Opioid Use Disorder in the Medicare Fee-for-Service Program

Economic Analysis

June 2024

Prepared for: Voices for Non-Opioid Choices

Executive Summary

The Joint Economic Committee estimated that, in total, the United States spent $1.5 trillion combatting the opioid addiction crisis in 2020.[1] This report quantifies the economic impact of opioid use disorder (OUD) specific to the Medicare fee-for-service (FFS) program, which covers approximately 51.6 percent of Medicare beneficiaries.

Opioid prescribing and associated use has been well-documented in the United States. The Centers for Disease Control and Prevention (CDC) reports that 131,778,501 opioid prescriptions were dispensed in the United States in 2022.[2] While this represents a nearly 50 percent decrease in total opioid prescribing in the United States—which peaked in 2011 with approximately 250 million opioid prescriptions dispensed—in Medicare, opioid prescribing has remained consistent, and Medicare's share of overall opioid prescribing in the country has increased by 75 percent since 2011.

Reports show that exposure to prescription opioids can have devastating long-term repercussions. Research shows that between 6[3] and 20[4] percent of acute pain patients will misuse opioids prescribed to them. Accordingly, the CDC has, in its opioid prescribing guidelines, urged caution in opioid prescribing.

Medicare beneficiaries may carry increased risk for misuse, dependence, and addiction, as they are disproportionately heavy users of healthcare resources in the United States and consequently have more opportunities to be prescribed opioids.

The Office of the Inspector General (OIG) reports annually on the state of the opioid epidemic. The OIG reports that in 2022 about 1.1 million Medicare beneficiaries were diagnosed with OUD. According to that report, approximately 52,000 people enrolled in Medicare Part D experienced an opioid overdose in 2022.

Voices for Non-Opioid Choices asked The Moran Company, a Health Management Associates, Inc. (HMA), company, to examine the economic impact to the Medicare program of costs associated with the incidence of OUD.

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[1] Joint Economic Committee. The Economic Toll of the Opioid Crisis Reached Nearly $1.5 Trillion in 2020. Available at: https://www.jec.senate.gov/public/_cache/files/67bced7f-4232-40ea-9263-f033d280c567/jec-cost-of-opioids-issue-brief.pdf.

[2] Centers for Disease Control and Prevention. Overdose Prevention. Table 1. Total Number and Rate of Opioid, Buprenorphine, and Naloxone Prescriptions Dispensed, United States, 2019-2022. March 19, 2024. Available at: https://www.cdc.gov/overdose-prevention/data-research/facts-stats/us-dispensing-rate-maps.html?CDC_AAref_Val=https://www.cdc.gov/drugoverdose/rxrate-maps/index.html.

[3] Brummett CM, Waljee JF, Goesling J, et al. New Persistent Opioid Use After Minor and Major Surgical Procedures in US Adults. *JAMA Surg.* 2017;152(6):e170504. doi:10.1001/jamasurg.2017.0504.

[4] Coté C, Bérubé M, Moore L, et al. Strategies Aimed at Preventing Long-Term Opioid Use in Trauma and Orthopaedic Surgery: A Scoping Review. *BMC Musculoskelet Disord*. 2022;23(1):238. doi: 10.1186/s12891-022-05044-y.

Key Findings

- We identified approximately 145,000 patients who were newly diagnosed with OUD in 2022 in the fee-for-service Medicare population.
- The cost to Medicare for managing these newly diagnosed patients was $29,669 more per patient than the propensity-matched control patients without OUD in 2022.
- We thus estimate that newly diagnosed OUD patients cost the Medicare program $4.3 billion dollars in 2022.
- If these results can also be translated to all 1.1M beneficiaries diagnosed with OUD, then the total economic impact to the Medicare program can be estimated at $33B in 2022.
- Additionally, if these incident patient results were extrapolated into a ten-year budgetary impact analysis and if we assume constant rates of OUD incidence in the Medicare population, we estimate that the ten-year impact of OUD to the Medicare program would be $62.56 billion.

Methodology

Data Sources

We used 2021−2022 100 percent Medicare standard analytic files (SAFs) for inpatient,[5] outpatient,[6] and physician services[7] housed in the Centers for Medicare & Medicaid Services (CMS) Virtual Data Resource Center (VRDC) to identify patients with OUD and create comorbidity indicators for our cohort. The 2021−2022 Medicare beneficiary summary files (MBSF) were used to obtain patient coverage; demographic characteristics such as age, gender, race; and dual eligibility status. Total payments in each setting were identified using 2021−2022 100 percent inpatient, outpatient, carrier (physician services), skilled nursing facility (SNF), home health agency (HHA), and hospice SAFs. Spending on prescription drugs was calculated using 2021−2022 Medicare 100 percent Part D data.

Sample Selection

We identified FFS Medicare beneficiaries who were newly diagnosed with OUD between January 1, 2022, and December 31, 2022. Patients with an OUD diagnosis in 2021 were excluded from the study sample. OUD diagnosis was defined by the standard algorithm used by

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[5] The inpatient SAF contains FFS claims submitted by inpatient hospital providers for reimbursement of facility costs. These claim records represent covered stays (Medicare-paid FFS bills.)

[6] The outpatient SAF contains FFS claims submitted by institutional outpatient providers. Examples of institutional outpatient providers include hospital outpatient departments, rural health clinics, renal dialysis facilities, outpatient rehabilitation facilities, comprehensive outpatient rehabilitation facilities, federally qualified health centers (FQHCs) and community mental health centers.

[7] The carrier SAF includes FFS claims submitted by healthcare professionals, including physicians, physician assistants, clinical social workers, nurse practitioners. Claims for some organizational providers, such as freestanding facilities, also are found in the carrier claims file. Examples include independent clinical laboratories, ambulance providers, freestanding ambulatory surgical centers, and freestanding radiology centers.

the CMS[8]: at least one inpatient claim or at least two hospital outpatient or carrier (physician) claims for OUD treatment with a least a day apart in a given year. OUD claims were identified based on the following International Classification of Disease (ICD-10) codes: F11 and T40; and the following ICD-10 procedure codes: HZ81ZZZ, HZ84ZZZ, HZ85ZZZ, HZ86ZZZ, HZ91ZZZ, HZ94ZZZ, HZ95ZZZ, HZ96ZZZ (any position on the claim).

The analysis was focused on FFS patients only. Patients were required to be continuously enrolled in both Part A (coverage for hospital and post-acute care services) and Part B (coverage for outpatient medical care) for 24 months from January 1, 2021, to December 31, 2022. We excluded beneficiaries who lived outside the United States during the study period. Finally, patients with any missing data fields were dropped from the analysis.

Propensity Score Matching

A 1:1 propensity score matching (PSM) method was used to control for confounding bias in the population.

- Covariates used in the matching were based on beneficiary's baseline year (2021) characteristics.
- Covariates used in the PSM algorithm included demographic characteristics, seven chronic conditions classified as risk factors for OUD, and beneficiaries' total cost of care information, which includes Medicare payment, payment responsibility of beneficiary and payment made by primary payer.
  - Age
  - Gender (female/male)
  - Race (White/Black/Hispanic/other)
  - Dual status (dual/non-dual)
  - Comorbidities were defined by the standard algorithm used by the Centers for Medicare and Medicaid Services (see Appendix)
    1. Non-opioid substance abuse
    2. Depression
    3. Schizophrenia
    4. Other mental disorder
    5. Migraine
    6. Fibromyalgia
    7. Rheumatoid Arthritis/Osteoarthritis
- Covariates standardized differences were estimated to determine the quality of matching.

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[8] Centers for Medicare & Medicaid Services. Opioid Use Disorder (OUD) #2: Diagnosis- and Procedure-Code Basis for OUD. Revised February 2023. Available at: https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-oud-2.pdf.

The sample before matching included 24,664,820 beneficiaries – 24,518,950 in the non-OUD group, and 145,870 in the OUD-group. After applying a 1:1 PSM method, the non-OUD group reduced to 145,870 individuals and the OUD-group remained the same.

Table 1 shows a well-balanced match between the OUD and non-OUD groups. The standardized differences reduced significantly for several covariates. Specifically, the standardized differences of patient characteristics covariates ranged from 0.00 to -1.08 before the PSM; these numbers dropped to -0.03 – 0.03 range after matching. We observed similar patterns in beneficiaries' baseline year (2021) spending.

Table 1. Standardized Difference Before and After Propensity Score Matching

	Before Matching			After Matching		
	Non-OUD N=24,518,950	OUD N=145,870	Std. Difference	Non-OUD N=145,870	OUD N=145,870	Std. Difference
Patients characteristics						
Age	73	68	-0.39	68	68	-0.03
Gender						
Female	55%	59%	-0.08	59%	59%	0.01
Dual Status						
Dual	14%	31%	-0.40	30%	31%	-0.02
Race						
White	84%	85%	-0.03	85%	85%	0.00
Black	7%	9%	-0.06	9%	9%	0.00
Hispanic	2%	2%	0.00	2%	2%	0.00
Comorbidity						
Nonopioid Substance Abuse	8%	25%	-0.47	24%	25%	-0.03
Depression	17%	44%	-0.60	44%	44%	0.01
Schizophrenia	1%	3%	-0.12	3%	3%	-0.01
Other Mental Disorder	19%	45%	-0.57	45%	45%	0.01
Migraine	3%	10%	-0.27	10%	10%	-0.01
Fibromyalgia	20%	68%	-1.08	69%	68%	0.02
Rheumatoid Arthritis	34%	64%	-0.64	66%	64%	0.03
Spending						
Inpatient	$ 2,783	$ 8,065	0.27	$ 7,441	$ 8,065	0.03
SNF	$ 605	$ 1,517	0.13	$ 1,509	$ 1,517	0.00
HHA	$ 403	$ 1,123	0.26	$ 1,082	$ 1,123	0.01
Hospice	$ 114	$ 145	0.01	$ 128	$ 145	0.01
Outpatient	$ 2,880	$ 6,030	0.23	$ 5,655	$ 6,030	0.03
Physicians	$ 4,068	$ 7,984	0.28	$ 7,193	$ 7,984	0.06
Part D Prescription	$ 3,118	$ 7,191	0.21	$ 6,525	$ 7,191	0.03

Results

After creating the OUD and non-OUD study groups, we analyzed claims data to calculate the total Medicare spending in each setting by the two groups of patients. For purposes of this study, spending includes both spending by Medicare in addition to the patient responsibility for deductible and coinsurance. Figure 1 and Table 2 display the average per patient spending in 2022 in the following settings for those patients with and without a diagnosis of OUD: 1)

inpatient, 2) SNF, 3) HHA, 4) hospice, 5) outpatient, 6) physicians, and 7) Part D prescription. The analysis shows that spending for the incident OUD group increased significantly in 2022—almost four times higher in settings such as IP ($6,103 vs. $23,476) and SNF ($1,570 vs. $4,731), double in HHA ($1,024 vs. $2,046) and physician ($6,893 vs. $11,495) spending. Across all settings, incident OUD patients cost the Medicare program nearly $30,000 per patient in total.

Figure 1. Average Total per Patient Payments by Setting in 2022 Between Patients with and without OUD
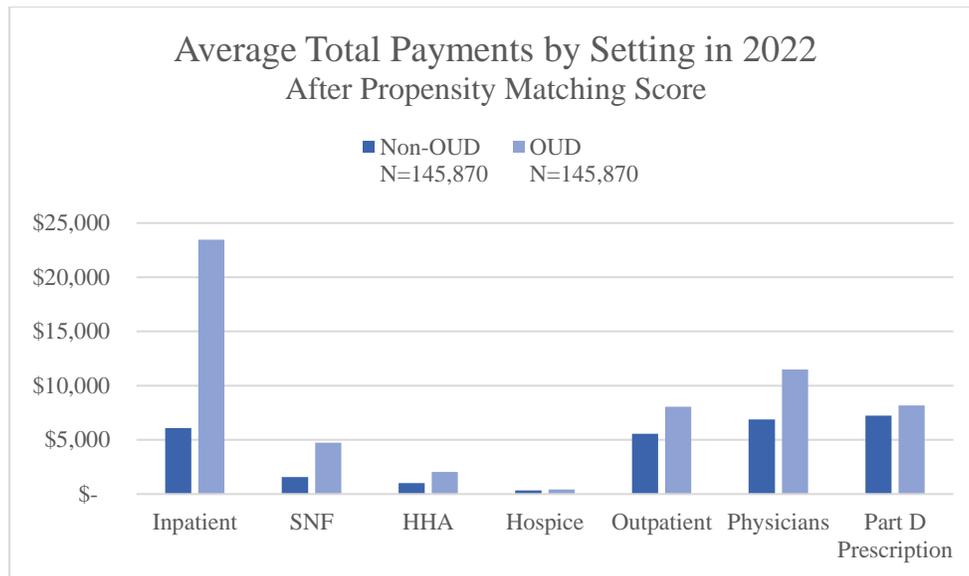

Table 2. Average Total per Patient Payments by Setting in 2022 Between Patients with and without OUD

	Non-OUD N=145,870		OUD N=145,870		Difference	
Inpatient	$	6,103	$	23,476	$	17,373
SNF	$	1,570	$	4,731	$	3,161
HHA	$	1,024	$	2,046	$	1,022
Hospice	$	329	$	420	$	91
Outpatient	$	5,572	$	8,044	$	2,472
Physicians	$	6,893	$	11,495	$	4,602
Part D Prescription	$	7,222	$	8,170	$	948
Total	$	28,713	$	58,382	$	29,669

Fiscal Implications

Multiplying the 145,000 incident OUD patients identified by the $29,669 in additional per patient spending, we estimate that newly diagnosed OUD patients cost the Medicare program approximately $4.3 billion in 2022. Though this study focused on only incident patients, it seems plausible that similar cost differences persist in the prevalent OUD patient population as well. If the $29,669 cost differential also were applied to the 1.1 million beneficiaries with prevalent OUD as identified by OIG, then the total economic impact on the Medicare program would be estimated at $33 billion in 2022.

We also considered a simplified approach to generalizing these findings across the typical 10-year time horizon used by the Congressional Budget Office (CBO) and the Office of Management and Budget when they consider the fiscal impacts of public policy. Using the CBO's May 2023 baseline[9], we compared 2022 actual spending in Part A, Part B, and Part D with the 2024−2033 total baseline window projected spending. We arrived at multipliers of 14.08 for Part A spending, 15.94 for Part B spending, and 14.92 for Part D spending. Weighting these multipliers by the share of OUD spending in Table 2, we arrived at an overall 10-year multiplier of 14.55. We therefore estimate that, if incidence rates hold constant for 10 years, the 10-year budgetary impact of incident OUD would be $62.56 billion. If the prevalent OUD population has a similar cost impact as the incident population measured in this study, the 10-year projected budgetary impact of OUD is $480 billion.

Table 3. Extrapolating Budgetary Effects of OUD Over the Next 10 Years

Savings	Total Medicare Spending on OUD		
	Number of Patients Per Year	One Year Spending	Projected 10 Year Cost
Incident OUD Population	145,000	$ 4,300,000,000	$ 62,565,000,000
Incident + Prevalent Population^	1,100,000	$ 32,620,000,000	$ 474,600,000,000

^Assumes Prevalent Population spends the same increased amount as the incident population

Conclusion

The Moran Company analysis demonstrates that OUD results in significant Medicare spending, including rising costs to beneficiaries through copayments and increased premiums. Additional work may be needed to determine whether the cost differential for incident patients with OUD generalizes to prevalent OUD patients as well. Though the 10-year budgetary impact figures require extrapolation and assumptions about future OUD use, they illustrate for policymakers the size of the fiscal challenge created by OUD in the Medicare population.

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[9] Congressional Budget Office. Baseline Projections: Medicare. May 2023. Available at: https://www.cbo.gov/system/files/2023-05/51302-2023-05-medicare.pdf.

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Appendix

Codes Used to Identify Comorbidities

Codes used to identify non-opioid substance abuse are found here:
- Alcohol Use Disorders
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-alcohol-use.pdf
- Tobacco Use
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-tobacco.pdf

Codes used to identify depression are found here:
https://www2.ccwdata.org/documents/10280/86658989/chr-cond-algo-depression.pdf

Codes used to identify schizophrenia are found here:
https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-schizophrenia.pdf

Codes used to identify other mental disorders are found here:
- ADHD, conduct disorders, and hyperkinetic syndrome:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-adhd.pdf
- Anxiety disorders:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-anxietydisorders.pdf
- Bipolar disorder:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-bipolardisorder.pdf
- Intellectual disabilities:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-intellectual.pdf
- Learning disabilities:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-learning.pdf
- Developmental delays:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-otherdevelopment.pdf
- Personality disorders:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-personality.pdf
- PTSD:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-ptsd.pdf
- TBI and nonpsychotic mental disorders in brain:
  https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-braininjury.pdf

Codes used to identify migraine are found here:
https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-migraine.pdf

Codes used to identify fibromyalgia are found here:
https://www2.ccwdata.org/documents/10280/19140001/oth-cond-algo-fibromyalgia.pdf

Codes used to identify rheumatoid arthritis/osteoarthritis are found here:
https://www2.ccwdata.org/documents/10280/86658989/chr-cond-algo-arthritis.pdf