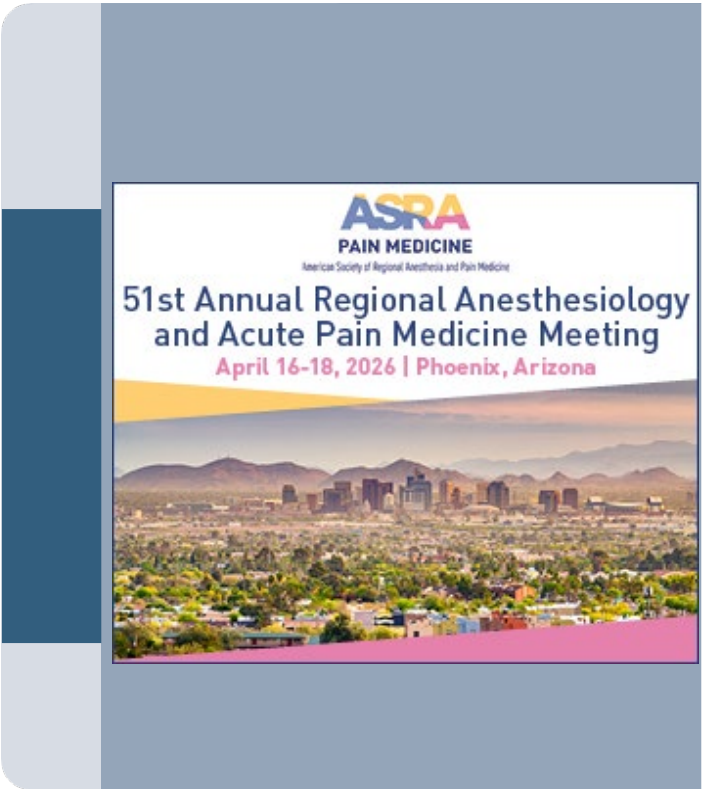




Characteristics of Initial Opioid Prescriptions and Risk of New Persistent Opioid Use and OUD: US Medicaid Populations

Andrew J. Schoenfeld¹; Sushanth Jeyakumar²; Nicole Princic³; Meghan Moynihan³; Ryan Ross³; Ann M. Menzie²

¹Harvard Medical School; Brigham and Women's Hospital, Boston, MA, United States; ²Vertex Pharmaceuticals Incorporated, Boston, MA, United States; ³MarketScan by Merative, Ann Arbor, MI, United States

BACKGROUND

- Medicaid beneficiaries are prescribed opioids at higher rates than those with other sources of insurance, and as a result, are disproportionately impacted by the opioid epidemic. ¹
- This increased prescribing, combined with limited healthcare access and socioeconomic factors such as low-income status, contributes to an increased risk of new persistent opioid use (NPOU) among Medicaid beneficiaries.²
 - NPOU is defined as the continued use of opioids beyond the post-surgical recovery period in patients who were previously opioid naïve.
- Medicaid beneficiaries are also at a higher risk of overdose and opioid use disorder (OUD). In 2023, Medicaid provided coverage to 47% of all nonelderly adults with OUD.³
- Given the elevated risks of NPOU and OUD in the Medicaid population, there is a critical need to better understand how characteristics of initial opioid prescriptions influence these outcomes in this vulnerable population.

OBJECTIVES

- To evaluate the relationship between characteristics of the initial opioid prescription (e.g., days' supply) and risk of NPOU among opioid-naïve post-surgical patients with acute pain in the Medicaid population.**
- Additionally, to analyze the impact of days' supply of the initial opioid prescription on the incidence of OUD.**

METHODS

- A retrospective, longitudinal, observational study was conducted using the Merative MarketScan Multi-State Medicaid database. The study period was from January 1, 2015, through June 30, 2024.
- Opioid naïve adult patients (aged ≥18 years) who were prescribed an opioid medication (date of earliest treatment = index date) between January 1, 2016, and June 30, 2023, either within 14 days before or 30 days after a major surgical procedure for the management of post-surgical acute pain and without a cancer diagnosis in the 12-month period prior to index date were included in the analysis.
 - Opioid naïve was defined as no pharmacy or medical claim for an opioid and no medical claim for OUD (based on ICD-10-CM diagnosis codes for opioid abuse [F11.1*] or opioid dependence [F11.2*]) in the 12-month period prior to index date.
 - Patients were also required to have at least 12 months of continuous enrollment prior to and following the index date.
- Days' supply and daily dose (defined by morphine milligram equivalent [MME]/day) of the initial opioid prescription were assessed.
 - Daily dose was categorized into low (<36MME/day), medium (36-<120MME/day), and high (≥120MME/day).
- The incidence of NPOU was estimated; NPOU was defined as an opioid prescription between 90-180 days after the initial prescription, stratified by days' supply and daily dose of the initial opioid prescription.⁴
- The incidence of OUD was evaluated based on ICD-10-CM diagnosis codes from the index date through the earlier of disenrollment or end of the study period and stratified by days' supply.
- Descriptive analyses were performed for all outcomes. A multivariable logistic regression model was utilized to evaluate the association between the days' supply and daily dose of the initial opioid prescription and the incidence of NPOU, adjusting for potential confounding variables.
- Deidentified administrative claims data were used; therefore, institutional review board approval was not required.

RESULTS

Population and Patient Characteristics

- 192,673 opioid-naïve patients in the MarketScan Medicaid population were prescribed opioids for post-surgical acute pain.
- Patient demographics, clinical, and surgical characteristics are described in **Table 1**.

Table 1. Patient Characteristics

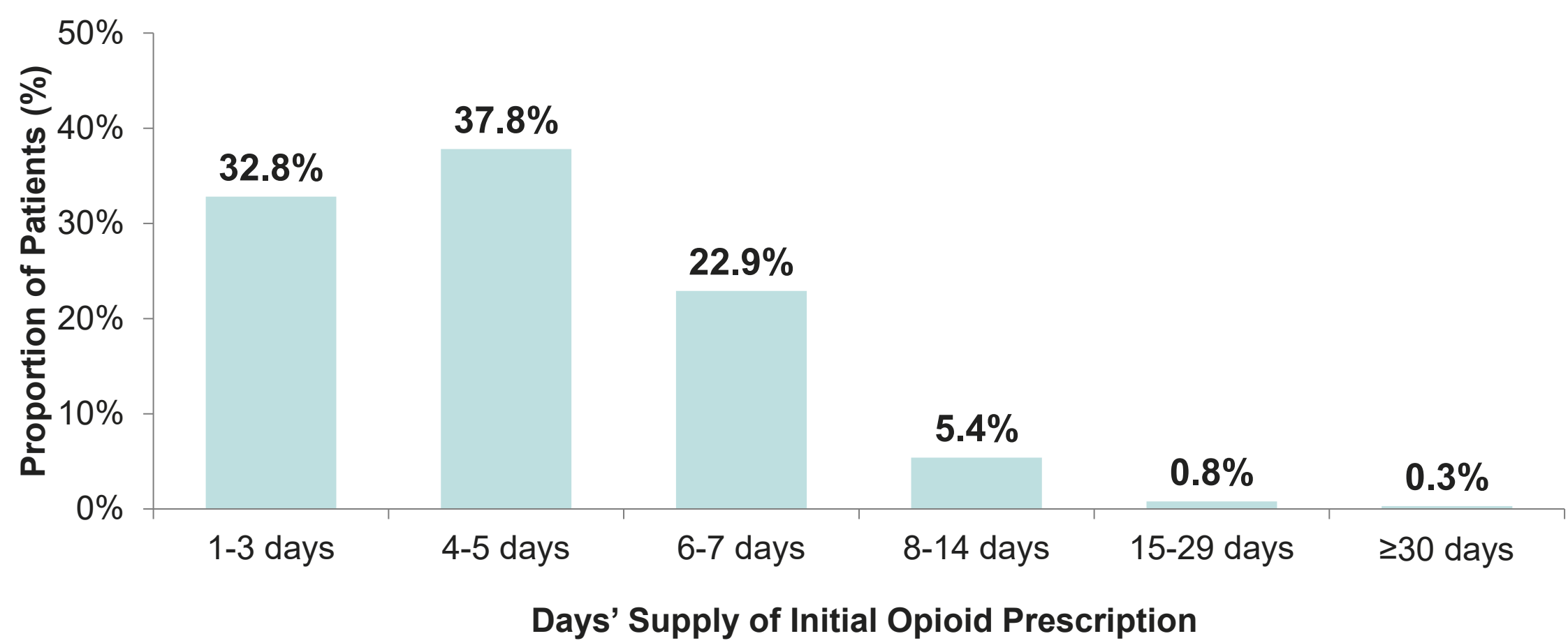
Characteristic	N = 192,673
Age (years), mean (SD)	34.9 (12.8)
Male, n (%)	45,321 (23.5)
DCCI, mean (SD)	0.52 (0.10)
Most Common Clinical Conditions ^a , n (%)	
Tobacco use ^b	55,076 (28.6)
Obesity	48,324 (25.1)
Hypertension	40,073 (20.8)
Anxiety	37,331 (19.4)
Depression	35,465 (18.4)
Diabetes	18,783 (9.7)
Substance abuse ^b	18,438 (9.6)
Sleep disorders	18,226 (9.5)
Osteoarthritis	15,542 (8.1)
Surgery Type ^a , n (%)	
Gynecologic and Male Reproductive	82,064 (42.6)
Orthopedic	49,518 (25.7)
General	41,778 (21.7)
ENT	10,148 (5.3)
Plastic	7,371 (3.8)
Cardiothoracic	6,309 (3.3)
Neurosurgery	3,926 (2.0)
Ophthalmologic	1,548 (0.8)
Urologic	1,030 (0.5)
Other	737 (0.4)

^a Categories are not mutually exclusive. ^b Includes current or history of tobacco use/substance abuse. ENT, ear, nose, and throat; N: number of participants; n: number of participants in the specified category. SD: standard deviation.

Characteristics of Initial Opioid Prescriptions

- The mean (standard deviation[SD]) days' supply of the initial opioid prescription was 4.9 (2.7) days, with 94% of patients receiving ≤7 days and 33% receiving brief prescriptions of 1–3-days (**Figure 1**).
- Among patients with a calculable MME, the mean (SD) daily dose of the initial prescription was 42.4 (34.6) MME/day, with 49% and 50% of patients receiving a low and medium daily dose, respectively.

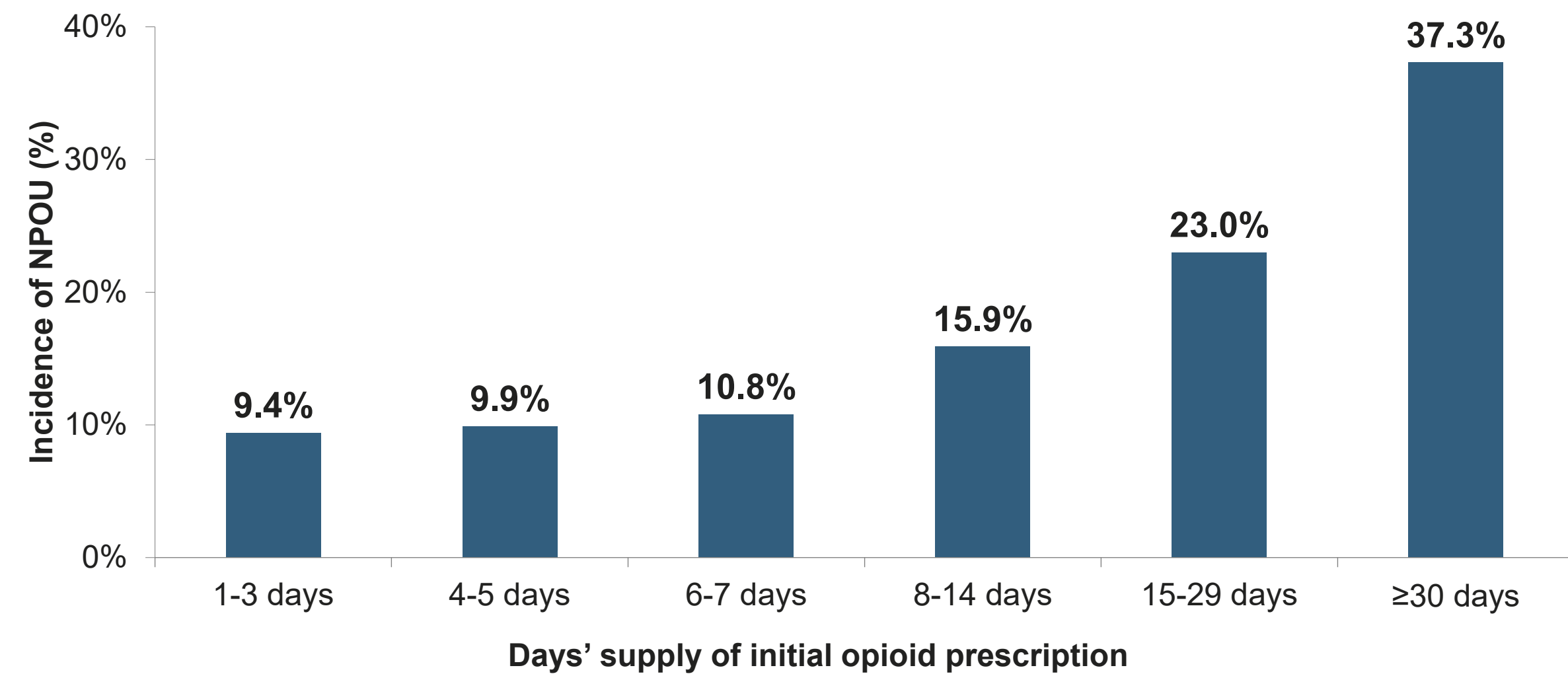
Figure 1. Distribution of Days' Supply of Initial Opioid Prescription



New Persistent Opioid Use

- The incidence NPOU increased substantially with longer days' supply of initial opioid prescription.
- Brief opioid prescriptions of 1-3 days had a 9.4% incidence of NPOU, which increased to 9.9% for 4-5 days' supply and 10.8% for 6-7 days' supply (**Figure 2**).
 - Overall, opioid prescriptions of ≤7 days had a 9.9% incidence of NPOU.

Figure 2. Incidence of NPOU Stratified by Days' Supply of Initial Opioid Prescription



- The incidence of NPOU was 9.6% among individuals prescribed low daily doses of initial opioids, increasing to 11.2% for medium daily doses and 11.9% for high daily doses.
- When adjusting for covariates, each additional day of initial opioid prescription significantly increased the odds of NPOU by 4% (OR 1.04 [95% CI: 1.03-1.04]; p<0.001) (**Table 2**).
 - A medium daily dose of initial opioid prescription increased the odds of NPOU by 6% (OR 1.06 [95% CI: 1.03-1.10]; p<0.001) compared to a low daily dose.

Table 2. Multivariate Logistic Regression Analysis: Association Between Days' Supply and Daily Dose of Initial Opioid Prescription Characteristics and Risk of New Persistent Opioid Use

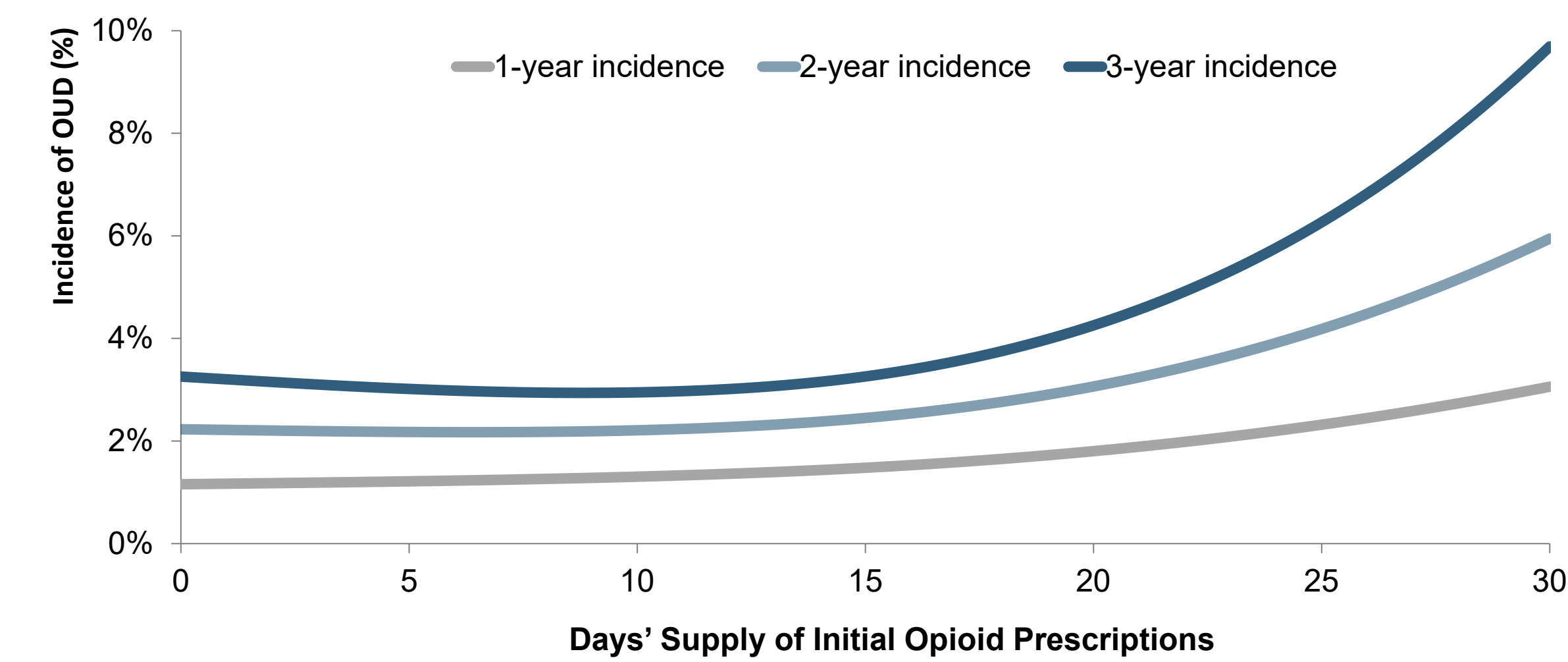
Characteristic	Odds Ratio (95% CI)	P Value
Days' Supply (1-day)		
Daily Dose (MME/day)	1.04 (1.03-1.04)	<0.001
Low (<36 MME/day)	1 [Reference]	-
Medium (36-<120 MME/day)	1.06 (1.03-1.10)	<0.001
High (≥120 MME/day)	1.38 (1.22-1.56)	<0.001
Age		
18-24	1 [Reference]	-
25-34	1.16 (1.10-1.21)	<0.001
35-45	1.48 (1.41-1.56)	<0.001
45-54	1.93 (1.83-2.04)	<0.001
55-65	1.86 (1.76-1.98)	<0.001
≥65	1.72 (1.49-1.98)	<0.001
Female	0.92 (0.89-0.96)	<0.001
Deyo Charlson Comorbidity Index	1.12 (1.11-1.14)	<0.001
Clinical comorbid conditions		
Anxiety	1.13 (1.08-1.17)	<0.001
Depression	1.17 (1.12-1.21)	<0.001
Obesity	1.02 (0.98-1.06)	0.279
Hypertension	1.17 (1.12-1.21)	<0.001
Sleep disorders	1.15 (1.10-1.20)	<0.001
Substance abuse ^a	1.17 (1.12-1.23)	<0.001
Tobacco use ^a	1.27 (1.23-1.31)	<0.001

^a Includes current or history of substance abuse/tobacco use. CI, confidence interval; MME, morphine milligram equivalent.

Opioid Use Disorder

- The 1-, 2-, and 3-year cumulative incidence of OUD also increased with longer days' supply of initial opioid prescription (**Figure 3**).
- Even brief prescriptions of 1-3 days had a 1-, 2-, and 3-year cumulative OUD incidence of 1.26%, 2.39%, and 3.42%, respectively.

Figure 3. Cumulative Incidence of OUD Stratified by Days' Supply of Initial Opioid Prescription



LIMITATIONS

- This study identified opioid-naïve patients identified through the absence of pharmacy or medical claims for an opioid and OUD diagnosis during the 12 months prior to index date, however, patients could have had a claim for an opioid outside the study period.
- This study included patients without a documented diagnosis of OUD in the 12 months prior to the index date. It is possible some patients may have had a diagnosis outside the study period or remained undiagnosed.
- The incidence of OUD was assessed using specific ICD-10 codes from claims data. This approach does not capture patients diagnosed through other methods or those exhibiting OUD symptoms without a clinical diagnosis, likely leading to an underestimation of the true incidence of OUD.
- The MarketScan multi-state Medicaid dataset includes data from 7-12 states; therefore, there may be limitations associated with generalizing results to the full Medicaid population.

DISCUSSION

- Short-duration opioid prescriptions for post-surgical acute pain are associated with a substantial risk of NPOU and OUD in Medicaid beneficiaries, with risk increasing for each additional days' supply of the initial prescription.
 - Even brief opioid prescriptions of just 1-3 days pose a notable risk of NPOU and OUD, underscoring the need to eliminate opioid exposure.
 - Further, even low daily doses (<36MME/day) of opioids have a profound risk of NPOU, which increases significantly with a medium daily dose.
- Based on findings of this study, approximately 1 in 11 Medicaid beneficiaries prescribed a brief opioid prescriptions (1-3 days) may develop NPOU, while around 1 in 29 may be diagnosed with OUD within 3-years of opioid exposure.
- Medicaid beneficiaries are particularly vulnerable to the risks of NPOU and OUD due to higher opioid prescribing rates, limited access to healthcare, and socioeconomic challenges such as low income, and housing instability.
- These vulnerabilities also exacerbate the challenges of accessing treatment and recovery services, placing a significant burden on already strained healthcare systems and contributing to broader societal impacts.

CONCLUSIONS

- These findings highlight the significant risk associated with even short duration and/or low doses opioid prescriptions in developing NPOU and OUD among Medicaid beneficiaries. The use of effective and safe non-opioid analgesics for managing post-surgical acute pain may minimize these risks in this vulnerable population.**

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