

Long-term buprenorphine treatment for OUD and adverse events following discontinuation among Medicaid beneficiaries

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Conflicts

- Nothing to declare

Funding

- NIDA K23 DA044342-01 (Williams, PI)
“Improving the treatment cascade of MAT initiation and retention for opioid use disorder”
- NIDA 1R01DA047347-01 (Crystal, PI)
“Opioid Overdoses among Medicaid Beneficiaries: Predictors, Outcomes, and State Policy Effects”
- NIDA T32 DA031099 for Hillary Samples (Hasin, PI)
- AHRQ R18 HS03258, U19 HS021112, and R18HS02346 (Drs. Olfson and Crystal)
- CTSA UL1TR003017 (Crystal, PI)

Team

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- **Mark Olfson MD MPH**
Department of Psychiatry, Columbia University New York
State Psychiatric Institute
- **Hillary Samples PhD**
Department of Epidemiology, Columbia University
Mailman School of Public Health
- **Stephen Crystal PhD**
Institute for Health, Health Care Policy, and Aging
Research, Rutgers University

Background

- 2-5 million with OUD in US
- MOUD Initiation and Retention are key stages of OUD Cascade of Care
- Buprenorphine/MOUD treatment reduces risk of overdose and death upwards 60-80%
- Most patients discontinue treatment in 3-6 months
- NQF endorsed a 180-day continuous MOUD measure
- Not empirically based
- Longitudinal studies difficult to conduct

OD Treatment Cascade: 90-90-90 Gaps

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To Battle The Opioid Overdose Epidemic, Deploy The 'Cascade of Care' Model

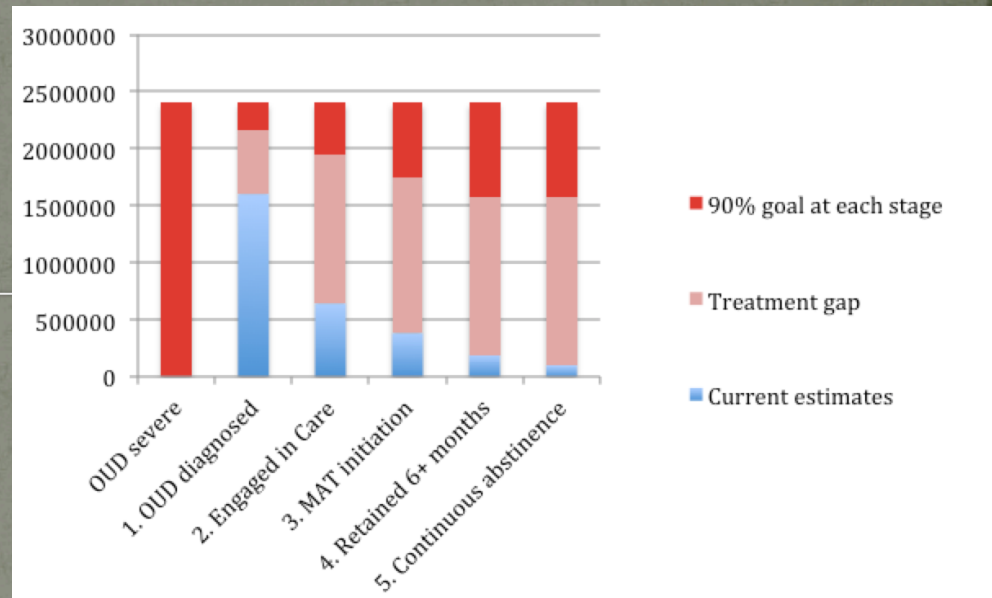
Arthur Robin Williams, Edward Nunes, Mark Olfson

MARCH 13, 2017 10.1377/hblog20170313.059163



TOOLS < SHARE

Despite a plateau in opioid prescribing, opioid-related overdose deaths have continued to climb in epidemic proportion. Much of the recent rise is related to unpredictable adulteration of heroin and black market pills with fentanyl.



Williams AR, Nunes EV, Olfson M (2017). To battle the opioid overdose epidemic, deploy the "Cascade of Care" model. *Health Affairs blog*, March 13, 2017.

Objective

- Among Medicaid beneficiaries who were successfully retained beyond six months minimum
- Assess 4 adverse health outcomes
 - ED visits (all cause)
 - Inpatient hospitalizations (all cause)
 - Receipt of opioid prescriptions
 - Medically-treated overdose
- Following buprenorphine discontinuation (6 mo)

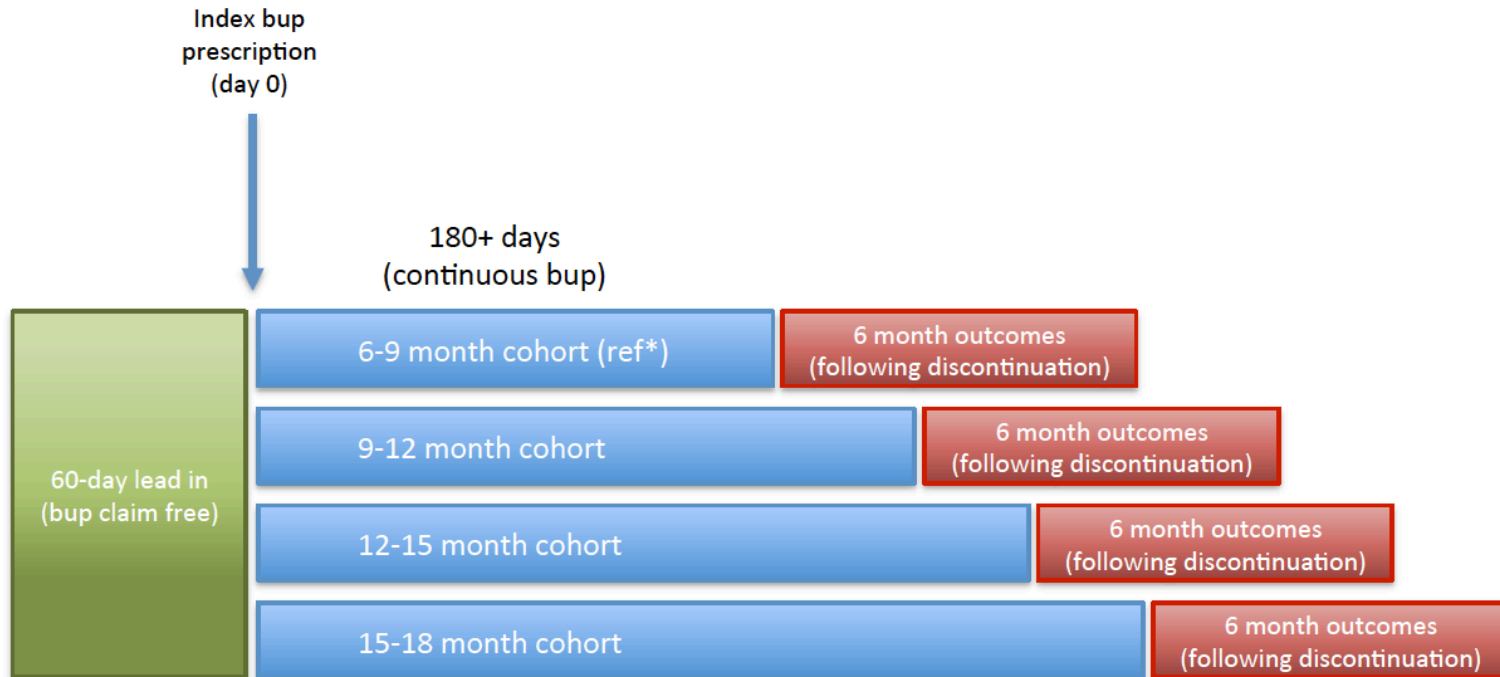
Methods: Data Source

- MarketScan multi-state Medicaid claims
 - An estimated 5-8 states, anonymous
 - Covering 12 million beneficiaries annually
 - Enrollment information, insurance plan type
 - Demographic characteristics (age, sex, race)
 - Diagnostic codes
 - Billing codes across all services paid by Medicaid
 - Inpatient, outpatient, and emergency services
 - Prescription drugs/pharmacy billed to Medicaid

Methods: Approach

- Retrospective longitudinal cohort analysis
- Continuously enrolled through 6 months following buprenorphine discontinuation
- Calendar years: 2013, 2014, 2015, 2016, 2017
- Adults 18-64 years
- Received buprenorphine continuously for ≥ 180 days
- **Cohorts** retained for 6-9 months (ref.), 9-12 months, 12-15 months, and 15-18 months

Figure: Methods



*6-9 month cohort was used as a reference group for the 9-12 month, 12-15 month, and 15-18 month cohorts. Bup = buprenorphine medications FDA-approved for treatment of OUD. An index buprenorphine prescription was defined by a single buprenorphine prescription with no buprenorphine claim in the preceding 60 days in attempt to capture new episodes. Discontinuation was determined following a 60-day lapse between refills and defined by the last day of medication coverage. Four primary outcomes in the six-month period following discontinuation were analyzed: all-cause emergency department visits, all-cause hospitalizations, opioid prescriptions, and medically treated overdoses

Figure: Study Sample

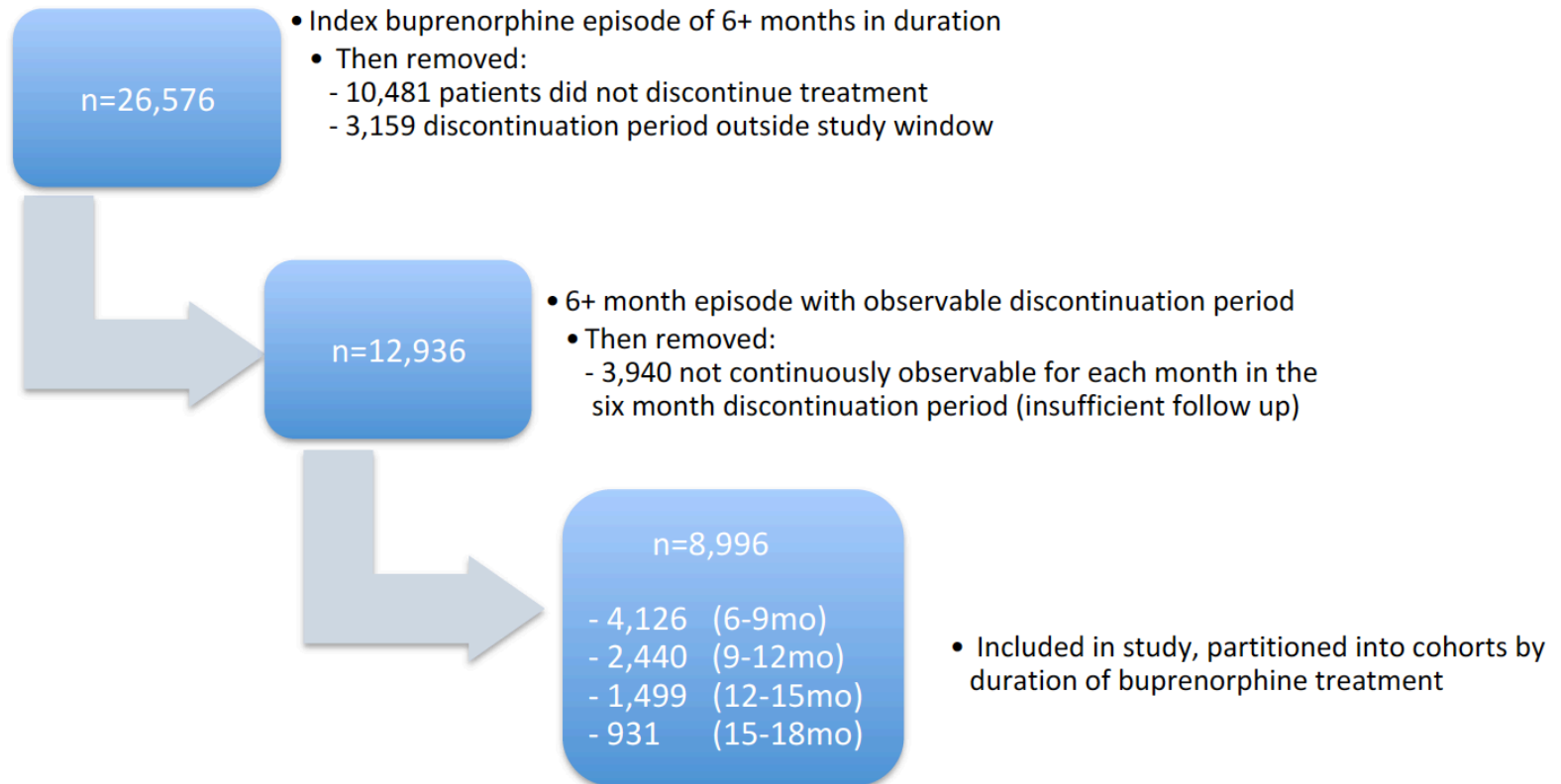


Table 1: Baseline Characteristics

	Total	6-9 months		9-12 months		12-15 months		15-18 months	
	N	N	%	N	%	N	%	N	%
	8,996	4,126	45.9	2,440	27.1	1,499	16.7	931	10.3
Demographics									
Sex									
Male	3,512	1,641	39.8	934	38.3	583	38.9	354	38.0
Female	5,484	2,485	60.2	1,506	61.7	916	61.1	577	62.0
Age									
18-24	966	462	11.2	258	10.6	157	10.5	89	9.6
25-34	4,473	2,072	50.2	1,210	49.6	718	47.9	473	50.8
35-44	2,400	1,079	26.2	654	26.8	418	27.9	249	26.7
45-54	856	375	9.1	241	9.9	151	10.1	89	9.6
55-64	301	138	3.3	77	3.2	55	3.7	31	3.3
Race/ethnicity									
White	8,234	3,772	91.4	2,220	91.0	1,372	91.5	870	93.4*
Non-white	762	354	8.6	220	9.0	127	8.5	61	6.6*
Medicaid plan type									
FFS	2,681	1,237	30.0	762	31.2	409	27.3*	273	29.3
Capitation	6,315	2,889	70.0	1,678	68.8	1,090	72.7*	658	70.7
Clinical Characteristics									
Mental Health Diagnosis	2,777	1,273	30.9	764	31.3	454	30.3	286	30.7
Substance Use Diagnoses									
Alcohol use disorder	430	205	5.0	107	4.4	77	5.1	41	4.4
Non-opioid drug use disorder	1,951	931	22.6	517	21.2	308	20.5	195	20.9
Clinical Characteristics	Mean	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Initial buprenorphine dose (mg)	8.0	7.9	2.3	8.0	2.3	8.2	2.4**	8.2	2.4**

Results

- Adverse events were common across all cohorts
- Almost half of patients (42.1-49.9%) seen in the emergency department at least once
- Compared to those retained for 6-9 months, patients retained on buprenorphine for 15-18 months had lower odds of:
 - Emergency department visits, OR 0.75*** (0.65-0.86)
 - Inpatient hospitalizations, OR 0.79* (0.64-0.99)
 - Filling opioid prescriptions, OR 0.67*** (0.56-0.80)
 - No difference in medically treated overdose (~5%)

Figure: Results

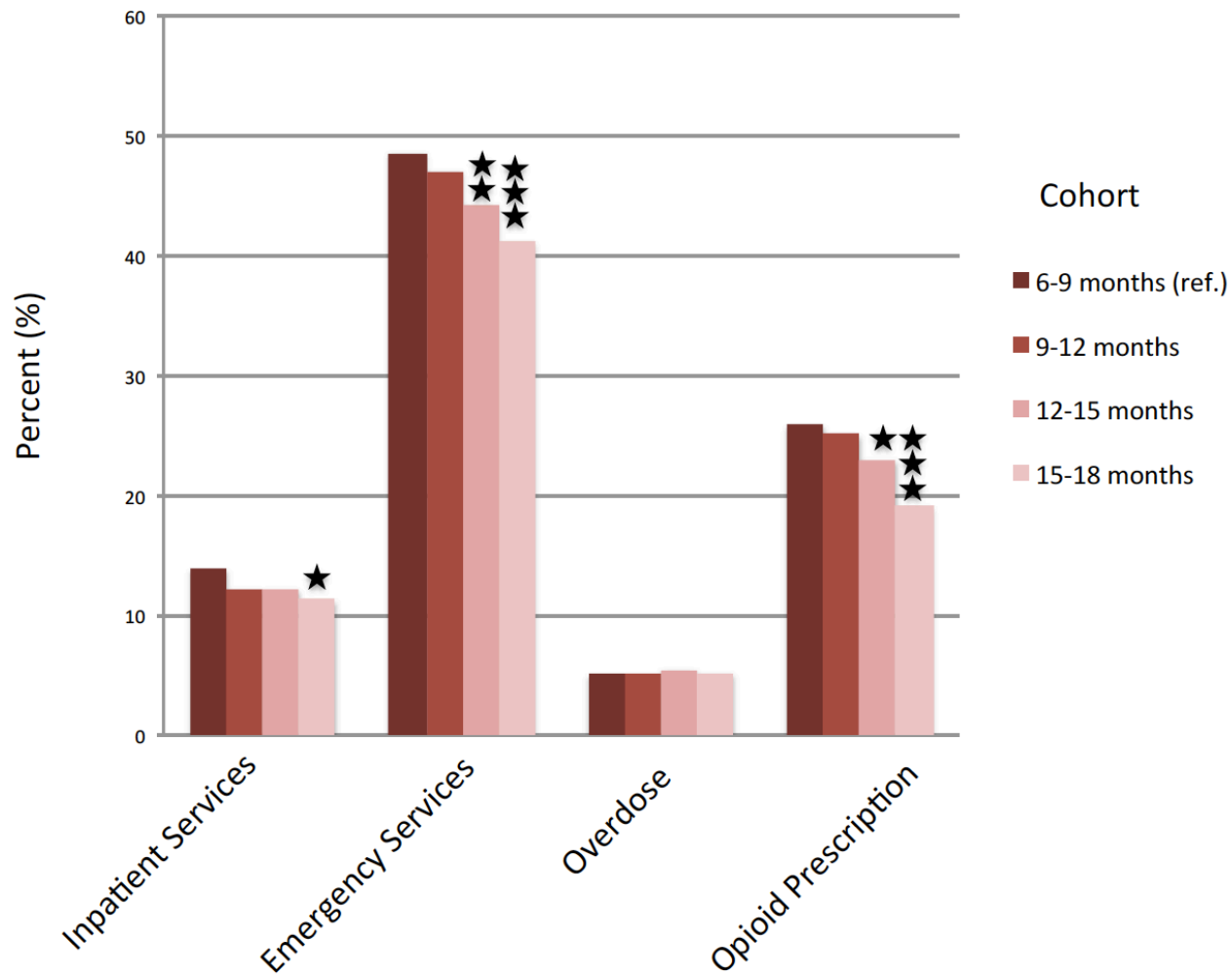


Table 2a: Outcomes

	Inpatient Hospitalization		Emergency Department Visit		Overdose		Opioid Prescription	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Episode Duration								
6-9 months (n=4,126)	Ref.		Ref.		Ref.		Ref.	
9-12 months (n=2,440)	0.86	(0.74, 1.01)	0.94	(0.85, 1.04)	1.04	(0.82, 1.30)	0.95	(0.85, 1.07)
12-15 months (n=1,499)	0.86	(0.72, 1.03)	0.84	(0.75, 0.95)**	1.10	(0.84, 1.43)	0.84	(0.73, 0.97)*
15-18 months (n=931)	0.79	(0.64, 0.99)*	0.75	(0.65, 0.86)***	1.04	(0.75, 1.44)	0.67	(0.56, 0.80)***
Demographics								
Sex								
Male	Ref.		Ref.		Ref.		Ref.	
Female	1.10	(0.96, 1.26)	1.16	(1.06, 1.27)***	0.65	(0.54, 0.79)***	1.39	(1.25, 1.54)***
Age								
18-24	Ref.		Ref.		Ref.		Ref.	
25-34	0.94	(0.76, 1.16)	0.98	(0.85, 1.12)	0.83	(0.61, 1.15)	1.20	(1.01, 1.43)*
35-44	0.94	(0.74, 1.18)	1.03	(0.88, 1.20)	0.95	(0.68, 1.33)	1.52	(1.26, 1.83)***
45-54	1.39	(1.06, 1.82)*	1.04	(0.86, 1.25)	0.76	(0.50, 1.16)	2.14	(1.72, 2.67)***
55-64	1.79	(1.26, 2.57)***	1.37	(1.05, 1.78)*	0.95	(0.54, 1.64)	2.76	(2.07, 3.69)***
Race/ethnicity								
White	Ref.		Ref.		Ref.		Ref.	
Non-white	1.22	(1.27, 2.53)***	1.33	(1.14, 1.54)***	1.06	(0.76, 1.48)	1.09	(0.92, 1.30)
Medicaid Plan								
FFS	Ref.		Ref.		Ref.		Ref.	
Capitation	1.19	(1.03, 1.37)*	1.09	(0.99, 1.20)	1.21	(0.98, 1.50)	1.00	(0.90, 1.20)

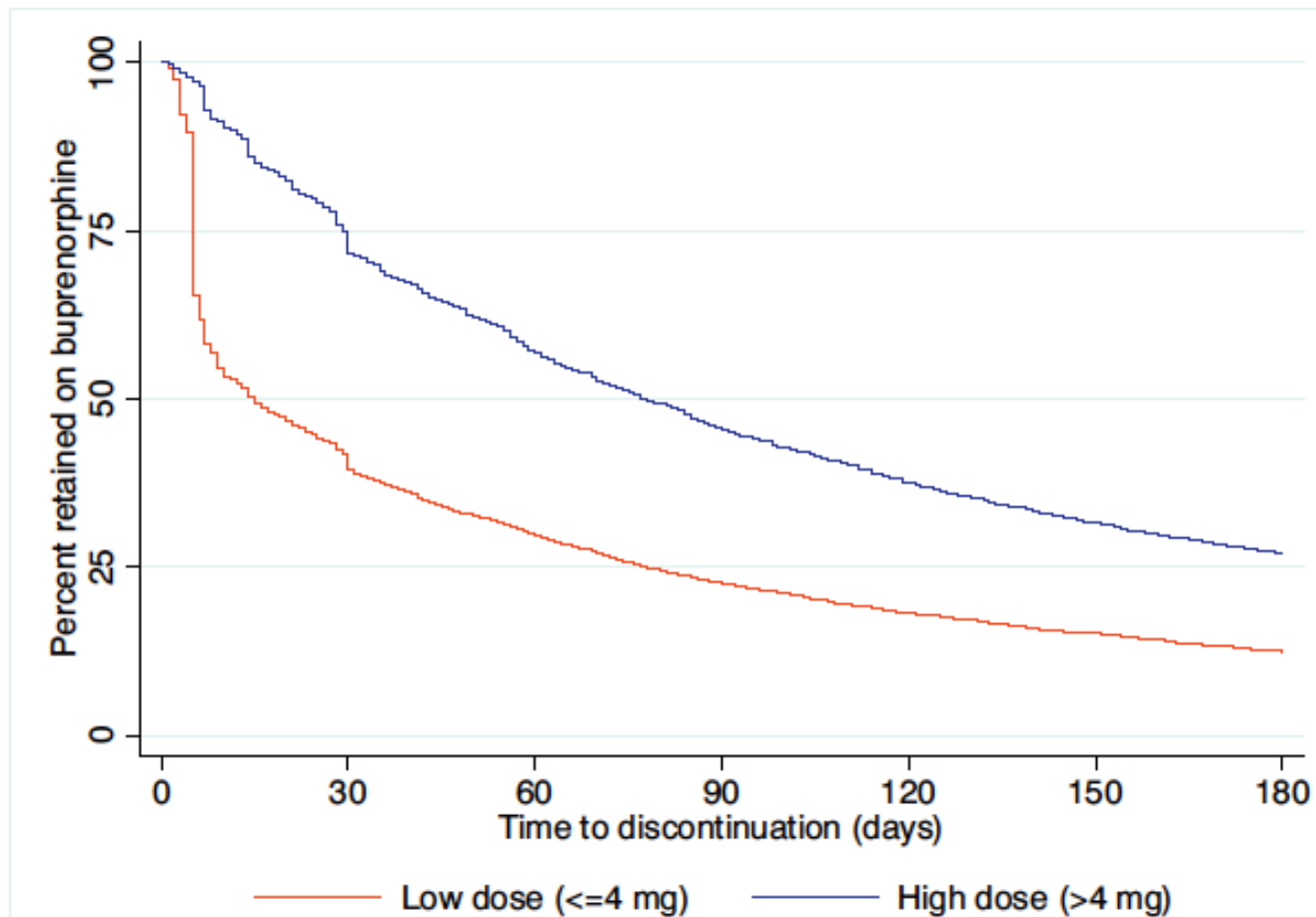
Table 2b: Outcomes

	Inpatient Hospitalization		Emergency Department Visit		Overdose		Opioid Prescription	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Episode Duration								
6-9 months (n=4,126)	Ref.		Ref.		Ref.		Ref.	
9-12 months (n=2,440)	0.86	(0.74, 1.01)	0.94	(0.85, 1.04)	1.04	(0.82, 1.30)	0.95	(0.85, 1.07)
12-15 months (n=1,499)	0.86	(0.72, 1.03)	0.84	(0.75, 0.95)**	1.10	(0.84, 1.43)	0.84	(0.73, 0.97)*
15-18 months (n=931)	0.79	(0.64, 0.99)*	0.75	(0.65, 0.86)***	1.04	(0.75, 1.44)	0.67	(0.56, 0.80)***
Clinical Characteristics								
Mental Health Diagnosis	1.56	(1.37, 1.78)***	1.49	(1.36, 1.64)***	1.61	(1.32, 1.96)***	1.58	(1.42, 1.75)***
Substance Use Diagnoses								
Alcohol use disorder	1.61	(1.26, 2.05)***	1.34	(1.09, 1.63)**	2.02	(1.47, 2.79)***	0.98	(0.78, 1.23)
Non-opioid drug use disorder	1.70	(1.48, 1.95)***	1.26	(1.13, 1.39)***	1.51	(1.22, 1.86)***	1.07	(0.95, 1.21)
Treatment Characteristics								
Initial buprenorphine dose	0.99	(0.96, 1.02)	0.98	(0.97, 1.00)	1.00	(0.97, 1.04)	0.99	(0.97, 1.01)

Limitations

- Residual confounding, unmeasured variables
- Not possible to ascertain indicators of addiction severity or response to treatment from claims data
 - However, covariates associated with addiction severity were included in all analyses (e.g. comorbid substance use disorder, mental illness)
- Sample likely represents relatively stable patients
 - A minority of Medicaid patients reach 6 months
 - Likely differ from early drop-outs

Samples H, Williams AR, Olfson M, Crystal S: Risk factors for premature discontinuation of buprenorphine treatment for opioid use disorders in a multi-state sample of Medicaid enrollees. *J Subst Abus Treat* 2018; 95:9-17.



Limitations

- Lack of data regarding vital status
- Unable to distinguish fatal from non-fatal overdose
 - Given that overdoses occurred at similar rates across cohorts, it is unlikely that fatal overdoses were differentially distributed across the study cohorts
- Beneficiaries who experienced fatal overdoses in the field would have lost Medicaid eligibility and would therefore have been ineligible for analysis in this study
- Excluded Medicare/duals
- May not generalize to other publicly or commercially insured, or uninsured, populations