Abstract #936

Evaluating the Impact of Polypharmacy on Virologic Success in People with HIV

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BACKGROUND

- Advances in combination antiretroviral therapy (ART) have led to a lower antiretroviral (ARV) pill burden for most people with HIV (PWH)
- On the converse, pill burden for non-AIDS-related conditions has increased for most PWH as they age and develop other co-morbidities, leading a growing concern regarding the effect of polypharmacy on patient outcomes
- Prior studies have linked increased pill burden to increased incidence of drug-drug interactions, decreased adherence and virologic failure

OBJECTIVE

- To assess the impact of polypharmacy and other variables, such as comorbid conditions and patient demographics, on virologic success in our patient population

METHODS

- **Study design:** Retrospective, cross sectional , single-center chart review, IRB approved
- **Time period:** January 1, 2019 to September 30, 2019
- **Statistical analyses:** conducted using SAS software (version 9.4; SAS Institute)

INCLUSION CRITERIA

- Patients ≥ 18 years-old
- Diagnosis of HIV infection
- Receiving care at the Comprehensive Care Center (CCC), a Ryan White-funded clinic
- At least 2 medical visits in 2019 with laboratory data from 2 separate occasions at least 24 weeks apart

EXCLUSION CRITERIA

- Age < 18 years old
- < 24 weeks laboratory data
- Missing or incomplete demographic or laboratory data
- Not receiving ART (elite controllers) or on ART for < 24 weeks during study period.

ENDPOINTS

Primary Endpoint

- Percentage of patients with virologic suppression (HIV RNA < 200 copies/mL) based on pill burden (polypharmacy vs non-polypharmacy group)

Secondary Endpoints

- Identify predictors of virologic suppression among polypharmacy and non-polypharmacy cohorts
- Describe patient characteristics and their correlation with virologic suppression

RESULTS

Table 1. Baseline Characteristics

Characteristics	Total (n=964)	Non-polypharmacy (n=609)	Polypharmacy (n=355)
Gender*			
Male	574 (60%)	392 (64%)	181 (51%)
Female	389 (40%)	217 (36%)	174 (49%)
Transgender	1 (0.1%)	1 (0.1%)	0 (0%)
Age*, mean (yrs)	49.2	44.8	56.8
Ethnicity**			
Black	432 (45%)	254 (42%)	178 (50%)
Latinx	445 (46%)	309 (51%)	136 (38%)
White	75 (8%)	38 (6%)	37 (11%)
Other	12 (1%)	8 (1%)	4 (1%)
Years w/ HIV Diagnosis*, mean	12.3	10.5	15.4
AIDS Diagnosis	458 (48%)	257 (42%)	201 (57%)
CD4 Cell Count⁺, mean	616 (596-635)	619 (594-645)	610 (580-640)
Comorbidities*			
Asthma/COPD	148 (15%)	49 (8%)	99 (28%)
Diabetes	137 (14%)	36 (5.9%)	99 (28%)
GI Disorder	174 (18%)	42 (8%)	128 (36%)
Hypertension	395 (41%)	134 (22%)	263 (74%)
Hyperlipidemia	304 (32%)	97 (16%)	209 (59%)
Mental Health Disorder	260 (27%)	55 (9%)	202 (57%)
Pain Disorder	165 (17%)	18 (3%)	146 (41%)

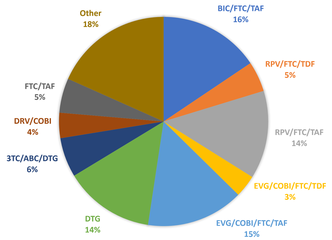
*P < 0.0001 **P = 0.001 ⁺cells/mm³ (95% CI)

Table 2. Predictors of Virologic suppression (HIV RNA <200 copies/mL)

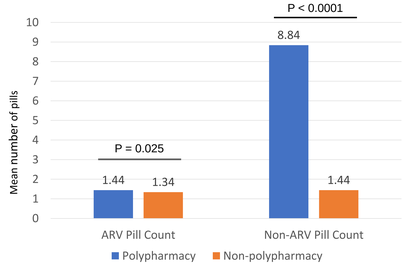
Characteristics	Unadjusted Odds Ratio (OR)		Adjusted Odds Ratio⁺⁺ (aOR)	
	OR (95% CI)	P-value	aOR (95% CI)	P-value
Age	**1.03 (1.02-1.05)**	**<0.0001**	**1.03 (1.01-105)**	**0.005**
Gender				
Male	Reference	0.99	Reference	0.16
Female	1.13 (0.68-1.55)		1.4 (0.87-2.3)	
Race/Ethnicity				
Black	Reference	**0.022**	Reference	**0.0089**
Latinx	**1.8 (1.2-2.8)**		**2.0 (1.3-3.2)**	
White	2.4 (0.95-6.3)		**2.7 (1.01-7.4)**	
Other	1.9 (0.24-1.5)		0.59 (0.32-1.1)	
HIV Risk Factor				
Heterosexual	Reference	<0.0001	Reference	**0.0036**
MSM	1.2 (0.75-2.05)		**1.9 (1.01-3.59)**	
PWID	1.4 (0.65-3.05)		1.28 (0.57-2.88)	
Perinatal	0.15 (0.07-0.35)		**0.3 (0.12-0.78)**	
AIDS Diagnosis	0.74 (0.5-1.1)	0.143	-	-
Years since HIV Diagnosis	1.01 (0.99-1.04)	0.40	-	-
Comorbidities				
Asthma/COPD	0.9 (0.53-1.55)	0.72	-	-
Diabetes	1.96 (0.96-3.97)	0.063	-	-
GI Disorder	1.47 (0.83-2.59)	0.19	-	-
Hypertension	**1.87 (1.2-2.9)**	**0.005**	-	-
Hyperlipidemia	**2.7 (1.6-4.7)**	**0.0002**	-	-
Mental Health Disorder	1.4 (0.6-3.3)	0.43	-	-
Pain Disorder	**3.9 (1.69-9.09)**	**0.0014**	-	-

⁺⁺Multivariate logistic regression analysis conducted to adjust for age, sex, race/ethnicity, and HIV risk factor.

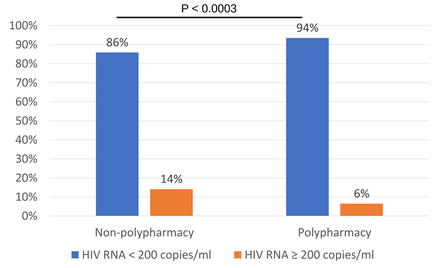
Prescribed Antiretrovirals



Pill Burden



Virologic Suppression



DISCUSSION

- PWH in the polypharmacy group were disproportionally older, more likely to be female, and less likely to be Latinx.
- PWH in the polypharmacy group were more likely to have virologic suppression, even after adjusting for age, sex, race/ethnicity and HIV risk factor (aOR 1.9 [95% CI 1.1-3.2]).
- The increased pill burden in the polypharmacy group was driven by management of other comorbidities, not antiretroviral agents.
- Hypertension, hyperlipidemia, and mental health disorders were the most prevalent comorbidities.
- Virologic suppression was higher among Latinx and White patients in comparison to Black patients at our clinic.
- MSM and perinatal HIV transmission risks were predictors of virologic suppression compared to heterosexual exposure, with MSM increasing odds and perinatal infection decreasing the odds.

CONCLUSION

- Polypharmacy is driven by increasing comorbid conditions and was correlated with virologic success among PWH at our Ryan-White funded clinic.
- Availability of potent ARV coformulations and newer simplification strategies have significantly lowered the ARV pill burden among PWH in high-income countries.

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APPENDIX

Antiretroviral 3-letter abbreviations:
ABC/DTG//3TC: abacavir/dolutegravir/lamivudine (Triumeq)
BIC/FTC/TAF: bictegavir/emtricitabine/tenofovir alafenamide (Biktarvy)
RPV/FTC/TDF: rilpivirine/emtricitabine/tenofovir disoproxil fumarate (Complera
RPV/FTC/TAF: rilpivirine/emtricitabine/tenofovir alafenamide (Odefsey)
EVG/COBI/FTC/TDF: elvitegravir/cobicistat/emtricitabine/tenofovir disoproxil fumarate (Stribild)
EVG/COBI/FTC/TAF: elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide (Genvoya)
DTG: dolutegravir (Tivicay)
DRV/COBI: darunavir/cobicistat (Prezcobix)
FTC/TAF: emtricitabine/tenofovir alafenamide (Descovy)

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