Methods Report: Analysis of Medicaid Claims Data to Assess Diagnosis of Opioid Use Disorder and Receipt of Medications for Opioid Use Disorder

Updated September 2025

Data Source

Medicaid is a program that provides free or low-cost health care insurance for individuals and families with limited income or people with disabilities. It is funded by both the state and federal governments and is administered by states. In Washington State, Medicaid is also known as "Apple Health" and is administered by the Washington State Health Care Authority (HCA). Medicaid beneficiaries in Washington receive health insurance from one of five Managed Care Organizations (Community Health Plan of Washington, Coordinated Care, Molina Healthcare of Washington, UnitedHealthcare Community Plan, and Wellpoint Washington) or through the state's fee-for-service program.

HCA collects *enrollment data* from individuals enrolling or renewing their Medicaid benefits and *claims data* from healthcare providers following a medical, dental, and pharmacy visit or service that was paid for by Medicaid. Medical and dental claims contain procedure codes that identify medical services and products that were provided or used for the patient (e.g. medications, medical equipment, etc). Medical claims also contain International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) diagnosis codes for new or current conditions and diseases patients are diagnosed with. Pharmacy claims contain national drug codes serving as identifiers for medications that were prescribed to the patient. Table 1 shows the types of code that are used to define Opioid Use Disorder (OUD) and Medications for Opioid Use Disorder (MOUD) in this dashboard.

Table 1. Types of code used to define OUD and MOUD	
	Types of code used
OUD	ICD-10-CM codes
MOUD	
Methadone	Procedure codes
Buprenorphine	Procedure codes National drug codes
Injectable Naltrexone	Procedure codes National drug codes

Public Health – Seattle & King County (PHSKC) receives Medicaid enrollment and claims data from HCA for all King County residents with any form of Medicaid coverage in the last 10 years. HCA has approved PHSKC's use of Medicaid data for public health surveillance, program evaluation, research that has undergone required approval procedures, performance measurement, and treatment and care coordination. To prevent disclosing potentially identifiable information, tabular or graphical displays of aggregate information corresponding to 1-10 beneficiaries are suppressed. General enrollment and healthcare use trends among King County Medicaid beneficiaries can be viewed [here](#).

Inclusion Criteria

The dashboard represents King County Medicaid beneficiaries in each quarter-year period from Q1-2017 to present who meet the following criteria:

- Meet the OUD definition (see "Definitions" section below)
- Are less than 65 years at the end of the quarter
- Have full medical benefits
- Are enrolled in Medicaid for 2+ months out of 3 months of the quarter
- Alive at the end of the quarter[i]

The rationale for each inclusion criterion is explained in Table 2 and weighs two central considerations: (1) sample representativeness and (2) data availability in observation period.

Table 2. Rationale for the inclusion criteria	
Inclusion criteria	**Rationale**
Less than 65 years	- 91% of Medicaid beneficiaries 65+ years old were dually covered by Medicare in 2024. - Since *Medicare* serves as the primary payer, OUD/MOUD *Medicaid* claims are likely to be missing for dually covered beneficiaries. - Older adults *without* dual Medicare coverage are unlikely representative of older adults in the population.
Full medical benefits	- OUD diagnoses and/or MOUD receipt may be incompletely ascertained for individuals with partial Medicaid benefits.
Enrolled in Medicaid for 2+ months out of 3 months of quarterly observation period	- Including beneficiaries who were enrolled in Medicaid for only a fraction of the quarter could result in under-ascertainment of OUD diagnoses and MOUD receipt. - Requiring complete Medicaid enrollment for the duration of the quarter would exclude beneficiaries who are more likely to experience changes in Medicaid eligibility and would likely introduce bias.
Alive at the end of the quarter	- Beneficiaries who died prior to the end of the quarter would have incomplete ascertainment of OUD diagnoses and/or MOUD receipt.

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[i] Beneficiaries' vital status at the end of the quarter was determined by linking Medicaid data with death certificate data through machine learning record linkage algorithms.

Definition of Key Analytic Concepts

The OUD and MOUD definitions were informed by a review of the peer-review and gray literature and a series of internally-conducted sensitivity analyses. Most commonly applied definitions of OUD were based solely upon diagnosis codes for opioid abuse, dependence, and use; though a combination of diagnosis codes and MOUD claims has also been used to define OUD.[1-3] OUD definitions also differed according to whether the date corresponding to the OUD and MOUD receipt criteria occurred within the "current" time period of interest, the past 12 months, past 24 months, or ever in the past.[1-3]

The final OUD definition adopted by our team does not consider an MOUD claim without a past documented OUD diagnosis as a marker for OUD, to minimize the likelihood that buprenorphine, methadone, or naltrexone were prescribed for a clinical purpose other than treating OUD. The final definition requires documentation of the OUD criteria within the past 12-months. This time frame was chosen in light of the following considerations: varying lengths of Medicaid enrollment affecting longer-term ascertainment of OUD status, potential for people to recover from OUD, and varying levels of healthcare utilization.

Medicaid beneficiaries are considered to have OUD in a given quarter if they meet either of the two criteria below:

Table 3. Definition of "OUD diagnosed"
1. Have any claim with an OUD diagnosis in the current quarter OR the previous 3 quarters OR
2. Have a MOUD claim in the current quarter OR the previous 3 quarters AND Had an OUD diagnosis at any point in the past

Medicaid beneficiaries are considered to have received MOUD in a given quarter if they meet either of the two criteria below:

Table 4. Definition of "Receipt of MOUD prescription"
1. Meet the OUD definition AND have a claim with procedure codes for methadone, buprenorphine, or injectable naltrexone OR
2. Meet the OUD definition AND have a claim with national drug codes for buprenorphine or injectable naltrexone

Initiation and re-initiation of MOUD in a given quarter is defined in Table 5:

Table 5. Definitions of MOUD re-initiation and initiation	
Category	**Definition**
Re-initiated MOUD after lapse in recent care episode	Beneficiaries received MOUD in the current quarter AND in the prior 181-365 days
Initiated MOUD	Beneficiaries received MOUD in the current quarter AND not in the prior 91-365 days

Measures of Duration of MOUD Coverage

The dashboard presents information on the number of days covered by a MOUD prescription for (1) all beneficiaries who met the OUD criteria in a given quarter and (2) beneficiaries who initiated or re-initiated MOUD in a given quarter. For both analyses, beneficiaries' duration on MOUD was calculated by summing the number of days of medication prescribed over the calendar quarter (i.e., a beneficiary with two separate MOUD prescriptions for 7 days and 24 days would be shown to have a total of 31 days of MOUD treatment). Duration on long-acting injectable buprenorphine is similarly defined by summing the number of days of medication recorded on the prescription. This is a conservative approximation of medication coverage, given the long half-life of long-acting injectable buprenorphine in established patients. If there were overlapping prescriptions, meaning patients received a second MOUD prescription within the timeframe that should have been covered by the first prescription, we assumed that the first prescription ended on the day the second prescription began (i.e., a client with two separate MOUD prescriptions for 7 days and 24 days, where there are 3 days of overlapping prescription time frames, would be shown to have a total of 28 days of MOUD treatment).[ii]

In analyses that describe MOUD utilization *across all beneficiaries with OUD*, duration of MOUD coverage was characterized using the 5 categories presented in Table 6. Though subjective, the categories were chosen because they correspond to clinically meaningful time points.

Table 6. Categories for beneficiaries' duration on MOUD
0 days of 90-day quarter
1-6 days of 90-day quarter
7-30 days of 90-day quarter
31-60 days of 90-day quarter
Greater than 60 days of 90-day quarter

Three measures of retention *following MOUD initiation or re-initiation* were utilized (see Table 7): 1) low, moderate, high retention in MOUD in the180 days after initiation[7], 2) Healthcare Effectiveness Data and Information Set (HEDIS) retention in MOUD in the 180 days after initiation[8], and 3) retention in Substance Use Disorder (SUD) – related healthcare services in the 34 days after initiation[9,10]. Data is shown by the year and quarter of MOUD initiation. Beneficiaries who died during the 34- or 180-day post-initiation observation period were excluded from post-initiation retention analyses.

[ii] There are conflicting practices in the literature surrounding how to address overlapping MOUD prescriptions, with some using the method depicted above[4] while others summed up all the days of medications prescribed regardless of the overlap.[5,6] After reviewing our data with and without addressing overlapping prescriptions, we did not find any noticeable differences in the trends of beneficiaries' duration on MOUD, outside of a small increase in beneficiaries who were covered by oral buprenorphine for a longer time period (when summing up all the days of medication vs addressing medication overlap). To avoid the potential of over-estimation, we decided to address overlapping prescriptions by assuming the first prescription ended on the day the second prescription was received, though we may be slightly under-estimating the true duration on MOUD.

Table 7. Definitions of 3 MOUD retention measures		
Measure	**Category**	**Definition**
Low, Moderate, High Retention[7]	Single MOUD prescription	1 prescription received in the 180 days after MOUD initiation/re-initiation
	Low retention	Beneficiaries are covered by MOUD for less than 60 days out of the 180 days after MOUD initiation/re-initiation
	Moderate retention	Beneficiaries are covered by MOUD for 60-120 days out of the 180 days after MOUD initiation/re-initiation
	High retention	Beneficiaries are covered by MOUD for greater than 120 days out of the 180 days after MOUD initiation/re-initiation
HEDIS Retention[8]	Retained	Continuously covered by MOUD for 180 days after MOUD initiation/re-initiation and did not have a gap in coverage of more than 7 days
	Not Retained	Not continuously covered by MOUD for 180 days and had a gap in covered of 7+ days
Retention in 34 Days[9][10]	Retained	Received 2+ SUD-related clinical visits within 34 days after MOUD initiation/re-initiation
	Not Retained	Did not receive 2+ SUD-related clinical visits within 34 days after MOUD initiation/re-initiation

Limitations

MOUD duration measures can be influenced by incarceration episodes, since receipt of MOUD while incarcerated would not be documented in Medicaid claims.

This visualization depicts MOUD *receipt*. The extent to which "MOUD receipt" approximates "MOUD utilization" is unknown.

Past and future policy changes affecting Medicaid eligibility can influence OUD and MOUD indicators.

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