The impact of churn on HIV outcomes in a Southern United States clinical cohort

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BACKGROUND

- Retention in care is associated with viral suppression (VS), which improves clinical outcomes and reduces HIV transmission. It is not dichotomous; persons with HIV (PWH) may go in and out of care in a cycle called "churn." There Is increased churn projected in the South, but there are no dedicated studies on churn in this region.
- **Objective:** quantify the impact of churn on viral load (VL), clinical, and care continuum outcomes

METHODS

- **Population:** PWH newly establishing care from 2012-17 at the Grady Infectious Disease Program, a Ryan White-funded HIV/AIDS program in Atlanta, GA
- **Exposure:** churn (≥ 1 year gap between visits/labs)

Outcomes		
HIV metrics	**Clinical**	**Care continuum**
Viral load (VL) CD4 count	AIDS-defining illness Death	Future churn Future loss to follow-up

- **Hypothesis:** PWH who experienced churn had lower rates of VS and higher rates of transmissible viremia (≥ 1500 copies) with increased odds of AIDS-defining illness, death, and future churn and loss to follow-up

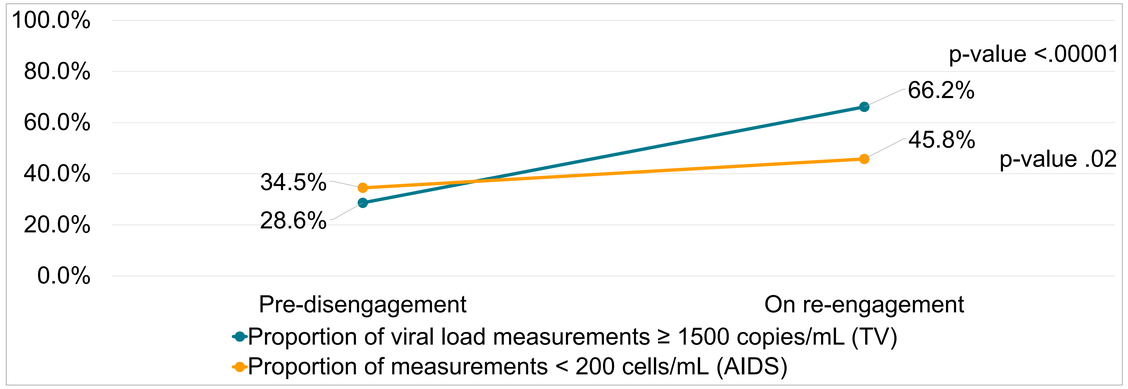


	Churn	Retention
Age		
Median (IQR)	34 (24 – 46)	23 (20 – 33)
Sex		
Male	171 (85.5)	537 (77.9)
Female	29 (14.5)	152 (22.1)
Race/ Ethnicity		
Black, non-Hispanic	184 (92.0)	578 (83.9)
Other	16 (8.0)	111 (16.1)
Substance Use		
Alcohol	110 (55.0)	285 (41.4)
Drugs‡	80 (40.0)	176 (25.5)

The rate of churn in a Southern clinic was high (15.3%), and those who experienced churn had increased transmissible viremia at re-entry and accounted for a disproportionate amount of the community viral load without immediate clinical or care continuum consequence

RESULTS

- PWH have significantly higher rates of transmissible viremia (TV) on re-engagement, increasing the risk of transmission while out of care and upon initial return to care
- PWH also have a significantly higher rate of AIDS by CD4 count on return to care

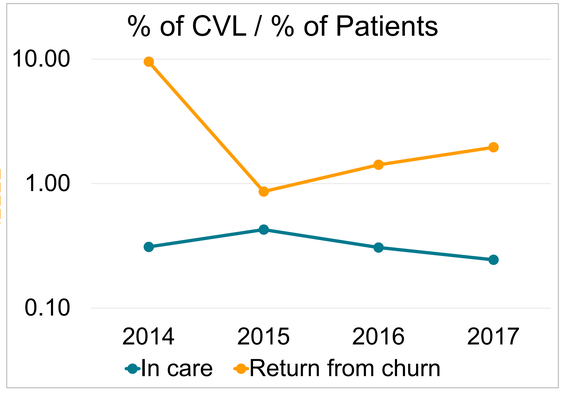


- PWH returning to care consistently contributed a disproportionate amount of the community viral load (calculated as the sum of mean VL measurements of patients in each group per calendar year):

Community viral load (CVL) – 2017*

	Active Patients	% of Pts	% of CVL	% of CVL / % of Pts
New	156	15.3%	50.1%	3.28
In care	552	54.1%	13.2%	0.24
Enter churn	62	6.1%	4.0%	0.65
Return from churn	38	3.7%	7.3%	1.96
Loss to follow-up	113	11.1%	15.9%	1.43
Transfer out	83	8.1%	8.8%	1.08
Transfer in	6	0.6%	0.2%	0.28
Unknown	11	1.1%	0.6%	0.55

*2017 chosen as a representative year of the annual CVL calculations



- On return to care, PWH with TV have a lower overall rate of VS and a longer time to VS from re-engagement:

		VS		
	Patients	**N**	**%**	**p-value**
Churn	122	101	82.8	<.00001
No churn	1013	972	96.0	

		Time to VS (days)			
	Patients	**Median**	**IQR**	**aHR**	**95% CI**
Churn	122	153.5	49 – 442	0.59	0.48, 0.73
No churn	1013	84	47 – 156	Ref	

- PWH who experienced churn did not have increased odds of AIDS defining illness (aOR 0.61, 95% CI 0.35-1.07) or hazard rate of death (aHR 1.00, 95% CI 0.66-1.50), adjusted for age, sex, race/ethnicity, insurance status, and alcohol/drug use.

- PWH who experienced churn did not have increased odds of later churn or LTFU compared to those who newly established care, adjusted for age, sex, race/ethnicity, insurance status, and alcohol/drug use:

		Future churn				
	Patients	**n**	**%**	**p-value**	**aOR**	**95% CI**
New	200	22	11.0	0.11	Ref	
Prior churn	121	21	17.4		1.53	0.79, 2.97

		Future lost to follow-up				
	Patients	**n**	**%**	**p-value**	**aOR**	**95% CI**
New	200	44	22.0	0.68	Ref	
Prior churn	121	29	24.0		1.04	0.60, 1.79

CONCLUSION

- The 15.3% rate of churn is higher than documented in other clinic cohorts in the literature. There was no immediate clinical or care continuum consequences for individual PWH who experience churn. However, churn was associated with increased rate of unsuppressed HIV with transmissible viremia, so identifying and mitigating churn may help reduce HIV incidence.

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