

Prevalence and predictors of dolutegravir resistance among children and adolescents living with HIV with virologic failure in Mid-Western Uganda, 2021-2025

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(poster #25)



BACKGROUND

The World Health Organisation (WHO) recommends HIV drug-resistance (HIVDR) surveillance to ensure HIV treatment programs remain effective.

The **2022** Uganda Antiretroviral therapy (ART) guidelines recommend **HIVDR testing** for clients with two consecutive viral-load (VL) results $\geq 1,000$ copies/mL.

The **2021–2022** Uganda national HIVDR surveillance 'CADRE' reported a prevalence of **dolutegravir (DTG) resistance of 6.6%** among children and adolescents living with HIV (CALHIV).

However, there are limited regional data on the prevalence and associated client factors in Mid-Western Uganda, a region with a high burden of undiagnosed CALHIV, poor health-seeking practices/behaviour, and refugee influx.

METHOD

1 STUDY DESIGN & SETTING

- Retrospective analysis
- 40 ART clinics, Mid-Western Uganda
- Children & Adolescents Living with HIV (CALHIV), 0–19 years

2 STUDY POPULATION

- CALHIV with virologic failure
- Two consecutive viral loads $\geq 1,000$ copies/mL
- HIVDR results available January 2021 - March 2025

3 DATA COLLECTED

- ART treatment history
- Viral load profile
- Adherence barriers
- Clinical assessments
- Resistance-associated mutations (RAMs)

4 DTG RESISTANCE DEFINITION

- Stanford HIVDR Database
- Penalty score ≥ 30
- Intermediate–High resistance

5 STATISTICAL ANALYSIS

- Logistic regression to identify factors associated with DTG resistance
- Adjusted Odds Ratios (aORs) estimated using Stata 14
- Statistical significance: $p < 0.05$

RESULTS

Figure 1: HIVDR Cascade summary

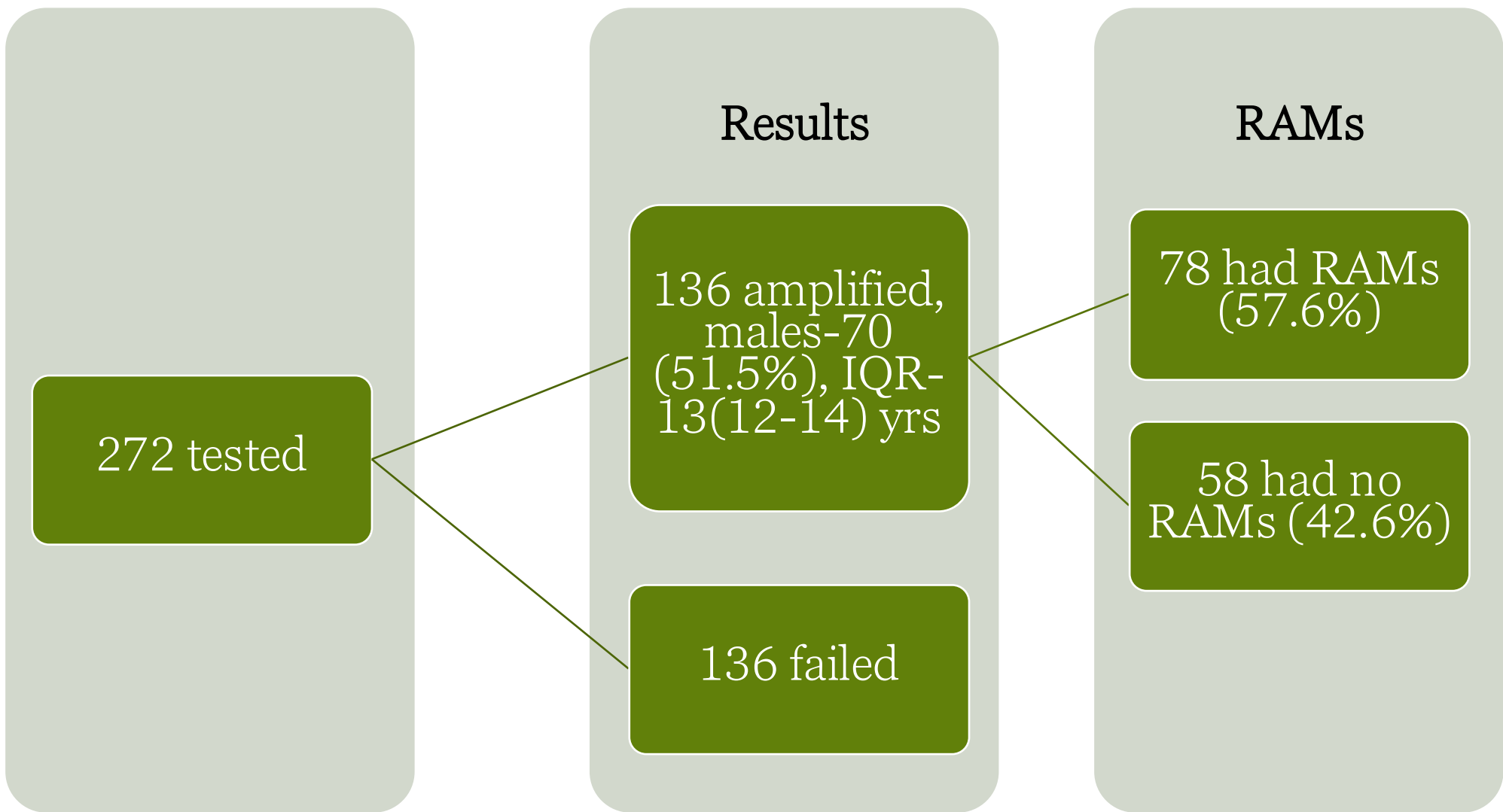


Table 1: Unadjusted and adjusted effects of participant characteristics on DTG resistance

Characteristic	% (n/N)	crude OR (95% CI)	p-value	aOR (95% CI)	p-value
Overall	17.7 (24/136)	N/A		N/A	
Sex					
Female	9.1 (6/66)	1	0.015	1	0.036
Male	25.7 (18/70)	3.46 (1.28-9.37)		3.19 (1.08-9.45)	
Age groups (years)					
0-12	25.0 (13/52)	1	0.081	1	0.435
13-19	13.1 (11/84)	0.45 (0.19-1.10)		0.67(0.24-1.84)	
NRTI resistance					
No	10.4 (11/106)	1	<0.001	1	<0.001
Yes	43.3 (13/30)	6.60 (2.54-17.15)		6.29 (2.26-17.55)	
Level of facility					
Lower (II/III)	22.8 (13/57)	1	0.184	1	0.164
High (IV/V)	13.9 (11/79)	0.55 (0.23-1.33)		0.49(0.18-1.34)	
History of TB treatment					
No	16.2 (17/105)	1	0.414	1	0.36
Yes	22.6 (7/31)	1.51 (0.56-4.06)		1.23(0.39-3.88)	

Figure 2: Prevalence of RAMs

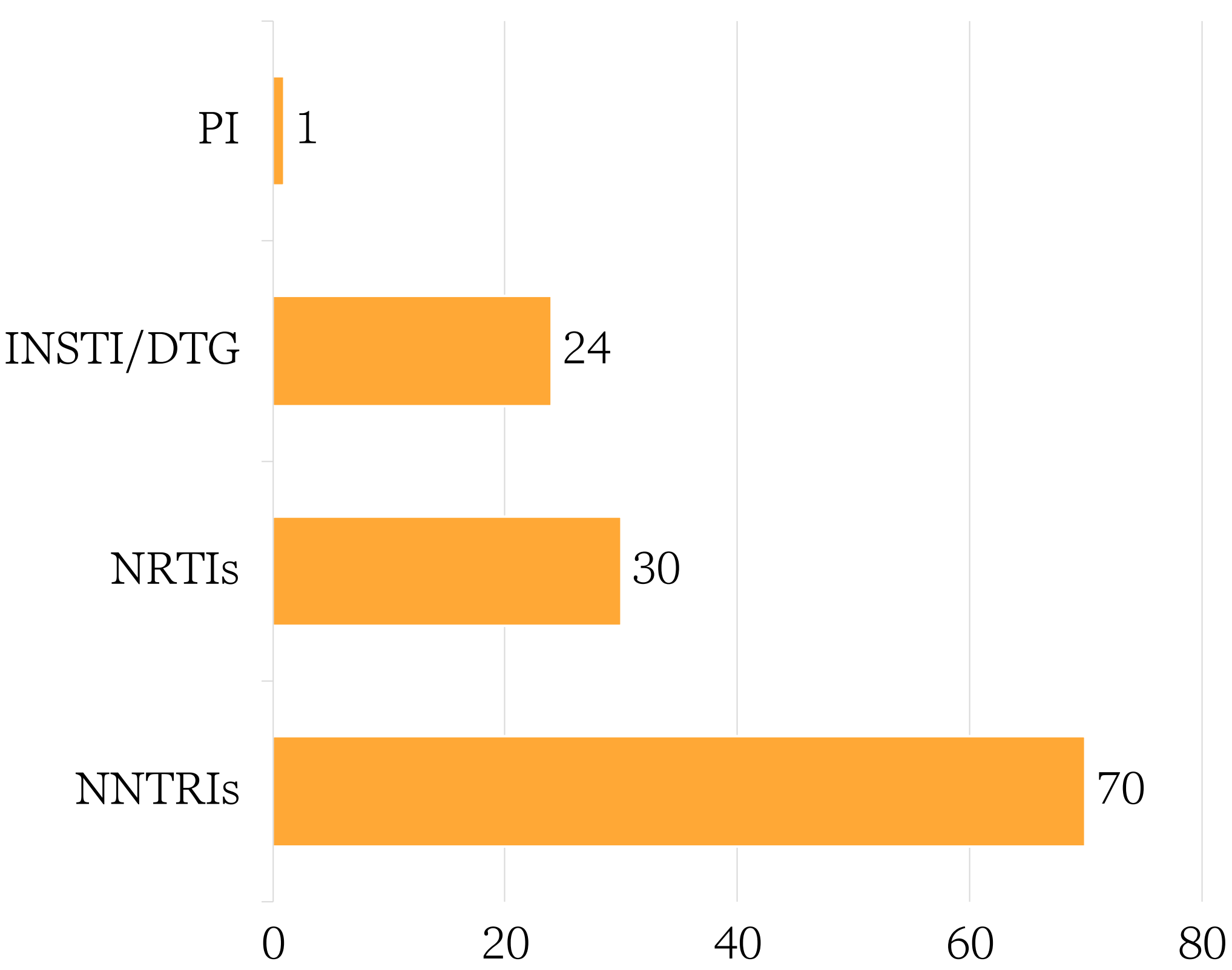
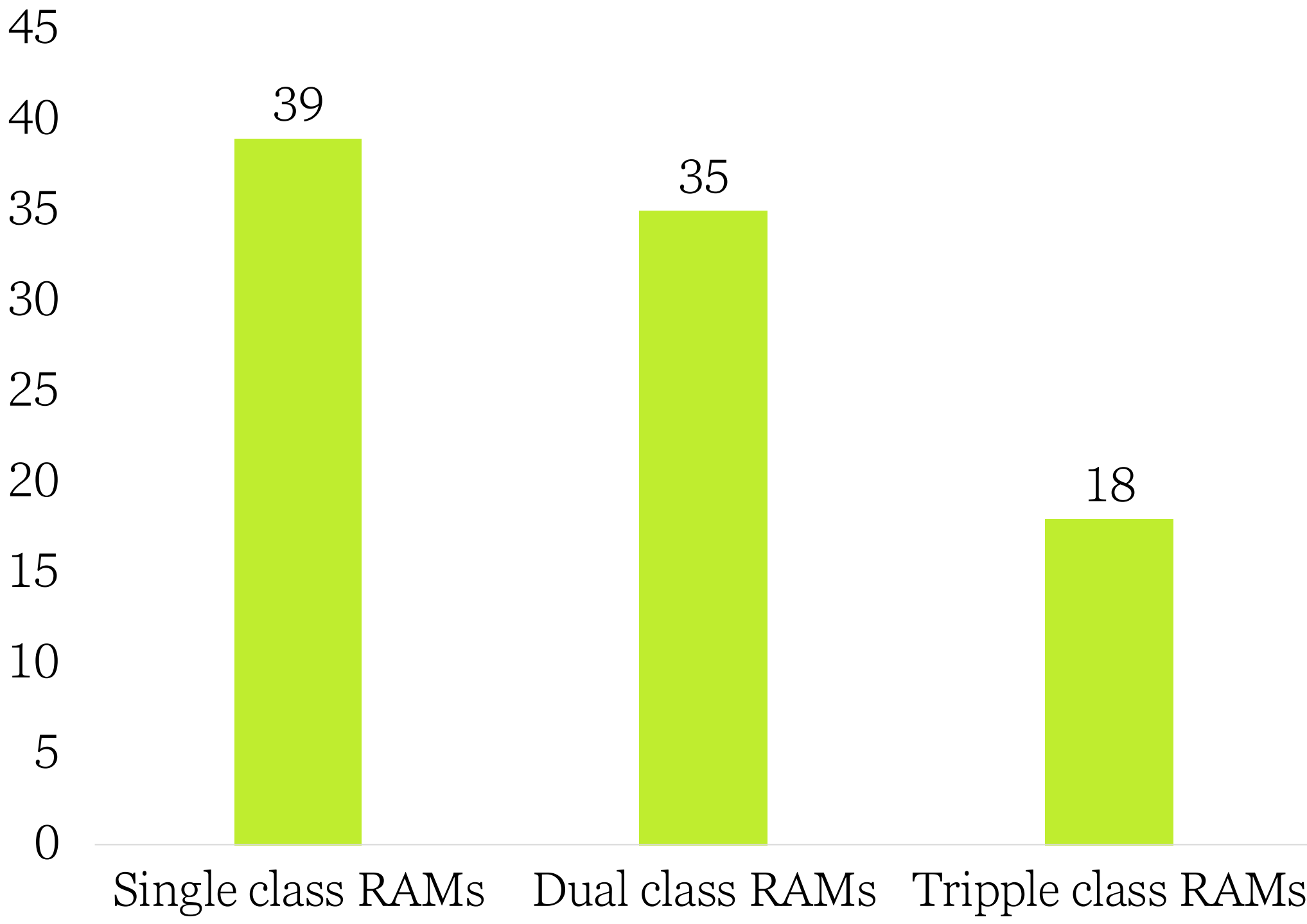


Figure 3: Drug class RAMs



CONCLUSION

The prevalence of DTG resistance among CALHIV with virologic failure in Mid-Western Uganda was high, higher among males and those with NRTI resistance. Achieving favourable treatment outcomes in this population will necessitate strengthening adherence support, timely VL monitoring and regimen optimisation.

ACKNOWLEDGEMENT

Ministry of Health- Uganda
US CDC- Uganda
Baylor Foundation- Uganda

