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Those Less Care Engaged and Females Are Less Likely to Re-start HIV Antiretroviral Therapies: An Analysis of 12 Years US Medicaid Data

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- Conflicts
  - No conflicts of interest

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Background

- Clinical benefits associated with adherence to antiretroviral therapies (ARTs) for HIV
  - Reduce viral load
  - Improve quality of life
  - Delay progression to AIDS
  - Reduce mortality risk

Holkmann et al. HIV Med 2007; Kousignian et al. Clin Infect Dis. 2008; DART Trial Team. AIDS 2008; El-Sadr et al. N Engl J Med. 2006.

- Half of HIV patients discontinued ART within 2 years

Gonzalez-Serna et al. J Antimicrob Chemother 2014.

- Very few studies examine re-initiation of ART
  - Focused on African populations
  - Small sample size
  - Poorly defined measures for re-initiation of ART

Toulson et al. The J of Infectious Diseases. 2005; Teklu et al. BMC Health Services Research. 2017. Lewis et al. J AIDS. 2010

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Study Questions

- How many ART discontinuers re-initiate therapy within 18-months?
- Which patient characteristics are associated with ART re-initiation?
- Does greater engagement in care lead to higher re-initiation of ART?

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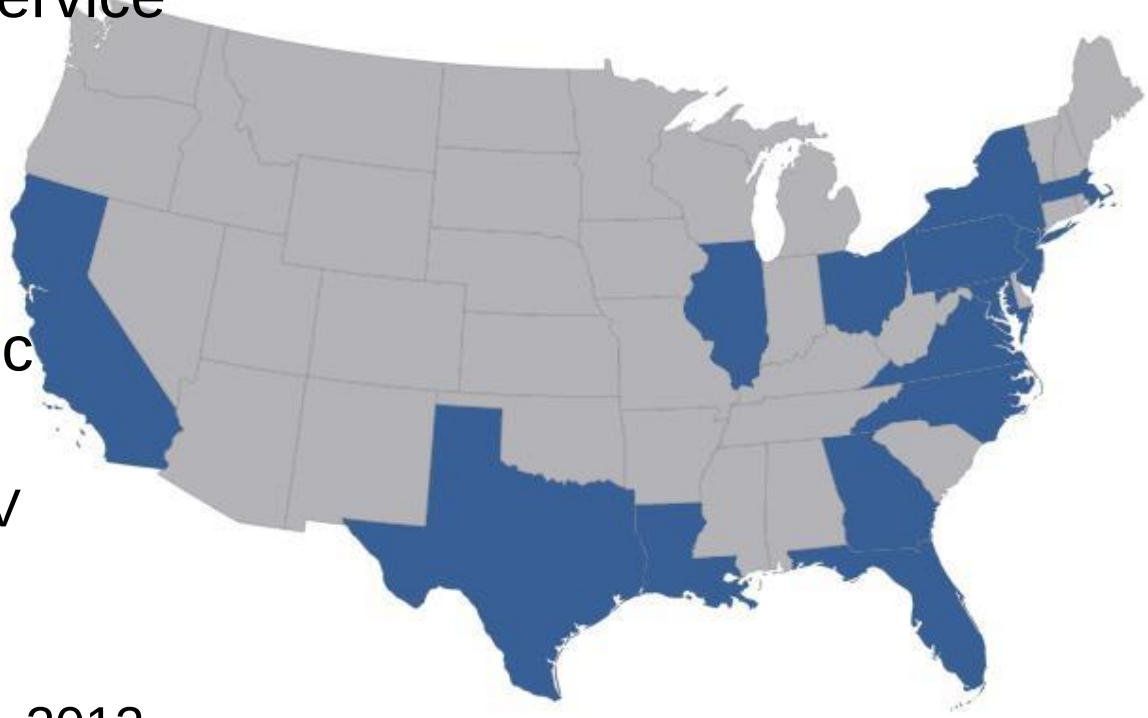
Methods: Medicaid Program

- Joint federal-state income-based public health insurance program
- Enrollment criteria vary by state
  - Income qualifications
- Claims for some enrolled populations not observable
  - Managed care enrollees
  - Medicare-Medicaid duals

Methods: Design and Data Sources

- Retrospective cohort study of Medicaid fee-for-service (FFS) patients



- The Medicaid Analytic eXtract (MAX) files:
  - 14 states with 75% of HIV prevalence in the U.S.
  - Longitudinal years: 2001-2012

CDC. HIV surveillance report, 2010; vol. 22. Atlanta

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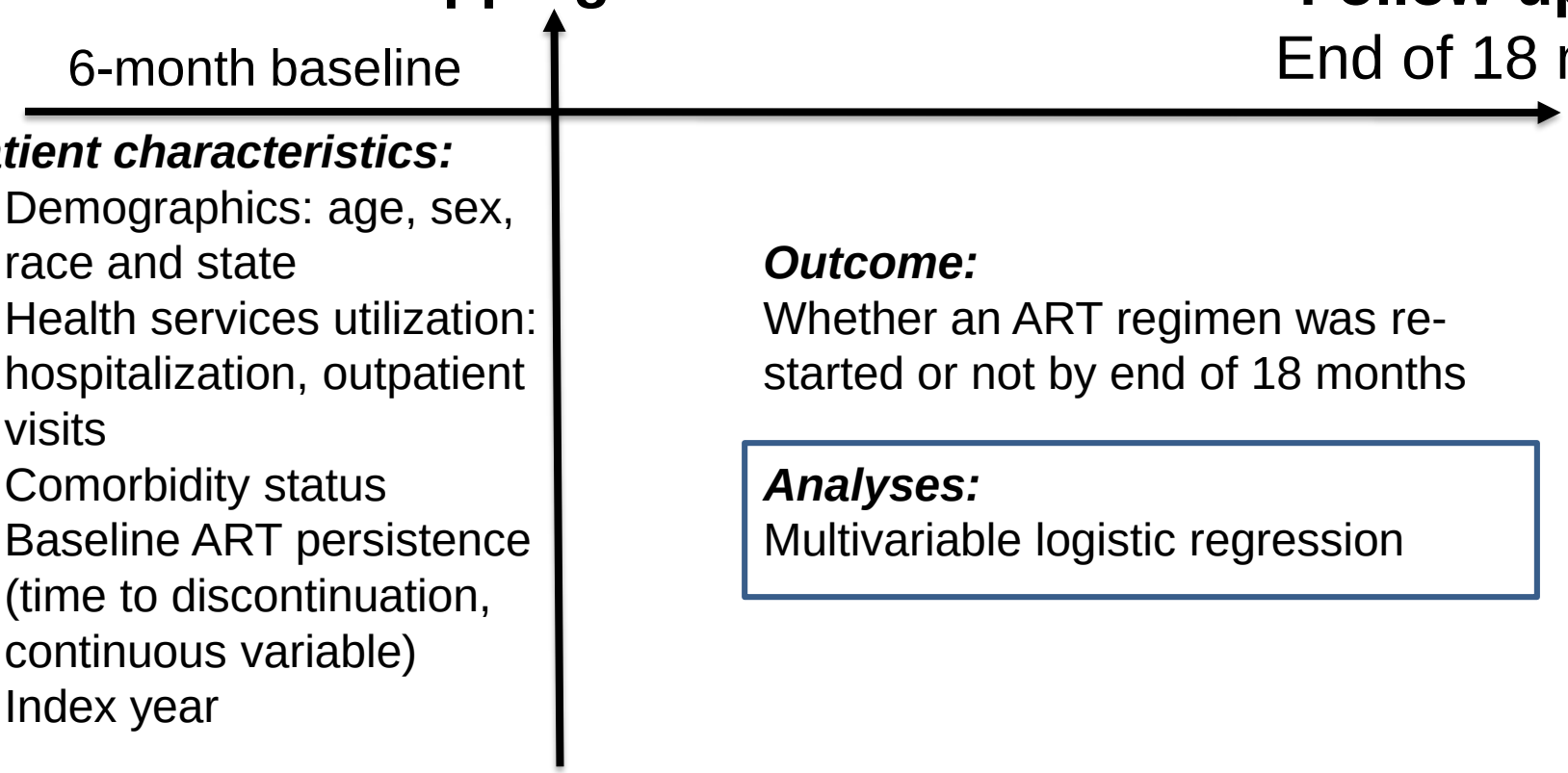
Methods: Study Population

- Medicaid beneficiaries who stopped an ART regimen
  - ART regimen: drugs from 2+ ART drug classes for ≥30 days
  - ART stopping date: last prescription fill + 90 days' gap

Methods: Primary Analysis



Patient characteristics:

- Demographics: age, sex, race and state
- Health services utilization: hospitalization, outpatient visits
- Comorbidity status
- Baseline ART persistence (time to discontinuation, continuous variable)
- Index year

Outcome:
Whether an ART regimen was re-started or not by end of 18 months

Analyses:
Multivariable logistic regression

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Methods: Sensitivity Analysis

- Follow-up end to the earliest event:
  - ART re-started (study outcome)
  - End of 18 months
  - Death
  - Medicaid FFS discontinuation
  - Medicaid MCO enrollment/dual status
  - Multistate status

N=110,338

- Analysis: multivariable Cox proportional hazards regression

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Results: Overall Baseline Characteristics

Baseline characteristics	Study cohort (n=30,384)
Age	
Mean (SD), years	42.3 (9.2)
<45 years	60.5%
Females	47.8%
Race	
Black, not Hispanic	55.1%
White, not Hispanic	18.7%
Hispanic or Latino	17.2%
Presence of hospitalization	25.2%
Outpatient visits	
0	12.1%
1-2	8.2%
≥3	79.7%
Presence of non-HIV-related comorbidities	13.8%
Presence of HIV-related comorbidities	5.6%

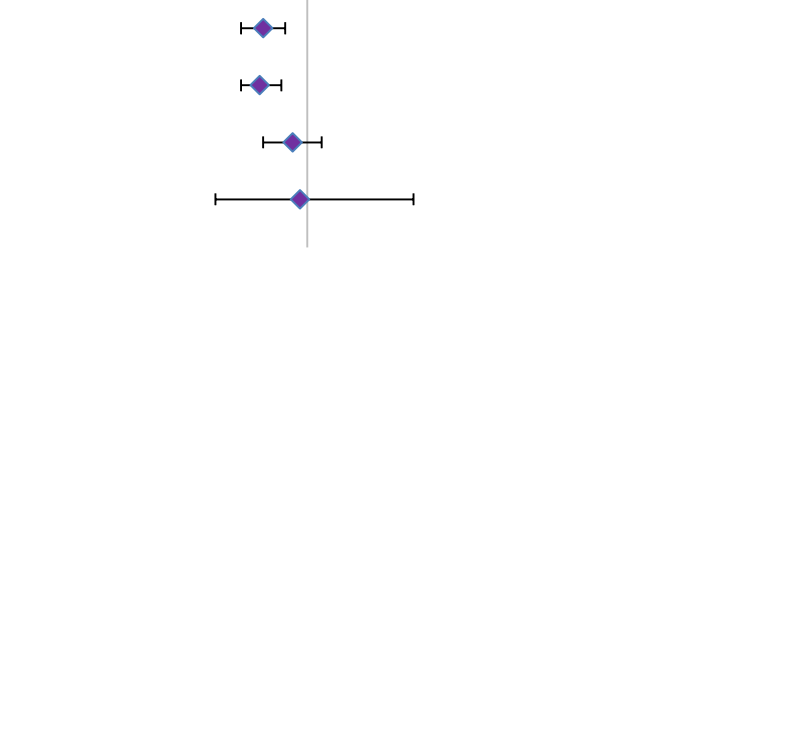
Results: 18-month ART Re-start Rate

ART re-start status following discontinuation	**Count, n (%)**
Did not re-start ART	**17,412 (57.3)**
Re-started within 6 months	3,640 (12.0)
Re-started between month 7-12	6,907 (22.7)
Re-started between month 13-18	2,425 (8.0)
Total	30,384 (100)

Results: Logistic Regression

Patient characteristics at baseline	**Adjusted ORs (99% CIs)**
Demographics	
Age: <45 vs. ≥45 years	0.88 (0.82 - 0.94)
Females vs. Males	0.87 (0.82 - 0.93)
Black vs. White	0.96 (088 - 1.04)
Hispanic/Latino vs. White	0.98 (0.75 - 1.29)

Adjusted ORs (99% CIs)



Note: Model adjusted for states.

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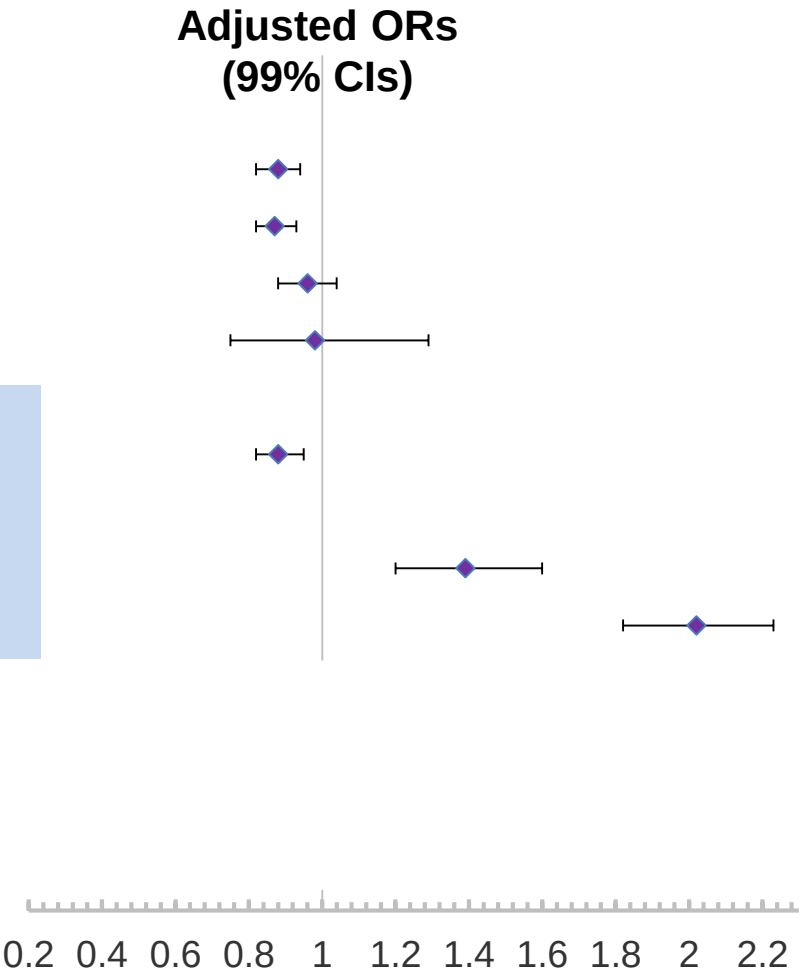
Health services utilization	
Hospitalization, yes vs. no	0.88 (0.82 - 0.95)
Outpatient visits	
1-2 vs. 0	1.39 (1.20 - 1.60)
3+ vs. 0	2.02 (1.82 - 2.23)



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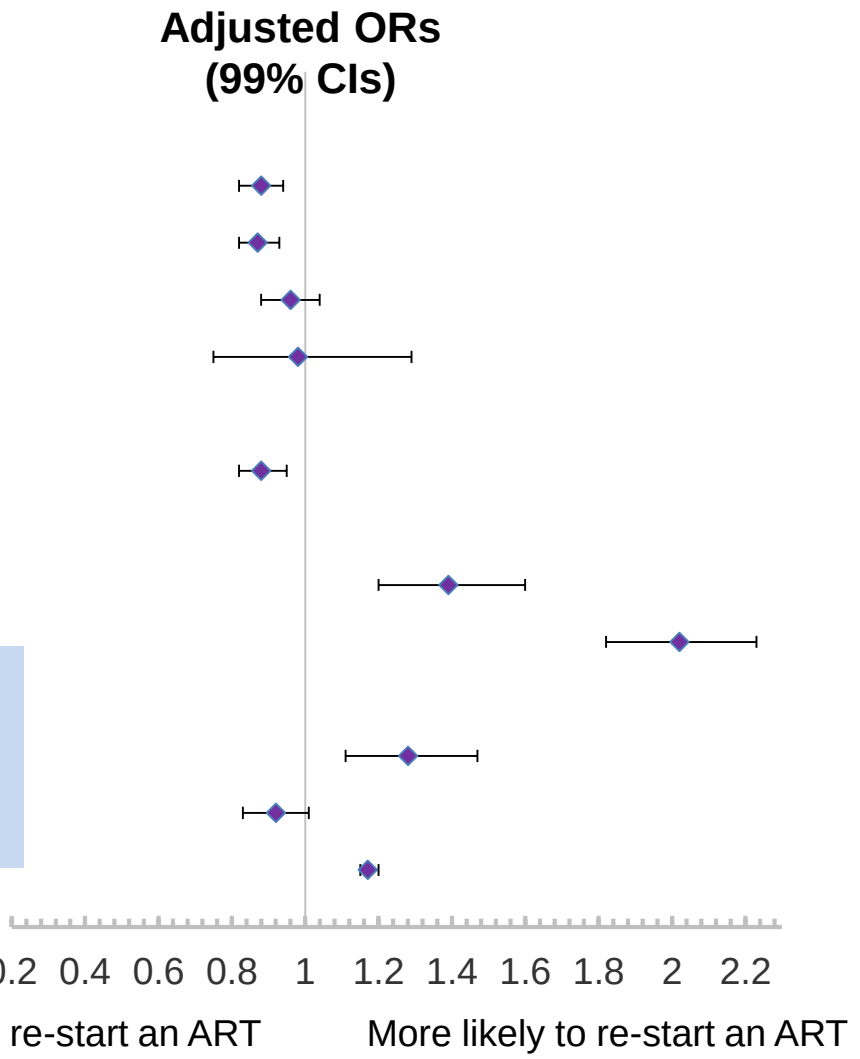
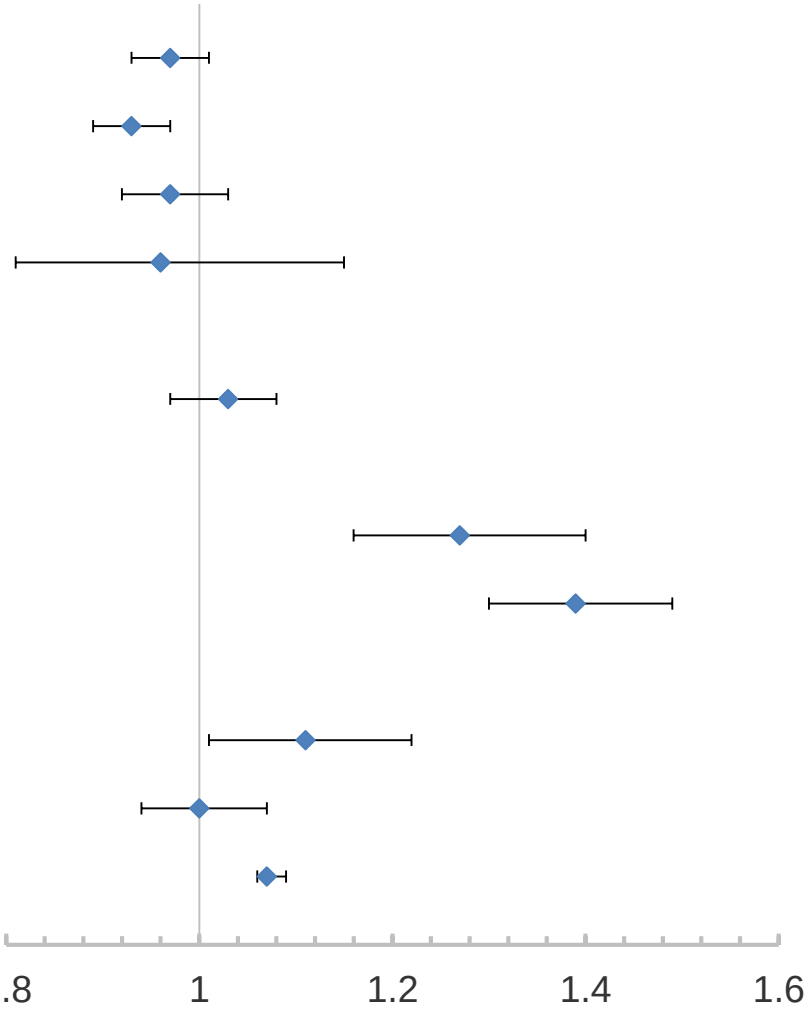
1-2 vs. 0	1.39 (1.20 - 1.60)
3+ vs. 0	2.02 (1.82 - 2.23)
Comorbidities	
HIV-related	1.28 (1.11 - 1.47)
HIV-unrelated	0.92 (0.83 - 1.01)
Persistence, 1 month increase	1.17 (1.15 - 1.20)



Note: Model adjusted for state

Results: Cox Proportional Hazard Model (n=110,338)

Patient characteristics at baseline	Adjusted ORs (99% CIs)
Demographics	
Age: <45 vs. ≥45 years	0.97 (0.93 - 1.01)
Females vs. Males	0.93 (0.89 - 0.97)
Black vs. White	0.97 (0.92 - 1.03)
Hispanic/Latino vs. White	0.96 (0.81 - 1.15)
Health services utilization	
Hospitalization, yes vs. no	1.03 (0.97 - 1.08)
Outpatient visits	
1-2 vs. 0	1.27 (1.16 - 1.40)
3+ vs. 0	1.39 (1.30 - 1.49)
Comorbidities	
HIV-related	1.11 (1.01 - 1.22)
HIV-unrelated	1.00 (0.94 - 1.07)
Persistence, 1 mon. increase	1.07 (1.06 - 1.09)



Note: Model adjusted for state

Limitations

- No laboratory data e.g., CD4+ cell counts and viral loads
- Prescription claims
  - Filled prescription ≠ medication taken
  - Alternative sources of medications (samples, free supplies)
- Unmeasured confounders
  - e.g., substance use status, education
- Generalizability
  - Medicaid versus Medicare, commercially insured, and uninsured HIV patients
- Lack of follow-up after Medicaid disenrollment

Conclusions

- Only 42.7% of HIV patients using ART re-start therapy following 90-day discontinuation
- Patients with greater engagement in healthcare (outpatient visits) were more likely to re-start their ART regimen (adjOR 2.02)
- Females were less likely to re-start their ART regimen (adjOR 0.87)
- Differences in Medicaid eligibility and benefits across states are expected to influence ART re-initiation

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Implications

- Efforts to improve patients' engagement in care should lead to better ART use

- Efforts for younger, female patients should be prioritized

Thank you! Questions?

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