The effect of antidepressant initiation on viral load suppression among PWH with depression in Baltimore, MD, USA, 2012-2023

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# Depression is a key risk factor for unsuppressed VL

- 5-15% of people with HIV (PWH) in the US do not maintain a suppressed viral load (VL) after initiating ART

- Depression is a key risk factor for having an unsuppressed VL

- People with treated depression have similar VL to those without depression

- BUT prevalent depression treatment ≠ decision to initiate an antidepressant

DiPrete et al. *AIDS Behav*, 2019; Gokhale et al. *AIDS Behav* 2019; Lesko et al. *AIDS* 2021; Hernán *Am J Epidemiol* 2015

Aim

- To estimate the effect of initiating any antidepressant on subsequent viral suppression among PWH with clinically recognized depression

Setting

- The Johns Hopkins HIV Clinical Cohort includes PWH receiving care in John G. Bartlett Specialty Practice in East Baltimore, Maryland, US

- Co-located psychiatry service offering comprehensive psychiatric evaluation, diagnosis, and treatment for psychiatric conditions and substance use
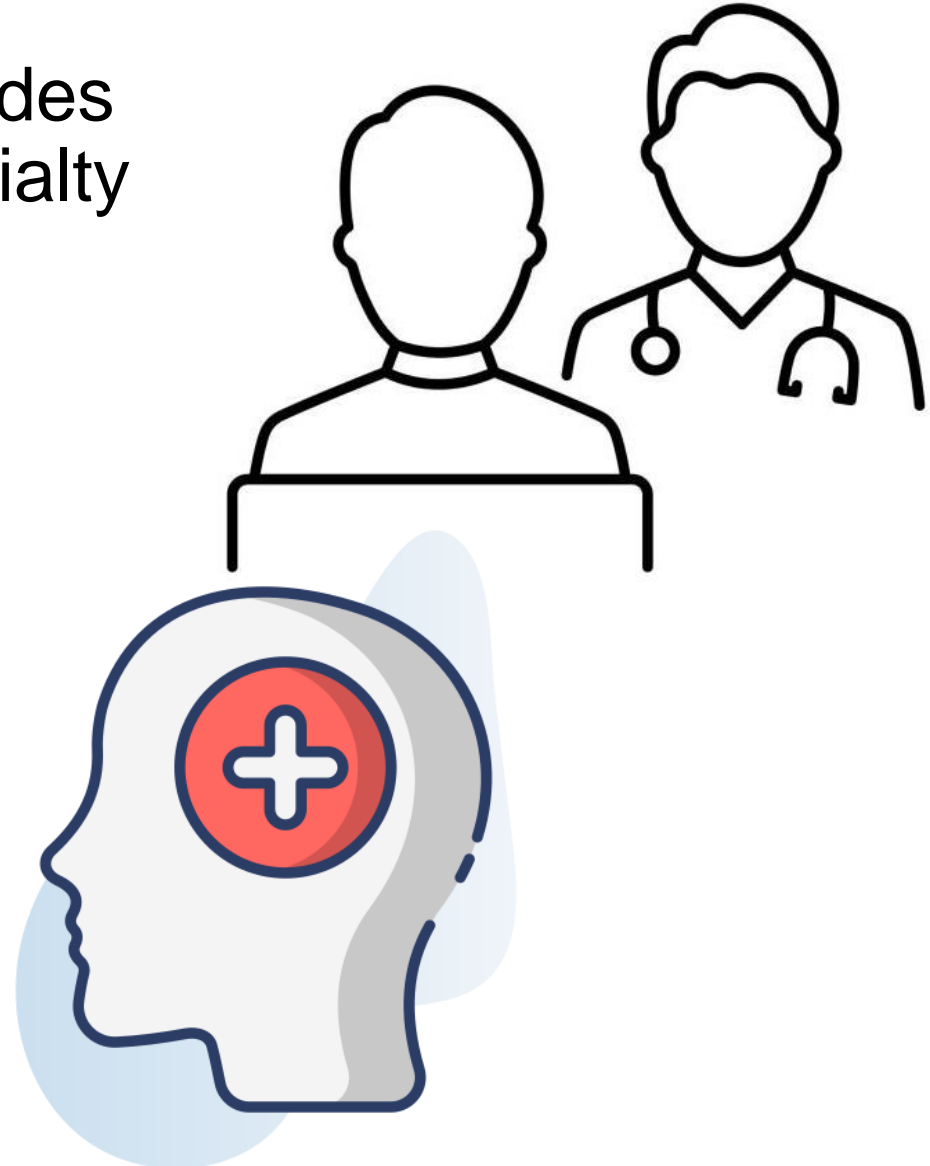
Data

- Medical records including
  - Diagnoses
  - Laboratory test results
  - Visit records
  - Prescription records
- A subset of patients also consent to provide Patient Reported Outcomes (PROs) on tablet-based surveys approximately every 6 months
- Trained abstractors review the medical record and abstract heroin, cocaine, and unhealthy alcohol use for all patients for every contiguous 6 months they are in care
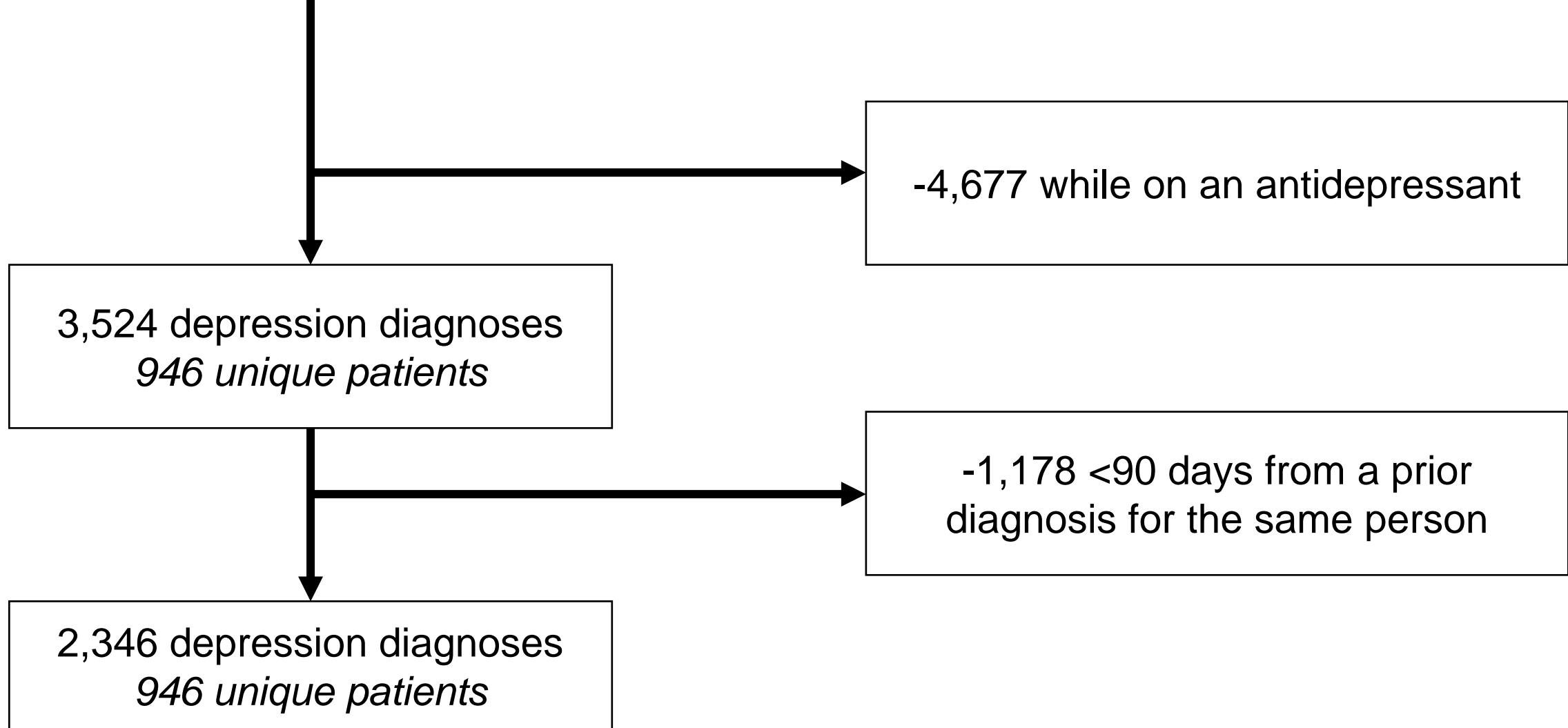
Study Sample

21,438 unique (patient, day) depression diagnoses from Jan 2012 to Jun 2022
1,787 unique patients

-784 prior to ART initiation
-1,570 prior to enrollment in the cohort

19,385 depression diagnoses
1,665 unique patients

-5,129 with bipolar disorder
-1,648 with schizophrenia disorder
-5,420 on antipsychotic medication
-6,038 with >1 Mental Health visits in prior 90 days

8,201 depression diagnoses
1,195 unique patients

-4,677 while on an antidepressant

3,524 depression diagnoses
946 unique patients

-1,178 <90 days from a prior diagnosis for the same person

2,346 depression diagnoses
946 unique patients

Exposure, Outcome

Exposure: Initiation of any antidepressant within 1 month of index depression diagnosis

Index Dx 1 mo 3 mos 12 mos
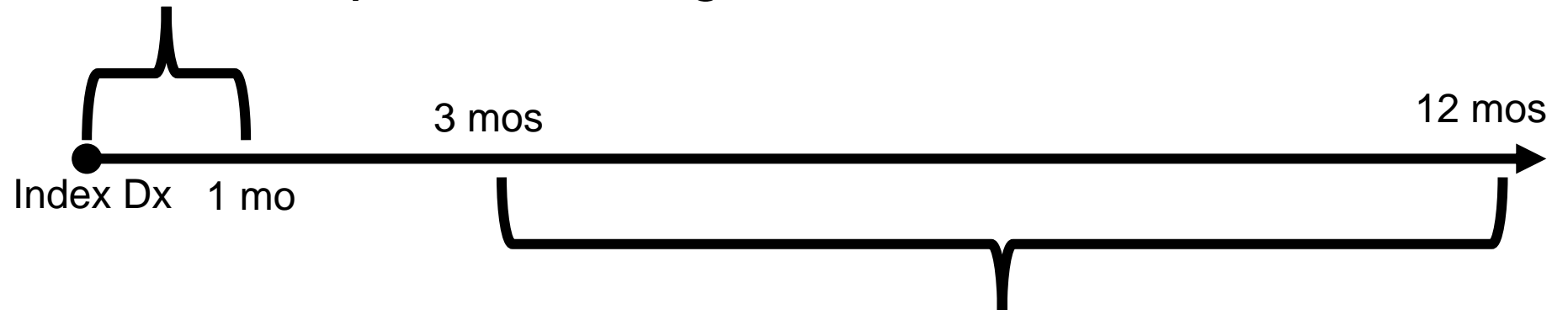
Outcome: First viral load measurement 3-12 months subsequent >200 copies/mL
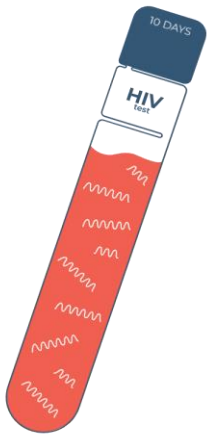
Estimands

- ITT: effect of antidepressant initiation, regardless of persistence
- PP: effect of antidepressant persistence

Statistical Analysis

- AIPW

- Missing data → 50 imputed datasets with chained equations (MICE)

- Standard error → 200 nonparametric bootstrap resamples within each imputed dataset

Gabriel et al. *Stat Med*, 2004; White et al. *Stat Med* 2011; Efron & Tibshirani (1993)
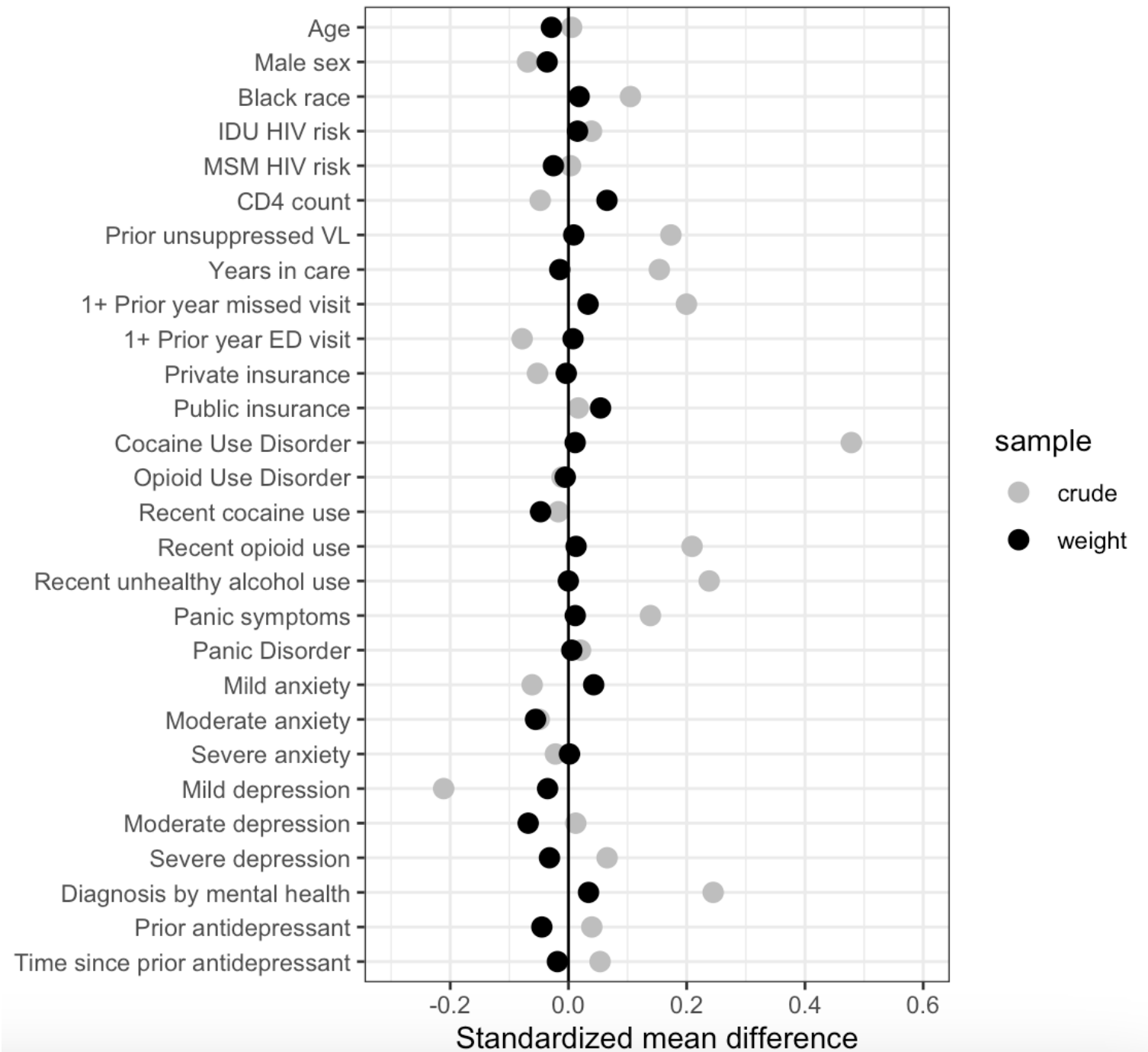
Results

Results

	Risk		Adjusted	
	Exposed	Unexposed	RD	RR
Initiation (ITT)	16.8 (13.0, 20.6)	15.6 (13.1, 18.1)	0.5 (-3.7, 4.8)	1.03 (0.79, 1.36)
Persistence (PP)	16.0 (11.8, 20.1)	15.8 (13.1, 18.4)	-0.5 (-5.2, 4.2)	0.97 (0.71, 1.32)

No significant difference in depressive symptoms; small suggestion of an effect if limited to first observation per person (PP RD=-4.0; 95% CI: -11.4, 3.5) or if exposure was antidepressant initiation + ≥1 mental health visit within 3 months vs. neither (PP RD=-1.9; 95% CI: -10.5, 7.0)

Discussion

- Results are consistent with several small prior trials
- Importance of looking at incident exposures that are tied to a hypothetical intervention

- High levels of baseline viral suppression (80%); everyone experienced higher viral suppression at follow up (~84%)
- Antidepressants are not universally effective (36-67% response probability)
- High levels of prevalent antidepressant treatment in the clinic (60% of depression diagnoses; 20% of unique patients with depression) → maybe high levels of treatment resistance in target population? (43% prescribed an atypical antidepressant)

Pence et al. *AIDS* 2016; Rabkin et al. *Am J Psych* 1999; Rush et al. *Am J Psych* 2006

Conclusions

Although interventions are needed for patients with depression, increasing prescriptions of antidepressants alone is unlikely to meaningfully impact the HIV care continuum in our patient population.