Healthcare resource utilization and cost among commercially insured Opioid Use Disorder patients treated with monthly injectable buprenorphine: a retrospective claims analysis

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Introduction

- Opioid Use Disorder (OUD) is a chronic, treatable condition associated with increased rates of morbidity and mortality, including overdose.[1]
- Multiple effective medications for OUD (MOUD) are approved by the Food and Drug Administration: oral methadone, sublingual or transmucosal buprenorphine and buprenorphine/naloxone (BUP), subcutaneous extended-release buprenorphine (BUP-XR), and intramuscular extended-release naltrexone (NTX-XR).[1,2]
  - Lack of MOUD initiation: 17% of the 4.8 million people aged ≥12 years in the United States who were classified as having an OUD in 2023–2024 received MOUD.[3]
- Data shows that patients with OUD who remain on MOUD for >6 months have fewer overdoses and less serious opioid-related acute healthcare use compared with those who had shorter treatment duration or no treatment.[4]
  - Lack of MOUD retention: Most patients (51–64%) discontinue treatment by 6 months.[5,6]
- This study seeks to fill the gap in evidence regarding the real-world adherence to BUP-XR and its association with patient outcomes and costs.

Objectives

To evaluate patient characteristics, treatment patterns, healthcare resource utilization (HCRU), and costs following initiation of BUP-XR among commercially-insured patients with OUD, overall and stratified by level of adherence to BUP-XR treatment.

Methods

Retrospective Claims Analysis

- Administrative claims data from Merative™ MarketScan® Commercial and Medicare Databases
  - Index selection period: March 1, 2019–December 31, 2022; the index date was the first claim for BUP-XR (i.e., SUBLOCADE®) during the index selection period.
  - Study period: March 1, 2018–December 31, 2023
- Patients were required to have continuous enrollment with medical, pharmacy, and behavioral health benefits 12 months prior to index (baseline period) and 12 months after and including index (follow-up period).
- Patients with BUP-XR utilization 12 months prior to index or those with NTX-XR utilization 30 days prior to index were excluded.
- Patient profiles including demographics, clinical characteristics, and medication use were assessed at baseline. HCRU and cost were assessed during the follow-up period.
- Patients were categorized into sub-cohorts by proportion of days covered (PDC) to BUP-XR during the first 6 months of the follow-up period.

Results

Baseline Demographics and Comorbidities

- The 663 BUP-XR patients identified were on average 37.5±11.4 years old, 67.4% male, and 84.8% resided in urban areas (**Table 1**).
- Common baseline comorbidities and concomitant medications are presented in **Table 1**.

MOUD Adherence

- BUP-XR Adherence: Average BUP-XR PDC during the first 6 months of the follow-up period was 0.6, with 42.4% (n=281) of patients with high adherence (PDC≥0.8) and 16.3% (n=108) with low adherence (PDC<0.2) (**Table 2**).
- MOUD Overall Adherence: Patients with low BUP-XR adherence had an average PDC of 0.5 for all MOUD (BUP-XR plus all other MOUD) during the first 6 months of the follow-up period (**Table 2**).

Table 1. Demographics and Baseline Clinical Characteristics

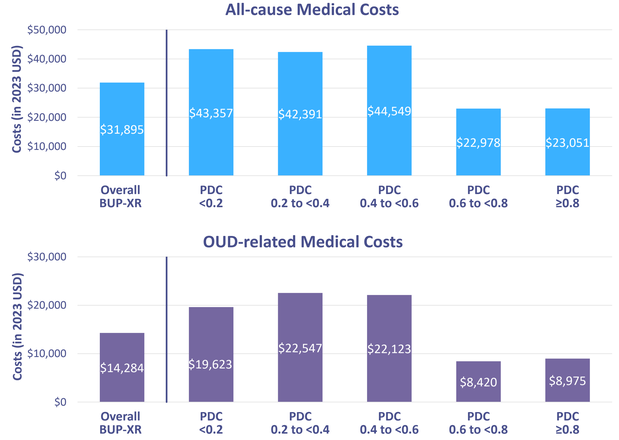
	Overall BUP-XR (N=663)	PDC <0.2 (n=108)	PDC 0.2 to <0.4 (n=99)	PDC 0.4 to <0.6 (n=82)	PDC 0.6 to <0.8 (n=93)	PDC ≥0.8 (n=281)
Demographics (on index date)						
Age, mean (SD)	37.5 (11.4)	37.0 (12.3)	34.6 (10.8)	35.1 (11.6)	37.8 (12.0)	39.3 (10.6)
Sex, %						
Male	67.4	65.7	64.7	68.3	75.3	66.2
Female	32.6	34.3	35.4	31.7	24.7	33.8
Population density, %						
Urban	84.8	83.3	78.8	93.9	90.3	82.9
Rural	14.5	16.7	19.2	6.1	8.6	16.4
Unknown	0.8	0.0	2.0	0.0	1.1	0.7
Insurance plan type, %						
Comprehensive/Indemnity	2.6	3.7	3.0	2.4	0.0	2.9
EPO/PPO	56.3	55.6	50.5	54.9	64.5	56.2
POS/POS with capitation	10.7	9.3	12.1	11.0	4.3	12.8
HMO	11.6	9.3	16.2	12.2	16.1	9.3
CDHP/HDHP	17.7	18.5	17.2	19.5	14.0	18.2
Other/Unknown	1.2	3.7	1.0	0.0	1.1	0.7
Baseline clinical characteristics (in 12-month pre-index period plus index date)						
Charlson Comorbidity Index, mean (SD)	0.4 (0.8)	0.6 (1.3)	0.3 (0.6)	0.3 (0.8)	0.2 (0.6)	0.3 (0.8)
Select clinical condition, %						
OUD	88.5	87.0	86.9	93.9	91.4	87.2
AUD	22.2	25.9	27.3	19.5	19.4	20.6
SUD (other than OUD/AUD)	52.8	60.2	55.6	51.2	49.5	50.5
Depression/bipolar disorder	47.1	50.9	50.5	47.6	47.3	44.1
Generalized anxiety disorder	52.2	55.6	60.6	53.7	47.3	49.1
Chronic pain conditions	39.5	42.6	37.4	31.7	44.1	39.9
Concomitant medications, %						
Narcotic pain medications	19.9	23.2	24.2	15.9	23.7	17.1
Benzodiazepines	29.4	38.9	35.4	25.6	36.6	22.4
Sedative/hypnotics	37.1	37.0	41.4	51.2	39.8	30.6
Antidepressants	64.6	57.4	73.7	67.1	63.4	63.7
Antipsychotics	29.6	38.0	33.3	31.7	36.6	22.1

Table 2. Study Outcomes

	Overall BUP-XR (N=663)	PDC <0.2 (n=108)	PDC 0.2 to <0.4 (n=99)	PDC 0.4 to <0.6 (n=82)	PDC 0.6 to <0.8 (n=93)	PDC ≥0.8 (n=281)
PDC during 6-month post-index period, mean (SD)						
BUP-XR	0.6 (0.3)	0.2 (0.0)	0.3 (0.0)	0.5 (0.0)	0.7 (0.0)	0.9 (0.1)
All MOUD[1]	0.8 (0.3)	0.5 (0.3)	0.6 (0.3)	0.6 (0.2)	0.8 (0.1)	0.9 (0.1)
All-cause healthcare utilization during 12-month post-index period, %						
Admission (excluding for detoxification)	7.2	6.5	8.1	7.3	9.7	6.4
ED visit (excluding for detoxification)	32.0	38.9	39.4	36.6	35.5	24.2
Detoxification[2]	16.0	20.4	27.3	19.5	15.1	9.6
Recurrence[3] of OUD symptoms	12.1	16.7	23.2	13.4	12.9	5.7
Days to recurrence, mean (SD)	130 (105)	78 (85)	141 (110)	94 (75)	139 (97)	192 (114)

[1]Included BUP, BUP-XR, and NTX-XR.
[2]Identified by claims for inpatient and outpatient service (including ED visit) with procedure codes for detoxification.
[3]Defined by claims for inpatient admission, ED visit, or detoxification with a diagnosis for current opioid use/abuse/dependence or opioid overdose in the primary position for inpatient claims or any position for outpatient claims.

Figure 1. Non-MOUD Costs During 12-month Post-index Period



OUD-related costs were identified through medical claims with a diagnosis for current opioid use/abuse/dependence or opioid overdose in the primary position for inpatient claims or any position for outpatient claims.

Healthcare Resource Utilization and Costs

- Compared to BUP-XR patients with low adherence (**Table 2**), patients with high adherence had lower proportions of:
  - All-cause ED visits excluding detoxification (24.2% vs. 38.9%)
  - All-cause detoxification visits (9.6% vs. 20.4%)
  - Evidence of OUD symptom recurrence (i.e., return to use) (5.7% vs. 16.7%)
- After excluding MOUD-related pharmacy costs, patients with high adherence had lower all-cause costs ($23,051 vs. $43,357) and OUD-related costs ($8,975 vs. $19,623) compared to patients with low adherence (**Figure 1**).

Conclusions

- Patient characteristics, healthcare utilization, and costs differ between patients with high (PDC≥0.8) vs. low (PDC<0.2) adherence to BUP-XR.
  - Patients with low adherence are more likely to experience complex medical histories including comorbid substance use and psychiatric disorders.
  - A benefit is observed among patients with high adherence, including fewer ED and detoxification visits, a lower rate of OUD symptom recurrence (i.e., return to use) and lower non-MOUD costs.
- Additional studies evaluating the impact of BUP-XR adherence on real-world outcomes are warranted.

Limitations

- Administrative claims data are subject to limitations in data coding and data entry errors (e.g., the use of MOUD may be under-reported in claims if patients receive the medications during inpatient hospitalization or pay for them out of pocket).
- Study results may not be generalizable to populations with other types of health coverage (e.g., Medicaid or Tricare) or the uninsured.
- The study period occurred during the COVID-19 pandemic when access restrictions to care and disruption of the healthcare system could influence findings.
- Study results have not been adjusted for differences in baseline characteristics between adherence groups.
- Although PDC≥0.8 is commonly used in claims-based studies as the level indicative of medication adherence, this threshold may not capture nuances of real-world treatment behaviors for a long-acting medication.

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Abbreviations

AUD: alcohol use disorder; BUP: sublingual or transmucosal buprenorphine and buprenorphine/naloxone; BUP-XR: buprenorphine extended-release; CDHP: consumer-driven health plan; ED: emergency department; EPO: exclusive provider organization; HCRU: healthcare resource utilization and costs; HDHP: high deductible health plan; HMO: health maintenance organization; MOUD: medications for opioid use disorder; NTX-XR: intramuscular extended-release naltrexone; PDC: proportion of days covered; POS: point of service; PPO: preferred provider organization; OUD: opioid use disorder; SD: standard deviation; SUD: substance use disorder.

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