Variables Associated with Lack of Suppression on Antiretroviral Therapy (ART) Among People Living with Human Immunodeficiency Virus (PLWH) in the US

Trio Health

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1. BACKGROUND

This retrospective observational study evaluated characteristics associated with viral suppression among PLWH receiving care at 10 US community health centers.

2. METHODS

PLWH >18 years old on a new ART between January 2015 - September 2019 with viral load at regimen prescription and ≥6 months of prior ART history were selected from Trio Health HIV Research Network database. Baseline (index date) was start of the first qualified regimen.

Multivariable logistic regression with binary outcome (suppressed viral load ≤50 cells/ml) was used to estimate variable association with viral suppression at 9-15 months after baseline (n=13,215).

Covariates included: baseline viral suppression status (suppressed viral load ≤50 cells/ml), gender, race, age, payer, region (South vs. non-South), baseline single vs. multi-tablet regimen, and switch status from baseline regimen. Multicollinearity was not present.

Regions were defined per US Census and sample availability (South included: TX, FL; Non-South: IL, NM, CA, PA).

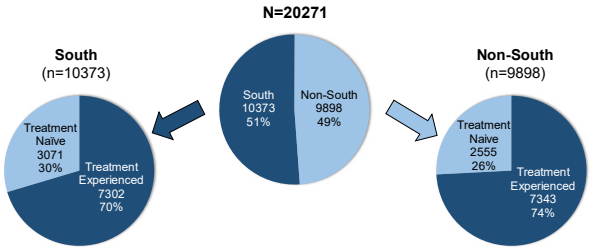
TABLE 1: DEMOGRAPHICS AND BASELINE CLINICAL CHARACTERISTICS

n (%) unless specified		Treatment Naïve (N=5626)			Treatment Experienced (N=14645)		
		Southern (n=3071)	Non-Southern (n=2555)	p-value	Southern (n=7302)	Non-Southern (n=7343)	p-value
Age, mean (SD)		39.1 (12)	37.4 (11.9)	**<0.001**	47.4 (11.9)	46.6 (12.1)	**<0.001**
Age >50		651 (21)	448 (18)	**0.001**	3160 (43)	3091 (42)	0.148
Male		2290 (75)	2005 (78)	**<0.001**	5748 (79)	5877 (80)	**<0.001**
Race	White	1461 (48)	1035 (41)	**<0.001**	3934 (54)	3946 (54)	**<0.001**
	Black	1218 (40)	990 (39)		2256 (31)	1920 (26)	
	Other	223 (7)	140 (5)		493 (7)	402 (5)	
	Unknown	169 (6)	390 (15)		619 (8)	1075 (15)	
Payer Type	Commercial	1014 (33)	1618 (63)	**<0.001**	3543 (49)	5296 (72)	**<0.001**
	Medicare	171 (6)	186 (7)		1177 (16)	988 (13)	
	Medicaid	121 (4)	243 (10)		306 (4)	397 (5)	
	Other	648 (21)	477 (19)		899 (12)	622 (8)	
	Unknown	1117 (36)	31 (1)		1377 (19)	40 (1)	
BMI	Underweight	132 (5) n=2697	84 (4) n=2394	**<0.001**	181 (3) n=6574	127 (2) n=7017	**<0.001**
	Normal	1189 (44) n=2697	1156 (48) n=2394		2099 (32) n=6574	2665 (38) n=7017	
	Overweight	825 (31) n=2697	758 (32) n=2394		2475 (38) n=6574	2680 (38) n=7017	
	Obese	551 (20) n=2697	396 (17) n=2394		1819 (28) n=6574	1545 (22) n=7017	
CD4 <200 cells/ml		488 (22) n=2177	308 (27) n=1161	**0.008**	343 (6) n=5885	262 (5) n=4854	0.335
eGFR	<60	82 (3) n=2516	79 (3) n=2483	**0.004**	636 (10) n=6278	629 (9) n=7222	**<0.001**
	60-89	592 (24) n=2516	489 (20) n=2483		2676 (43) n=6278	2759 (38) n=7222	
	90+	1842 (73) n=2516	1915 (77) n=2483		2966 (47) n=6278	3834 (53) n=7222	
Suppressed at baseline		0 (0)	0 (0)	N/A	6083 (83)	6686 (91)	**<0.001**
Cardiovascular Disease		534 (17)	1077 (42)	**<0.001**	2330 (32)	3411 (46)	**<0.001**
Diabetes		64 (2)	91 (4)	**0.001**	542 (7)	618 (8)	**0.026**
Hypertension		331 (11)	281 (11)	0.792	1672 (23)	2035 (28)	**<0.001**

3. RESULTS

Of 20,271 patients, 10,373 (51%) were treated in South (41% not suppressed at baseline including 30% treatment-naive) and 9,898 (49%) in non-South (32% not suppressed including 26% treatment-naive) [Figure 1].

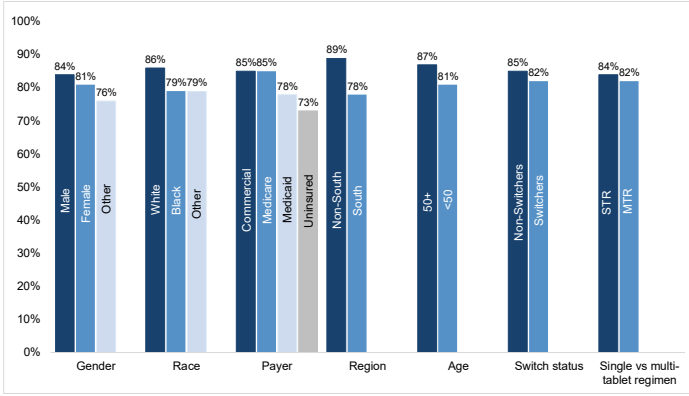
FIGURE 1. PATIENT DISPOSITION



Baseline characteristics of treatment-naïve and treatment-experienced groups differed by region: patients in the South had a lower proportion of commercially insured, patients with normal eGFR (90+), suppressed at baseline, and higher proportion of black and obese patients [Table 1].

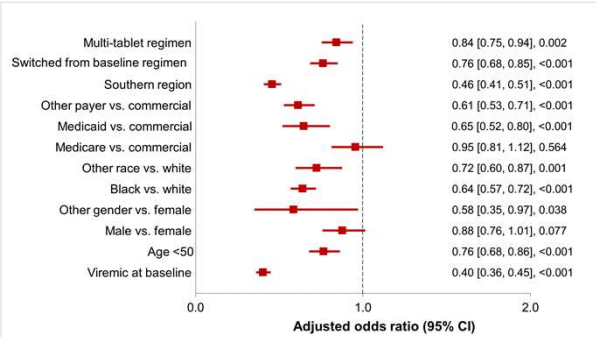
The following groups had significantly lower (p<0.001) viral suppression rates at 9-15 months: females (81%) v males (84%); black (79%) v white (86%) and other known race (79%); on Medicaid (78%) or uninsured (73%) v commercial or Medicare insurance (both 85%); treated in South (78%) v non-South (89%); age >50 (81%) v 50+ (87%); switchers from baseline regimen (82%) v non-switchers (85%); on multi-tablet regimen (82%) v single-tablet (84%) [Figure 2].

FIGURE 2. SUPPRESSED AT 9-15 MONTHS



In multivariable analysis patients less likely to be suppressed at 9-15 months were: age <50 adjusted odds ratio (aOR)=0.76 (0.68-0.86), unspecified gender v female aOR=0.58 (0.35-0.97), black v white aOR=0.64 (0.67-0.72), other race (Asian, etc.) v white aOR=0.72 (0.60-0.87), insured by Medicaid v commercially aOR=0.65 (0.52-0.80), uninsured v commercially insured aOR=0.61 (0.53-0.71), treated in South aOR=0.46 (0.41-0.51), switched from baseline regimen aOR=0.76 (0.68-.085), treated with multi-tablet regimen v single-tablet aOR=0.84 (0.75-0.94), viremic at baseline aOR=0.40 (0.36-0.45) [Figure 3].

FIGURE 3. PREDICTORS OF SUPPRESSION AT 9-15 MONTHS



Other race=Asian, American Indian or Alaska native, native Hawaiian or other Pacific islander

4. LIMITATIONS

Limitations of this study are typical of retrospective observational studies: subjects were non-randomized, observers were non-blinded, and some subgroups were small in sample size.

Viral suppression rates since baseline were evaluated regardless of regimen.

Data was limited to treatment centers captured in the Trio database and may not represent treatment patterns and patient characteristics in the entire US. All patients were treated at federally qualified health centers.

5. CONCLUSION

The study highlighted lower rates of viral suppression among younger, black, or other non-white patients, those treated in the South, on Medicaid or uninsured, on multi-tablet regimens, even after accounting for covariates.

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