

INTRODUCTION

- Adult and adolescent women represented 27% of people living with HIV (1).
- Controversy still exists regarding gender differences in virologic response between treatment-naïve HIV-infected individuals. Some studies have shown that HIV-infected women have poorer virologic responses when compared to men(2,3), whereas others have documented no differences between genders.(4)
- The primary objective of this study was to evaluate gender differences in virologic and immunologic response to antiretroviral treatment in treatment-naïve HIV infected individuals.
- A secondary objective was to investigate gender differences in CD4/CD8 ratio as a marker of chronic inflammation

METHODS

Study design and study population

This was a retrospective, observational study of treatment-naïve HIV-infected individuals managed at the University of Louisville 550 Clinic. Data was collected between January 1, 2010 and December 31, 2015. Non-consecutive medical records of patients with the diagnosis of HIV who were treatment naïve, started treatment and were followed up for at least a year in the clinic were reviewed. Institutional Review Board approval was obtained.

Study definitions

Inclusion criteria

- ART initiated between January 1st, 2010 and December 31, 2015.
- Available CD4 counts and viral load before initiating ART and one year after treatment.

Study outcomes

- Virologic success was defined as <48 HIV-1 RNA viral copies/mL.
- Immunological recovery was defined as a CD4 count increase of at least 150 cells/mm³.

Statistical analysis

Dichotomous variables were reported in number and percentage and analyzed using Chi-squared tests and Fisher's exact (whichever was appropriate). Continuous variables were reported as median and interquartile range (IQR) and analyzed using Wilcoxon rank sum tests. Multivariate analyses performed were logistic regressions with adjustment for other covariates. P value <0.05 was considered statistically significant. R version 3.3.2 was used for the statistical analysis.

RESULTS

- A total of 74 women and 116 men were included in the study. Patients' characteristics are shown in Table 1.
- Virologic success at one year of ART initiation was documented in 76% of women and 66% of men (p=0.196). Multivariate analysis for virologic success is shown in Figure 1.
- Immunological recovery was documented in 62% of women and 65% of men (p=0.759). Multivariate analysis for immune recovery is shown in Figure 2.
- CD4/CD8 ratio > 1 was documented in 40% of women and 26% of men (p=0.081). Multivariate analysis for CD4/CD8 ratio is shown in Figure 3.
- Resistance in baseline genotype was documented in 5 women (7%). All of these patients had VL <20 copies/mL at 1 year follow-up. Resistance in baseline genotype was documented in 17 men (15%). Thirteen of these patients had VL <20 copies/mL at 1 year follow-up.

Table 1. Patients' characteristics

Variable	MALES	FEMALES	P-value
DEMOGRAPHICS			
Age, Median (IQR)	33 (18)	41 (19)	<0.001
White, n (%)	47 (41)	19 (26)	0.043
Hispanic, n (%)	8 (7)	1 (1)	0.157
RISK FACTORS FOR HIV ACQUISITION			
Homosexual men n (%)	83 (72)	0 (0)	<0.001
Heterosexual, n (%)	49 (42)	73 (99)	<0.001
Intravenous Drug Use, n (%)	7 (6)	11 (15)	0.073
Transgender, n (%)	2 (2)	3 (4)	0.379
Transfusion, n (%)	0 (0)	0 (0)	NA
Vertical Transmission, n (%)	0 (0)	0 (0)	NA
SOCIAL HISTORY			
Current Tobacco Use, n (%)	62 (53)	39 (53)	>0.999
Alcohol Use, n (%)	52 (45)	19 (26)	0.009
Current Drug Use, n (%)	41 (35)	23 (31)	0.637
MEDICAL HISTORY			
Hepatitis B Co-infection, n (%)	6 (5)	2 (3)	0.486
Hepatitis C Co-infection, n (%)	8 (7)	13 (18)	0.032
Years from Diagnosis, Median (IQR)	4 (3)	4 (3)	0.675
AIDS (at diagnosis), n (%)	45 (39)	32 (43)	0.549
Baseline viral load, Median (IQR)	63,250 (235,600)	46,150 (125,135)	0.201
Baseline viral load > 100,000, n (%)	85 (73)	52 (70)	0.74
Baseline CD4 Count, Median (IQR)	273 (358)	340 (616)	0.391
Baseline CD4 < 200, n (%)	42 (36)	33 (45)	0.288
Baseline CD4/CD8, Median (IQR)	0.3 (0.4)	0.4 (0.7)	0.288
ANTIRETROVIRAL THERAPY			
Regimen - INSTI, n (%)	44 (38)	30 (41)	0.761
Regimen - NNRTI, n (%)	33 (28)	18 (24)	0.615
Regimen - PI, n (%)	39 (34)	32 (43)	0.219
Compliant with medication, n (%)	100 (86)	63 (85)	0.834

AIDS= Acquired Immunodeficiency Syndrome; INSTI= Integrase Strand Transfer Inhibitors; NNRTI= Non-nucleoside Reverse Transcriptase Inhibitors; PI= Protease Inhibitors

RESULTS (cont'd)

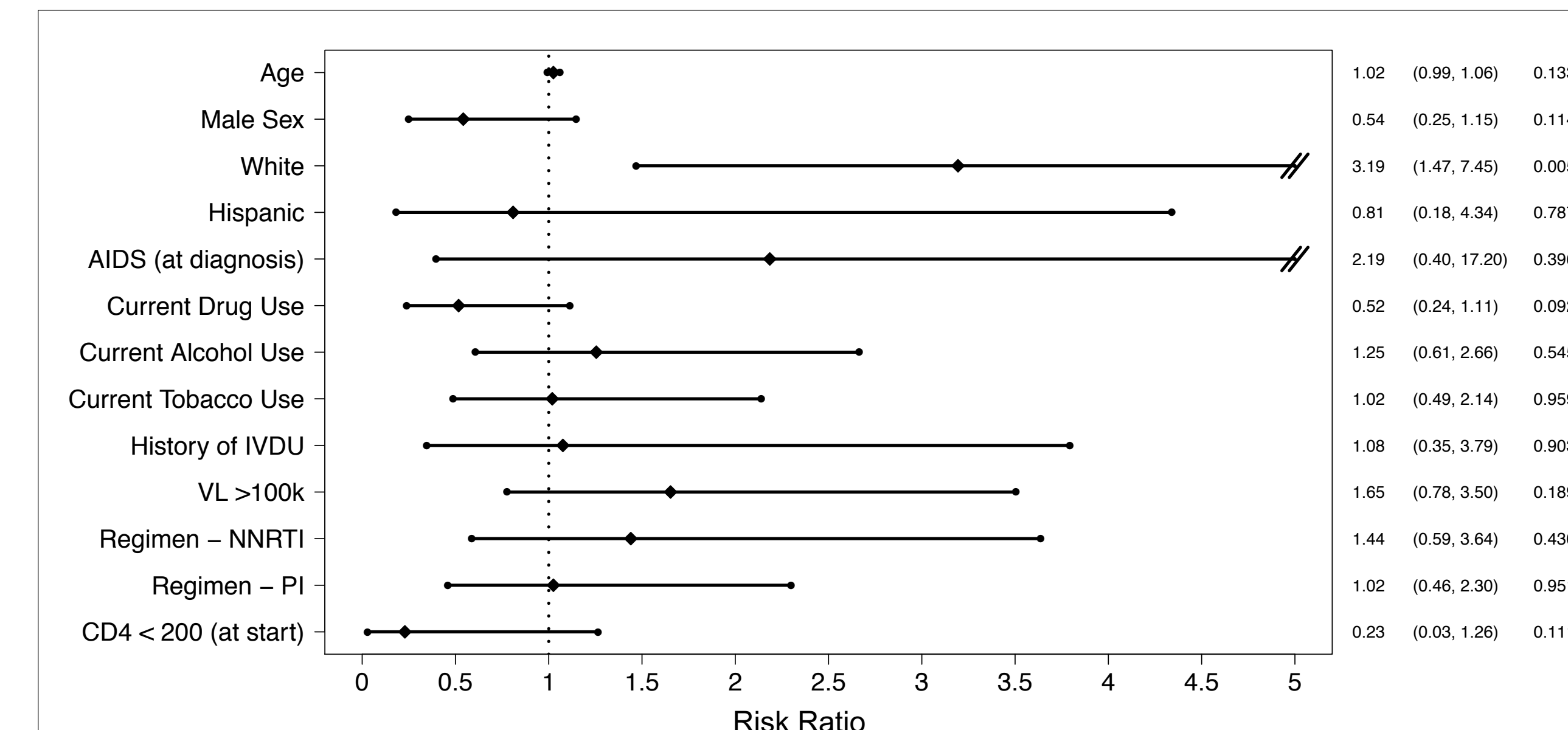


Figure 1. Multivariate analysis for virologic success at 1 year

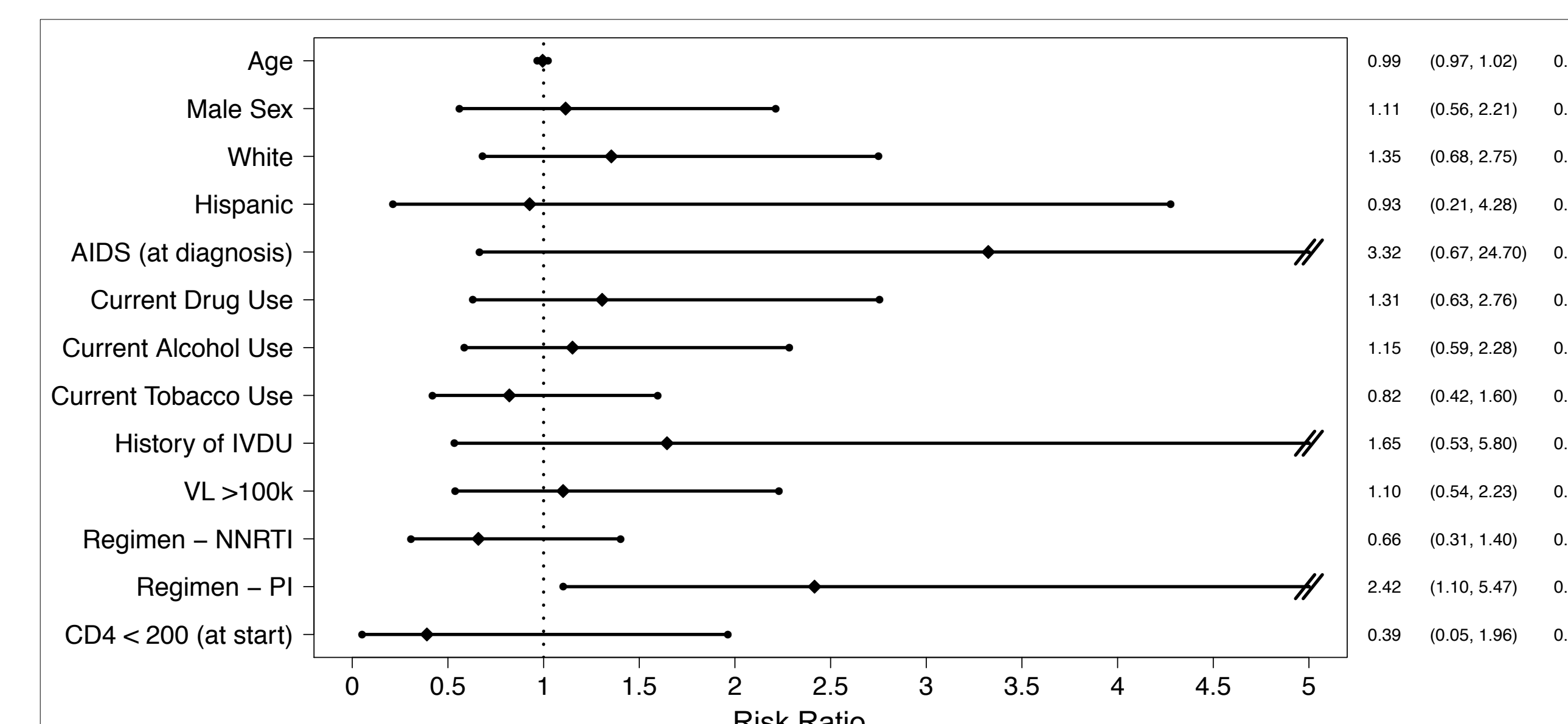


Figure 2. Multivariate analysis for immune recovery at 1 year

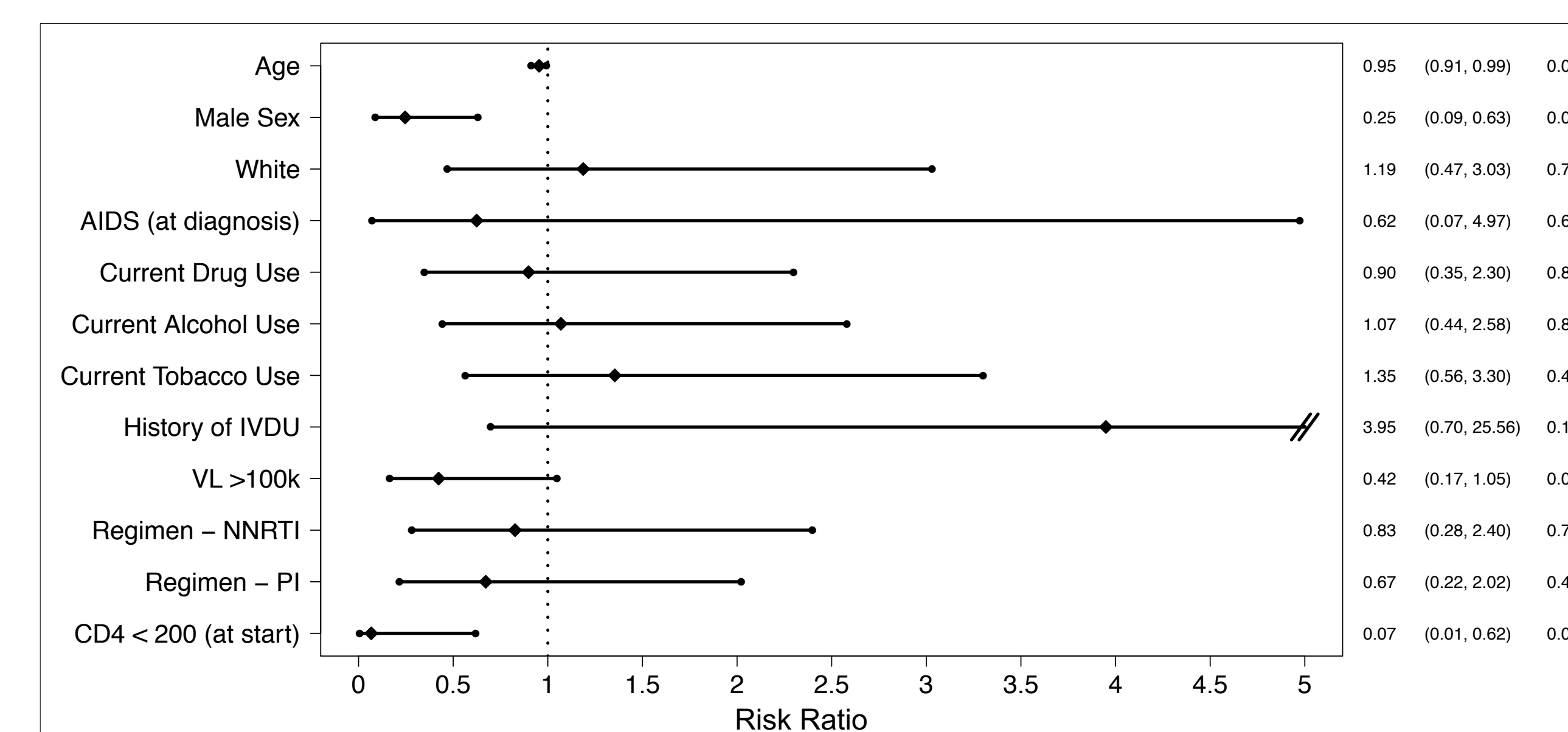


Figure 3. Multivariate analysis for CD4/CD8 ratio > 1 at 1 year

CONCLUSIONS

- Our study showed a similar response to treatment and immune recovery in both genders.
- White race was found to be an independent risk factor for achieving viral load suppression, supporting other disparities described among people living with HIV.
- Our data is in accordance with prior studies reporting lower viral load and higher CD4 count in women before initiating ART.(2,3,5)
- According to our study, PI-based regimens had a higher likelihood of reaching better immunologic recovery than INSTI or NNRTI based regimens. A prior retrospective study comparing such regimens did not show any difference among NNRTI, PI, and INSTI. However, PI class was used as reference.(6)
- Male sex was independently associated with less likelihood of reaching a CD4/CD8 ratio > 1 at 1 year follow-up. Published data suggested that an inverted CD4/CD8 ratio may identify patients with ongoing chronic activation.(7) This could have implications for treatment and prognosis.
- Studies assessing particular barriers and needs affecting HIV-positive women are needed in order to improve care in this population.

REFERENCES

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