



**UNMET BIOMEDICAL NEEDS AMONG ADOLESCENTS IN TANZANIA  
: A ROAD TOWARDS ENDING ADOLESCENT HIV EPIDEMIC**

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# OUTLINE

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- 1 **Introduction**
- 2 **The cascade of HIV care for adolescents and young adults**
- 3 **HIV drug resistance surveillance**
- 4 **The unmet needs of adolescents and young adults**
- 5 **Conclusion and recommendations**
- 6 **Acknowledgment**





# INTRODUCTION

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- East and Southern Africa is home to 1.74 million adolescents living with HIV (ALHIV); 60% of this population globally
- AIDS is the leading cause of adolescent mortality in the region
- In 2019 NACP reported the 90-90-90 cascade for PLHIV in Tanzania at 78%-78%-88%
- Despite the progress made in response to HIV in Tanzania, none of the 2020 targets were achieved, this translates to:
  - The need to understand what works for scale-up
  - Identify unmet needs
  - Need for evaluation of on-going biomedical interventions/implementation research
  - Review how adolescent and youth friendly services have contributed towards improved ART outcomes





# HIV Cascade of care for Adolescents and Young Adults

## HIV-infected AYA aged 10-24 years enrolled in Tanzania National ART program (January 2018 and December 2020)

### HIV test (diagnosis)

96,960

(82.2%) females

22,322 (28.0%)  
pregnant

15-19yrs ↑  
proportion of  
pregnancies

### ART initiation rate

98% were  
started on  
ART within 1<sup>st</sup>  
month

(N=95,020)

### Viral suppression (VS)

27,340 (40.3%) had  
VS within 12  
months

\*(N=67,689)

\*tested for VL





# HIV Drug Resistance surveillance in Tanzania

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- Tanzania had first acquired drug resistance (ADR) surveillance in 2020
- ADR occurs under selective pressure caused by high viral load
- Drug resistance surveillance and susceptibility scores inform strategies for the implementation of effective ART
- Surveillance is key in addressing HIVDR in order to sustain the progress towards the goal of ending the HIV epidemic by 2030
- Lack of routine HIV DR testing
  - Limited to ART failure of PI based regimen





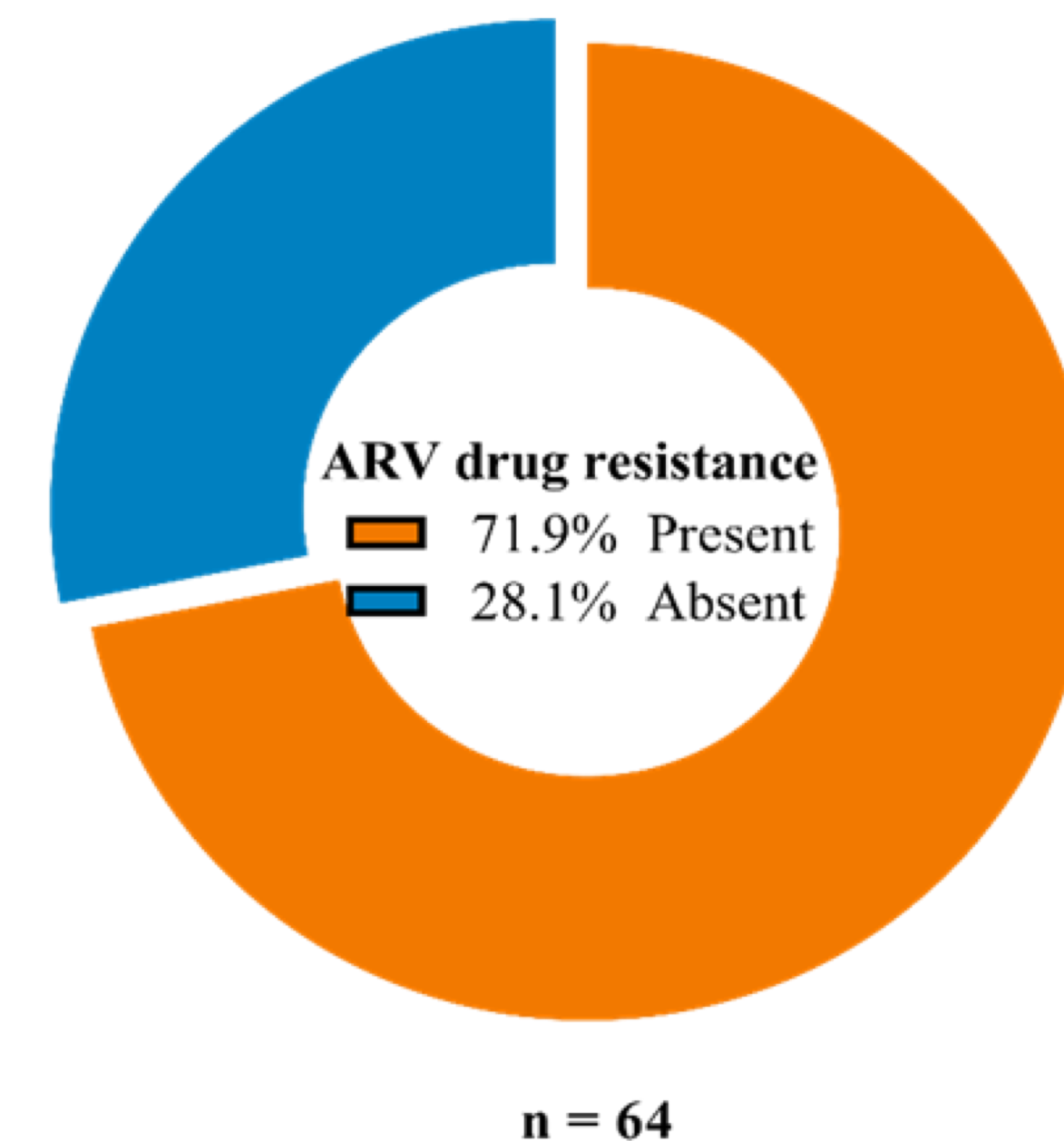
# HIV drug resistance among adolescents and young adults in Tanzania

## Methods

- A cross sectional study of AYA 10-24 yrs nested in a national ADR surveillance
- Study sites: 36 facilities using a two-stage cluster design
- Study period: July - October 2020
- WHO accredited laboratory in Canada for genotyping.
  - DBS samples
- HIV drug resistance was predicted using the Stanford HIV db algorithm.

## Results

- A total of 578 who had been on ART for 9-15 months and  $\geq 36$  months were analyzed
- 8 excluded due to invalid results
- 64 participants had  $VL \geq 1000$ cp/ml were genotyped



# Results: characteristics of study participants (N=570)

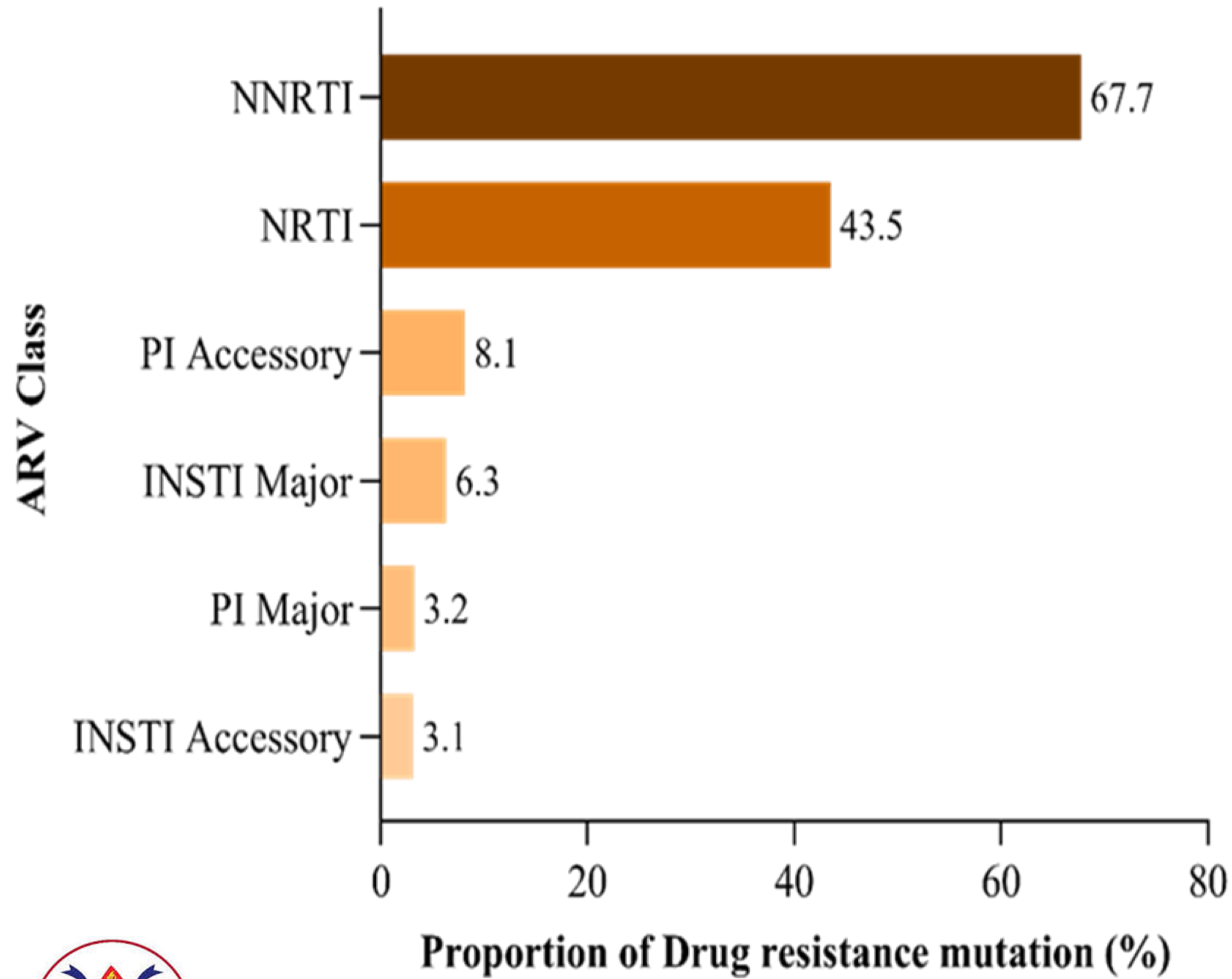
Variable	Frequency (n)	Percent (%)
Age group (years)		
Adolescents (10 – 19)	535	92.6
Youth (20 – 24)	43	7.4
Sex		
Male	260	45.0
Female	318	55.0
Education		
No formal education	209	36.2
Primary education	324	56.1
O - level	43	7.4
A - level	1	0.2
Post-secondary	1	0.2
Median duration on ART in months (IQR)	66.0 (37.0, 100.0)	
ART regimen		
NNRTI based	15	2.8
PI based	68	12.9
INSTI based	444	84.3
HIV Viral Load (copies/mL)		
Suppressed (< 1000)	506	88.8
Non suppression ( $\geq$ 1000)	64	11.2



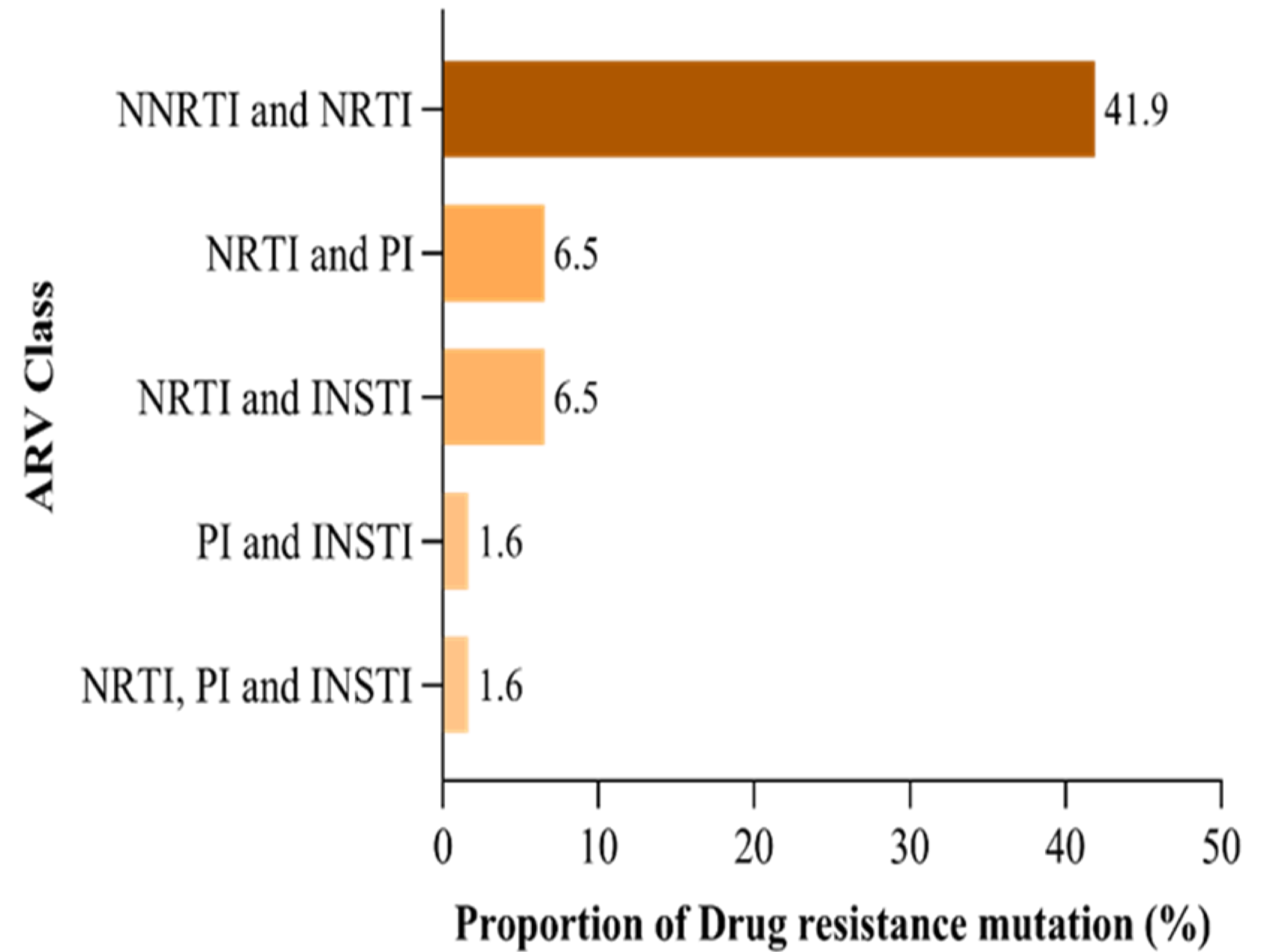


# Results : drug resistance by ARV classes

**Fig 1: Frequency of Drug resistance mutations by ARV classes**



**Fig 2: Proportion of dual class resistance by ARV classes**



# Factors associated with ADR among AYA

Variable	Anti-retroviral drug resistance		P - value
	Present (%)	Absent (%)	
Age group (years)			
10 – 14	39 (72.2)	15 (27.8)	1.000
15 – 24	7 (70.0)	3 (30.0)	
Gender			
Male	25 (83.3)	5 (16.7)	0.093
Female	21 (61.8)	13 (38.2)	
Education			
None	21 (75.0)	7 (25.0)	0.798
Primary	20 (71.4)	8 (28.6)	
Secondary	5 (62.5)	3 (37.5)	
Duration on ART (months)			
11 – 15	4 (57.1)	3 (42.9)	0.362
16 – 35	4 (57.1)	3 (42.9)	
>35	38 (76.0)	12 (24.0)	
Number of regimen change			
< 4	17 (63.0)	10 (37.0)	0.260
≥ 4	29 (78.4)	8 (21.6)	
Experienced side effects			
Yes	7 (87.5)	1 (12.5)	0.424
No	39 (69.6)	17 (30.4)	
Initial HIV viral load status			
Suppressed	12 (52.2)	11 (47.8)	<b>0.019</b>
Non-suppressed	34 (82.9)	7 (17.1)	
Latest CD4 count			
< 350	9 (81.8)	2 (18.2)	0.714
≥ 350	37 (69.8)	16 (30.2)	
Disclosure*			
Yes	35 (68.6)	16 (31.4)	0.307
No	5 (100)	0 (0.0)	
Adherence*			
Good	30 (70)	11 (26.8)	0.741
Poor	10 (66.7)	5 (33.3)	





## HIVDR surveillance – key findings

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- NRTI drug resistant mutations (DRMs) found in 44%; a backbone ART class
  - high prevalence suggests an increased risk for INSTI monotherapy
  - 6.3 % had INSTI DRMs
- First HIV viral load  $\geq 1000$ cp/ml - a major risk factor for development of DRMs
  - A call for optimal VL monitoring for early detection of ART virologic failure



## The unmet biomedical needs

- Lack of routine genotypic testing to young populations after VL failure
  - Increases chances for ART failure & transmission to peers
- Barriers to reach and sustain VS include drug resistance
  - limited evidence for AYA population (transmitted/pre treatment drug resistance)
- Sub-optimal VL monitoring
  - optimal prevention to emergence of ADR





## Recommendations

- Routine HIVDR genotyping among AYA with high viremia
  - select effective ART
- A need for improvement in uptake of VL testing
  - HIVDR stewardship
  - HIV transmission risk
- Review dedicated care for AYA friendly services versus research/implementation findings is paramount
  - Is implementation producing results? or showing significant improvement
  - consider to scale up the right biomedical interventions to achieve VS



# Acknowledgement

● **MUHAS**  
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● **NACP**



● **MNH**



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