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Low-Level Viremia & Risk Factors for Failure on Long Acting Cabotegravir-Rilpivirine (LA CAB/RPV)

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BACKGROUND

- LA CAB/RPV has transformed the HIV treatment paradigm as an alternative to daily oral antiretroviral therapy (ART).
- Potential challenges with CAB/RPV include therapeutic failures characterized by virologic failure and/or the development of resistance-associated mutations (RAMs).

METHODS

- Single-center, retrospective cohort study of adults with HIV-1 receiving LA CAB/RPV via an Infusion Center-Based Administration Model (ICBM) between 3/1/2022 and 12/31/2023

Primary Outcomes
- Describe clinical outcomes among LA CAB/RPV recipients
  - Risk factors associated with virologic failure
  - Incidence of low-level viremia (LLV; HIV viral load >40 copies/mL and <200 copies/mL on 2 or more consecutive occasions

Secondary Outcomes
- Describe clinical characteristics among LA CAB/RPV recipients with LLV
- Describe the clinical management of LLV in the ICBM

DEMOGRAPHICS

Demographics

Patients Referred for CAB/RPV Initiation, number	115
Median Age, years (range)	40 (21 to 69)
Gender Identity, number (%)	
Cis-Male	79 (69%)
Cis-Female	26 (23%)
Transgender/Non-binary	2 (2%)
Not Reported	8 (7%)
Race, number (%)	
Asian	2 (2%)
Black/African American	59 (51%)
White	47 (41%)
More than 1 Reported Race	2 (2%)
Not Reported	5 (4%)
Ethnicity, number (%)	
Hispanic or Latino	7 (6%)
Not Hispanic or Latino	106 (92%)
Not Reported	2 (2%)
Insurance Type at CAB/RPV Initiation, number (%)	
Medicaid	46 (40%)
Medicare	8 (7%)
AIDS Drug Assistance Program (ADAP)	10 (9%)
Private	63 (55%)
Patient Assistance Program	0 (0%)

RESULTS

Reasons For Not Initiating LA CAB/RPV After Referral

Patients, number	24
Insurance Barriers, number (%)	4 (17%)
Participant Decision to Continue Oral Treatment, number (%)	5 (21%)
Moved Before First Injection, number (%)	2 (8%)
Could Not Contact for Follow Up, number (%)	7 (29%)
Requested Lab Work Not Completed, number (%)	1 (4%)
Evidence of Prior RPV Resistance, number (%)	1 (4%)
Other, number (%)	4 (17%)

Recognized Risk Factors for Virologic Failure on LA CAB/RPV

	Referred for CAB/RPV N (%)	Started CAB/RPV N (%)
Total Number of Participants	115	91
HIV Subtype A	1 (1%)	0 (0%)
RPV Resistance Associated Mutations	1 (1%)	0 (0%)
Body Mass Index ≥30 kg/m²	35 (30%)	26 (29%)
>1 Risk Factor	1 (1%)	0 (0%)

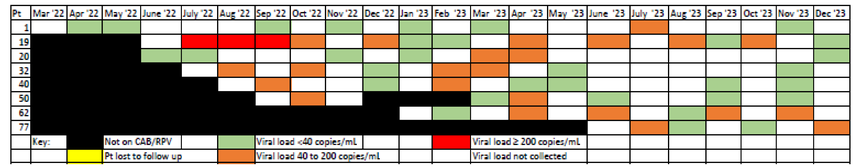
Participant Clinical Characteristics

	Started LA CAB/RPV	Viral Load >40 copies/mL During LA CAB/RPV Treatment	Viral Blip (isolated viral load >40 and <200 copies/mL) During LA CAB/RPV Treatment	LLV During LA CAB/RPV Treatment
Patients, number	91	8	4	4
Median Age, years (range)	40 (21 - 69)	41 (33 - 68)	46 (35 - 68)	37 (33 - 45)
Gender Identity, number (%)				
Cis-Male	79 (87%)	6 (75%)	3 (75%)	3 (75%)
Cis-Female	26 (29%)	1 (12%)	0 (0%)	1 (25%)
Transgender/Non-binary	2 (2%)	1 (12%)	1 (25%)	0 (0%)
Not Reported	8 (9%)	0 (0%)	0 (0%)	0 (0%)
Race, **number (%)**				
Asian	2 (2%)	0 (0%)	0 (0%)	0 (0%)
Black/African American	59 (65%)	6 (75%)	4 (100%)	2 (50%)
White	47 (52%)	2 (25%)	0 (0%)	2 (50%)
More than 1 Reported Race	2 (2%)	0 (0%)	0 (0%)	0 (0%)
Not Reported	5 (5%)	0 (0%)	0 (0%)	0 (0%)
Body Mass Index, number (%)				
<25 kg/m²	36 (40%)	5 (62%)	3 (75%)	2 (50%)
25-30 kg/m²	44 (48%)	1 (12%)	0 (0%)	1 (25%)
30-35 kg/m²	19 (21%)	1 (12%)	1 (25%)	0 (0%)
>35 kg/m²	16 (18%)	1 (12%)	0 (0%)	1 (25%)
HIV Genotype Available for Review, number (%)	69 (60%)	7 (87%)	3 (75%)	4 (100%)
HIV Subtype A	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Presence of RPV RAMS	0 (0%)	0 (0%)	0 (0%)	0 (0%)
CD4 Nadir, average (range)	281 (0 - 736)	125 (19 - 292)	59 (19 - 99)	159 (85 - 292)
CD4 Count at The Time of Switch, number (range)	718 (40 - 2068)	535 (311 - 877)	494 (392 - 877)	577 (328 - 887)
Average Prior ART Regimens, number (range)	2.3 (1 - 6)	2.5 (1 - 5)	3.5 (2 - 5)	1.5 (1 - 2)
ART at the Time of Switch to CAB/RPV, number (%) †				
BIC/TAF/FTC	60 (66%)	5 (62%)	2 (50%)	3 (75%)
DRV/c/TAF/FTC	1 (1%)	0 (0%)	0 (0%)	0 (0%)
DTG/ABC/3TC	16 (21%)	0 (0%)	0 (0%)	0 (0%)
DTG/RPV	3 (3%)	0 (0%)	0 (0%)	0 (0%)
DTG/3TC	5 (5%)	0 (0%)	0 (0%)	0 (0%)
DTG + TAF/FTC	3 (3%)	1 (12%)	1 (25%)	0 (0%)
EVG/c/TAF/FTC	10 (11%)	1 (12%)	0 (0%)	1 (25%)
RPV/TAF/FTC	7 (8%)	1 (12%)	1 (25%)	0 (0%)
RPV/TDF/FTC	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Other	8 (9%)	0 (0%)	0 (0%)	0 (0%)
Viral Load >40 and <200 in Year Preceding First CAB/RPV Dose, number (%)	8 (9%)	5 (62%)	3 (75%)	2 (50%)
Viral Load >40 at LA CAB/RPV Start, number (%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)
LA CAB/RPV Missed Injection(s) All With Appropriate Oral Bridge	15 (16%)	3 (37%)	2 (50%)	1 (25%)
LA CAB/RPV Any Missed Injection(s) Without Oral Bridge	15 (16%)	1 (12%)	1 (25%)	0 (0%)

LA CAB/RPV Participant Outcomes (N=91)

Any Detectable Viral Load, number (%)	8 (9%)
Low-Level Viremia, number (%)	4 (4%)
Any Viral Load >200 copies/mL, number (%)	1 (1%)
Treatment Failure, number (%)	0 (0%)

Low-level viremia & blips among LA CAB/RPV Recipients



Management of Viremia

Patient	Management Strategy
1	No changes made to standard care*
19	Injections switched to LA CAB/RPV 400/600 mg every 4 weeks in August 2022. DRV/c/FTC/TAF added August 2022 through October 2022. Switched to LA CAB/RPV 600/900 mg every 8 weeks in March 2023. Continued frequent viral load monitoring throughout treatment period
20	No changes made
32	Continued frequent viral load monitoring throughout treatment period
40	Continued frequent viral load monitoring throughout treatment period
50	Pause in treatment due to insurance barriers. Continued frequent viral load monitoring throughout treatment period
62	No changes made to standard care
77	No changes made to standard care

*Standard care at OSUWMC IBCM: LA CAB/RPV 600/900mg administered every 8 weeks ± 7 day window. HIV viral load monitoring with every injection for first year of treatment.

CONCLUSION & FUTURE SCOPE

- History of LLV or viral blips during oral ART use in the year prior to LA CAB/RPV were observed more frequently among patients with LLV or viral blips during LA CAB/RPV treatment.
- Low-level viremia was not associated with virologic failure among participants treated with LA CAB/RPV in clinical practice.
- Clinicians should have awareness of and develop monitoring processes for the early detection of LA CAB/RPV therapeutic failures.
- Further research is needed to identify those at risk of virologic failure and to develop optimal prevention strategies.

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