

## Background

- Risk of lymphomas has decreased with HIV but remains higher than the general population.
- Outcomes improved due to advancements in the fields of both HIV and cancer therapeutics.

## Methods

- Retrospective cohort study**, adult HIV+ with lymphoma s/p chemotherapy w/wo auto HSCT between 1/1/2007-12/31/2019 at KUMC followed until 5/1/2020.
- Group 1:** Lymphoma treated with chemotherapy only matched 1:1 to HIV neg, on age, gender, lymphoma histology, stage at diagnosis, year of diagnosis.
- Group 2:** Lymphoma post auto HSCT matched 1:2 to HIV neg, on age at transplant, gender, lymphoma histology, stage at diagnosis, and year of transplantation.
- Overall survival (OS) & Progression Free Survival (PFS)** at 2 years using KM analysis. Multivariate Cox model was used to adjust for ECOG and IPS (for HL) & IPI (for NHL).

## Patients Characteristics

Group 1 HIV with lymphoma cases and controls characteristics			
Variable		case	control
Number		22	22
Age at diagnosis	Mean(sd)	46.3 (10.4)	47.9 (10.4)
Sex	Male, n (%)	21 (95.5%)	21 (95.5%)
Ethnicity	Non-Hispanic	20 (90.9%)	20 (90.9%)
Race	Black, n (%)	3 (13.6%)	3 (13.6%)
	White, n (%)	16 (72.7%)	17 (77.3%)
	Other, n (%)	3 (13.6%)	2 (9.1%)
ECOG status	Mean(sd)	1.2 (1.4)	0.7(0.6)
Type of lymphoma	NHL-DLBCL, n (%)	12 (54.5%)	12 (54.5%)
	NHL-primary CNS, n (%)	1 (4.5%)	1 (4.5%)
	NHL-Burkitt's, n (%)	4 (18.2%)	4 (18.2%)
	HL-mixed cellularity, n (%)	2 (9.1%)	2 (9.1%)
	HL-nodular sclerosis, n (%)	2 (9.1%)	2 (9.1%)
	HL-lymphocytic rich, n (%)	1 (4.5%)	1 (4.5%)
Stage of lymphoma at diagnosis	Stage II, n (%)	2 (9.1%)	2 (9.1%)
	Stage III, n (%)	4 (18.2%)	5 (22.7%)
	Stage IV, n (%)	16 (72.7%)	15 (68.2%)
IPI	IPI-high, n (%)	5 (22.7%)	1 (4.5%)
	IPI-low, n (%)	4 (18.2%)	4 (18.2%)
	IPI-mid, n (%)	3 (13.6%)	6 (27.3%)
	IPI-n/a, n (%)	10 (45.5%)	11 (50%)
IPS	IPS-high, n (%)	3 (13.6%)	1 (4.5%)
	IPS-low, n (%)	1 (4.5%)	2 (9.1%)
	IPS-mid, n (%)	1 (4.5%)	2 (9.1%)
	IPS-n/a, n (%)	17 (77.3%)	17 (77.3%)
Number of relapse	0, n (%)	22 (100%)	21 (95.5%)
	1, n (%)	0 (0%)	1 (9.1%)

Sd= standard deviation, n/a= not applicable, ECOG= Eastern Cooperation Oncology Group, NHL= Non Hodgkin's lymphoma, DLBCL = Diffuse large B-cell lymphoma, CNS= Central nervous system, HL= Hodgkin's lymphoma, IPI= International Prognostic Index, IPS= International prognostic score

Group 2. HIV Lymphoma with HSCT, cases and controls characteristics			
Variable		case	control
Number		9	18
Age at HSCT	Mean (sd)	45.8 (10)	43.4 (11.7)
Sex	Male, n (%)	9 (100%)	18 (100%)
Ethnicity	Non-Hispanic, n (%)	8 (88.9%)	17 (94.4%)
Race	Black, n (%)	0 (0%)	4 (22.2%)
	White, n (%)	8 (88.9%)	12 (66.7%)
	Asian, n (%)	0 (0%)	1 (5.6%)
	More than one, n (%)	1 (11.1%)	1 (5.6%)
ECOG	Mean(sd)	0.4 (0.7)	0.8 (0.7)
Type of lymphoma	NHL-DLBCL, n (%)	4 (44.4%)	8 (44.4%)
	NHL-Burkitt's, n (%)	2 (22.2%)	4 (22.2%)
	HL-mixed cellularity, n (%)	2 (22.2%)	4 (22.2%)
	HL-nodular sclerosis, n (%)	1 (11.1%)	2 (11.1%)
Stage of lymphoma at diagnosis	Stage III, n (%)	1 (11.1%)	2 (11.1%)
	Stage IV, n (%)	8 (88.9%)	16 (88.9%)
IPI	IPI-high, n (%)	0 (0%)	5 (27.8%)
	IPI-low, n (%)	3 (33.3%)	2 (11.1%)
	IPI-mid, n (%)	2 (22.2%)	3 (16.7%)
	IPI-miss, n (%)	4 (44.4%)	8 (44.4%)
IPS	IPS-high, n (%)	2 (22.2%)	3 (16.7%)
	IPS-low, n (%)	0 (0%)	0 (0%)
	IPS-mid, n (%)	1 (11.1%)	3 (16.7%)
	IPS-n/a, n (%)	6 (66.7%)	12 (66.7%)
Number of relapses	0, n (%)	9 (100%)	16 (88.9%)
	1, n (%)	0 (0%)	1 (5.6%)
	2, n (%)	0 (0%)	1 (5.6%)

n=number, sd= standard deviation, n/a= not applicable, HSCT= Hematopoietic stem cell transplant, ECOG= Eastern Cooperation Oncology Group, NHL= Non Hodgkin's lymphoma, DLBCL = Diffuse large B-cell lymphoma, CNS= Central nervous system, HL= Hodgkin's lymphoma, IPI= International Prognostic Index, IPS= International prognostic score.

Figure 1. Time-to-Relapse-or-Death for patients with HSCT

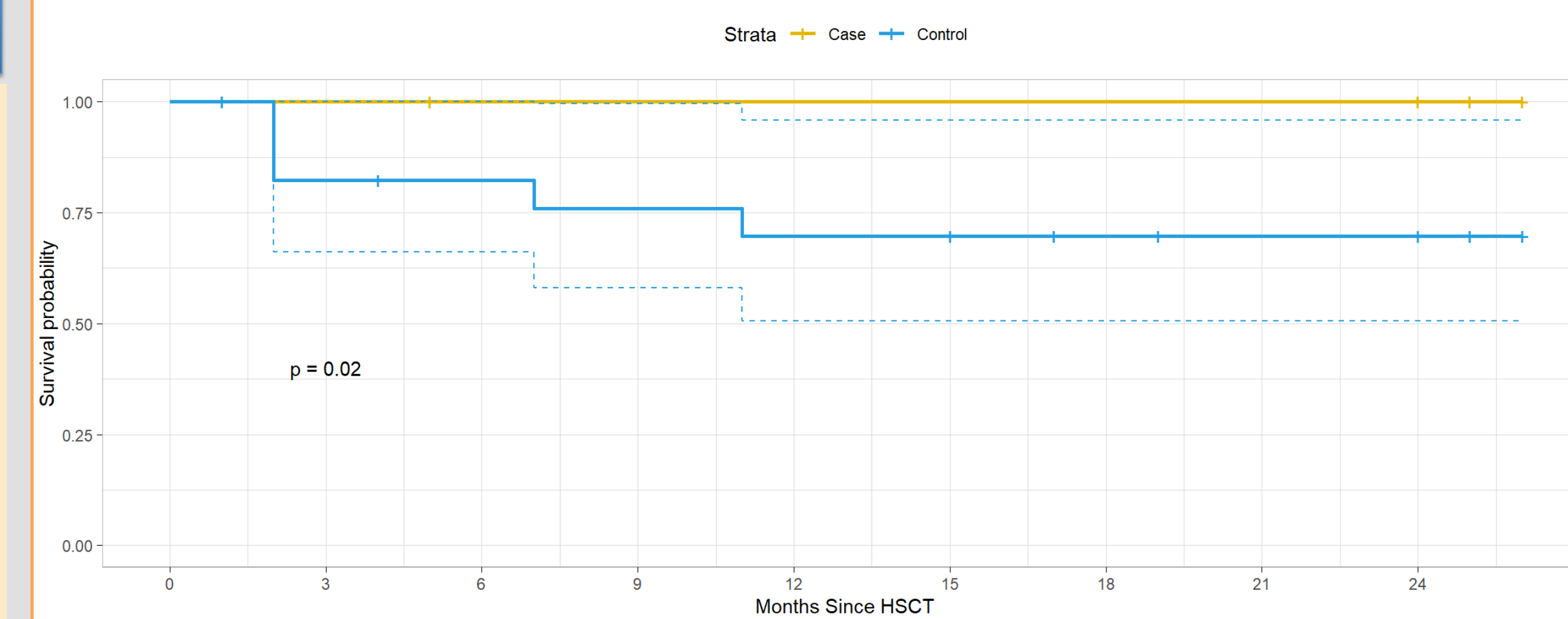
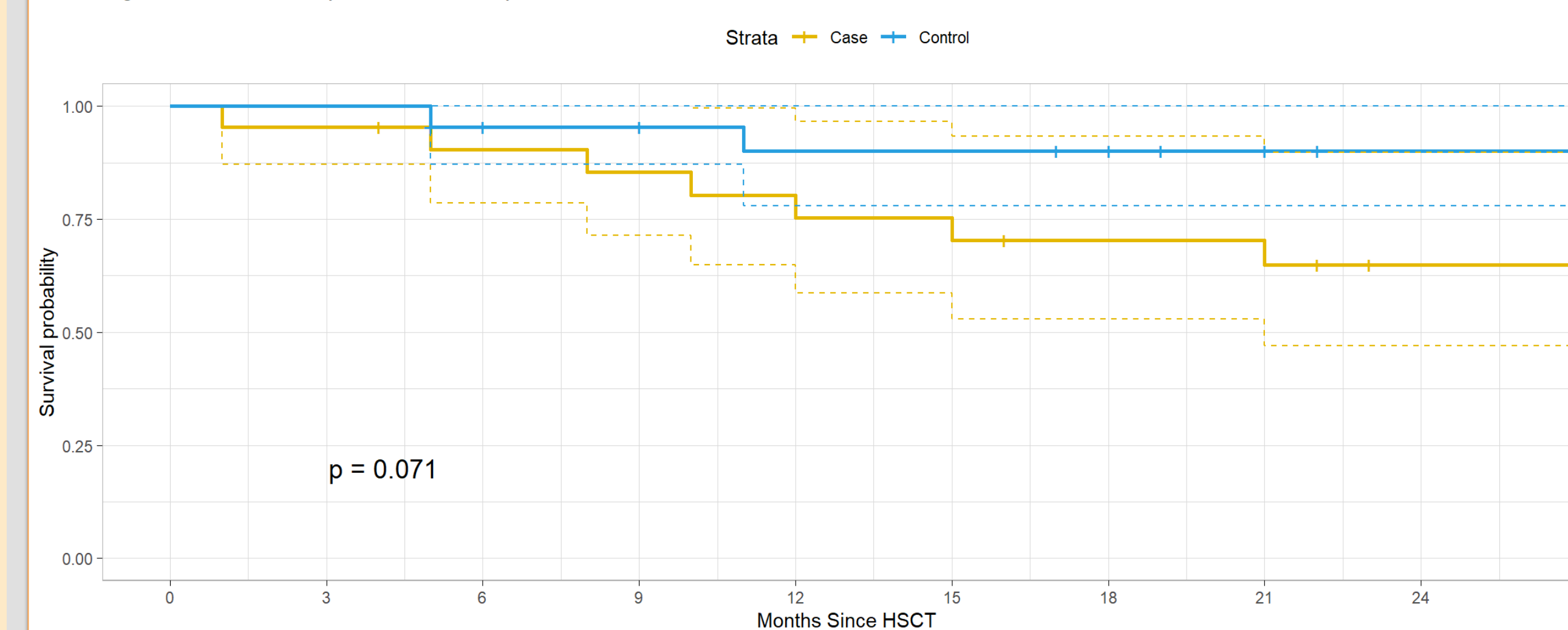


Figure 2. Time-to-Relapse-or-Death for patients without HSCT

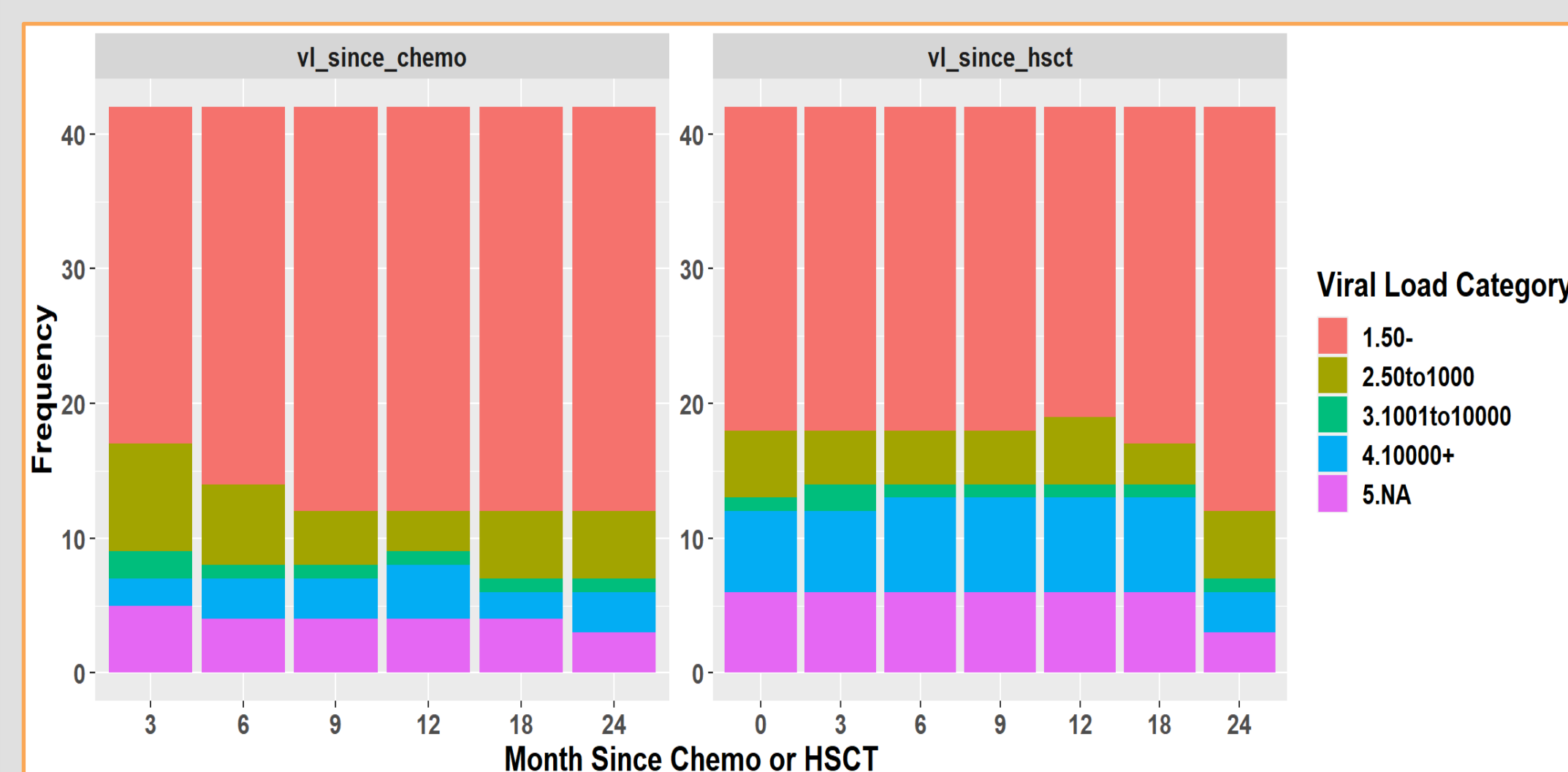


## Results

37 HIV+ with lymphoma were included: 9 HL, 28 NHL. 11 underwent auto HSCT (3 HL, 8 NHL). White (76.2%), non-Hispanic (92.9%), males (90.5%), mean age 46y. Median CD4 331, HIV viral load <50 copies/mL in 76.9%, and 76.2% were on antiretroviral therapy (ART) at diagnosis. ART interrupted in 14.6% and ART adjusted in 40.5%. **Group 1** (22), **Group 2** (9) in the matched analysis.

On KM analysis at 2 years, **Group 1** had worse **OS** (75% vs 95%, p=0.02), and a trend for worse **PFS** (75% vs 90%, p=0.07) than the matched referent group, while **Group 2** had similar **OS** (100% vs 94%, p= 0.47) and better **PFS** (100% vs 70%, p=0.02) than the matched referent group. On Cox models adjusting for ECOG and IPI/IPS, HIV status was no longer independently associated with **OS** in **Group 1** or **PFS** in **Group 2**.

## VL distribution over time within 24 months post-chemo or post-HSCT



## Conclusion

In patients with HIV and lymphoma treated with chemotherapy with or without auto HSCT, the outcomes are comparable to those without HIV in our single center contemporary cohort.

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