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Buprenorphine treatment persistence and healthcare expenditures: a retrospective claims study

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Disclosures

- This study was funded by Braeburn
- NBK is an employee of Braeburn

Opioid Use Disorder (OUD) – A Chronic Relapsing Brain Disease

- OUD is a chronic, relapsing disease which involves functional changes to some brain circuits related to self-control and decision making[1]
- Defined as a physical dependence with compulsive drug seeking and use despite adverse consequences[1]
- Individuals attempting to abstain from opioids may relapse and revert to opioid use[2]
- OUD can be successfully managed with medications (MOUD), including buprenorphine, methadone and naltrexone.[1]

An estimated 10.1 million Americans, misused opioids and 1.6 million people were diagnosed with OUD in 2019*[3]

***Persons aged 12 years or older**

1. Volkow, N.D., 2018, The Science of Addiction 2. American Psychiatric Association, 2013, DSM-5 3. SAMHSA, 2019 Survey on Drug Use

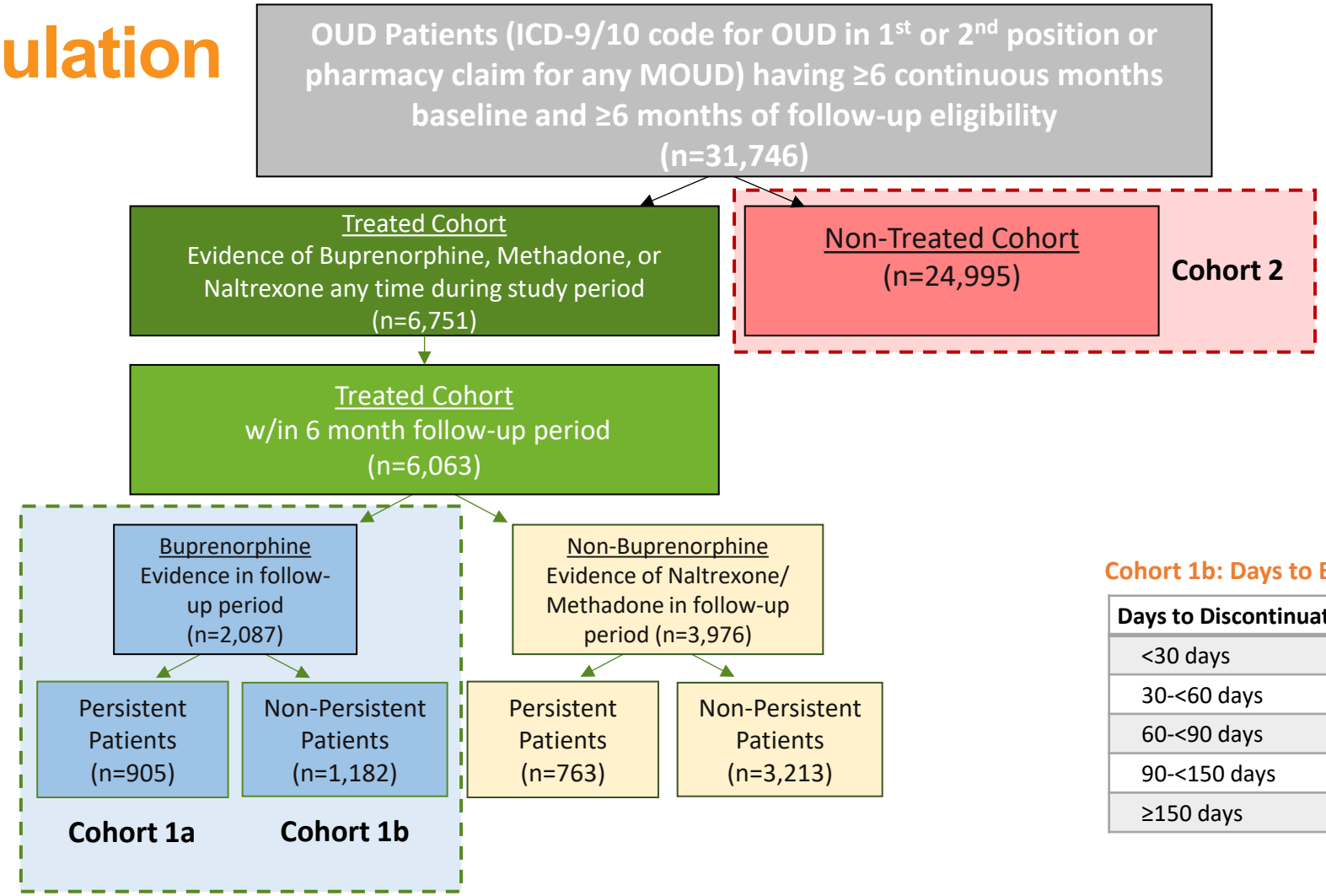
Objectives

- To describe healthcare resource utilization and costs among patients not treated with MOUD, treated with buprenorphine and not-persistent, and treated with buprenorphine and persistent on treatment.

Design and Methodology

- Retrospective claims study from a database of 15.9 million patients during a 45-month period (January 1, 2014 - September 30, 2017) from a national US health plan providing commercial and Medicare Advantage coverage
  - Medical claims: ICD-9/10 diagnosis codes, procedure codes, and site of service codes
  - Pharmacy claims: drug, dose, and days of supply
- All-cause and OUD-related emergency department (ED) and inpatient (IP) visits were identified
- Intravenous drug use (IVDU) complications were assessed as ED/ IP visits for cellulitis and abscess
- Results are reported in aggregate and healthcare utilization (HCU) costs in per patient per year
- Persistence was measured as the number of days from first to last buprenorphine claim before a ≥30-day gap
  - Individuals whose last MOUD claim was 30 days or fewer before the end of the follow up period were considered to be persistent
- Three cohorts were evaluated: buprenorphine persistent, buprenorphine non-persistent and non-treated (no MOUD claims)

Study Population



Cohort 1b: Days to Buprenorphine Discontinuation

Days to Discontinuation	% of Patients (n=1,182)
<30 days	34%
30-<60 days	31%
60-<90 days	15%
90-<150 days	20%
≥150 days	--

Index date: first date with evidence of OUD

MOUD, medication for the treatment of opioid use disorder; OUD, opioid use disorder

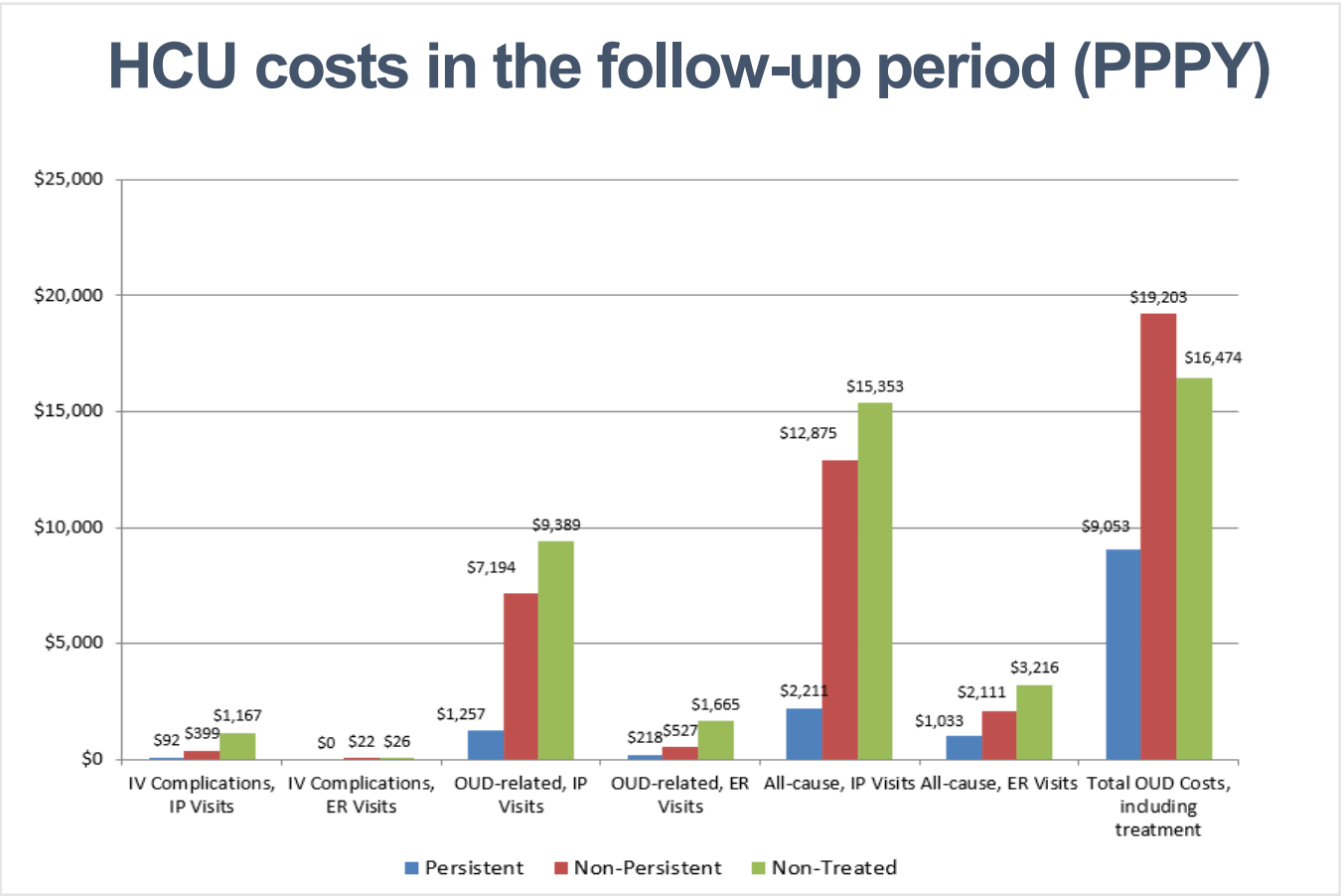
Patient Demographics and Selected Clinical Characteristics

	Persistent BPN (Cohort 1a)	Non-Persistent BPN (Cohort 1b)	Non-Treated (Cohort 2)
Sample Size (n)	905	1,182	24,995
Demographics			
Gender, % male	67%	65%	58%
Age (years), mean	37.7	37.0†	46.9
Episode Risk Group Score*, mean	2.1	2.7†	3.6
Specific Baseline Comorbidities, %			
ADHD	3.2%	3.5%	2.3%
PTSD	1.8%	1.9%	1.7%
Hepatitis C	0.3%	0.9%	0.03%
Chronic Pain	22%	28%†	31%
Back Pain	45%	54%†	59%
Baseline Substance Abuse, %			
Cocaine	0.3%	0.3%	0.4%
Alcohol	0.7%	1.8%†	4.5%
Cannabis	0.1%	0.5%	0.9%

†Statistically significant difference ($p<0.05$) between Persistent and Non-Persistent BPN cohorts
*Episode Risk Score (ERG): proprietary algorithm by Optum to describe burden of illness using 12 consecutive months of claims data
BPN, buprenorphine

Results

- Total OUD-related costs were highest for the non-persistent as compared to persistent and non-treated cohorts.
- HCU costs were lowest for the persistent cohort across all evaluated ED and IP domains (IVDU complication, OUD-related, all-cause) as compared to non-persistent and non-treated.
- In the follow-up, 34 (4%) of the persistent had an OUD-related ED visit, compared to 125 (11%) of non-persistent ($p<0.05$) and 6,587 (26%) in non-treated.
- In the follow-up, 54 (6%) of the persistent had an OUD-related IP visit, as compared to 281 (24%) in the non-persistent ($p<0.05$) and 5,296 (21%) in non-treated.



Follow-up period: 6 months post index date
Index date: first claim date with evidence of OUD (diagnosis or pharmacy)
HCU, healthcare utilization; PPPY, per patient per year; IV, intravascular; DU, drug use; IP, inpatient; ER, emergency room; OUD, opioid use disorder

Opioid and Heroin Overdose-related Healthcare Utilization (follow-up)

	Opioid Overdose-related Health Services	Number of Members	Number of Visits	"Per K" (per 12,000 member-months)	Costs ($) PMPY (per member per year)
1a. BPN Persistent (n=905)	Inpatient Visits	2	2	4	46
	ER Visits	0	.	.	.
1b. BPN Non-Persistent (n=1,182)	Inpatient Visits	7	8	14	321
	ER Visits	7	8	13	15
Non-Treated (n=24,995)	Inpatient Visits	147	152	12	231
	ER Visits	143	157	13	31

	Heroin Overdose-related Health Services	#Members	# Visits	"Per K" (per 12,000 member-months)	Costs ($) PMPY (per member per year)
1a. BPN Persistent (n=905)	Inpatient Visits	0	.	.	.
	ER Visits	1	1	2	10
1b. BPN Non-Persistent (n=1,182)	Inpatient Visits	5	5	8	189
	ER Visits	9	10	16	43
Non-Treated (n=24,995)	Inpatient Visits	17	17	2	22
	ER Visits	33	35	3	8

Opioid overdose: diagnosis code (965.09, E850.2, E935.2, T40.0%, T40.2%, T40.4%, or T40.6%) in any position
Heroin overdose: diagnosis code (T40.1%) in any position
Follow-up period: 6 months post index date
Index date: first claim date with evidence of OUD (diagnosis or pharmacy)
BPN, buprenorphine; ER, emergency room
For Cohort 1b Inpatient setting , one member was removed owing to an outlier cost value (n=1,181

Limitations

- Potential for errors in coding for medical claims.
- Pharmacy claims reflect fills but not if the medication was taken by the patient. Some patients may have been using MOUD before the baseline period
- Various databases hold samples which are not random. As such, they may not be generalizable to the other populations.

Conclusions

- This study highlights the potential economic and clinical benefits of buprenorphine persistence in patients with OUD.
- Overall, buprenorphine persistence was shown to be low and early discontinuation was common.
- Buprenorphine persistent patients were less likely to utilize the emergency department or be admitted for all-cause and opioid-related complications and had half the total costs of the non-persistent.
- Treatment strategies which improve buprenorphine persistence can improve patient outcomes, reduce healthcare resource utilization, and reduce costs.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