Medical Utilization Surrounding Initial Opioid-Related Diagnoses by Coding Method

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ABSTRACT

OBJECTIVES: To identify methods for coding initial opioid-related disorder (ORD) diagnoses in administrative claims and determine whether coding methods correspond to acute medical utilization patterns.

STUDY DESIGN: Retrospective analysis of Blue Health Intelligence commercial data.

METHODS: We included members with 2 years of continuous coverage around the first appearance of an ORD diagnosis code (initial ORD) in medical or pharmacy claims with dates of service between October 2015 and March 2016. Initial ORD was identified by *International Classification of Diseases, Tenth Revision, Clinical Modification* (*ICD-10-CM*) F11 codes or buprenorphine for medication-assisted treatment (BUP-MAT) with a duration of 3 or more days. Descriptive analyses were evaluated prediagnosis, in the month of diagnosis, and post diagnosis and included mean cost per member per month (PMPM); mean monthly percentage of members with at least 1 opioid agonist prescription (OAP), inpatient visit, or emergency department (ED) visit; and percentage of members with at least 1 *ICD-10-CM* Z79.891 code (long-term [current] use of opiate analgesic).

RESULTS: A total of 6426 initial ORD diagnoses were identified by F11.20 (65.2%), F11.x (28.7%), and BUP-MAT (6.1%). PMPM costs for BUP-MAT ($2054) were lower than for F11.20 ($5053) and F11.x ($6597) in the diagnosis month. Mean monthly percentage of members with at least 1 OAP declined from pre– to post initial ORD diagnosis (F11.20, 52.5% to 50.0%; F11.x, 44.1% to 37.9%; BUP-MAT, 34.0% to 12.7%). Members with initial ORD coded as F11.x had the highest mean percentage with at least 1 inpatient or ED visit in the diagnosis month (30.9% and 26.8%, respectively) versus F11.20 (19.3% and 10.8%) and BUP-MAT (5.1% and 3.5%). Percentage of members with at least 1 Z79.891 code was higher post diagnosis than in the month of diagnosis (F11.20, 34.6% vs 25.7%; F11.x, 16.5% vs 8.1%; BUP-MAT, 19.5% vs 8.1%).

CONCLUSIONS: Medical utilization patterns of members with ORD differ by the coding method used to document their initial diagnosis in administrative claims.

Am J Manag Care. 2020;26(2):e64-e68

Insured persons (members) with opioid use disorder (OUD), opioid abuse, opioid misuse, or opioid dependence—hereafter referred to as opioid-related disorder (ORD)—exhibit elevated payer costs and healthcare utilization compared with members without ORD.[1-4] This may incentivize payers to facilitate population health interventions, especially for members with untreated or newly diagnosed ORD, which necessitates understanding of ORD coding and accurate documentation of ORD when submitting claims for reimbursement.[5]

However, ORD coding is complicated by discrepancies among coding guidelines and interpretation of code descriptions.[6] This is especially true for *International Classification of Diseases, Tenth Revision, Clinical Modification* (*ICD-10-CM*) code F11.20 (opioid dependence, uncomplicated).[7] Coding guidelines for a diagnosis of opioid dependence (**Table 1**[8-11]) are consistent with the World Health Organization definition of dependence, and these guidelines reserve F11.20 for moderate/severe OUD or dependence on prescription or illicit opioids for nonmedical use.[8-11] However, contrary to this definition, F11.20 is often applied to members who have developed physical dependence on opioid agonist prescriptions (OAPs) due to long-term prescription therapy, even when used as directed.[12] Thus, members on appropriate long-term OAPs can be mischaracterized as having ORD upon review of claims data, and this could affect the care they receive post diagnosis.[13] In the absence of known opioid misuse or abuse, *ICD-10-CM* code Z79.891 (long-term [current] use of opiate analgesic) is recommended for indicating long-term OAP for pain treatment (Table 1[8-11]) and offers a method for distinguishing this member population from those with ORD.[10]

This analysis describes how initial ORD diagnoses were coded in 1 administrative database and presents the following measures for each coding method: mean dollars spent per member per month (PMPM); mean percentage of members with at least 1 OAP, all-cause inpatient visit, or all-cause emergency department (ED) visit each month; and percentage of members with at least 1 *ICD-10-CM* Z79.891 diagnosis in a specified time period. Results highlight that medical utilization profiles differ by coding method for initial ORD diagnoses and suggest that better guidance is needed regarding coding practices for long-term OAP.

METHODS

This was a retrospective study of administrative claims for members with commercial health coverage from Blue Health Intelligence.[14] The data set contains deidentified eligibility information, pharmacy claims, and medical claims for more than 8.7 million members across all US states and territories.

Data between January 1, 2011, and March 31, 2017, were reviewed. Members were included in the analysis if they had at least 2 years of continuous health coverage centered around an initial ORD code that occurred in the assessment period (October 1, 2015, to March 31, 2016). No age restrictions were applied. Members with any previous ORD code before October 1, 2015 (prior to *ICD-10-CM* mandated implementation), were excluded. Members were identified for exclusion using *International Classification of Diseases, Ninth Revision, Clinical Modification* (*ICD-9-CM*) codes for opioid abuse and dependence (304.0x, 304.7x, 305.5x) or by a prescription claim before October 1, 2015, for any buprenorphine for medication-assisted treatment (BUP-MAT) product with a duration of 3 or more days.[15] ORD was identified in the assessment period by *ICD-10-CM* F11 codes for opioid abuse, dependence, or use, or by a prescription claim for any BUP-MAT product with a duration of 3 or more days.[7] The code F11.20 (opioid dependence, uncomplicated) was examined separately from other F11.x codes to understand the impact of F11.20 code application to both physical dependence and OUD on medical utilization or cost differences. A BUP-MAT duration of 3 or more days excluded members receiving a short course of buprenorphine for acute opioid withdrawal, which may not equate to an ORD diagnosis.[16] Because the intent was to capture the first documentation of an active ORD diagnosis, remission codes (F11.11 and F11.21) were excluded from the assessment period. Any F11 diagnosis associated with the CMS Place of Service (POS) code 81 (independent laboratory) was excluded to avoid capturing laboratory services as a source of medical diagnosis.[17] For members with both F11.20 and F11.x codes on the same date, ties were broken per *ICD-10-CM* coding guidelines (Table 1[8-11]): BUP-MAT > F11.20 > F11.x.

Using the first date of initial ORD diagnosis in medical and pharmacy claims (ie, ORD diagnosis

TAKEAWAY POINTS

- Payers are incentivized to facilitate population health interventions for opioid-related disorders (ORDs), requiring an understanding of ORD coding methods.
- In this analysis, 65% of commercial members who received their first ORD diagnosis were coded with opioid dependence. Contrary to the recommended course of care for opioid dependence, defined as moderate or severe opioid use disorder, 50% continued to receive opioid agonist prescriptions. We also observed that 35% received at least 1 diagnosis code indicating long-term opioid agonist treatment for pain.
- This suggests that long-term opioid therapy may be documented as opioid dependence in claims, which could mischaracterize these members as having ORD and affect their care; thus, better coding guidance is needed.

TABLE 1. *ICD-10-CM* Guidelines and *DSM-5* Guidelines for Coding ORD and Long-term Drug Therapy[8-11]

ICD-10-CM Code	*DSM-5* Guidelines[8,9]	*ICD-10-CM* Coding Guidelines[10]
F11.1x: Opioid abuse	Assign code for mild (2-3 symptoms) OUD	Cannot be coded simultaneously with F11.2x or F11.9x • If both abuse (F11.1x) and dependence (F11.2x) are documented, only the code for dependence can be assigned (ie, dependence is the more severe diagnosis). • If both abuse (F11.1x) and use (F11.9x) are documented, only the code for abuse can be assigned (ie, abuse is the more severe diagnosis).
F11.2x: Opioid dependence[a]	Assign code for moderate (4-5 symptoms) or severe (≥6 symptoms) OUD	Cannot be coded simultaneously with F11.1x or F11.9x • If both dependence (F11.2x) and abuse (F11.1x) are documented, only the code for dependence can be assigned (ie, dependence is the more severe diagnosis). • If both dependence (F11.2x) and use (F11.9x) are documented, only the code for dependence can be assigned (ie, dependence is the more severe diagnosis).
F11.9x: Opioid use	N/A	Cannot be coded simultaneously with F11.1x or F11.2x • If both use (F11.9x) and abuse (F11.1x) are documented, only the code for abuse can be assigned (ie, abuse is the more severe diagnosis). • If both use (F11.9x) and dependence (F11.2x) are documented, only the code for dependence can be assigned (ie, dependence is the more severe diagnosis).
Z79.x: Long-term (current) drug therapy	N/A	Code indicates continuous use of a prescribed drug for the long-term treatment of a condition. • Cannot be used to indicate addiction (ie, code for drug dependence should be assigned) • Cannot be assigned for medications used in detoxification or maintenance programs to prevent withdrawal symptoms in patients with drug dependence (ie, should not be assigned for MAT) • Cannot be assigned for medication administered to treat an acute illness or injury (ie, should not be assigned for an acute course of opioid therapy)

DSM-5 indicates *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition; *ICD-10-CM*, *International Classification of Diseases, Tenth Revision, Clinical Modification*; MAT, medication-assisted treatment; N/A, not applicable; ORD, opioid-related disorder; OUD, opioid use disorder.

[a]World Health Organization description of opioid dependence syndrome[11]: cluster of behavioral, cognitive, and physiological phenomena that develop after repeated opioid use; includes a strong desire to take the opioid, difficulties in controlling opioid use, persistent opioid use despite harmful consequences, a higher priority given to opioid use than other activities and obligations, increased tolerance, and sometimes a physical withdrawal state.

TABLE 2. Cost per Member per Month, OAP, Inpatient and ED Utilization, and Long-term Opioid Use Results by Coding Method and Time Period[a]

		F11.20 (n = 4187)	F11.x (n = 1844)	BUP-MAT (n = 395)
Cost per member per month[b]	Prediagnosis	$1656	$1812	$756
	Month of diagnosis	$5053	$6597	$2054
	Post diagnosis	$1803	$2069	$1148
% members[b] with at least 1 OAP	Prediagnosis	52.5%	44.1%	34.0%
	Month of diagnosis	59.3%	47.3%	9.1%
	Post diagnosis	50.0%	37.9%	12.7%
% members[b] with at least 1 inpatient visit	Prediagnosis	3.5%	3.7%	1.0%
	Month of diagnosis	19.3%	30.9%	5.1%
	Post diagnosis	3.8%	4.7%	2.4%
% members[b] with at least 1 ED visit	Prediagnosis	4.2%	5.3%	2.6%
	Month of diagnosis	10.8%	26.8%	3.5%
	Post diagnosis	4.1%	5.3%	3.1%
% members[c] with long-term opioid use (Z79.891)	Prediagnosis[d]	–	–	–
	Month of diagnosis	25.7%	8.1%	8.1%
	Postdiagnosis	34.6%	16.5%	19.5%

BUP-MAT indicates buprenorphine for medication-assisted treatment; ED, emergency department; *ICD-9-CM*, *International Classification of Diseases, Ninth Revision, Clinical Modification*; *ICD-10-CM*, *International Classification of Diseases, Tenth Revision, Clinical Modification*; OAP, opioid agonist prescription.

[a]Prediagnosis: 1 to 365 days before diagnosis. Month of diagnosis: 0 to 30 days after diagnosis. Postdiagnosis: 31 to 365 days after diagnosis.

[b]Calculated as mean value of all months in the specified time period.

[c]Calculated as percentage of members receiving at least 1 diagnosis in the specified time period.

[d]Not assessed prediagnosis because this period may include *ICD-9-CM* and *ICD-10-CM* codes, and the comparable *ICD-9-CM* code (V58.69; long-term [current] use of other medications) is not specific to opioids.

with no prior history of ORD), the following descriptive analyses were evaluated prediagnosis (1 to 365 days before diagnosis), month of diagnosis (0 to 30 days after diagnosis), and post diagnosis (31 to 365 days after diagnosis): mean cost PMPM and mean percentage of members with at least 1 OAP, inpatient visit, or ED visit in each month averaged across the specified time periods. The percentage of members receiving at least 1 *ICD-10-CM* code for long-term opioid use (Z79.891) in the month of initial ORD diagnosis and post diagnosis was also evaluated; it was not evaluated prediagnosis because this period overlaps with use of *ICD-9-CM*, and the only comparable *ICD-9-CM* code (V58.69; long-term [current] use of other medications) is not specific to opioids.[15] *Cost* refers to the amount paid by the insurer. Inpatient and ED visits were assumed as all-cause and not specific to opioid-related incidents. ED visits were identified by POS code 23 (emergency room—hospital) or by the presence of both POS code 21 (inpatient hospital) and an ED revenue code (0450, 0451, 0452, 0453, 0454, 0455, 0457, 0458, or 0459). Inpatient visits were identified by POS code 21 in the absence of an ED revenue code.

RESULTS

A total of 6426 initial ORD diagnoses were identified. Of these, 120 members were coded for ORD by both F11.20 and F11.x on the same date and were then assigned F11.20 as the primary diagnosis per coding guidelines (Table 1[8-11]). Initial ORD diagnoses were divided into 3 diagnosis types: F11.20 (65.2%), F11.x (28.7%), and BUP-MAT of 3 or more days (6.1%).

Mean PMPM costs prediagnosis and during the month of diagnosis for F11.20 ($1656 and $5053, respectively) and F11.x ($1812 and $6597) were more than twice those for BUP-MAT ($756 and $2054) (**Table 2**). Post diagnosis, mean PMPM costs dropped from the month of diagnosis but remained elevated compared with prediagnosis for all 3 diagnosis types: F11.20 ($1803), F11.x ($2069), and BUP-MAT ($1148).

The mean percentage of members with at least 1 OAP each month prediagnosis was highest among F11.20 (52.5%), followed by F11.x (44.1%) and BUP-MAT (34.0%) (Table 2). The difference across all time periods ranged from 8% to 12% higher for F11.20 compared with F11.x. Incident diagnoses identified by a sustained BUP-MAT prescription had a sharp drop in mean percentage of members with an OAP each month from prediagnosis (34.0%) to month of diagnosis (9.1%) and post diagnosis (12.7%).

Members with F11.x as an incident diagnosis had the highest percentage with at least 1 inpatient visit during the month of diagnosis (30.9%) compared with F11.20 (19.3%) and BUP-MAT (5.1%) (Table 2). The mean percentage of members with at least 1 inpatient visit each month decreased post diagnosis: F11.20 (3.8%), F11.x (4.7%), and BUP-MAT (2.4%).

Similar to PMPM costs, the mean percentage of members with at least 1 ED visit each month was higher for F11.20 and F11.x compared with BUP-MAT across all time periods (Table 2). During the month of diagnosis, more members with diagnosis type F11.x (26.8%) visited the ED at least once compared with F11.20 (10.8%) and BUP-MAT (3.5%).

The percentage of members with at least 1 Z79.891 code during the month of ORD diagnosis was highest among F11.20 (25.7%) compared with F11.x (8.1%) and BUP-MAT (8.1%) (Table 2). Compared with the month of diagnosis, a higher percentage of members across all diagnosis types received at least 1 Z79.891 code in the 11-month postdiagnosis period: F11.20 (34.6%), F11.x (16.5%), and BUP-MAT (19.5%).

DISCUSSION

This analysis characterizes methods for coding incident ORD diagnoses in administrative data using prescription claims for any BUP-MAT product with 3 or more days' duration and any *ICD-10-CM* F11 code for opioid abuse, dependence, or use. Future analyses could examine opioid overdose codes as an ORD indicator. Medical

utilization profiles and payer costs for members receiving incident Z79.891 (long-term [current] use of opiate analgesic) versus F11.20 (opioid dependence, uncomplicated) codes could also be evaluated.

The majority (65.2%) of members in this analysis had an initial ORD diagnosis coded in administrative claims by application of F11.20 (opioid dependence, uncomplicated). We evaluated F11.20 separately from F11.x to determine if its application to members prescribed OAP therapy and to members otherwise dependent on prescription or illicit opioids for nonmedical use contributes to differences in acute medical utilization compared with members with other ORDs. If the F11.20 population in this analysis exclusively represented those with moderate or severe OUD (Table 1[8-11]), we would expect to observe higher acute medical utilization and expenditure than members diagnosed with mild OUD (F11.1x) or abuse (F11.9x).[1] However, mean PMPM costs and inpatient and ED utilization for the F11.20 group were lower than that of the F11.x population across all time periods, even in the month of diagnosis, during which values peaked (Table 2). Conversely, the mean percentage of members with at least 1 OAP each month and with coded long-term use of OAP (Z79.891) was higher in the F11.20 group compared with F11.x. These results suggest that at least a portion of the F11.20 population is representative of those stable on long-term OAP without a true OUD indication and underscore the need for better education and guidance for appropriate application of F11.20 versus Z79.891. Additionally, there exists a subset of long-term OAP users who develop "complex persistent dependence," a diagnostic gray area between physiologic dependence and OUD, and thus may be coded with F11.20 while still continuing to receive OAPs for pain treatment.[18] Given the high rate of OAP each month post diagnosis in both the F11.20 and F11.x groups, it may be worthwhile to investigate provider specialties associated with specific diagnoses and whether the F11 codes and OAPs are received from the same practitioner.

In contrast to either F11 group, members whose incident ORD diagnoses were coded via receipt of a BUP-MAT product with a duration of 3 or more days had lower mean PMPM costs and lower mean percentages of OAP, inpatient visits, or ED visits each month in the prediagnosis, month of diagnosis, and postdiagnosis periods (Table 2), consistent with previous analyses.[19-21] This implies that earlier MAT intervention for ORD may prevent costly escalations in healthcare. Comorbid conditions, drivers, or patterns contributing to inpatient or ED utilization were not explored, and further research is warranted.

The mean percentage of members with at least 1 OAP in the BUP-MAT group decreased from prediagnosis (34.0%) to post diagnosis (12.7%), a sharper decline in OAP than in either F11 group. The mean percentage of members in the BUP-MAT group with at least 1 coded diagnosis of long-term OAP (Z79.891) increased from the month of diagnosis (8.1%) compared with the 11 months post diagnosis (19.5%). Implications for this finding could be 2-fold: (1) Long-term BUP-MAT is being coded with the same Z79.891 code or (2) practitioners are increasingly utilizing buprenorphine sublingual formulations to treat pain.[22] Coding guidelines indicate that maintenance medications for drug dependence should not be coded as Z79.891 (Table 1[8-11]). If BUP-MAT is being coded as Z79.891, this further reiterates the need for better education around appropriate code utilization.

Limitations

This analysis relies on the accuracy of claims data in which ORD is likely underreported.[23] Results for this commercially insured population may not be generalizable to other insured or uninsured populations. Claims history was limited to dates of service on or after January 1, 2011, preventing full visibility into prior ORD diagnosis codes that members may have received. Measures were not compared against medical records to verify accuracy of diagnoses.

CONCLUSIONS

The *ICD-10-CM* F11.20 code represents a large percentage of initial ORD diagnoses. Members coded with incident F11.20 exhibited lower mean PMPM costs and fewer inpatient or ED visits compared with the F11.x group, despite F11.x being a more stable diagnosis by DSM-5 guidelines (Table 1[8-11]). The mean percentage of members prescribed OAP each month did not markedly decrease after ORD diagnosis by any F11 code, while the percentage of members receiving at least 1 diagnosis of long-term OAP use increased post diagnosis. Compared with diagnosis by any F11 code, members first identified as having ORD via a BUP-MAT prescription for 3 or more days exhibited lower mean PMPM costs, fewer OAPs, and fewer inpatient or ED visits.

Results of this analysis highlight the need for better education around coding practices for ORD and long-term OAP. Accurate measurement of members with ORD is increasingly important given the escalating opioid epidemic. Thus, improvements to standardization are needed for the managed care community to appropriately identify ORD for case management, clinical intervention, or expanding access to care. ■

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Source of Funding: axialHealthcare funded acquisition of the research data set.

Author Disclosures: At the time of manuscript acceptance, Dr Watson was employed by axialHealthcare as a clinical pharmacist and scientific writer. Dr Simon was employed by axialHealthcare as a data scientist and has a patent pending on a machine learning model for predicting opioid use disorder. Ms Peratikos was employed by axialHealthcare as director of research. Dr Stringer was employed by axialHealthcare as chief science and clinical officer.

Authorship Information: Concept and design (AW, DMS, MBP, EAS); acquisition of data (EAS); analysis and interpretation of data (AW, DMS, MBP); drafting of the manuscript (AW); critical revision of the manuscript for important intellectual content (DMS, MBP); and supervision (MBP, EAS).

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