not associated with detectable VL or virologic failure
- Need to consider resources needed to manage no-show injections visits, including outreach, scheduling, and appointment availability as scale of LAI increases

References

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3. Senison MG, Brunet L, Hsu RK, et al. Cabotegravir+rilpivirine long-acting injections for HIV treatment in the US: Real world data from the OPERA cohort. *Infect Dis Ther.* 2023;12:2807-2817.