An Integrated Health System Specialty Pharmacy Impacts HIV Viral Load Suppression and Maintenance

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SCAN ME

BACKGROUND

Patients with HIV who adhere to antiretroviral (ARV) therapy achieve and maintain viral load (VL) suppression. Previous research has shown that adherence rates of ≥ 95% are necessary for optimal ARV therapy efficacy and VL suppression.[1] Integrated health system specialty pharmacies (HSSPs) like Proprium Specialty Pharmacy utilize a care model that may overcome barriers to optimal HIV outcomes. The purpose of this analysis was to determine the impact of a HSSP on HIV VL suppression and maintenance in patients who have experienced a high viral load.

METHODS

Study Design: This was a single-center, retrospective, IRB-approved study of Sentara Health HIV patients.
- **Inclusion Criteria:** Patients aged 18-89 years with a high VL (defined as >100,000 copies/mL) on ARV therapy from July 1, 2017 through June 30, 2023
- **Definitions:** Patients were identified as Proprium Pharmacy patients (Proprium group) if they ever used the HSSP, while patients who never used Proprium SP were defined as the commercial pharmacy group.

Primary Outcome: Achievement of an undetectable VL (defined as < 20 copies/mL according to Sentara Health lab guidelines) from the index date of the high VL

Secondary Outcome: Maintenance of VL suppression for 6 months after reaching an undetectable VL

Data Identification: The following data were collected through the electronic medical record or specialty pharmacy management system:
- Age, gender, race/ethnicity, comorbidities, primary insurance type, laboratory data, and health care utilization for one year after the index VL.

Analysis: Relative risks were calculated using bivariate analysis. Longitudinal relationships between HIV VL and the Proprium SP were analyzed using a generalized estimating equation longitudinal regression model. The impact of demographic, clinical factors, and Proprium SP use on HIV VL was analyzed using a Cox proportional hazard regression multivariate model. Kaplan-Meier curves were used to show the probability of maintaining an undetectable VL between Proprium SP and the commercial pharmacy groups. P-values < 0.05 were considered statistically significant.

RESULTS

Within the study period, 676 patients meeting the inclusion criteria were identified, 104 (15%) in the Proprium group and 572 (85%) in the commercial group. Patients in the Proprium group were 1.09 times more likely to achieve an undetectable VL following a high index VL compared to the commercial group (95% CI: 1.00 – 1.18; p-value = 0.03). Proprium patients were 9% more likely to report a non-detectable level following the initial high VL, compared to commercial pharmacy patients. Furthermore, patients in the Proprium group were 1.28 times or 28% more likely to maintain VL suppression for 6 months after reaching an undetectable level compared to the commercial pharmacy group (95% CI: 1.04 – 1.56; p-value = 0.002). **Figure 1** shows the overall survival time in days after achieving VL suppression for a patient to report VL > 20 copies/mL, showing that the Proprium group was significantly less likely to report a report a VL > 20 copies/mL after achieving VL suppression. When adjusting for other covariates, patients who never used the Proprium SP were associated with a 1.73 (95% CI: 1.15-2.60; p=0.01) times higher risk of failing to maintain VL suppression compared to the Proprium group (**Table 1**). Patients who achieved VL suppression and sustained it for 60 days (RR: 0.26, 95% CI: 0.19-0.35, p-value < 0.05) or 90 days (RR: 0.26, 95% CI: 0.22-0.30, p-value < 0.05) had a significantly lower risk of reporting a detectable VL (Figure 2).
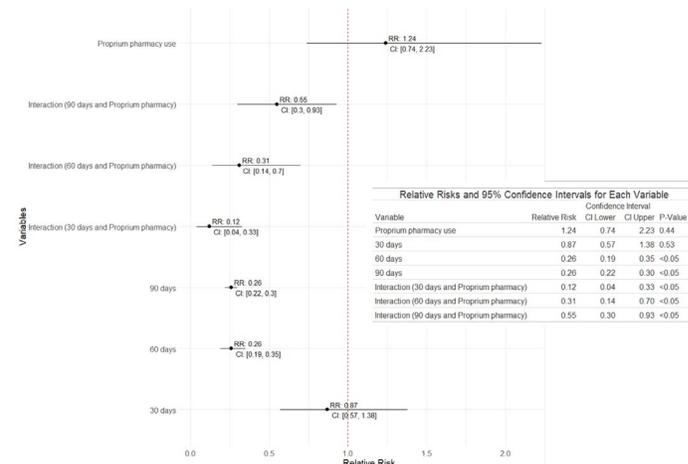
Figure 1: Kaplan-Meier overall survival curve for positive HIV result

Figure 2: Forest Plot of RR and 95% CI for Variables in Longitudinal Regression Model
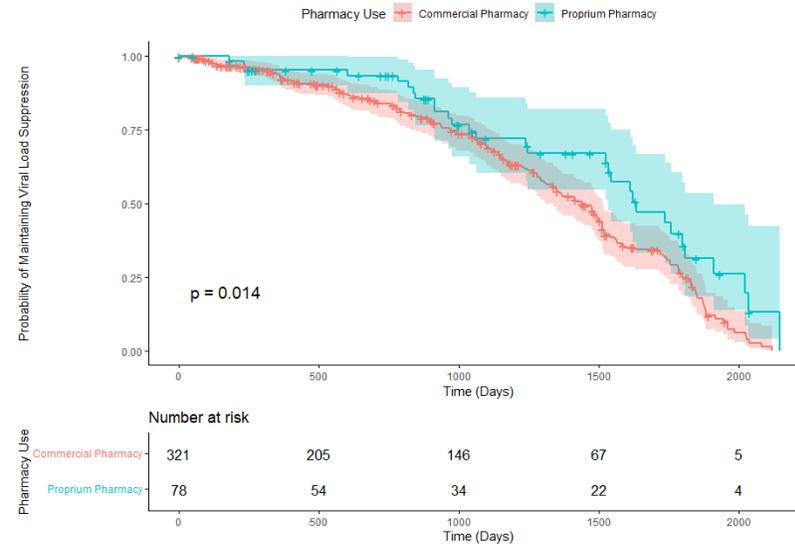
Table 1: Cox Proportional Hazard Regression Multivariate Model

Variable	Adjusted Hazard Ratio (95% CI)	P-value
Age at diagnosis (years)	1.00 (0.99-1.01)	0.70
Sex		
Female	-	-
Male	0.91 (0.66-1.26)	0.58
Ethnicity		
Hispanic or Latino	-	-
Not Hispanic or Latino	1.77	0.18
Unknown	**3.85 (1.26-11.80)**	**0.02**
Sexually transmitted infection diagnosis		
No	-	-
Yes	1.19 (0.78-1.84)	0.42
Hepatitis Diagnosis		
No	-	-
Yes	1.38 (0.89-2.14)	0.15
Tuberculosis Diagnosis		
No	-	-
Yes	1.73 (0.75-3.98)	0.20
Proprium SP Use		
Used at least once	-	-
Never used	**1.73 (1.15-2.60)**	**0.01**

CONCLUSIONS

HIV patients utilizing the Proprium Specialty Pharmacy demonstrated higher likelihood of VL suppression following a high index VL and higher rates of maintenance of undetectable VL at six months compared to patients using commercial specialty pharmacies, demonstrating the impact of the integrated health system specialty pharmacy model on achievement of clinical outcomes in this population.

REFERENCE

1. Paterson DL, et al. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. *Ann Intern Med.* 2000;133(1):21-30.