Durable Viral Suppression Using Different Definitions in a Ryan White HIV Program Clinic, 2018-2021

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BACKGROUND

Durable viral suppression (DVS), a metric that evaluates viral suppression (VS) over time, has many different definitions. The Centers of Disease Control and Prevention and the Ryan White HIV/AIDS Program (RWHAP) define VS for a year as the last viral load (VL) in the year is suppressed and require a person with HIV (PWH) to have at least 1 VL test to be included in the metric. We quantified the annual prevalence of this VS definition and 3 DVS outcomes at one RWHAP clinic to identify how different definitions impact VS results.

METHODS

- Study Period: 01/01/2018 – 12/31/2021
- Cohort: PWH who were >18 years & had established care at the University of Virginia RWHAP clinic by start of study
- Excluded PWH who died, relocated, or were incarcerated on or before the end of the study.
- Data Collected: sociodemographic, clinical, and lab data
- See Table 2 for VS/DVS definitions.
- For each metric, we quantified the annual VS/DVS prevalence for those with the required number of VLs.
- We also performed a sensitivity analysis that imputed not having VS/DVS if the required number of VLs was not met.

Table 1. Cohort Characteristics

		N = 618 n (%)
Age[1]		51 (40-58)
Sex at Birth	Female	178 (29%)
	Male	440 (71%)
Race/ Ethnicity	Black/African-American	288 (47%)
	White (non-Hispanic)	281 (45%)
	Hispanic	35 (6%)
	Other[2]	14 (2%)
Insurance[3]	Medicaid	165 (28%)
	Medicare	183 (31%)
	No Insurance	36 (6%)
	Private - Employer	145 (24%)
	Private - Individual	64 (11%)
Income[1,4]		130% (74-248%)

[1] Median (Interquartile range)
[2] Includes American Indian or Alaska Native, Asian, more than one race, Native Hawaiian or other Pacific Islander and Not specified
[3] Data available for 593 people
[4] Income as a percentage of the Federal Poverty Level

National and state outcomes that rely on 1 viral load test are likely **overestimating** the **true durable viral suppression** of people with HIV in the United States.

Table 2. Viral Suppression and Durable Viral Suppression Outcome Definitions and Results for the Cohort, 2018-2021

Outcome Definition	Outcome	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
VS: Last VL < 200 copies/mL; 1 VL required	VS	552/589 (94%)	565/595 (95%)	565/592 (95%)	564/593 (95%)
	VS- SA[1]	552 (89%)	565 (91%)	565 (91%)	564 (91%)
DVS #1: All VLs < 200 copies/mL; 1 VL required	DVS #1	511/589 (87%)	529/595 (89%)	532/592 (90%)	548/593 (92%)
	DVS#1- SA[1]	511 (83%)	529 (86%)	532 (86%)	548 (89%)
DVS #2: All VLs < 200 copies/mL; 2 VLs required	DVS #2	424/487 (87%)	462/520 (89%)	343/393 (87%)	416/447 (93%)
	DVS #2- SA[1]	424 (69%)	462 (75%)	343 (56%)	416 (67%)
DVS #3: All VLs < 200 copies/mL; >90 days between first and last; 2 VLs required	DVS #3	413/487 (85%)	449/520 (86%)	327/393 (83%)	405/447 (91%)
	DVS #3- SA[1]	413 (67%)	449 (73%)	327 (53%)	405 (66%)

1. SA- Sensitivity analysis performed: any participant who did not have the required number of VLs was imputed as not having viral suppression, Denominator for all sensitivity analyses was 618.

RESULTS

Of the cohort (n=618), median age was 51 (interquartile range 40-57). 71% were male, 6% were uninsured, 28% had Medicaid, and 38% had an income below the Federal Poverty Line (**Table 1**).

Of the definitions, VS had the highest prevalence (range 94-95%, **Table 2**). DVS#1 prevalence was lower than VS prevalence for each year (range 87-92%). All DVS metrics that required 2 VLs decreased in prevalence from 2019 to 2020. For each year, DVS#3 had the lowest prevalence (range 83-91%). The prevalence of having no VL result was <5% in each year. The prevalence of having only 1 VL result in a year was lower pre-COVID-19 (2018: 17%, 2019: 13%) than in years impacted by COVID-19 (2020: 34%, 2021: 25%). Analyses assuming PWH without the required number of VLs did not have DVS demonstrate that DVS prevalence may have been as low as 53-73% (DVS#3).

CONCLUSIONS

For a study that included the COVID-19 pandemic, VS was high. However, DVS results shed light on gaps in VS, and the sensitivity analyses show worst case scenario results. The more restrictive VS definitions exclude more people, and those excluded may not be a random subset of PWH, which could lead to selection bias.

This work has implications for HIV care evaluation. National/state outcomes that rely on 1 VL are likely overestimating the true DVS of PWH in the United States. Federal and state agencies should consider reporting (1) additional annual VS/DVS metrics that require at least 2 VLs and (2) sensitivity analyses.

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