Regional and Racial Disparities in Response to Antiretroviral Therapy (ART) Among People Living with Human Immunodeficiency Virus (PLWH)

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1. BACKGROUND

This study evaluated differences in viral suppression by race and region among PLWH in care at 10 community practices.

2. METHODS

PLWH (≥18 years) starting new ART between Jan'15-Sept'19 with viral load recorded at regimen prescription and ≥6 months (mo) of prior history were selected from Trio Health HIV EMR database. Baseline (index date) was start of the first qualified regimen.

Logistic regression was used to estimate association of covariates with outcome "viremic" (viral load >50 cells/ml) among those with viral load recorded 12-15 mo after baseline. Sensitivity analyses were conducted using viral loads at 9-15 mo, in patients on their baseline regimens for ≥12 mo, and patients with dispensing data. Covariates: baseline suppression, gender, race, age, payer, region (South vs non-South), baseline single vs multi-tablet regimen (STR vs MTR), and switch status from baseline regimen. Multicollinearity was not present (variance inflation factor (VIF)<2).

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

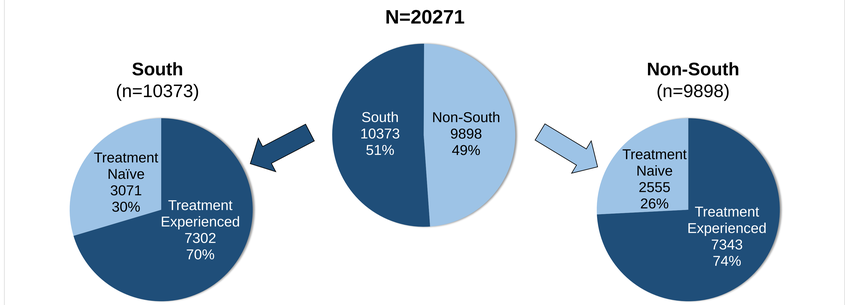
TABLE 1: DEMOGRAPHICS AND BASELINE CLINICAL CHARACTERISTICS

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 20271 PLWH, 10373 (51%) were treated in South (41% not suppressed at baseline including 30% treatment-naïve) and 9898 (49%) in non-South (32% not suppressed including 26% treatment-naïve) [Figure 1].

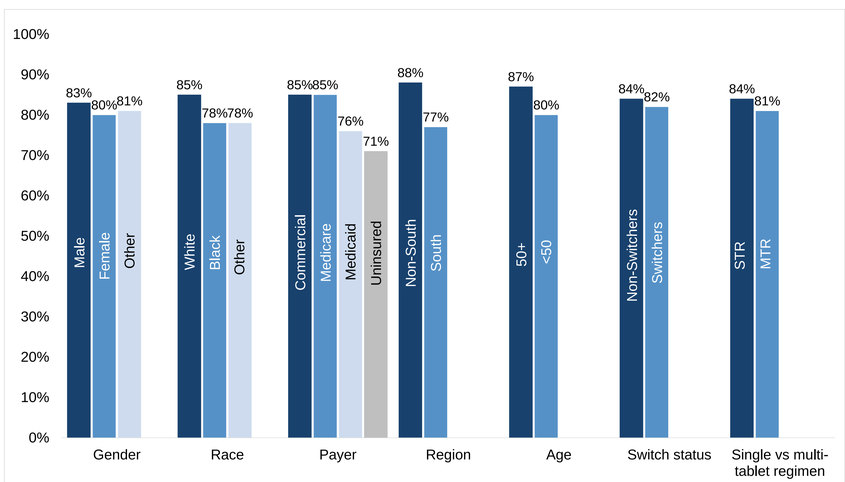
FIGURE 1. PATIENT DISPOSITION



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].

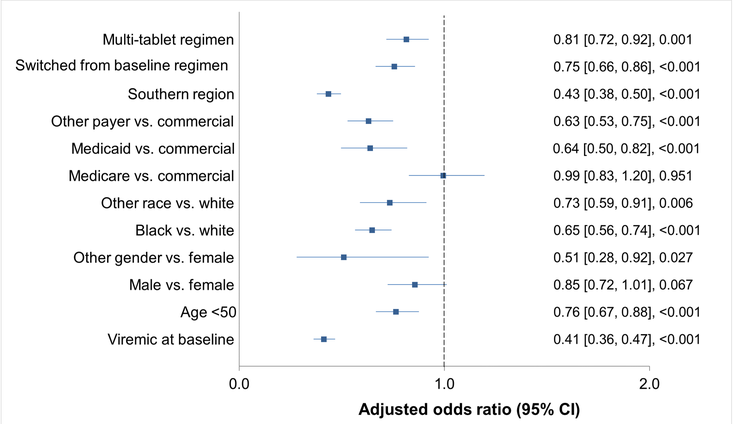
The following groups had higher suppression rates at 12-15 months: males (83%) vs females (80%) p=0.003; white (85%) vs black (78%) and other known race (78%) p<0.001; insured by commercial or Medicare insurance (both 85%) vs Medicaid (76%) or uninsured (71%) p<0.001; treated in non-South (88%) vs South (77%) p<0.001; age ≥50 (87%) vs <50 (80%) p<0.001, those who did not switch from baseline regimen (84%) vs switchers (82%) p<0.001; on STR (84%) vs MTR (81%) p<0.001 [Figure 2].

FIGURE 2. SUPPRESSED AT 12-15 MONTHS



In logistic regression, patients less likely to be suppressed at 12-15 mo were: <50 years at baseline vs ≥50 adjusted odds ratio (aOR)=0.76 (0.67-0.88), unspecified gender vs female aOR=0.51 (0.28-0.92), black vs white aOR=0.65 (0.56-0.74), other race (Asian, etc.) vs white aOR=0.73 (0.59-0.91), insured by Medicaid vs commercially aOR=0.64 (0.50-0.82), uninsured vs commercially insured aOR=0.63 (0.53-0.75), treated in South aOR=0.43 (0.38-0.50), switched from baseline regimen aOR=0.75 (0.66-.086), on MTR vs STR aOR=0.81 (0.72-0.92), viremic at baseline aOR=0.41 (0.36-0.47) [Figure 3].

FIGURE 3. PREDICTORS OF SUPPRESSION AT 12-15 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 nationally qualified health centers.

5. CONCLUSION

Our findings highlighted higher rates of viremia among younger, black or other non-white race, patients treated in the South, on Medicaid or uninsured, on MTR, even after accounting for other characteristics.

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