Title

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Journal

Health Affairs Scholar, 3(2)

Authors

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Publication Date

2025-02-01

DOI

10.1093/haschl/qxaf036

Peer reviewed

Health Affairs Scholar, 2025, **3**(2), qxaf036
https://doi.org/10.1093/haschl/qxaf036
Advance access publication: February 14, 2025
Brief Report

Health Affairs Scholar
EMERGING & GLOBAL HEALTH POLICY
OXFORD

Medications for opioid use disorder in traditional medicare beneficiaries: associations with age

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Abstract

Rates of opioid use disorder (OUD) have increased in older adults (age ≥ 50). Medications for OUD (MOUD) treat OUD effectively; however, limited data exist on whether older adults with OUD are provided MOUD. Using 2016-2020 claims data from Medicare beneficiaries with a new episode of OUD, we calculated rates of MOUD initiation (first dispensing within 14 days of index event), engagement (dispensing of a second MOUD within 34 days of initiation), and retention (receiving MOUD consistently over 180 days). Among beneficiaries with qualifying index events ($N = 40\,336$), 17%, 38%, and 45% were ages 20-49, 50-64, and ≥ 65, respectively. Five hundred and three beneficiaries with a qualifying index event (1.3%) initiated MOUD, 461 (1.1%) reached engagement, and 309 (0.8%) were retained. Multivariable logistic regressions showed older age was associated with reduced MOUD initiation (compared with those aged 20-49, adjusted odds ratios [aORs] were 0.79 [95% CI, 0.64-0.98] and 0.36 [95% CI, 0.25-0.51] for ages 50-64 and ≥65, respectively). Reduced MOUD initiation was associated with female sex (aOR = 0.74; 95% CI, 0.61-0.89) and increasing comorbidity score (aOR = 0.76 per 1-point increase; 95% CI, 0.72-0.80). These results suggest that in addition to general efforts to increase uptake of MOUD, age-specific strategies are needed.

Key words: medications for opioid use disorder; older adults; medicare.

Introduction

Opioid use disorder (OUD) is a chronic condition (often lasting years or decades) characterized by persistent use of opioids despite impairment (eg, physical, mental, social, or criminal), the development of opioid tolerance, and/or opioid withdrawal or efforts to avoid it.[1] Age-standardized prevalence of OUD in the United States in 2016 was the highest in the world, estimated at 1050-1300 per 100 000 people,[1] and OUD is associated with increased morbidity and mortality,[2,3] along with substantial costs.[4] Although OUD prevalence is highest in younger individuals,[5] rates of OUD and opioid overdose deaths are rising among older adults,[6,7] defined here as individuals age ≥50. In addition, rates of first-time and overall treatment admissions for OUD are rising among older adults.[8,9] Possible explanations for increased OUD among older adults include rising life expectancy among those with OUD,[10,11] older adults being prescribed opioids at higher rates,[5] and a cohort effect of ageing Baby Boomers, for whom substance use was more socially acceptable.[12] Some older adults with OUD have been exposed to opioids for decades through drug experimentation starting as early as adolescence, whereas others become exposed through prescription by a healthcare provider for pain, and then develop OUD.[13]

Effective medications for OUD (MOUD) include buprenorphine, methadone, and extended-release naltrexone.[10,14,15] Despite the benefits of MOUD, access has remained limited, with numerous barriers to MOUD provision at the provider, payer, and regulatory levels.[16] Even with rising rates of OUD in older adults, few studies focus on differences in provision of MOUD by age, with "provision" defined as dispensing a buprenorphine prescription, dispensing methadone at an opioid treatment program (OTP), or receiving injectable naltrexone. In populations with OUD, data have shown that MOUD provision is lower in older individuals,[17-19] including a 2023 Office of Inspector General (OIG) report showing that among Medicare beneficiaries with a diagnosis of opioid abuse or dependence in 2022, those age ≥65 were 2.5 times less likely to be provided MOUD compared with those age <65.[18] However, in these studies, which include individuals who have had OUD for varying lengths of time, current age may simply be a marker for duration of OUD, with older individuals more likely to have had OUD for longer, and thus to have tried MOUD in the past. Therefore, current findings of lower MOUD provision with older age may not reflect a provider's willingness to provide MOUD or a patient's willingness to accept it in a new episode of OUD. In this article, to better understand the effect of age on MOUD provision, we focus on older adults with new episodes of OUD: those who have no MOUD provision and no evidence of opioid-related disorders in the year prior to their OUD diagnosis. We use national-level data from Medicare, which covers both older and disabled individuals.

Data and methods

Study sample and data

Methods are described in detail in the Supplementary Material. In brief, data sources included enrollment, claims

Received: December 10, 2024; Revised: February 6, 2025; Accepted: February 12, 2025

and prescription drug event data for traditional Medicare beneficiaries enrolled in parts A, B, and D. To obtain the study sample, which was identified from a cohort of Medicare beneficiaries who had at least one ICD-9 or ICD-10 code potentially indicative of OUD, we delimited the study period to 2016-2020 to focus on more recent data. We then used criteria established by Morgan et al.[20] to identify the first OUD index event for each beneficiary between January 1, 2017 and June 30, 2020, with OUD index events indicating a need for MOUD. In order to identify new episodes of OUD, we further delimited these index events to those in which the beneficiary had no diagnosis of an opioid-related disorder (ICD-10-CM code starting with "F11") and no provision of MOUD in the year preceding the index event.

Variables

Following the approach of Morgan et al.,[20] outcomes of interest included: (1) MOUD initiation (provision of first MOUD within 14 days of OUD diagnosis, or within 30 days in a sensitivity analysis), (2) MOUD engagement (provision of a second MOUD within 34 days of initiation, or within 60 days in a sensitivity analysis), and (3) MOUD retention (provision of MOUD consistently over 180 days, without a gap of >14 days between the end of one dispensing or administration and the beginning of the next). MOUD included facility- or office-administered medications (buprenorphine, methadone, or naltrexone) or prescriptions filled at retail pharmacies (buprenorphine excluding formulations for pain; oral or injectable naltrexone). Methadone was only included in 2020, since Medicare did not cover treatment at OTPs, the only location where methadone for OUD can be dispensed, until 2020. Building on work by Mauro et al.'s[21,22] implementation of the Andersen behavioral model of health services use, we selected independent variables representing predisposing, enabling and need characteristics available in our data that would influence the likelihood of initiating MOUD. These included age (categorized as 20-49, 50-64, and ≥65), sex, race/ethnicity (categorized as non-hispanic White, Black, Hispanic, and Other), disability as original reason for Medicare entitlement, dual eligibility for Medicare and Medicaid, eligibility for Medicare Part D's low-income subsidy (as a proxy for poverty),[23] county-level urbanicity,[24] state of residence, presence of at least one mental health disorder,[25] presence of at least one nonopioid substance use disorder,[25] an adaptation of the Charlson comorbidity index (using a 12-month lookback period),[26] and calendar year.

Statistical analysis

We calculated rates of MOUD initiation, engagement and retention for the sample overall as well as stratified on key covariates. We estimated multivariable logistic regressions to identify statistically significant associations between the independent variables and MOUD initiation, generating adjusted odds ratios (aORs) with 95% CI. We conducted several sensitivity analyses. First, given that beneficiaries dually eligible for Medicare and Medicaid could have been provided methadone through Medicaid before Medicare began coverage for methadone in 2020 and thus could have had unobserved MOUD provision from 2016 to 2019, we estimated regressions stratified on dual eligible status. Second, we estimated regressions restricting the sample to individuals whose original reason for Medicare entitlement was disability, to eliminate the potential confounding effect of a different population of age-eligible individuals entering Medicare at age 65. Third, we estimated regressions stratified by OUD index events before (2017-2019) and after (2020) Medicare's initiation of methadone coverage for OUD.

Results

The parent cohort contained 2 133 678 individuals with a diagnosis potentially indicative of OUD between 2013 and 2020, of whom 214 065 had first OUD index events between January 1, 2017 and June 30, 2020. Of these events, 40 336 individuals had OUD index events indicative of new OUD episodes. Table 1 shows demographic characteristics of the study sample, who were 38% age 50-64 and 45% age ≥65; 51% female; and 76% non-Hispanic White, 14% Black, 7% Hispanic, and 3% other race. Most individuals were originally entitled to Medicare due to disability (71%); dually eligible for Medicare and Medicaid (63%); and eligible for Medicare Part D's low-income subsidy (70%). Of those with new OUD episodes, 503 individuals (1.3%) initiated MOUD, of whom 461 (1.1%) reached engagement, and 309 (0.8%) reached retention. Table S1 reports results by MOUD type. The sensitivity analysis allowing more time to reach MOUD initiation (30 days) and engagement (60 days postinitiation) resulted in 749 (1.9%) individuals initiating MOUD, of whom 677 (1.7%) reached engagement.

Multivariable analyses (Table 2) showed lower odds of MOUD initiation for older adults (compared with those age 20-49, aORs were 0.79 [95% CI, 0.64-0.98] and 0.36 [95% CI, 0.25-0.51] for ages 50-64 and ≥ 65, respectively). All sensitivity analyses (Table S2) demonstrated significantly lower odds of MOUD initiation for those age ≥65. Lower odds of MOUD initiation were also found for female sex (aOR, 0.74; 95% CI, 0.61-0.89) and increasing comorbidity score (aOR 0.76 per 1-point increase; 95% CI, 0.72-0.80), with results robust to sensitivity analyses.

Discussion

In traditional Medicare beneficiaries with new episodes of OUD, we found that individuals age ≥65 were less likely to initiate MOUD. This work builds upon the 2023 OIG report showing that among Medicare beneficiaries with diagnoses of opioid abuse or dependence, those aged ≥65 were also less likely to be provided MOUD.[18] A limitation of the report and other prior work had been the nature of the populations studied, which could include those with both new and ongoing episodes of OUD. In contrast, we included only those OUD index events preceded by a minimum 1-year period with no diagnoses of opioid-related disorders and no MOUD provision, which increases the likelihood that age is truly related to the decision to provide MOUD.

There are several potential explanations for the observed findings. First, providers may be reluctant to offer MOUD to older individuals, perhaps because of concern over medical complexity and side effects. The strong negative association between increasing comorbidity score and MOUD use in our data supports this possibility. Second, older adults may be less willing to accept MOUD even when it is offered to them. A prior study found that individuals aged ≥65 were less likely to receive treatment for substance use disorders compared with younger age groups but were also less likely

Table 1. Demographic characteristics of the sample, overall and by highest level of MOUD achieved.

Variable	Total *N* (column %)	No MOUD *N* (row %)	Initiation (with or without engagement),[a] *N* (row %)	Retention *N* (row %)
Overall	40 336 (100)	39 833 (98.8)	194 (0.5)	309 (0.8)
Age				
20–49	6946 (17)	6764 (97.4)	74 (1.1)	108 (1.6)
50–64	15 379 (38)	15 145 (98.5)	86 (0.6)	148 (1.0)
≥ 65	18 011 (45)	17 924 (99.5)	34 (0.2)	53 (0.3)
Sex				
Female	20 485 (51)	20 282 (99.0)	79 (0.4)	124 (0.6)
Male	19 851 (49)	19 551 (98.5)	115 (0.6)	185 (0.9)
Race/ethnicity				
Non-Hispanic White	30 816 (76)	30 428 (98.7)	163 (0.5)	225 (0.7)
Black/Hispanic/Other[b]	9520 (24)	9405 (98.8)	31 (0.3)	84 (0.9)
Disability[c]				
No	11 561 (29)	11 507 (99.5)	23 (0.2)	31 (0.3)
Yes	28 775 (71)	28 326 (98.4)	171 (0.6)	278 (1.0)
Eligible for medicare and medicaid on index date				
No	15 004 (37)	14 924 (99.5)	46 (0.3)	34 (0.2)
Yes	25 332 (63)	24 909 (98.3)	148 (0.6)	275 (1.1)
Eligible for medicare part D low-income subsidy on index date				
No	12 216 (30)	12 166 (99.6)	30 (0.2)	20 (0.2)
Yes	28 120 (70)	27 667 (98.4)	164 (0.6)	289 (1.0)
Urbanicity				
Metropolitan (urban)	31 784 (79)	31 387 (98.8)	145 (0.5)	252 (0.8)
Nonmetropolitan, adjacent to metro	5450 (14)	5381 (98.8)	32 (0.6)	37 (0.7)
Nonmetropolitan, nonadjacent (rural)	3048 (8)	3011 (98.8)	17 (0.6)	20 (0.7)
Unknown	54 (0)	54 (100.0)	0 (0.0)	0 (0.0)
Mental health disorder				
No	13 026 (32)	12 857 (98.7)	60 (0.5)	109 (0.8)
Yes	27 310 (68)	26 976 (98.8)	134 (0.5)	200 (0.7)
Non-opioid substance use disorder				
No	33 713 (84)	33 310 (98.8)	152 (0.5)	251 (0.7)
Yes	6623 (16)	6523 (98.5)	42 (0.6)	58 (0.9)
Charlson comorbidity index				
0	7854 (19)	7658 (97.5)	85 (1.1)	111 (1.4)
1	7770 (19)	7625 (98.1)	51 (0.7)	94 (1.2)
2	6377 (16)	6308 (98.9)	26 (0.4)	43 (0.7)
≥3	18 335 (45)	18 242 (99.5)	32 (0.2)	61 (0.3)
Calendar year of index date for incident OUD				
2017	14 502 (36)	14 342 (98.9)	55 (0.4)	105 (0.7)
2018	12 326 (31)	12 209 (99.1)	37 (0.3)	80 (0.7)
2019	10 102 (25)	9936 (98.4)	60 (0.6)	106 (1.1)
2020[d]	3406 (8)	3346 (98.2)	42 (1.2)	18 (0.5)

Percent may not sum to 100 due to rounding. Categories of "no MOUD," "initiation (with or without engagement)," and "retention" are mutually exclusive. MOUD, medication for opioid use disorder; OUD, opioid use disorder.
[a]Categories of initiation and engagement are combined to comply with the Centers for Medicare & Medicaid Services cell size suppression policy.
[b]Consists of $N = 5531$ Black, $N = 2680$ Hispanic, and $N = 1309$ Other.
[c]As original reason for Medicare entitlement.
[d]2020 included only 6 months of eligible index dates (January 1 to June 30, 2020).

to perceive a need for treatment.[27] These potential age-specific barriers to MOUD use coincided with more general barriers to MOUD uptake during the time period our data covered, including lack of reimbursement by Medicare for methadone until 2020[28,29] and restricted authorization to prescribe buprenorphine until 2023, with buprenorphine prescribing highly concentrated within a select few providers.[30,31]

While problematic opioid use may be less common among older adults at a population level,[5] due to changing demographics of the population as a whole, older adults constitute a substantial population in absolute terms, and almost one-quarter of people with self-reported prescription opioid misuse in the past year were aged ≥50.[32] For this reason, policy efforts targeting older adults may be of even greater value now than previously. As the older population with OUD continues to expand, educational interventions targeting clinicians (eg, to increase awareness that OUD is prevalent among older adults) and tailored public health messaging for older adults (eg, to destigmatize OUD treatment)[33] may be needed to address barriers to MOUD provision in this population. However, our findings regarding age occur in the context of observing very low MOUD initiation rates overall, even lower than in prior literature.[20,34,35] These results may reflect our stringent inclusion criteria in which we eliminated individuals with MOUD use or an opioid-related disorder in the year prior to the OUD index event from our sample.

This work has certain limitations. First, it is observational and does not control for unmeasured factors (eg, education) that could lead to selection effects by age. Therefore, results should be viewed as associations and not causal. Second, it

Table 2. Multivariable logistic model showing associations of the demographic characteristics with MOUD initiation.

Variable	$N = 40\,336$ Adjusted odds ratio (95% CI)
Age	
20-49	Referent
50-64	**0.79 (0.64-0.98)**
≥65	**0.36 (0.25-0.51)**
Sex	
Male	Referent
Female	**0.74 (0.61-0.89)**
Race/ethnicity	
Non-Hispanic White	Referent
Black	1.04 (0.77-1.41)
Hispanic	1.08 (0.76-1.53)
Other	0.85 (0.51-1.43)
Disability[a]	
No	Referent
Yes	1.10 (0.74-1.64)
Eligible for medicare and medicaid on index date	
No	Referent
Yes	**1.49 (1.02-2.17)**
Eligible for medicare part D low-income subsidy on index date	
No	Referent
Yes	1.53 (0.95-2.46)
Urbanicity	
Metropolitan (urban)	Referent
Nonmetropolitan, adjacent to metro	0.83 (0.63-1.10)
Nonmetropolitan, nonadjacent (rural)	0.70 (0.48-1.03)
Unknown	<0.01 (<0.01- > 999.99)
Mental health disorder	
No	Referent
Yes	0.89 (0.73-1.09)
Non-opioid substance use disorder	
No	Referent
Yes	0.79 (0.63-1.00)
Charlson comorbidity index (per 1-point increase)	**0.76 (0.72-0.80)**
Calendar year	
2017	Referent
2018	0.94 (0.73-1.19)
2019	**1.70 (1.36-2.12)**
2020[b]	**1.95 (1.43-2.65)**

Model is adjusted for state of residence (except for model using 2020 data only). MOUD initiation is defined as the provision of first MOUD within 14 days of OUD diagnosis. 95% CI are in parentheses. Bolded associations are statistically significant at $P < 0.05$ using a two-tailed test. OUD, opioid use disorder; MOUD, medication for opioid use disorder.
[a]As the original reason for medicare entitlement.
[b]Includes only the first 6 months of 2020.

is unlikely that we eliminated prevalent OUD from our sample completely. For example, some dual eligible enrollees in our sample initiated methadone in January 2020 (data not shown), which could reflect switching of payer for existing methadone users from Medicaid to Medicare rather than new methadone use. However, our findings regarding age were robust to exclusion of dual eligible enrollees from the sample. Third, the algorithm used to identify OUD episodes is based on clinical logic and has not been validated against medical record review. Prior work suggests that OUD diagnoses in healthcare data are specific and have adequate positive predictive value for opioid misuse;[36] to the extent these results extrapolate to OUD, individuals identified through claims algorithms are likely to have OUD. Fourth, we did not measure behavioral health treatment and cannot rule out the possibility that older adults were more likely to receive nonpharmacologic treatment for OUD. Last, in 2020, Medicare expanded MOUD coverage to include methadone administered through OTPs, but our 2020 results pertain only to the first 6 months, which coincided with the start of the COVID-19 pandemic, including the "lockdown" period in early 2020. Thus, results from 2020 must be viewed cautiously. Fifth, our sample size was insufficient to estimate regressions predicting initiation, engagement, and retention rates for each MOUD individually. However, we believe that this is an important area of research when feasible.

In conclusion, in a national sample of traditional Medicare beneficiaries, we observed lower MOUD initiation rates in individuals aged ≥65. Future work can explore the causes of these observed results to inform policy adoption and implementation.

Contribution statement

D.A.G.: conceptualization, methodology, and writing—original draft; J.H.C.: funding acquisition, conceptualization, and writing—review & editing; J.L.: conceptualization, methodology, formal analysis, and writing—review & editing; D.A.G. and K.S.: writing—review & editing; B.D.S.: conceptualization and writing—review & editing; E.A.T.: funding acquisition, conceptualization, and writing—review & editing.

Supplementary material

Supplementary material is available at *Health Affairs Scholar* online.

Funding

This work was supported by a grant from the National Institute on Aging (grant no. R21AG071925). The organization funding this study had no role in the design or conduct of the study; in the collection, management, analysis, or interpretation of the data; or in the preparation, review, or approval of the manuscript. The content of this publication is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health, the Department of Veterans Affairs, or the United States government.

Conflicts of interest

Please see ICMJE form(s) for author conflicts of interest. These have been provided as supplementary materials.

Data availability

Due to the terms of the data use agreement with the US Centers for Medicare and Medicaid Services, Medicare data cannot be shared with third parties.

Notes

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