OSU Oregon State University College of Pharmacy

Drug Use Research & Management Program

OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Retrospective Drug Use Review to Improve Antipsychotic Adherence in Patients with Schizophrenia

Policy Goal

- Improve antipsychotic adherence rates for patient with schizophrenia and thereby reduce hospitalizations with a minimal impact on overall healthcare costs

Recommendations

- Create a weekly RetroDUR provider fax notification campaign of potentially non-adherent patients with a recent diagnosis of schizophrenia
- Reporting metrics
  - Provider satisfaction responses
  - HEDIS 2013® Adherence to Antipsychotic Medications for Individuals With Schizophrenia (SAA)
  - Hospitalization rates by antipsychotic adherence level
  - Pre/post hospitalization and prescription utilization rates for patients identified by program for intervention
- Outreach
  - Collaborate with CCO Pharmacy Directors regarding initiative content and timing and inclusion of CCO patients and providers

Background

Schizophrenia represents a significant risk of both severe morbidity and mortality, affecting seven in 1,000 people.[1] Patients with schizophrenia have a higher overall risk of mortality, including an increased risk of suicide.[2] Patients with schizophrenia also have a higher risk of cardiovascular disease.[3] Patients with schizophrenia often have low rates of adherence, short durations of therapy, and high relapse rates.[4–6] Low adherence is likely due to multiple factors, including symptoms of schizophrenia (e.g. disorganization), intolerance to medications side effects, and a perceived lack of efficacy. The 2009 PORT Schizophrenia guidelines recommend continuous pharmacotherapy indicating lower relapse rates with continuous therapy versus intermittent therapy.[4] PORT guidelines also recommend interventions to improve adherence, though data is insufficient to recommend specific strategies.

The National Committee for Quality Assurance (NCQA) added four antipsychotic-related measures to the 2013 Healthcare Effectiveness Data and Information Set (HEDIS®).[7] Adherence to Antipsychotic Medications for Individuals With Schizophrenia (SAA) was added with the goal of reducing relapse rates, thereby reducing hospitalizations, risks of suicide, and homelessness.[4,8] NCQA cites a 2004 study of California Medicaid patients which demonstrated significant increases in overall healthcare costs and hospitalization rates in patients with underutilization of antipsychotic medications.[9]

A systematic review of interventions to improve adherence to antipsychotic therapy in patients with schizophrenia found strategies targeting adherence (versus overall care) to be the most effective.[10] A

pharmacy-based Veterans Affairs (VA)program used a multiple intervention program to improve adherence. These interventions included unit dose packaging, patient education by a pharmacist, patient refill reminders and provider notifications when prescriptions were not filled on schedule (7-10 days late).[11] Patients were randomized into usual care or intensive management in this study. Blinding was weak, but the study found a difference of 24% in mean medication possession ratio (MPR) between the control and study groups.

For Oregon Medicaid members, antipsychotic medications are paid for by the Fee For Service (FFS) program, regardless of Coordinated Care Organization (CCO) enrollment. Because of this payment structure, CCOs and their providers often have limited and/or delayed access to information on the refill history of the medications. Although the FFS program provides claims history for these medications to the CCOs, the level of integration of this information into the electronic medical record varies by CCO and provider. Provider conversations have indicated that notifications of non-adherence sent to clinicians would be valuable, as the actual refill history is a major gap of information in health care systems that do not have integrated pharmacies.

This drug use evaluation was designed to answer two questions. First, are there patients in the Oregon Medicaid program with a recent diagnosis of schizophrenia who are partially or non-adherent to antipsychotic therapy? Second, are adherence rates associated with increased hospitalizations rates?

Methods

The study enrollment period was 1/1/2011-12/31/2011. Patients with a paid medical claim with a diagnosis of schizophrenia (ICD9 295xx) during the enrollment period were evaluated for inclusion (Figure 1). Of the 9,070 patients with a qualifying diagnosis, 3,250 were included in the study. Administrative exclusions included patients with other health care coverage (Medicare or private insurance) were excluded or with gaps in coverage exceeding 45 days. Patients with a recent diagnosis of dementia, over 64 years old, or under 19 years old were also excluded. Patients with only one antipsychotic claim during the study period were also excluded.

The study period was defined as the 12 months following the patient's index claim date (IPSD). The IPSD was defined as the first antipsychotic claim during the enrollment period. No distinction was made between newly started therapy and continuation of existing therapy. Antipsychotic claims included point of sale (POS) drug claims and depot antipsychotics bill via the professional claims (PAD AP). PAD AP claims were excluded when the procedure code did not have national drug code (NDC) or the NDC did not match the procedure code.

Adherence was assessed over the study period using proportion of days covered (PDC) .[12,13] The PDC is the number of days a member is covered by at least one antipsychotic medication prescription, divided by the number of days in the study period. The handling of overlapping prescriptions is explained in detail in the data specification in appendix B. PDC differs from medication possession ratio (MPR) in several ways. The most salient being the MPR uses the first and last prescription date, whereas the PDC use the first prescription date and the end date of the study period. MPR may overestimate adherence rates for patients who discontinue

medications. The PDC has been endorsed by the Pharmacy Quality Alliance as preferred over MPR and was used in the HEDIS 2013 SAA specification.[7,14] Patients were categorized into 3 levels of adherence: [13,15]

- Adherent (PDC 80-100%)
- Partially Adherent (PDC 50-79%)
- Non-Adherent (PDC <50%)

Hospitalizations were reported as all cause hospitalizations and schizophrenia hospitalizations. Schizophrenia hospitalizations were identified as hospital encounters within the study period with a primary diagnosis of schizophrenia (ICD9 295). All cause hospitalizations are any hospital encounters during the study period.

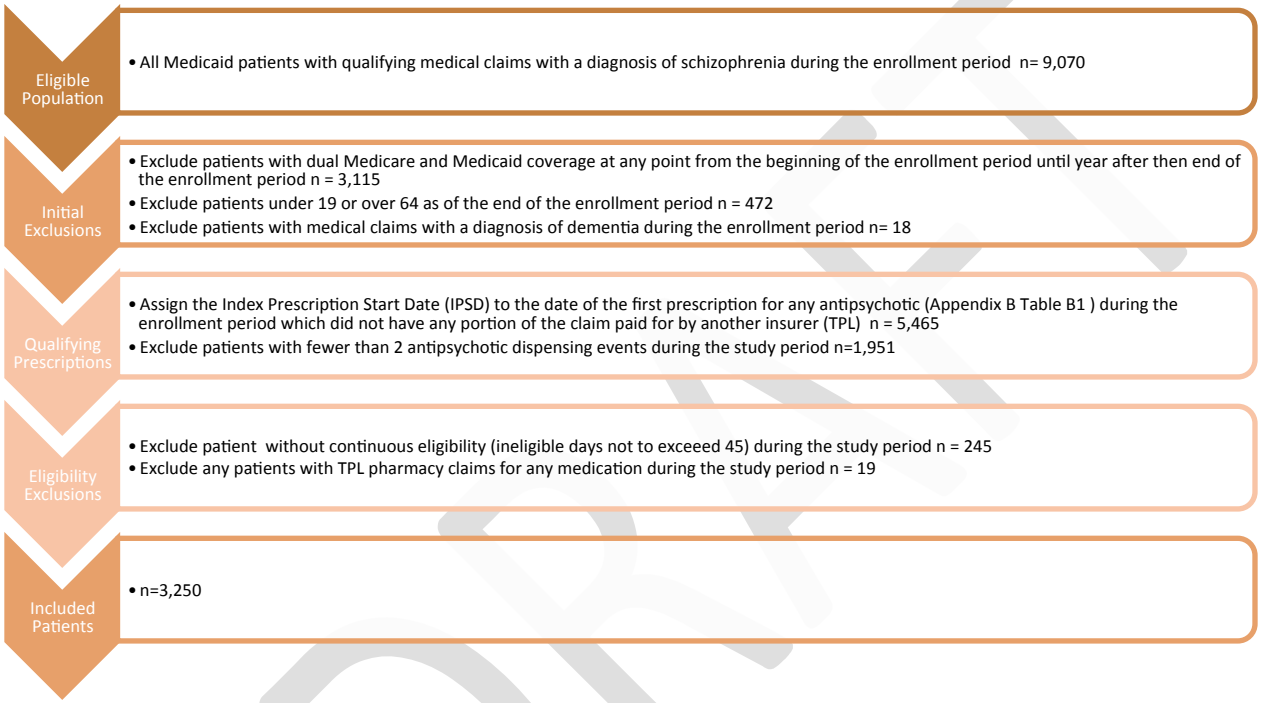


Figure 1. Subject enrollment and exclusion algorithm

Results

Patient demographics appear in Table 1. The majority of patients were between 40-59 (55%). Slightly more men were included than women (54%).

Of the 3,250 member included 68% were categorized as adherent (Table 2). Both all cause hospitalizations per member and schizophrenia hospitalizations per member were higher for partially adherent and non-adherent groups compared to the adherent group.

OSU Oregon State University College of Pharmacy
Drug Use Research & Management Program
OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor
Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Baseline Demographics

n = 3,250

	#	%
Age at IDSP		
19-29	552	17%
30-39	651	20%
40-49	882	27%
50-59	925	28%
60-64	240	7%
Gender		
F	1,507	46%
M	1,743	54%

Table 1 Baseline Demographics

PDCAdherence	Members		All Cause Hospitalizations	All Cause Hospitalizations Per Members	Schizophrenia Hospitalizations	Schizophrenia Hospitalizations Per Members
0-49% - Non-Adherent	441	14%	198	0.45	72	0.16
50-79% - Partially Adherent	586	18%	327	0.56	123	0.21
80-100% - Adherent	2,223	68%	705	0.32	240	0.11

Table 2 Adherence Levels and Associated Hospitalizations

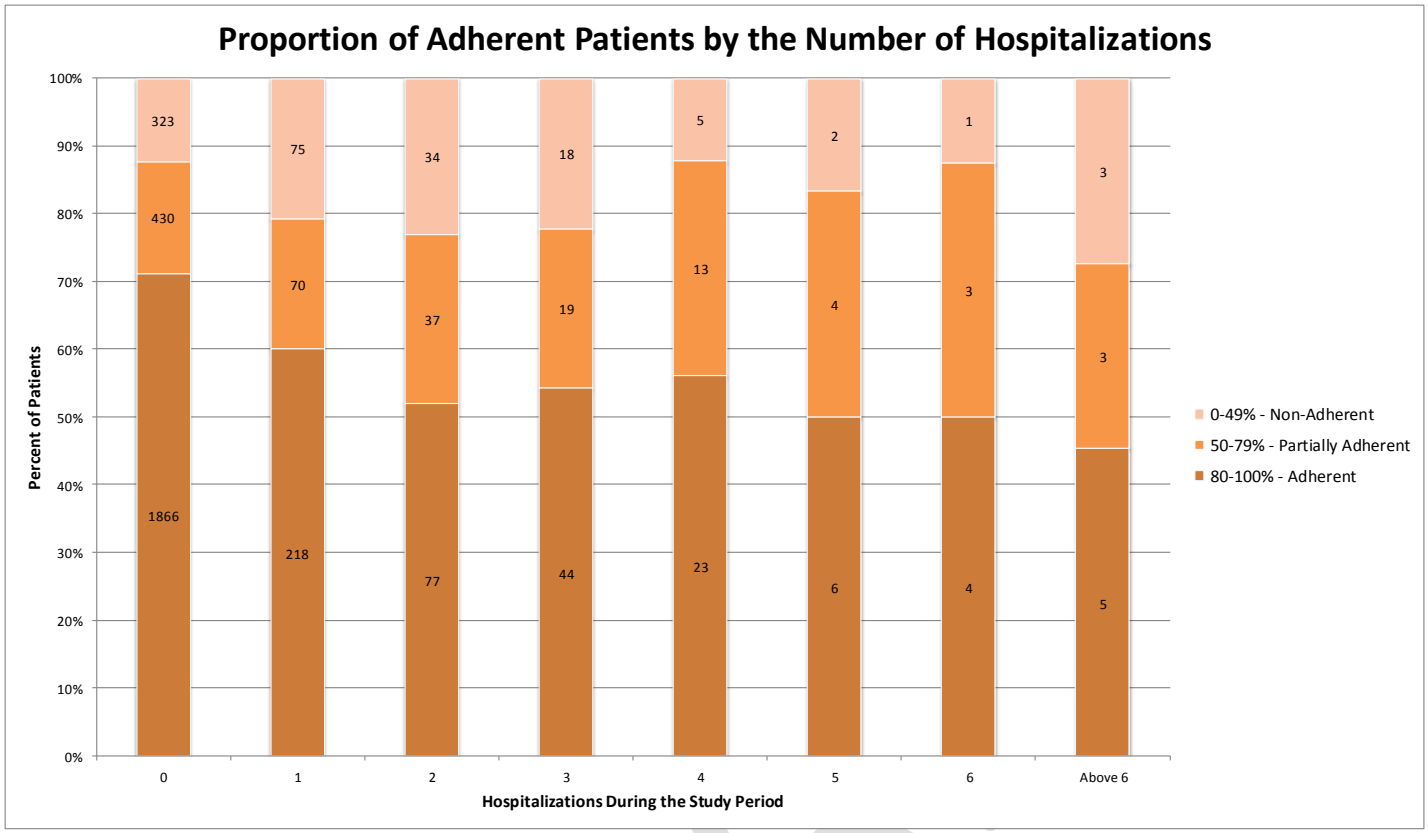


Figure 2 Proportion of Adherent Patients by the Number of Hospitalizations During the Study Period

The proportion of patients who were adherent to antipsychotic therapy trended downward as the number of hospitalizations during the study period increased (figure 2).

Discussion

Nearly 1 in 3 patients included in this study was classified as non-adherent or partially adherent. These patients are more likely to be hospitalized than patients who are adherent. This is true for both schizophrenia and non-schizophrenia related hospitalizations. The hospitalization rates observed in partially and non-adherent patients may be indicative of poorer symptom control and lower quality of life. This represents a significant opportunity to improve care for patients.

There are several limitations to this analysis. As with any retrospective claims analysis, diagnosis information may not accurately reflect the true clinical diagnosis, both including patients without schizophrenia and excluding patient with schizophrenia. A paid pharmacy claim may not correspond to a patient actually taking a medication. The use of medication samples and inpatient hospitalizations may also produce apparent gaps in therapy where none exists. Submission of medical claims is commonly delayed up to 6 months. This is particularly problematic for patient receiving depot antipsychotics which are not billed to the FFS program by

a pharmacy. Despite these limitations, there appears to be sufficient opportunity to notify providers of potential adherence issues.

Recommendations

A RetroDUR provider fax campaign represents a cost-effective notification system highlighting potentially non-adherent patients. Each week the provider will receive a fax for any patients with a history of partial or non-adherence who are at least 7 days late refilling an ongoing antipsychotic prescription. Patients with a recent history of antipsychotic adherence exceeding 80% (i.e. adherent patients) will generate a notification only after the prescription is fourteen days late. The provider report (appendix A) contains three sections. The first section identifies the patient and describes the RetroDUR program. The second page shows the patient's recent antipsychotic refill history, contact information for recent pharmacies and a feedback form. The third page contains educational materials on the Medicaid formulary, medication costs, and strategies to increase adherence.

Faxes will initially be sent only to select pilot sites. The program will be refined through working closely with these pharmacies. The program will be expanded to a larger audience as the program matures. Discussions with several pilot sites are ongoing.

RetroDUR activity reports will include:

- Patient Identified
- Provider messages sent
- Provider response rate
- Number of providers who found the information useful

Improvements to quality will be measured by two reports. Adherence to antipsychotic therapy as measures by the HEDIS SAA specification will be reported on a quarterly basis (Table 3). The detailed specification appears in appendix B.

	Quarter 1 Oct - Dec		Quarter 2 Jan - Mar		Quarter 3 Apr - Jun		Quarter 4 Jul - Sep	
Adherence Level	#	%	#	%	#	%	#	%
0-49% - Non-Adherent								
50-79% - Partially Adherent								
80-100% - Adherent								

Table 3 Sample HEDIS SAA Quarterly Report Format

A pre/post report of antipsychotic adherence for patients who are identified by the program will be generated annually. Data elements will be similar to table 2 in the results section.

References

1. Higashi K, Medic G, Diez T, Granstrom O, De Hert M, Littlewood KJ. Medication adherence in schizophrenia: Factors influencing adherence and consequences of non-adherence - a systematic literature review. *Ther Adv Psychopharmacol*. 2013. doi:10.1177/2045125312474019.

2. Saha S, Chant D, McGrath J. A systematic review of mortality in schizophrenia: is the differential mortality gap worsening over time? *Arch Gen Psychiatry*. 2007;64(10):1123.

3. Hennekens CH, Hennekens AR, Hollar D, Casey DE. Schizophrenia and increased risks of cardiovascular disease. *Am Heart J*. 2005;150(6):1115–1121. doi:10.1016/j.ahj.2005.02.007.

4. Buchanan RW, Kreyenbuhl J, Kelly DL, et al. The 2009 Schizophrenia PORT Psychopharmacological Treatment Recommendations and Summary Statements. *Schizophr Bull*. 2009;36(1):71–93. doi:10.1093/schbul/sbp116.

5. Dixon LB, Dickerson F, Bellack AS, et al. The 2009 Schizophrenia PORT Psychosocial Treatment Recommendations and Summary Statements. *Schizophr Bull*. 2009;36(1):48–70. doi:10.1093/schbul/sbp115.

6. Lehman, Anthony F, Lieberman, Jeffery A, Dixon, Lisa B, et al. Practice Guideline for the Treatment of Patients With Schizophrenia Second Edition. *Am J Psychiatry*. 2004;16(2 supp):1–56. Available at: http://psychiatryonline.org/content.aspx?bookid=28&sectionid=1665359. Accessed August 13, 2013.

7. HEDIS 2013. *Natl Comm Qual Assur - HEDIS Qual Meas*. Available at: http://www.ncqa.org/HEDISQualityMeasurement/HEDISMeasures/HEDIS2013.aspx. Accessed July 29, 2013.

8. Harman JS, Scholle SH, Ng JH, et al. Association of Health Plans' Healthcare Effectiveness Data and Information Set (HEDIS) performance with outcomes of enrollees with diabetes. *Med Care*. 2010;48(3):217–223. Available at: http://journals.lww.com/lww-medicalcare/Abstract/2010/03000/Association_of_Health_Plans__Healthcare.5.aspx. Accessed August 8, 2013.

9. Gilmer TP, Dolder CR, Lacro JP, et al. Adherence to treatment with antipsychotic medication and health care costs among Medicaid beneficiaries with schizophrenia. *Am J Psychiatry*. 2004;161(4):692–699. Available at: http://ajp.psychiatryonline.org/article.aspx?articleID=176737. Accessed July 29, 2013.

10. Zygmunt A, Olfson M, Boyer CA, Mechanic D. Interventions to improve medication adherence in schizophrenia. *Am J Psychiatry*. 2002;159(10):1653–1664. Available at: http://ajp.psychiatryonline.org/article.aspx?articleID=175798. Accessed August 12, 2013.

11. Valenstein M, Kavanagh J, Lee T, et al. Using A Pharmacy-Based Intervention To Improve Antipsychotic Adherence Among Patients With Serious Mental Illness. *Schizophr Bull*. 2009;37(4):727–736. doi:10.1093/schbul/sbp121.

12. Karve S, Cleves MA, Helm M, Hudson TJ, West DS, Martin BC. Prospective Validation of Eight Different Adherence Measures for Use with Administrative Claims Data among Patients with Schizophrenia. *Value Health*. 2009;12(6):989–995. doi:10.1111/j.1524-4733.2009.00543.x.

13. National Committee for Quality Assurance. NCQA HEDIS & Quality Measurement. *Natl Comm Qual Assur*. 2013. Available at: http://www.ncqa.org/HEDISQualityMeasurement.aspx. Accessed April 23, 2013.

14. Nau DP. Proportion of Days Covered (PDC) as a Preferred Method of Measuring Medication Adherence. Available at: http://www.pqaalliance.org/images/uploads/files/PQA%20PDC%20vs%20%20MPR.pdf.

15. Karve S, Cleves MA, Helm M, Hudson TJ, West DS, Martin BC. Good and poor adherence: optimal cut-point for adherence measures using administrative claims data. *Curr Med Res Opin*. 2009;25(9):2303–2310. doi:10.1185/03007990903126833.

OSU Oregon State University College of Pharmacy
Drug Use Research & Management Program
OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Appendix A: Antipsychotic Adherence Monitoring Provider Report

Date: mm/dd/yyyy

Attention: Dr. X
Fax: 541-123-4567

Re: Patient John Doe has not filled Drug X since MM/DD/YY (ZZ days late as of mm/dd/yy)

Pharmacy claims data identified Dr. X as the most recent prescriber of Drug X for John Doe. Pharmacy claims as of MM/DD/YYYY indicate Drug X is ZZ days past due. The following page contains the last 12 months of refill history for John Doe as of MM/DD/YYYY including the antipsychotic fill history for your patient, and the medication possession ration (MPR) of each medication. MPR is a calculation based upon the total days covered by medication in the treatment period divided by total days in the treatment period.

The Oregon Medical Assistance Program (MAP) is providing prescribers information on adherence to antipsychotics for their Medicaid patients to facilitate increased adherence rates. The goal of increasing adherence is to reduce relapse rates, thereby reducing hospitalizations, risks of suicide, and homelessness, and increasing quality of care.

References:

- Gilmer TP, Dolder CR, Lacro JP, et al. Adherence to treatment with antipsychotic medication and health care costs among Medicaid beneficiaries with schizophrenia. Am J Psychiatry. 2004;161(4):692-699.
- The National Committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS®) 2013 “Adherence to Antipsychotic Medications for Individuals With Schizophrenia (SAA)”

OSU Oregon State University College of Pharmacy

Drug Use Research & Management Program

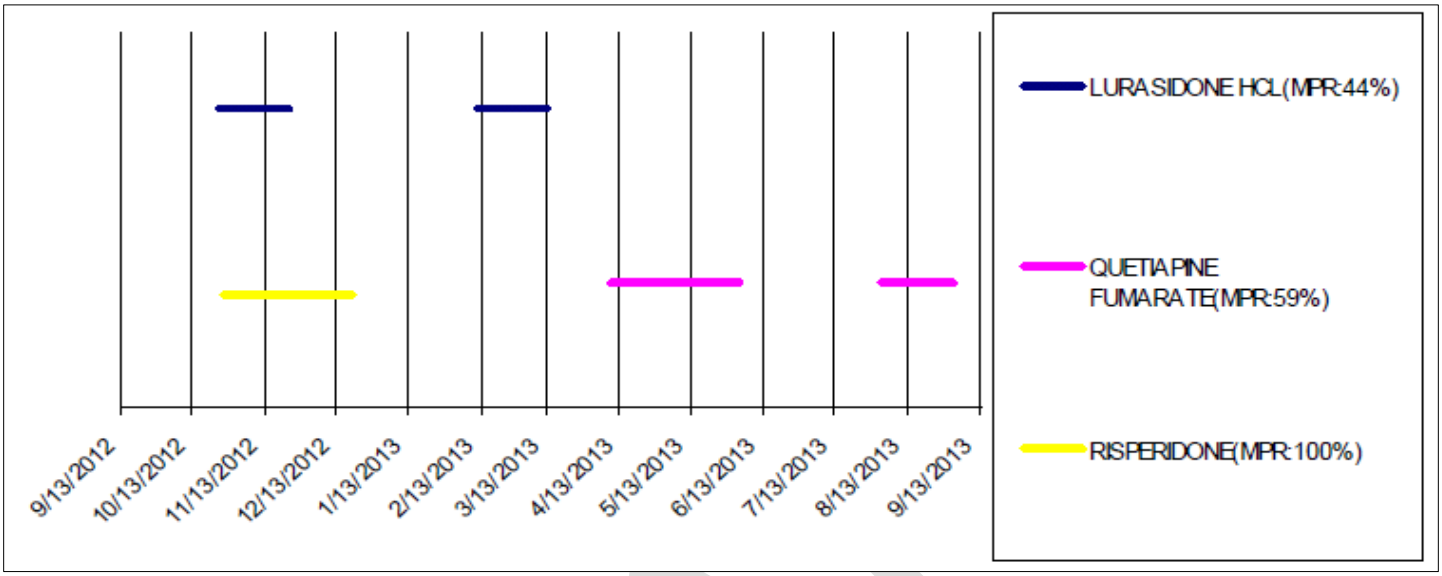
OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Medication Adherence Report as of MM/DD/YYYY

Patient: John Doe **DOB 1/1/1965** **Member ID XYZ1234**



Please note: Medications prescribed as needed may falsely appear as not having been filled on schedule. Intentionally discontinued medications may also appear on this report.

Fill History for John Doe DOB 1/1/1965

Pharmacy Information	Drug Name	Rx Number	Last Rx Fill Date	Days Supply Filled
ABC Pharmacy Portland, OR Phone: 503-234-5678 Fax: 503-234-5679	Quetiapine Fumarate	789	mm/dd/yyyy	xx
XYZ Pharmacy Portland, OR Phone: 503-111-2222 Fax: 503-111-2223	Lurasidone	456	mm/dd/yyyy	xx
	Risperidone	123	mm/dd/yyyy	xx

Please check all that apply:

- This information was useful
- I was unaware of the patient's refill history
- The educational information (page 3) was valuable
- Other _____
- Not my patient/no longer my patient
- Patient deceased
- Neither clinician or patient associated with this office

Please fax feedback to the Medical Assistance Program at 503-947-2596.
For questions regarding this report or policy please call 503-945-6513.

OSU Oregon State University College of Pharmacy

Drug Use Research & Management Program

OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Strategies to Increase Adherence

- Minimize Financial Barriers by using the Mental Health Preferred Drug List (PDL)
  - Preferred antipsychotics do not have a co-pay
  - Non-preferred antipsychotics have a patient copay which may reduce adherence
- Select drugs with low discontinuation rates
  - Initial therapy should be patient specific to minimize side effects, as few differences in short-term efficacy among the atypical antipsychotics have been demonstrated in patients with schizophrenia
  - Clozapine and olanzapine consistently result in lower discontinuation rates compared with other antipsychotics in patients failing to respond to initial therapy, especially in long-term studies
- Improve consistency and accountability with Pill Boxes and pill counts
- Use long acting depots in select populations
  - There are no known differences among the efficacy of long acting antipsychotic formulations of fluphenazine, haloperidol, aripiprazole, risperidone, paliperidone, and olanzapine.
  - Should be used in patients who are on a stable dose of oral medication before being switched
- Minimize Adverse Effects
  - Tardive dyskinesia: If patients experience, decrease the dose or switch to another SGA
  - Weight gain: Interventions may include nutritional counseling, initiation of exercise program, medications that promote weight loss, and/or a change of the antipsychotic medication to one that is less associated with weight gain

Antipsychotic costs are listed above along with voluntary PDL status. Non-preferred medications require a patient copayment. Please visit our website, www.orpdl.org , for the complete PDL.

Antipsychotic Costs[5] and Formulary Status

Preferred	Drug Name	Pharmacy Average Actual Acquisition Costs for a 1 Month Supply
Y	Risperidone	$5
Y	Olanzapine	$9
Y	Fluphenazine	$13
Y	Quetiapine Fumarate Immediate Release	$18
Y	Thioridazine	$20
Y	Fluphenazine Decanoate Depot Injection	$23
Y	Thiothixene	$24
Y	Haloperidol Decanoate Depot Injecction	$33
Y	Trifluoperazine	$43
Y	Haloperidol	$44
Y	Clozapine	$49
Y	Loxapine Succinate	$60
N	Clozapine ODT	$107
N	Risperidone ODT	$117
Y	Perphenazine	$121
Y	Chlorpromazine	$148
Y	Ziprasidone	$174
Y	Loxapine Succinate	$186
N	Olanzapine ODT	$241
N	Quetiapine Fumarate (Seroquel XR®)	$387
N	Risperidone Microspheres (Risperdal Consta®)	$430
N	Lurasidone (Latuda®)	$610
N	Paliperidone (Invega®)	$668
N	Asenapine Maleate(Saphris®)	$674
N	Iloperidone (Fanapt®)	$695
N	Aripiprazole (Abilify®)	$740
N	Aripiprazole (Abilify Discmelt®)	$791
N	Olanzapine Pamoate (Zyprexa Relprevv®)	$970
N	Paliperidone Palmitate (Invega Sustenna®)	$1,409
N	Aripiprazole (Abilify Maintena®)	$1,523

ODT = Orally disintegrating tablet

Concern and/or Risk	Risk Mitigation Strategies	Strength of Evidence
Extrapyramidal Side Effects	SGAs or low-potency FGAs	B
Tardive Dyskinesia	SGA	B
Sedation	Haloperidol or paliperidone	B
Weight gain on antipsychotic medications	Haloperidol or ziprasidone	A
	Lifestyle interventions	A
	Metformin	B

References:

1. McDonagh MS, Peterson K, Carson S, Fu R, Thakurta S. Drug class review: Second Generation Antipsychotics. Update 4.
2. Management of Schizophrenia: A National Clinical Guideline. Scottish Intercollegiate Guidelines Network. March 2013. Available. at <http://www.sign.ac.uk/pdf/sign131.pdf>
3. Adams, C.E., Fenton, M.K.P., Quraishi, S., David, A.S. Systematic meta-review of depot antipsychotic drugs for people with schizophrenia. Br J Psychiatry, 179 (OCT), 290-299 (2001).
4. Leucht S et al. Comparative efficacy and tolerability of 15 antipsychotic drugs in schizophrenia: a multiple-treatments meta-analysis. *The Lancet*. 382 (9896); 951-936.
5. AAAC Rate Listing for Brand and Generic Drugs. Available at http://or.mslc.com/AACRateArchive.aspx

OSU Oregon State University College of Pharmacy

Drug Use Research & Management Program

OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Appendix B. Data Specification for Adherence to Antipsychotic Medications for Individuals With Schizophrenia (SAA) Modified

Description

The percentage of members 19–64 years of age during the measurement year with schizophrenia who were dispensed and remained on an antipsychotic medication for at least 80% of their treatment period.

Definitions

IPSD	Index prescription start date. The earliest prescription dispensing date for any antipsychotic medication between January 1 and September 30 of the measurement year.
Treatment period	The period of time beginning on the IPSD through the last day of the measurement year.
PDC	Proportion of days covered. The number of days a member is covered by at least one antipsychotic medication prescription, divided by the number of days in the treatment period.
Oral medication dispensing event	One prescription of an amount lasting 30 days or less. To calculate dispensing events for prescriptions longer than 30 days, divide the days supply by 30 and round down to convert. For example, a 100-day prescription is equal to three dispensing events. Multiple prescriptions for different medications dispensed on the same day are counted as separate dispensing events. If multiple prescriptions for the same medication are dispensed on the same day, use the prescription with the longest days supply. Use the Drug ID to determine if the prescriptions are the same or different.
Long-acting injections dispensing event	Injections count as one dispensing event. Multiple J codes or NDCs for the same or different medication on the same day are counted as a single dispensing event.
Calculating number of days covered for oral medications	If multiple prescriptions for the same or different oral medications are dispensed on the same day, calculate number of days covered by an antipsychotic medication (for the numerator) using the prescription with the longest days supply. If multiple prescriptions for different oral medications are dispensed on different days, count each day within the treatment period only once toward the numerator. If multiple prescriptions for the same oral medication are dispensed on different days, sum the days supply and use the total to calculate the number of days covered by an antipsychotic medication (for the numerator). For example, if three antipsychotic prescriptions for the same oral medication are dispensed on different days, each with a 30-day supply; sum the days supply for a total of 90 days covered by an oral antipsychotic (even if there is overlap). Use the drug ID provided on the NDC list to determine if the prescriptions are the same or different.

Definitions

Calculating number of days covered for long-acting injections	Calculate number of days covered (for the numerator) for long-acting injections using the days-supply specified for the medication in Table B1. For multiple J Codes or NDCs for the same or different medications on the same day, use the medication with the longest days supply. For multiple J Codes or NDCs for the same or different medications on different days with overlapping days supply, count each day within the treatment period only once toward the numerator.

Eligible Population

Product lines	Medicaid.
Ages	19–64 years of age as of December 31 of the measurement year.
Continuous enrollment	The measurement year.
Allowable gap	No more than one gap in enrollment of up to 45 days during the measurement year. To determine continuous enrollment for a Medicaid beneficiary for whom enrollment is verified monthly, the member may not have more than a 1-month gap in coverage (i.e., a member whose coverage lapses for 2 months [60 days] is not considered continuously enrolled). *A manual review of gaps for all Oregon Medicaid members with less than 45 day without coverage found that all were single episode of loss of coverage. There were no members with multiple gaps. Therefore, simply use the total days of gap rather than instances and days.*
Anchor date	December 31 of the measurement year.
Benefits	Medical and pharmacy.
Event/ diagnosis	Follow the steps below to identify the eligible population.
Step 1	Identify members with schizophrenia as those who met at least one of the following criteria during the measurement year. At least one acute inpatient claim/encounter (Table B2) with any diagnosis of schizophrenia (ICD9 295). At least two visits in an outpatient, intensive outpatient, partial hospitalization, ED or nonacute inpatient setting (Table B2) on different dates of service, with any diagnosis of schizophrenia (ICD9 295).
Step 2: Required exclusions	Members with a diagnosis of dementia (Table B3) during the measurement year. Members who did not have at least two antipsychotic medication (Table B1) dispensing events during the measurement year.

OSU Oregon State University College of Pharmacy
Drug Use Research & Management Program
OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Table B1: Antipsychotic Medications

Description	Prescription		J Codes	Covered Days
Miscellaneous antipsychotic agents	Aripiprazole Asenapine Clozapine Haloperidol Iloperidone Loxapine Lurisadone Molindone	Olanzapine Paliperidone Pimozide Quetiapine fumarate Risperidone Ziprasidone		
Phenothiazine antipsychotics	Chlorpromazine Fluphenazine Perphenazine Perphenazine-amitriptyline	Prochlorperazine Thioridazine Trifluoperazine		
Psychotherapeutic combinations	Fluoxetine-olanzapine			
Thioxanthenes	Thiothixene			
Long-acting injections	*Aripiprazole* Fluphenazine decanoate Haloperidol decanoate	Olanzapine Paliperidone palmitate	*J0400(aripiprazole)* J1631(haloperidol decanoate), J2358(olanzapine), J2426(Paliperidone palmitate), J2680(fluphenazine decanoate)	28 days supply
	Risperidone		J2794(risperidone microspheres)	14 days supply

Exclude J code claims without NDCs and with incorrect NDCs. A manual review of claims indicated that immediate release antipsychotic NDCs were used for the long acting injectable J code. Including these claims would artificially inflate the adherence rate. Likewise, J Code claims without NDCs may not have administered the long acting agent and are therefore excluded. For risperidone dispensed at the pharmacy, the number of units dispensed is evaluated to determine the length of therapy. If one unit is dispensed, the duration is calculated as 14 day. For prescriptions with 2 units dispensed, the duration of coverage is assumed to be 28 days.

Administrative Specification

Denominator	The eligible population.
Numerator	The number of members who achieved a PDC of at least 80% for their antipsychotic medications (Table B1) during the measurement year.
	Follow the steps below to identify numerator compliance.
Step 1	Identify the IPSD. The IPSD is the earliest dispensing event for any antipsychotic medication (Table B1) during the measurement year.
Step 2	To determine the treatment period, calculate the number of days from the IPSD (inclusive) to the end of the measurement year.
Step 3	Count the days covered by at least one antipsychotic medications (Table B1) during the treatment period. To ensure that the days supply does not exceed the treatment period, subtract any days supply that extends beyond December 31 of the measurement year.
Step 4	Calculate the member's PDC using the following equation.
	$\frac{\text{Total Days Covered by an Antipsychotic Medication in the Treatment Period (step 3)}}{\text{Total Days in Treatment Period (step 2)}}$
Step 5	Sum the number of members whose PDC is ≥80% for their treatment period.

OSU Oregon State University College of Pharmacy
Drug Use Research & Management Program
OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119

Table B2: Codes to Identify Visit Type

Description	UB Revenue		
Acute inpatient	010x, 0110-0114, 0119, 0120-0124, 0129, 0130-0134, 0139, 0140-0144, 0149, 0150-0154, 0159, 016x, 020x, 021x, 072x, 0987		
	CPT		**POS**
	90801, 90802, 90816-90819, 90821-90824, 90826-90829, 90845, 90847, 90849, 90853, 90857, 90862, 90870, 90875, 90876, 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291	***WITH***	21, 51
	CPT	**HCPCS**	**UB Revenue**
Outpatient, intensive outpatient and partial hospitalization	90804-90815, 98960-98962, 99078, 99201-99205, 99211-99215, 99217-99220, 99241-99245, 99341-99345, 99347-99350, 99384-99387, 99394-99397, 99401-99404, 99411, 99412, 99510	G0155, G0176, G0177, G0409-G0411, H0002, H0004, H0031, H0034-H0037, H0039, H0040, H2000, H2001, H2010-H2020, M0064, S0201, S9480, S9484, S9485	0510, 0513, 0516, 0517, 0519-0523, 0526-0529, 0900, 0901, 0902-0905, 0907, 0911-0917, 0919, 0982, 0983
	CPT		**POS**
	90801, 90802, 90816-90819, 90821-90824, 90826-90829, 90845, 90847, 90849, 90853, 90857, 90862, 90870, 90875, 90876, 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291	***WITH***	03, 05, 07, 09, 11, 12, 13, 14, 15, 20, 22, 24, 33, 49, 50, 52, 53, 71, 72
	CPT		**UB Revenue**
ED	99281-99285		045x, 0981
	CPT		**POS**
	90801, 90802, 90845, 90847, 90849, 90853, 90857, 90862, 90870, 90875, 90876, 99291	***WITH***	23
	CPT	**HCPCS**	**UB Revenue**
Nonacute inpatient	99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337	H0017-H0019, T2048	0118, 0128, 0138, 0148, 0158, 019x, 0524, 0525, 055x, 066x, 1000, 1001, 1003-1005
	CPT		**POS**
	90801, 90802, 90816-90819, 90821-90824, 90826-90829, 90845, 90847, 90849, 90853, 90857, 90862, 90870, 90875, 90876, 99291	***WITH***	31, 32, 56

Table B3: Codes to Identify Dementia

ICD-9-CM Diagnosis
290, 291.2, 292.82, 294.0-294.2, 331.0, 331.1, 331.82

Table B4: Codes to Identify Substance Abuse

ICD-9-CM Diagnosis
'V6542', '2922', '96500', '96501', '96502', '96509', '9654','9694','9695','9696','97081', '97089', '9779', 'E8500','E8501','E8502','E851', 'E8532','E8541','E8543','E9500','E9501','E9502','E9503', 'V681','967','9697','E852','E860'

OSU Oregon State University College of Pharmacy

Drug Use Research & Management Program

OHA Division of Medical Assistance Programs
500 Summer Street NE, E35; Salem, OR 97301-107
Phone 503-947-5220 | Fax 503-947-1119

DIVISION OF MEDICAL ASSISTANCE PROGRAMS
Policy & Planning Section
John A. Kitzhaber, MD, Governor

Oregon Health Authority
500 Summer Street NE, E35
Salem, Oregon 97301-1077
Voice: (503) 945-6513
Fax: (503) 947-1119