
CBE ID

1879

Title

Adherence to Antipsychotic Medications For Individuals with Schizophrenia

Project

Management of Acute Events, Chronic Disease, Surgery, and Behavioral Health

Endorsement Status

Endorsed

Is Under Review

No

Next Maintenance Cycle

Spring 2030

Previous Endorsement Cycle

Spring 2025

Initial Endorsement

Fri, 11/02/2012 - 16:26

Steward

Centers for Medicare & Medicaid Services

1.0 New or Maintenance

Maintenance

1.1 Measure Structure

Single Measure

1.3 Electronic Clinical Quality Measure (eCQM)

No

1.6 Measure Description

Percentage of individuals at least 18 years of age as of the beginning of the performance period with schizophrenia or schizoaffective disorder who had at least two prescriptions filled for any antipsychotic medication and who had a Proportion of Days Covered (PDC) of at least 0.8 for antipsychotic medications during the performance period.

1.7 Measure Type

Intermediate Outcome

1.8 Level of Analysis

Clinician: Group/Practice, Clinician: Individual

1.9 Care Setting

Ambulatory Care: Clinic, Ambulatory Care: Clinician Office, Ambulatory Care: Office, Behavioral Health: Outpatient, Clinician Office/Clinic, Hospital: Outpatient

1.10 Measure Rationale

The prevalence of schizophrenia among U.S. adults is estimated to range from less than 1% to 1.8%.¹⁻⁴ This population has a higher risk of premature mortality compared with the general population,^{5,6} with one study estimating that adults with schizophrenia in the U.S. are more than 3.5 times likely to die (average of 28 years' potential life lost) than adults in the general population.⁷ Recent evidence estimates the excess economic burden of schizophrenia at \$343.2 billion (including \$62.3 billion in direct health care costs), primarily driven by caregiving costs, premature mortality, and unemployment.⁸

Current clinical guidelines emphasize the importance of treatment adherence and uninterrupted antipsychotic regimens to prevent symptoms and relapse among individuals diagnosed with schizophrenia or schizoaffective disorder.⁹⁻¹¹ Evidence indicates that improved adherence to antipsychotic medications among individuals diagnosed with schizophrenia or schizoaffective disorder may lower rates of violence, emergency department visits, psychiatric or other preventable hospitalizations, and mortality.¹²⁻¹⁵ This measure can support clinicians in identifying individuals diagnosed with schizophrenia or schizoaffective disorder who are non-adherent to treatment with antipsychotic medications and encourage the development and use of interventions to improve adherence,¹⁶⁻²⁰ including the use of long-acting injectable antipsychotic medications,^{13,21,22} among members of this high-risk subpopulation.

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1.11 Measure Webpage

https://qpp.cms.gov/docs/QPP_quality_measure_specifications/CQM-Measures/2025_M...

1.13 Data Dictionary

Attached

1.13a Attach Data Dictionary

[1.13 Data Dictionary-508.xlsx](#)

1.14 Numerator

Individuals in the denominator who have a Proportion of Days Covered (PDC) of at least 0.8 for antipsychotic medications

1.14a Numerator Details

NUMERATOR NOTE: The PDC is calculated as follows:

PDC NUMERATOR:

The PDC numerator is the sum of the days covered by the days' supply of all antipsychotic prescriptions. The period covered by the PDC starts on the day within the performance period when the first prescription is filled (i.e., the index date) and lasts through the end of the performance period, or death, whichever comes first. For prescriptions with a days' supply that extends beyond the end of the performance period, count only the days for which the drug was available to the individual during the performance period. If there are prescriptions for the same drug (generic name) on the same date of service, keep the prescription with the largest days' supply. If prescriptions for the same drug (generic name) overlap, then adjust the prescription start date to be the day after the previous fill has ended.

PDC DENOMINATOR:

The period covered by the PDC starts on the day within the performance period when the first prescription is filled (i.e., the index date) and lasts through the end of the performance period, or death, whichever comes first.

NUMERATOR OPTIONS:

Performance Met: Individual had a PDC of 0.8 or greater (G9512)

OR

Performance Not Met: Individual did not have a PDC of 0.8 or greater (G9513)

1.15 Denominator

Individuals at least 18 years of age as of the beginning of the performance period with schizophrenia or schizoaffective disorder and at least two prescriptions filled for antipsychotic medications during the performance period

1.15a Denominator Details

DENOMINATOR NOTE: *Signifies that this CPT Category I or HCPCS code is a non-covered service under the Medicare Part B Physician Fee Schedule (PFS). These non-covered services should be counted in the denominator population for MIPS CQMs.

The following are the oral antipsychotic medications for the denominator. The route of administration includes all oral formulations of the medications listed below.

ANTIPSYCHOTIC MEDICATIONS:

- aripiprazole
- asenapine
- brexiprazole
- cariprazine
- chlorpromazine
- clozapine
- fluphenazine
- haloperidol
- iloperidone
- loxapine
- lumateperone
- lurasidone
- molindone
- olanzapine
- paliperidone
- perphenazine
- prochlorperazine
- quetiapine

- quetiapine fumarate
- risperidone
- thioridazine
- thiothixene
- trifluoperazine
- ziprasidone

ANTIPSYCHOTIC COMBINATIONS:

- perphenazine-amitriptyline

LONG-ACTING INJECTABLE ANTIPSYCHOTIC MEDICATIONS:

NOTE: The following are the long-acting (depot) injectable antipsychotic medications for the denominator. The route of administration includes all injectable and intramuscular formulations of the medications listed below.

ANTIPSYCHOTIC MEDICATIONS:

- aripiprazole long-acting intramuscular injection (LAIM)
- aripiprazole lauroxil
- fluphenazine decanoate
- haloperidol decanoate
- olanzapine pamoate
- paliperidone palmitate
- risperidone microspheres

1.15b Denominator Exclusions

Patients who ever had a diagnosis of dementia

1.15c Denominator Exclusions Details

Patient ever had a diagnosis of dementia

1.15d Age Group

Adults (18-64 years), Older Adults (65 years and older)

1.16 Type of Score

Rate/proportion

1.17 Measure Score Interpretation

Better performance = Higher score

1.18 Calculation of Measure Score

The measure should be calculated using data from 12 consecutive months (referred to below as the “measurement year”).

CREATE DENOMINATOR:

1. Pull individuals who are at least 18 years of age as of the beginning of the measurement year.
2. Of those individuals identified in Step 1, keep those who had:
 1. At least two encounters with a diagnosis of schizophrenia or schizoaffective disorder, on different dates of service, in an outpatient, Emergency Department, or non-acute inpatient setting during the measurement year OR
 2. At least one encounter with a diagnosis of schizophrenia or schizoaffective disorder in an acute inpatient setting during the measurement year.
3. Of the individuals remaining after Step 2, keep those who filled at least two prescriptions for one or more qualifying antipsychotic medications during the measurement year.
4. Exclude those individuals who ever had a documented diagnosis of dementia.

CREATE NUMERATOR :

For each denominator-eligible individual, calculate the PDC according to the following instructions:

1. Determine the individual’s treatment period (i.e., the period covered by the PDC), which starts on the day within the measurement year when the first prescription for an antipsychotic medication is filled (i.e., the index date) and lasts through the end of the measurement year, or death, whichever comes first.
2. Within the treatment period, count the number of days the individual is covered by at least one antipsychotic medication, based on days’ supply.
 1. For prescriptions with a days’ supply that extends beyond the end of the measurement year, count only the days for which the drug was available to the individual during the measurement year.
 2. If there are prescriptions for the same drug (generic name) on the same date of service, keep the prescription with the largest days’ supply.
 3. If prescriptions for the same drug (generic name) overlap, then adjust the prescription start date to be the day after the previous fill has ended.
3. Calculate the PDC for each denominator-eligible individual. Divide the number of days identified in Step 2 by the number of days in the individual’s treatment period (found in Step 1).
4. Count the number of individuals with a calculated PDC of at least 0.8. This is the numerator.

1.19 Measure Stratification Details

This measure is not stratified.

1.20 Types of Data Sources

Claims Data, Registries

1.21a Data Collection Tool URL(s)

<http://example.com>

1.25 Data Source Details

The measure can be calculated from Medicare enrollment, claims, and prescription drug event data. This measure can also be calculated and reported through participating Quality Payment Program (QPP) Qualified Registries and Qualified Clinical Data Registries (QCDRs) which are able to collect and submit data on behalf of Merit-based incentive Payment System (MIPS) eligible clinicians.

1.26 Minimum Sample Size

The minimum sample size to calculate the performance score for any accountable entity (clinician or clinician group) is 20. This case minimum criterion is consistent with program requirements (Merit-based Incentive Payment System, <https://qpp.cms.gov/mips/quality-requirements?py=2025>).

2.1 Attach Logic Model

[2.1 Logic Model-508.pdf](#)

2.2 Evidence of Measure Importance

According to current clinical guidelines, antipsychotic medications are effective in treating acute psychotic exacerbations of schizophrenia and in reducing the likelihood of relapse. The 2021 guidelines from the American Psychiatric Association (APA) recommend that patients with schizophrenia be treated with an antipsychotic medication (1A, *high strength of evidence*), noting that the choice of antipsychotic agent should take into account the likely benefits, possible side effects, and patient preferences.¹ The 2023 recommendations from the U.S. Department of Veterans Affairs and Department of Defense (VA/DoD) for diagnosis and management of schizophrenia recommend pharmacologic treatment with antipsychotic medications (strong recommendation).² Finally, recommendations from the National Institute for Clinical Excellence (NICE) published in 2014 recommend the use of oral antipsychotics for patients with first-episode psychosis as well as acute exacerbation or recurrence of psychosis or schizophrenia.³

Current guidelines also note the importance of adherence to antipsychotic medications among patients with schizophrenia. The APA guidelines suggest long-acting injectable antipsychotic medications be used for treatment based on patient preferences or if patients have a history of poor or uncertain adherence (2B, *moderate strength of evidence*).¹ The 2023 VA/DoD guidelines also suggest offering long-acting injectable antipsychotics to improve medication adherence in patients with schizophrenia (weak recommendation).² The 2014 NICE guidelines note that long-acting injectable antipsychotic medications should be considered for patients with schizophrenia or other psychotic disorders based on patient preference or to resolve intentional or unintentional non-adherence.³

A systematic review by Aymerich et al. (2024) compared mortality risk among patients with schizophrenia prescribed long-acting injectable antipsychotics versus oral antipsychotics. Their meta-analysis of 17 studies found a lower risk of all-cause mortality among patients receiving long-acting injectable antipsychotics versus oral antipsychotics (odds ratio [OR]=0.79; 95% CI, 0.66-0.95). Pooled analyses identified a significantly lower risk of non-suicide mortality among patients receiving long-acting injectable antipsychotics (OR=0.77; 95% CI, 0.63-0.94); a non-significantly lower risk was observed for suicide mortality (OR=0.86; 95% CI, 0.59-1.26).⁴ A 2021 meta-analysis of 25 studies found that patients treated with long-acting injectable antipsychotics had lower odds of hospitalization (OR=0.62; 95% CI, 0.54-0.71), fewer hospitalizations (incidence rate ratio, IRR=0.75; 95% CI, 0.65-0.88) and fewer emergency department visits (IRR=0.86; 95% CI, 0.77-0.97) than patients treated with oral antipsychotics, with no significant net difference in per-patient-per-year all-cause healthcare costs.⁵

Impact of Medication Adherence on Patient Outcomes

Adherence to antipsychotic medications among patients diagnosed with schizophrenia is associated with positive outcomes. These outcomes include reductions in all-cause mortality, psychiatric hospitalizations, and emergency department (ED) visits; lower risk of cardiovascular disease and stroke; and lower rates of violence.⁶ Schizoaffective disorder (which is described as “schizophrenia but with manic episodes or a significant depressive component”⁷) is less frequent and much less studied than schizophrenia but presents with similar symptoms, so clinicians extrapolate from the literature on schizophrenia to schizoaffective disorder.^{7,8}

In a cross-sectional study of 14,365 New York State Medicaid beneficiaries, Egglefield et al. (2020) found that rates of preventable hospitalizations for diabetes mellitus were lowest among patients who demonstrated adherence to treatment with antipsychotic medications (2.0%), with “adherence” defined as a PDC $\geq 80\%$.⁹ Rates of preventable hospitalizations for diabetes mellitus were highest among patients who had very low or no engagement in antipsychotic treatment (4.7%), with “very low or no engagement” defined as two or fewer prescriptions for antipsychotic medications or no such prescriptions in the first six months of illness.

Hardy et al. (2018) conducted a retrospective cohort study from January to December 2015, using a sample of 7,851 Medicaid beneficiaries diagnosed with schizophrenia who were enrolled in Community Care of North Carolina.¹⁰ The study team found an inverse relationship between antipsychotic adherence and ED utilization among patients with schizophrenia. Unnecessary visits to the ED are problematic as they can lead to overcrowding, delays, and increased healthcare costs. The researchers approximated medication adherence using the medication possession ratio (MPR), which is similar to the PDC except that all prescriptions are assumed to cover 30 days. Patients who had an MPR < 0.80 had 1.61 times more ED visits than beneficiaries with an MPR ≥ 0.80 .

In a study of 1,435 patients with schizophrenia followed over 18 months, Buchanan et al. (2019) found that nonadherence to antipsychotic medication was significantly associated with injurious violence (hazard ratio = 2.93) after adjusting for participants’ demographic characteristics, childhood risk factors, clinical conditions, and recent contact with hospitals and prisons. Study participants self-reported injurious and non-injurious violence at baseline and follow-up.¹¹

It is important to acknowledge that the negative side effects associated with antipsychotic

medications are well-documented. These side effects include weight gain, sexual dysfunction, cardiovascular symptoms, disturbances in the menstrual cycle, sedation, tremors, and extrapyramidal side effects (i.e., drug-induced parkinsonism and/or movement disorders).¹²⁻¹⁵ Despite these side effects, the potential benefits of treatment with antipsychotic medications outweigh the potential harms for nearly all patients diagnosed with schizophrenia.¹

Interventions to Improve Medication Adherence

There are effective interventions that clinicians can employ to improve medication adherence for patients with schizophrenia. These interventions include cognitive behavioral therapy (CBT), psychoeducation about schizophrenia and the potential positive effect of medication, family interventions, motivational interviewing, and adherence therapy using electronic devices to share medication reminders.¹⁶⁻²⁰ While a variety of distinct interventions have been used successfully by clinicians to improve medication adherence, those found to be most effective use a multidimensional, mixed-intervention method combining educational and behavioral strategies tailored to the specific needs of the patient.²¹ Additionally, clinicians can promote optimal medication adherence by including the patient in decisions about their medications and involving the patient's support system whenever possible.^{16,17,19} Recent systematic reviews have also noted that digital and telehealth interventions (e.g., text messages, mobile apps, sensors) are another promising approach for increasing adherence among patients with schizophrenia, but additional validation of their effectiveness is needed.²²⁻²⁵

In addition, the use of long-acting injectable antipsychotic medications has been shown to improve adherence.^{4,6,26} A 2021 meta-analysis including 8 observational studies found that patients with schizophrenia receiving long-acting injectable antipsychotics had better adherence (defined as PDC >80%) than patients receiving oral medications (OR=1.40; 95% CI, 1.24-1.58, p<0.05). Patients receiving long-acting injectable antipsychotics were also more likely to have no gap in treatment for >60 days ("persistence") than patients receiving oral medications (OR=1.65; 95% CI, 1.11-2.46, p<0.05).⁴ A 2021 meta-analysis of 25 studies also found that patients treated with long-acting injectable antipsychotics had 1.89 times (95% CI, 1.52-2.35) higher odds of being adherent than patients treated with oral antipsychotics (PDC >80%).⁶

Patients with Major Neurocognitive Disorder/Dementia

Existing evidence supports the exclusion of individuals diagnosed with major neurocognitive disorder/dementia from the measure because of the risks of increased mortality and harmful side effects among patients with major neurocognitive disorder/dementia. In addition, indefinite maintenance on antipsychotic medications is not recommended in the setting of major neurocognitive disorder/dementia, as psychotic symptoms frequently abate as the condition progresses.

The U.S. Food and Drug Administration (FDA) issued a public health advisory in 2005 stating that increased mortality is associated with the use of second generation (formerly "atypical") antipsychotic medications among patients with dementia.²⁷ The FDA requested that a "black box" warning be included on the labels of such medications describing the increased mortality risk and noting that the drugs are not approved for treating behavioral disorders in individuals with major neurocognitive disorder/dementia. The FDA updated the advisory in 2008 to state that both first-

generation (formerly “conventional”) and second-generation antipsychotics are associated with an increased risk of mortality in individuals treated for major cognitive disorder/dementia.²⁸ The FDA public health advisory is based on findings from 15 placebo-controlled trials. Several of these trials involving 5,106 elderly patients treated for major cognitive disorder/dementia showed mortality roughly 1.6 to 1.7 times that of placebo-treated patients.²⁸

Mueller et al. (2020) conducted an observational study using data extracted between January 2007 and December 2015 from the South London and Maudsley NHS Foundation Trust’s Clinical Record Interactive Search platform.²⁹ The study team found that, among 10,106 patients with major neurocognitive disorder/dementia who had psychosis but no agitation, there was a significant increase in the risk of hospitalization for a stroke among patients who were prescribed an antipsychotic medication compared with those who were not prescribed antipsychotic medications (adjusted hazard ratio = 2.16). Among all patients with major cognitive disorder/dementia, the study team also found an increased risk of all-cause mortality (adjusted hazard ratio = 1.14) and stroke-specific mortality (adjusted hazard ratio = 1.28) among individuals who were prescribed an antipsychotic medication. The team used Cox regression models to analyze associations between antipsychotic medication use and all-cause and stroke-specific mortality, adjusting for 16 potential confounders, including demographics, cognition, functioning, and physical and mental health.

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2.4 Performance Gap

Performance gaps were estimated using the following data sources:

- Medicare Master Beneficiary Summary File (MBSF) from calendar year (CY) 2023 (which contains demographic and enrollment information, including beneficiaries' birth dates and states of residence)
- Institutional claims (Part A) from January 1, 2022–December 31, 2023 (to capture prior-year comorbidity diagnoses as well as measurement-year denominators)
- Noninstitutional/carrier claims (Part B) from January 1, 2022–December 31, 2023 (to capture prior year comorbidity diagnoses as well as measurement-year denominators)
- Prescription drug benefit claims (Part D) from CY 2023

For measurement year 2023 (January 1 through December 31), performance gap analyses included 138,508 eligible beneficiaries from all 50 states and the District of Columbia (DC) enrolled in Medicare Part D, who were attributed to 2,311 individual clinicians (by National Provider Identifier, NPI) or 2,254 clinician reporting entities (by Taxpayer Identification Number, TIN). Because only NPIs meeting the minimum volume threshold (i.e., 20) were included in analyses of NPI-level performance gaps, the number of eligible beneficiaries in the NPI analysis fell to 131,490.

As shown in Table 1. Performance Scores by Decile, which includes Tax Identification Number (TIN)-level performance scores, and the additional table (Table 2.4-1), located in *Appendix 2.4a: Additional Performance Gap Results* which presents National Provider Identifier (NPI)-level performance scores, the mean performance score (at both the NPI and TIN levels) varies from 58-59% at the 10th percentile to 92-93% at the 90th percentile, with a mean value of 77-78% and a median of 80-81%. These results indicate substantial overall variation in performance. Tables 2.4-3 and 2.4-4 included in *Appendix 2.4a: Additional Performance Gap Results* show statistically and clinically significant patient-level performance gaps by age and geography (i.e., state of patient residence), respectively. Specifically, the overall proportion of beneficiaries with $PDC \geq 0.8$ was about 0.70 for beneficiaries under 35 years of age, 0.75 for beneficiaries 35-44 years of age, and about 0.79 or greater for older beneficiaries. The overall proportion of beneficiaries with $PDC \geq 0.8$ varied from about 0.62 in DC to nearly 0.88 in South Dakota (SD), with southeastern and southwestern states (e.g., LA, NV, AZ) showing relatively low performance compared with northeastern and midwestern states (e.g., CT, NH, IA, WI). Rural-urban differences are small but statistically significant, favoring beneficiaries living in rural areas.

Table 1. Performance Scores by Decile

	Performance Gap												
	Overall	Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum
Mean Performance Score	0.775	0.171	0.586	0.672	0.735	0.773	0.806	0.833	0.857	0.886	0.922	1	1
N of Entities	2,254	n/a	224	226	225	226	224	242	220	216	226	225	n/a
N of Persons / Encounters / Episodes	138,508	n/a	10,433	11,544	14,323	16,259	17,575	14,731	14,711	15,410	13,971	9,551	n/a

2.4a Attach Performance Gap Results

[Appendix 2.4a Additional Performance Gap Results.pdf](#)

2.6 Meaningfulness to Target Population

To provide evidence that the target population values the measure and finds it meaningful, we can refer to the input collected from the Technical Expert Panel (TEP) members, which included patient and family caregiver representatives.

Out of 16 TEP members who voted on meaningfulness, 13 (81%) voted "yes" that the measured outcome, specifically adherence to antipsychotic medications for patients with schizophrenia, is meaningful and can help improve care for patients. This group included two patient and family caregiver representatives, indicating that the perspectives of those directly affected by the measure were considered. The majority agreement among TEP members suggests that the measure is seen as valuable in making care decisions.

The 3 TEP members who voted "no" felt that the measure construct needs to be updated to "more modern data ecosystems" to capture more person-centered approaches to adherence to improving outcomes. This feedback is being considered by the measure steward and the measure development team but could not be effectively addressed in the time frame for this submission cycle.

3.1 Contributions Towards Closing Care Gaps

This domain is optional for Spring 2025.

4.1a Data Structure and Availability

Because this measure can be estimated using readily available administrative claims data, feasibility is not an issue. This measure has been used in CMS programs for many years, having been first endorsed by the Consensus-Based Entity in 2012, and then re-endorsed in 2018. No difficulties have been reported with respect to data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, or time and cost of data collection. Providers routinely generate and transmit claims in a timely manner for all Medicare beneficiaries.

In CMS' Quality Payment Program (QPP), participating providers currently submit data on this measure as a MIPS Clinical Quality Measure (CQM). According to the CMS QPP Experience Public Use Files, the number of reporting entities was 726 in 2017, 489 in 2018, 736 in 2019, 976 in 2020, 652 in 2021, and 442 in 2022, indicating that reporting is feasible for many clinicians and clinician groups.

4.1b Implementation Costs and Burden

There are no fees associated with use of this measure. The measure specifications are available via the CMS Quality Payment Program (QPP) website. The information used in this measure is

collected as part of claims regularly generated and transmitted to CMS. Reporting providers can estimate the measure using their own claims data (or claims data provided by affiliated pharmacies, payers, or third-party intermediaries) to populate their CQM registry. In so doing, the HCPCS code G9512 is assigned to denominator-eligible individuals who had PDC ≥ 0.8 , and code G9513 is assigned to eligible individuals who had lower PDC.

4.1c Confidentiality

The information used in this measure is collected as part of claims regularly generated and transmitted to CMS so confidentiality is not an issue. Identifiable data are not included in the measure specifications.

4.3 Feasibility Informed Final Measure

No feasibility assessment was completed due to the reasons outlined above. No adjustments were necessary because the measure has been in widespread use since 2017 or earlier.

4.4 Proprietary Information

Not a proprietary measure and no proprietary components

5.1.1 Data Used for Testing

Testing was conducted using the following data sources:

- Medicare Master Beneficiary Summary File (MBSF) from calendar year (CY) 2023 (which contains demographic and enrollment information, including beneficiaries' birth dates and states of residence).
- Institutional claims (Part A) from January 1, 2022–December 31, 2023 (to capture prior-year comorbidity diagnoses as well as measurement-year denominators).
- Non-institutional/carrier claims (Part B) from January 1, 2022–December 31, 2023 (to capture prior year comorbidity diagnoses as well as measurement-year denominators).
- Prescription drug benefit claims (Part D) from CY 2023.
- The Universal Data Set (UDS) from CY 2017 through 2022, which is a curated data warehouse of all Quality Payment Program (QPP) data for analytics and reporting, housed in CMS' Centralized Data Repository. The UDS integrates data gathered by QPP component systems and resides in a relational database used to answer ad hoc data requests, generate reports, and supply data to dashboards.
- The Quality Payment Program (QPP) Public Use File (PUF) dataset from CY 2017 through 2022, which includes clinician-level (non-aggregated) data for each performance year. It provides detailed data at the Taxpayer Identification Number (TIN)/National Provider Identifier (NPI) level regarding clinician eligibility, measure level scoring, performance category scoring, final scores, and payment adjustment factors (represented as percentages).

5.1.1a Dates of Testing Data

Field not required Spring 2025

5.1.2 Differences in Data

Entity-level analyses were performed separately using both Medicare claims data and QPP data, as described in Section 5.1.1. Medicare claims data include entities that voluntarily report this measure and those that do not, but are limited to beneficiaries continuously enrolled in Medicare Parts A, B, and D. QPP data are limited to voluntarily reporting entities, but may include beneficiaries enrolled in commercial insurance plans, Medicaid, and Medicare Part C plans. Patient-level analyses could only be performed using Medicare claims data, because each row in the UDS/QPP data represents one entity reporting a quality measure.

5.1.3 Characteristics of Measured Entities

For measurement year 2023 (January 1 through December 31), scientific acceptability analyses included 138,508 eligible beneficiaries from all 50 states and the District of Columbia (DC) enrolled in Medicare Part D, who were attributed to 2,311 individual clinicians (by National Provider Identifier, NPI) or 2,254 clinician reporting entities (by Taxpayer Identification Number, TIN). Because only NPIs meeting the minimum volume threshold (i.e., 20) were included in analyses of NPI-level performance, the number of eligible beneficiaries in the NPI analysis fell to 131,490. A breakdown of NPIs and TINs by CMS Region can be found in Section 5.1.3 of *Appendix 7.1: Supplemental Attachment* (see Table 5.1.3: Characteristics of Measured Entities).

Additional scientific acceptability analyses were performed using provider-reported QPP data from 726 reporting entities in 2017, 489 in 2018, 736 in 2019, 976 in 2020, 652 in 2021, and 442 in 2022. Overall, the clinical specialties of reporting entities were 38.0% psychiatrists, 27.4% nurse practitioners, 5.1% physician assistants, 2.5% internal medicine physicians, 1.4% family physicians, 17.0% clinical psychologists, and 8.7% other (including licensed clinical social workers in 2022). Reporting clinicians were 91.4% in group practice, and 8.6% in individual practice. Median experience in the Medicare program was 9 years. Across all years, the majority of self-reporting clinicians practiced in the states of MD, TX, FL, NY, CA, AZ, and PA. See Table 5.3.4a.1-2: Characteristics of Reporting Entities, 2017-2022, in *Appendix 5.3.4 Validity Testing Results* for a tabular representation of these data.

5.1.4 Characteristics of Units of the Eligible Population

In the Medicare fee-for-service (FFS) population, the subpopulation eligible for this measure (N=131,490 in CY 2023) is 39% female and 61% male. Additional demographic characteristics, including the racial/ethnic and age distributions, are shown in Section 5.1.4 of *Appendix 7.1: Supplemental Attachment* (see Table 5.1.4: Characteristics of Units of the Eligible Population). Notably, about 73% of eligible beneficiaries in the Medicare FFS population are under 65 years of age, and about 64% identify as non-Hispanic White.

Patient characteristics are not available in the UDS/QPP provider-reported data.

5.2.1 Level(s) of Reliability Testing Conducted

Accountable entity level (i.e., measure score) (e.g., signal-to-noise analysis)

5.2.2 Method(s) of Reliability Testing

We used numerator and denominator data from all of the accountable entities (at both the National Provider Identification (NPI) number and Tax Identification Number (TIN) levels) to compute maximum likelihood estimates of the parameters of the beta binomial model, which were then combined with each accountable entity's denominator to estimate the provider-specific intraclass correlation coefficient (ICC) as an estimator of provider-specific reliability. As formulas are not allowed in the online form, see the logic model attachment for the detailed methodology.

The higher the ICC, the greater the statistical reliability of the measure, and the greater the proportion of variation that can be attributed to systematic differences in performance across hospitals (i.e., signal as opposed to noise). We used the rubric established by Landis and Koch (1977) to interpret ICCs¹:

- 0 – 0.2: slight agreement
- 0.21 – 0.39: fair agreement
- 0.4 – 0.59: moderate agreement
- 0.6 – 0.79: substantial agreement
- 0.8 – 0.99: almost perfect agreement
- 1: perfect agreement

Additional information on reliability methods can be found in Section 5.2.2 of *Appendix 5.2.3a: Additional Reliability Testing Results*.

References

1. Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics*. 1977;33(1):159-174.

5.2.3 Reliability Testing Results

Reliability results are available in Table 2: Accountable Entity (TIN) Level Reliability Testing Results and in Section 5.2.3a of *Appendix 5.2.3a: Additional Reliability Testing Results* (see Tables 5.2.3-1: NPI-Level Reliability Testing Results and 5.2.3-2: TIN-Level Reliability Testing Results).

5.2.3a Attach Additional Reliability Testing Results

[Appendix 5.2.3a Additional Reliability Testing Results.pdf](#)

5.2.4 Interpretation of Reliability Results

At the recommended minimum denominator volume threshold of 20, the measure demonstrates sufficient reliability at both the NPI (individual clinician) and TIN (clinician group) levels.

Specifically, minimum signal-to-noise reliability is 0.624 at the NPI level and 0.615 at the TIN level. Median reliability is about 0.76 at both levels of accountable entities, satisfying PQM endorsement criteria.

Table 2. Accountable Entity Level Reliability Testing Results by Denominator, Target Population Size

Accountable Entity-Level Reliability Testing Results													
	Overall	Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum
Reliability	0.770	0.615	0.637	0.675	0.698	0.731	0.764	0.800	0.834	0.868	0.906	0.991	0.991
Mean													
Performance Score	0.775	0.171	0.766	0.765	0.769	0.767	0.766	0.779	0.778	0.781	0.788	0.789	1
N of Entities	2,254	1	237	213	239	232	206	215	228	234	224	226	1
N of Persons / Encounters / Episodes	138,508	20	4,959	5,099	6,591	7,420	7,716	9,598	12,693	16,786	22,024	45,622	1,365

5.3.1 Level(s) of Validity Testing Conducted

Accountable entity level (i.e., measure score) (e.g., criterion validity)

5.3.2 Type of Accountable Entity Level Validity Testing Conducted

Empirical validity testing at the accountable entity-level (e.g., criterion validity, construct validity, known groups analysis), Systematic assessment of face validity of the measure’s performance score as an indicator of quality or resource use

5.3.3 Method(s) of Validity Testing

We demonstrated the measure’s convergent validity at the clinician and clinician group levels using a related measure, a claims-based version of QID #009/CMS128v12,² Antidepressant Medication Management, used for reporting at the health plan level as part of the NCQA’s Healthcare Effectiveness Data and Information Set (HEDIS), as the measure Antidepressant Medication Management (AMM).³ This measure targets individuals with major depression who are newly treated with antidepressant medication (after a clean or washout period of 105 days), and assesses the percentage who remained on any antidepressant for at least 12 weeks (84 days) or at least 6 months (180 days). The measure specification allows for gaps in medication treatment up to a total of 31 days during the 115-day period (numerator 1) or 52 days during the 232-day period (numerator 2). Gaps can include either gaps used to change medication, or treatment gaps to refill the same medication.

Similar to the current measure, AMM is a medication use measure that targets individuals with serious mental illness and the psychiatrists and other mental health clinicians who treat them. Further, AMM conceptually aligns with the quality construct for the current measure, as it assesses provider’s ability to promote persistent adherence with psychoactive medications that improve functioning but may have significant side effects. Finally, AMM can be calculated using the same data sets described above. We hypothesized that the correlation between these measures would be moderate (e.g., 0.2-0.6), reflecting that they both assess medication-related management of serious mental illness, yet they target entirely different medications that are used to treat different illnesses.

We performed similar analyses using quality measure performance scores based on provider-reported QPP data. These analyses of convergent validity were limited to other measures reported with sufficient frequency by the same providers (N>200), including:

- QID #130, Documentation of Current Medications in the Medical Record: Percentage of visits for patients aged 18 years and older for which the eligible professional or eligible clinician attests to documenting a list of current medications using all immediate resources available on the date of the encounter.
- QID #134, Preventive Care and Screening: Screening for Depression and Follow-Up Plan: Percentage of patients aged 12 years and older screened for depression on the date of the encounter or up to 14 days prior to the date of the encounter using an age-appropriate standardized depression screening tool AND if positive, a follow-up plan is documented on the date of the eligible encounter.
- QID #431, Preventive Care and Screening: Unhealthy Alcohol Use: Screening & Brief Counseling: Percentage of patients aged 18 years and older who were screened for unhealthy alcohol use using a systematic screening method at least once within the last 12 months AND who received brief counseling if identified as an unhealthy alcohol user.

Again, we hypothesized that the correlations between these measures and the current measure would be moderate (e.g., 0.2-0.6), reflecting that all assess recognition and appropriate follow-up of serious mental illnesses and substance use disorders, yet they target entirely different medications (or nonpharmacologic therapies) that are used to treat different illnesses.

We estimated Spearman rank correlation coefficients between performance rates for the current measure and other mental health measures at the clinician and clinician group levels. Spearman's rank correlation coefficient ranges from -1 to +1, where +1 indicates perfect agreement in the rank order of performance rates, -1 indicates the opposite rank order, and 0 indicates no correlation between measure performance rates. We interpreted these correlation coefficients across clinicians and clinician groups with at least 20 denominator-eligible beneficiaries for each measure, using the following scale established by Evans⁴:

- 0.00-0.19: very weak agreement
- 0.20-0.39: weak agreement
- 0.40-0.59: moderate agreement
- 0.60-0.79: strong agreement
- 0.80-1.00: very strong agreement

We also compared "known groups" of patients or providers likely to have low and high quality based on other available measures. For example, providers who use long-acting injectable antipsychotics (and their patients who are prescribed such medications) are likely to achieve higher adherence than providers (and their patients) who do not use these medications.

To reassess face validity, we reviewed the measure specification and testing results with members from our Technical Expert Panel (TEP). We collected feedback on the precision of the measure specification, the meaningfulness of the measure outcome, and whether the performance scores can be used to distinguish good from poor quality of care from eligible clinicians.

Finally, as discussed in Section 2.2: Evidence of Measure Importance, the measure excludes

anyone who received a diagnosis of dementia during the measurement year. We conducted a sensitivity analysis to estimate the effect of this exclusion on performance rates for clinicians, clinician groups, and states. We calculated the overall prevalence of the exclusion and then generated performance rates for clinicians and clinician groups with and without the exclusion applied.

References

1. Adherence to Mood Stabilizers for Individuals with Bipolar I Disorder. *Partnership for Quality Measurement*. Available at: <https://p4qm.org/measures/1880>; accessed January 9, 2025.
2. Anti-depressant Medication Management. *eCQI Resource Center*. Available at: [https://ecqi.healthit.gov/ecqm/ec/2024/cms0128v12?qt-tabs_measure=measu...;](https://ecqi.healthit.gov/ecqm/ec/2024/cms0128v12?qt-tabs_measure=measu...) accessed January 9, 2025.
3. Antidepressant Medication Management (AMM). *Partnership for Quality Measurement*. Available at: <https://p4qm.org/measures/0105>; accessed January 9, 2025.
4. Evans, J.D. (1996). *Straightforward Statistics for the Behavioral Sciences*. Thomson Brooks/Cole Publishing.

5.3.4 Validity Testing Results

Detailed results from the convergent validity testing with Antidepressant Medication Management (AMM), are provided in Section 5.3.4a.1 of *Appendix 5.3.4a: Additional Validity Testing Results* (see Table 5.3.4a.1-1). Among the 764 clinicians with at least 20 eligible Medicare beneficiaries for both the current measure and AMM, the rank correlation coefficient between the two measure performance rates was 0.40 (95% confidence interval, 0.34-0.46). Among the 359 clinician groups with at least 20 eligible Medicare beneficiaries for both the current measure and AMM, the rank correlation coefficient between the two measure performance rates was 0.25 (95% confidence interval, 0.14-0.34).

Analyses of convergent validity based on provider-reported QPP data were limited to fewer providers, with less observed variation in performance. Rank correlation coefficients between the current measure and QID #130 were 0.35 (95% CI, 0.26-0.43), 0.82 (95% CI, 0.78-0.86), -0.12 (95% CI, -0.21 to -0.04), 0.56 (95% CI, 0.50-0.61), and 0.33 (95% CI, 0.20-0.44) in 2017, 2018, 2019, 2020, and 2021, respectively.

Rank correlation coefficients between the current measure and QID #134 were 0.61 (95% CI, 0.52-0.69), 0.59 (95% CI, 0.50-0.67), 0.44 (95% CI, 0.39-0.50), and 0.23 (95% CI, 0.14-0.31) in 2018, 2019, 2020, and 2021, respectively.

All correlations greater than 0.1 were based on at least 200 reporting entities and were statistically significant at the $p < 0.0001$ level. (Only 442 providers reported the current measure in 2022, and they did not report other mental health-related measures with sufficient frequency to support estimating convergent validity.)

The known groups analysis of patient-level data showed that the mean proportion of days covered

(i.e., estimated adherence) was 86.7% among the 73.7% of patients prescribed only short-acting antipsychotic products, 84.7% among the 7.1% of patients prescribed only moderately long-acting products, and 94.5% among the 1.1% of patients prescribed only utralong-acting products. The 1.3% of patients who were switched by their mental health care provider from a short acting to a longer-acting product had especially poor prior adherence (67.6%).

Appendix 5.3.4a: Additional Validity Testing Results also presents the results of the exclusions analysis in Section 5.3.4a.2.

Face validity results are as follows:

- 13 of 16 TEP members (81%) voted “yes” that the measure is clearly specified and appears to measure what it is supposed to (i.e., face validity). TEP members who voted “no” felt that the measure construct needs to be updated to “more modern data ecosystems” to capture more person-centered approaches to adherence and improving outcomes.
- 9 of 15 TEP members (60%), including two patient and family caregiver representatives, voted “yes” that the measure’s performance scores provide an accurate reflection of eligible clinician quality of care and results can be used to distinguish good versus poor quality of care. TEP members voting “no” noted the gap between medication adherence and outcomes and felt that this measure is not comprehensive enough to establish “good” quality of care at the clinician level (versus at the systems-level). One TEP member felt that this measure is better suited for accountability at the payer level since payers have more control over medication coverage gaps and costs, which factor into the PDC calculation of adherence. These TEP members also indicated that medication adherence may be reflective of an engaged patient, a good provider, and numerous other factors, but not necessarily of quality of care.

5.3.4a Attach Additional Validity Testing Results

[Appendix 5.3.4a Additional Validity Testing Results.pdf](#)

5.3.5 Interpretation of Validity Results

We demonstrated the measure’s convergent validity at the clinician and clinician group levels using a related measure, a claims-based version of QID #009/CMS128v12, Antidepressant Medication Management (AAM). We performed similar analyses using quality measure performance scores based on provider-reported QPP data. These analyses of convergent validity were limited to other measures reported with sufficient frequency by the same providers (N>200). This convergent validity testing confirmed that clinicians who perform well on the current measure also tend to perform well on other measures of appropriate medication use and monitoring related to mental health and substance use, including appropriate duration and persistence of antidepressant use, documentation of current medications in the medical record, screening for depression and documenting an appropriate follow-up plan (including medications if appropriate), and screening and brief counseling for unhealthy alcohol use. These rank correlations are sufficiently high to confirm that the measures being compared reflect similar underlying quality constructs, while not being so high as to be redundant (e.g., >0.8).

These empirical testing results address some of the concerns raised during face validity testing, as

provider measure scores are correlated with those of similar measures that are implemented in different ways but reported at the same level of care. For example, Antidepressant Medication Management (AMM) measures persistent use of antidepressant medications for the optimal therapeutic duration, while QID#134, Preventive Care and Screening: Screening for Depression and Follow-Up Plan, measures screening and documentation of appropriate follow-up for patients with depression. Together, these three measures represent the entire process of screening, diagnosis, and medication initiation, persistence, and adherence among patients with serious mental illnesses.

5.4.1 Methods Used to Address Risk Factors

No risk adjustment or stratification

5.4.1b Rationale For No Adjustment or Stratification

This measure is an intermediate outcome measure intended to assess the adherence to a highly effective medication for patients with schizophrenia. The Expert Work Group (EWG) for this measure expressed concern that risk adjustment may suggest that the standard of care is different across different patient populations (e.g., age groups, racial and ethnic groups, socioeconomic groups), however, interventions to improve medication adherence should be considered for all patients with schizophrenia. The EWG supported the appropriateness of the measure as an unadjusted intermediate outcome measure.

6.1.1 Current Status

In use

6.1.3 Current Use(s)

Public Reporting, Payment Program

6.1.3 Program Details

Name of the program and sponsor

Quality Payment Program-Merit-based Incentive Payment System (QPP-MIPS)

URL of the program

<https://qpp.cms.gov/mips/overview>

Purpose of the program

The Quality Payment Program (QPP) was created to reward improved patient outcomes and drive movement towards a value-based system of care. There are two tracks in the QPP, the Merit-based Incentive Payment System and Advanced Alternative Payment Models.

Geographic area and percentage of accountable entities and patients included

Eligible clinicians serving Medicare beneficiaries throughout the United States participate in QPP-MIPS. According to the 2022 MIPS experience report, over 600,000 U.S. clinicians were eligible to participate in 2022 and 94% actively submitted data.

Applicable level of analysis and care setting

Outpatient clinician and clinician-group practices, behavioral health outpatient, outpatient emergency department

6.2.1 Actions of Measured Entities to Improve Performance

Clinician groups and individual clinicians can build infrastructure to improve access for patients with schizophrenia which could include embedded behavioral health services, clearly defined protocols that align with evidence-based best practices, links with community organizations to address patient needs, and staff training on treating serious mental health conditions. Clinicians can have a system for patient follow-up when patients do not return for care.

Clinician groups and individual clinicians can provide patient and caregiver education and engage in shared decision making with patients/caregivers regarding treatment plans. These plans may include switching to ultralong-acting injectable medications that promote higher long-term adherence. Clinicians can also provide patients with information about insurance and payment support to increase the likelihood that the medication and treatment costs will be covered and promote medication adherence.

Clinician groups can utilize a registry or electronic health record (EHR) systems to identify patients with schizophrenia who qualify for treatment with antipsychotic medication and track which patients have or have not received their medication, with active outreach to those who are not regularly receiving their medication. Promising technological interventions include e-monitoring using smart pill containers and daily text message reminders.

6.2.2 Feedback on Measure Performance

Users are able to submit feedback on this measure via the CMS ServiceNow platform. Since 2020, there have been seven questions via CMS ServiceNow for this measure. One question was about preparing the data submission file and is not discussed here.

In 2020, one implementer noted that although the denominator description is clear that an individual must have at least two prescriptions filled for qualifying antipsychotic medications during the performance period to be included in the measure denominator (ensuring that patients are on chronic therapy, not on episodic therapy for occasional acute symptoms), this criterion is not emphasized in the denominator logic section. In response, the measure team added an additional “and” statement to the denominator logic to clarify that an individual must have at least two prescriptions filled for the qualifying antipsychotic medications listed in the specification under “Denominator Note.” This change was implemented for PY2022.

In 2021, one implementer asked for clarification regarding how to count the number of days a patient was seen by a practice in order to calculate the PDC. In response, the measure team provided clarification that the period covered by the PDC starts on the day the first prescription is filled (index date) and goes to the end of the measurement period (or death, whichever comes first).

In 2021, one implementer asked for examples of how health systems are tracking and validating the denominator requirement for “at least two prescriptions filled”. In response, the measure team explained that CMS does not dictate how systems should be set up to obtain patient information for the purposes of reporting to MIPS and that, ultimately, the medical record must be able to substantiate what is being reported. The route to obtain any necessary information is left

to the implementer's discretion.

In 2021, one implementer asked for clarification on how to calculate the PDC for patients who were prescribed a long-acting injectable medication. The measure team responded that denominator PDC would begin on the day the first prescription was written, while the numerator PDC starts on the day the prescription is filled, as the intent of the measure is to determine adherence. Therefore, if the patient is denominator eligible, the PDC denominator starts at the date of the prescription and the PDC numerator starts on the date of prescription fill (index date) through the anticipated duration of the medication doses prescribed.

In 2022, one implementer asked about the CPT codes included in the denominator criterion "Outpatient Setting 2". Codes in this criterion rely on an accompanying place of service (POS) code to determine whether they were performed in an outpatient setting. The individual asked about CPT codes 99221 to 99239 and 99251 to 99255, because these are most often billed in an inpatient setting. The measure team reviewed and revised the code sets to ensure CPT codes appeared in the correct settings in the denominator criteria. This change was implemented for PY2024.

In 2023, one implementer asked for additional information on how ICD-10 coding changes impact the measure. The measure team responded by providing a link to the CMS website providing information about annual ICD-10 coding changes but noted that there is no public documentation outlining how specific ICD-10 coding changes impact specific measures.

6.2.3 Consideration of Measure Feedback

In addition to revisions to the measure specifications based on user feedback described above, the measure team ensured alignment between the measure specification and updated clinical guidelines and feedback from expert organizations.

For PY2022, the measure team added lumateperone to the list of qualifying antipsychotic medications specified in the denominator.

For PY2024, the measure team restructured the denominator criteria for diagnosis of schizophrenia by combining multiple criteria clauses into one block; remove "Setting 1" and "Setting 2" and utilized CPT codes in combination with relevant place of service (POS) codes to identify a qualifying outpatient visit. This change was intended to reduce the complexity of denominator criteria and decrease implementer burden.

For PY2024, the measure team added additional POS codes that qualify as an outpatient, emergency department, or non-acute inpatient setting: telehealth (not in patient's home), homeless shelter, telehealth (in patient's home), temporary lodging, walk-in retail clinic, off campus—outpatient hospital, non-residential substance abuse treatment facility, non-residential opioid treatment facility, outpatient rehabilitation facility, ESRD treatment facility, intermediate care facility, residential substance abuse treatment facility, and comprehensive inpatient rehab facility. This change was to ensure complete capture of all settings where a diagnosis of schizophrenia may take place.

For PY2024, the measure team removed CPT codes 99221-99233 as qualifying encounters in an outpatient, emergency department, or non-acute inpatient settings as these codes are used in acute inpatient settings.

For PY2024, the measure team added timing to denominator exclusion to read, “Patient ever had a diagnosis of dementia.” As dementia is a chronic condition that does not resolve, this change identifies patients with a prior diagnosis of dementia that should be excluded from the denominator.

For PY2025, the measure team removed the distinction between “typical” and “atypical” antipsychotic medications from the denominator specification as this distinction is outdated.

6.2.4 Progress on Improvement

Clinician performance on this measure is improving, according to self-reported data from MIPS-participating clinicians. From PY2022 to PY2025, the average performance rate on this measure increased from 89.64% to 95.95%, while the number of reporting clinicians dropped from 976 in the 2020 performance year to 442 in the 2022 performance year. However, our implementation of this measure using Medicare Part D claims data (described in 2.4 above) shows minimal improvement over the same time frame. Therefore, the measure is not topped out, and self-selection is the most plausible explanation for increasing performance in voluntarily reported MIPS data.

6.2.5 Unexpected Findings

CMS and the measure developer are not aware of any unexpected findings (positive or negative), including unintended impacts on patients.

7.1 Supplemental Attachment

[Appendix 7.1 Supplemental Attachment.pdf](#)

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The measure developer is different from the measure steward

Yes

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