



The Association Between Antiretroviral (ARV) Medication Adherence and Composite Medication Adherence for Non-HIV Chronic Conditions in People with HIV

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Background

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- People living with HIV 50+ years of age are at increased risk of developing chronic conditions.¹
- Polypharmacy contributes to medication nonadherence, negatively affects health care outcomes, leading to increased health-system costs and decrements in overall population health.²
- Polypharmacy has been associated with discontinuous ARV treatment.³
- Studies of people with HIV with chronic comorbidities have reported that only 38.7-42.9% of patients achieved the ARV treatment adherence quality standard of $\geq 90\%$ during one year of follow-up.^{4,5}

Objective

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- The added burden of comorbid conditions associated with aging likely detracts from the target medication adherence goals for ARV medication adherence.
- **Therefore**, we evaluated the association between ARV medication adherence and non-ARV composite medication adherence (CMA) for three non-HIV chronic conditions in people with HIV.

Methods

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Design:

- 37-month longitudinal observational cohort study 9/2018 – 9/2021
- 6-month pre-observational period included for eligibility determination
- 22,126 observation months

Sample:

- 598 adult people with HIV and type 2 diabetes, hypertension, and/or hypercholesterolemia
- Continuously enrolled in a US mid-Atlantic integrated health system
- Dispensed qualifying medications in pre-observational and observational periods
- **Exclusions:** Cumulative institutional stays exceeding seven days in the pre- and post-3/2020 observational periods; diagnosis of end stage renal disease pre-3/2020*; death; or incomplete demographic information (n=2)

*Note: 3 incident cases of ESRD were identified between 11/2020 and 3/2021, but were retained since they did not affect results interpretation.

Methods

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Measurements:

- Demographics
 - age, race/ethnicity, insurance type, comorbidities, COVID-19 interruption date
- Monthly proportion of days covered (PDC) was used to estimate both ARV medication adherence and non-ARV CMA
 - non-ARV CMA included diabetes (T2DM), renin-angiotensin system antagonist (RASA), and statin medications during the observation period.
 - PDC is a consistent measure with CMS and health care quality organization standards.⁶⁻⁸
- Adequate medication adherence thresholds for observation month:
 - $PDC \geq 0.80$ for non-ARV CMA
 - $PDC \geq 0.90$ for ARV medication adherence

Methods

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Analyses:

- Univariate analyses used to describe the cohort characteristics.
- Bivariate cross-tabulation for observed months with adequate medication adherence between ARV medication adherence and non-ARV CMA.
- Multivariable logistic regression using the generalized estimating equations approach was used to evaluate the association between ARV medication adherence and non-ARV CMA over the 37-month observational period.

Results

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- A majority of the study cohort (n=598) was...
 - 51-64 years old (58%) and 65+ years old (19%)
 - Black (74%)
 - Male (69%)
 - Commercially insured (67%)
- In addition to HIV:
 - 62% of people with HIV had one of the 3 comorbidities
 - 30% had two comorbidities
 - 9% had three comorbidities
- Common non-ARV medication classes:
 - Statins (68%), RASA (55%), and T2DM (23%)
- Adequate medication adherence
 - **ARV \geq 90%: 76% of observed months**
 - **non-ARV CMA \geq 80%: 71% of observed months**



Results

| | | non-ARV Composite Medication Adherence \geq 80% | | |
|-------------------------------------|------------|---------------------------------------------------|---------------------|----------------------|
| | | No | Yes | Total |
| ARV Medication Adherence \geq 90% | No | 2,681 (50%) | 2,676 (50%) | 5,357 (100%) |
| | Yes | 3,693 (22%) | 13,076 (78%) | 16,769 (100%) |
| Total | | 6,374 (29%) | 15,752 (71%) | 22,126 (100) |

For the 16,769 observational months with adequate ARV Medication Adherence, 78% of those months also had adequate non-ARV CMA.



Results

| | | non-ARV Composite Medication Adherence \geq 80% | | |
|----------------------------------------|-----|------------------------------------------------------|----------------------|--------------|
| | | No | Yes | Total |
| ARV Medication Adherence \geq 90% | No | 2,681 (42%) | 2,676 (17%) | 5,357 (24%) |
| | Yes | 3,693 (58%) | 13,076 (83%) | 16,769 (76%) |
| Total | | 6,374 (100%) | 15,752 (100%) | 22,126 (100) |

For the 15,752 observational months with adequate non-ARV CMA, 83% of those months also had adequate ARV Medication Adherence.

Results

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Positive association with adequate non-ARV CMA:

- **Adequate ARV medication adherence**
 - aOR=2.34, p<0.001, ref: inadequate
- Period 3/2020-9/2021
 - aOR=1.12, p=0.028, ref: pre-3/2020
- Ages 51-64y
 - aOR=1.22, p=0.035, ref: 18-50y
- Medicare enrollment
 - aOR=1.59, p<0.001, ref: commercial

Inverse association with adequate non-ARV CMA:

- Black race
 - aOR=0.55, p<0.001, ref: white
- Medicaid enrollment
 - aOR=0.55, p=0.002, ref: commercial
- Taking medications:
 - For 2 non-HIV chronic conditions, aOR=0.80, p=0.011, ref: 1
 - For 3 non-HIV chronic conditions, aOR=0.74, p=0.029, ref: 1

Limitations / Strengths

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- Observational design and small sample
- Analysis of historical (secondary) data
- Applying a surrogate measure of adherence
 - Actual adherence not measured
- No clinical outcome assessment
- Potential development of other conditions that may influence adherence
- Long duration of study – 37 months
- Innovative measure of composite medication adherence
- Raises awareness and reinforces the importance of considering the total care of people with HIV^{9,10}
- Identifies opportunities for improving care coordination in people with HIV

Conclusions

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- Despite positive association between ARV medication adherence and CMA, there is a considerable proportion of months when adequate ARV medication adherence and non-ARV CMA are discordant.
- ARV medication adherence may not reliably indicate adequate non-ARV CMA for non-HIV chronic conditions and vice versa.
 - Adequate non-ARV CMA may more reliably predict adequate ARV adherence than adequate ARV predicting non-ARV CMA.
- It is important for both HIV and primary care providers to be aware and reinforce medication adherence across total care for people with HIV.
 - Findings reinforce the need and potential role for adherence coordinators / navigators to assist in optimizing care.

References

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Questions?

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