Prescriber and Patient-Level Characteristics Associated With Adherence to Antipsychotics Among Patients With Schizophrenia in the United States

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Introduction

- Schizophrenia is a severe and chronic mental illness affecting an estimated 0.25% to 1.1% of the United States (US) population[1, 2]
- Clinical guidelines recommend the use of antipsychotic (AP) medications for schizophrenia management, yet many patients struggle to maintain consistent medication use[3]
- While prior studies have evaluated patient characteristics and treatments associated with adherence—and shown that long-acting injectable (LAI) APs are associated with improved adherence and clinical outcomes compared to oral APs—less is known about the role of prescriber characteristics[4, 5]

Objective

- To evaluate prescriber and patient factors associated with patient's adherence to AP medications in schizophrenia

Methods

Data source

- Closed claims from Komodo Research Data (KRD) (01/01/2016-06/30/2023) were used
  - KRD is a comprehensive data source containing closed medical and pharmacy insurance claims data from over 150 payers (including commercial, Medicare Advantage and Medicaid), representing over 170 million patients
- Data were de-identified and complied with the Health Insurance Portability and Accountability Act

Study design

Study periods and design

- A retrospective cohort study design was used
- The intake period spanned from 07/01/2021 to 06/30/2022; the index date was defined as the date of a newly initiated AP during the intake period
  - Among patients with multiple qualifying index dates after applying all selection criteria, one index date was randomly selected
- The baseline period was defined as the 12 months preceding the index date, and the follow-up period included the 12 months following the index date (inclusively)

Prescriber classification

- AP prescribers were categorized into 1 in 4 groups based on the proportion of LAIs to all types of APs prescribed to patients with schizophrenia during the intake period:
  - No LAI prescribed
  - Low LAI prescribers [Q1; ≤8.5% LAIs]
  - Intermediate LAI prescribers [Q2–Q3; >8.5% and <27% LAIs]
  - High LAI prescribers [Q4; ≥27% LAIs]
- Prescribers were required to have prescribed an AP to ≥6 patients with schizophrenia during the study intake period

Sample selection

- Patients met the following selection criteria:
  - ≥2 outpatient claims on different dates or ≥1 inpatient claim with a diagnosis of schizophrenia (ICD-10-CM: F20.X, F21), with ≥1 claim prior to or on the index date
  - ≥18 years old at the start of the intake period
  - Initiation of a new oral or LAI AP (i.e., no claims for the index AP in the 12 months preceding the index date) during the study intake period
  - ≥12 months of continuous insurance eligibility or Medicare/Medicaid eligibility before and after the index date
  - No diagnosis for bipolar disorder or pregnancy during the baseline period
  - Index AP prescriber information and classification were available, and the prescriber had treated ≥6 patients living with schizophrenia with APs during the intake period

Outcome measure

- Adherence to any AP was reported over the fixed 12-month follow-up period and defined as having a proportion of days covered (PDC) with any AP ≥80%

Statistical analyses

- A multivariate logistic regression was used to evaluate prescriber- and patient-level factors associated with adherence
  - Odds ratios (ORs), 95% confidence intervals (CIs), and *P*-values were reported

Results

Baseline characteristics

Patient characteristics

- A total of 22,255 patients were included in the study. Baseline characteristics of these patients are reported in **Table 1**

Table 1: Patient baseline characteristics

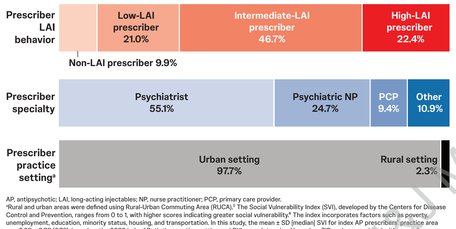
Mean ± SD [median] or n (%)	Patient population N = 22,255
Age at index date	40.9 ± 14.3 [39.0]
Female	7,570 (34.0)
Race	
White	6,970 (31.3)
Black/African American	6,966 (31.3)
Hispanic or Latino	3,834 (17.2)
Asian	1,111 (5.0)
Other or unknown	3,374 (15.2)
Region at index date	
West	6,611 (29.7)
South	6,526 (29.3)
Northeast	4,619 (20.8)
Midwest	4,499 (20.2)
Payer type[a]	
Medicaid	16,954 (76.2)
Medicare Advantage	3,207 (14.4)
Commercial	1,568 (7.0)
Missing	526 (2.4)
Quan-CCI	0.7 ± 1.4 [0.0]
DSM-5-TR list of comorbidities	
Substance-related and addictive disorders	10,756 (48.3)
Depressive disorders	9,580 (43.0)
Anxiety disorders	9,233 (41.5)
Sleep-wake disorders	4,922 (22.1)
Trauma- and stressor-related disorders	3,401 (15.3)
Neurodevelopmental disorders	2,550 (11.5)
Index AP type	
Any oral AP	18,264 (82.1)
Any LAI	3,991 (17.9)
Number of unique AP agents in baseline	1.3 ± 1.2 [1.0]
≥1 schizophrenia-related OP visit in baseline	16,080 (72.3)
≥1 schizophrenia-related ER visit in baseline	7,505 (33.7)
≥1 schizophrenia-related IP visit in baseline	6,747 (30.3)

AP, antipsychotic; CCI, Charlson Comorbidity Index; DSM-5-TR, Diagnostic and Statistical Manual of Mental Disorders, 5th Edition Text Revision; ER, emergency room; IP, inpatient; LAI, long-acting injectables; OP, outpatient; SD, standard deviation.
[a]For patients who had multiple payers over the data period, the payer with whom they were enrolled with the longest was reported.

AP prescriber characteristics

- Nearly half of the patients (46.7%) were prescribed the index AP by an intermediate-LAI prescriber, followed by 22.4% by high-LAI prescribers, 21.0% by low-LAI prescribers, and 9.9% by non-LAI prescribers (**Figure 1**)
- Over half of the index APs were prescribed by psychiatrists (55.1%), followed by psychiatric nurse practitioners (24.7%), primary care providers (PCPs; 9.4%), and other specialties (10.9%)

Figure 1: Percentage of patients seen by prescriber types

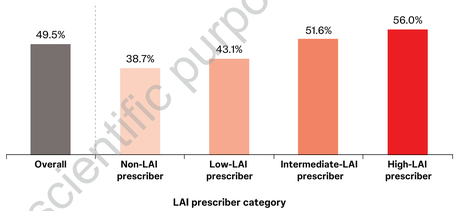


AP, antipsychotic; LAI, long-acting injectables; NP, nurse practitioner; PCP, primary care provider.
[a]Rural and urban areas were defined using Rural-Urban Commuting Area (RUCA).[1] The Social Vulnerability Index (SVI), developed by the Centers for Disease Control and Prevention, ranges from 0 to 1, with higher scores indicating greater social vulnerability.[2] The index incorporates factors such as poverty, unemployment, education, minority status, housing, and transportation. In this study, the mean ± SD [median] SVI for index AP prescribers' practice area was 0.69 ± 0.23 [0.76], based on the 2022 index.[2] Both the practice setting and SVI were determined based on ZIP codes associated with prescriber practice locations.

Adherence to any APs

- Overall, 49.5% of patients were adherent to any AP at 12 months follow-up (**Figure 2**)
- Adherence increased with greater use of LAIs among index AP prescribers, descriptively ranging from lowest among non-LAI prescribers to highest among high-LAI prescribers

Figure 2: Proportion of patients adherent to any AP at 12 months, by LAI prescriber category



AP, antipsychotic; LAI, long-acting injectables; PDC, proportion of days covered.
[a]PDC was defined as the sum of non-overlapping days of supply divided by a fixed 12-month period.

Factors associated with adherence

AP prescriber characteristics

- Being prescribed the index AP by an intermediate- or high-LAI prescriber was associated with 39% and 63% higher odds of adherence, respectively, relative to non-LAI prescribers (**Figure 3**)
- A higher Social Vulnerability Index associated with the practice area of the index AP prescriber was associated with lower odds of adherence
- Relative to patients whose index AP was prescribed by psychiatrists, adherence did not differ significantly for those prescribed by psychiatric nurse practitioners or primary care providers, whereas those prescribed by other specialties (e.g., emergency medicine, hospitalists) had significantly lower odds of adherence

Index treatment

- Being prescribed an LAI as the index agent was associated with 25% higher odds of adherence relative to an oral AP

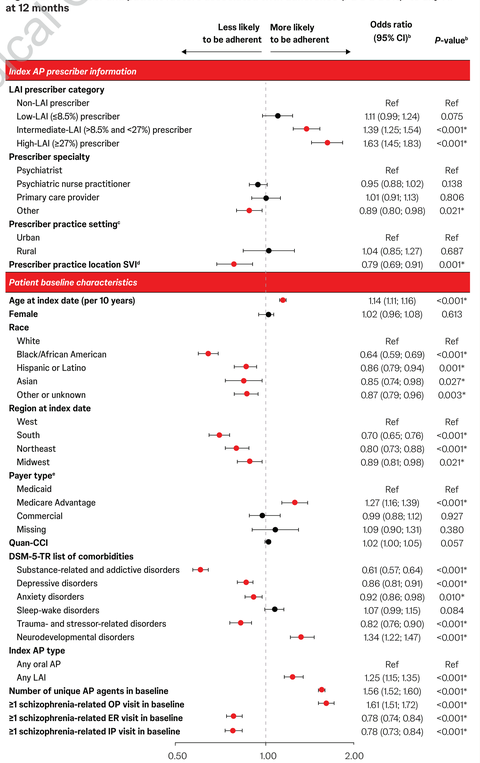
Clinical characteristics and patient journey

- Substance-related and addictive disorders, depressive disorders, anxiety disorders, and trauma- and stressor-related disorders were associated with lower odds of adherence, while neurodevelopmental disorders were associated with higher odds of adherence
- Each additional unique AP agent used during baseline was associated with 56% higher odds of adherence
- A schizophrenia-related emergency room visit or hospitalization during baseline was associated with lower odds of adherence, while an outpatient visit during baseline was associated with higher odds of adherence

Patient characteristics

- Older age at index was associated with higher odds of adherence
- Relative to White patients, all racial/ethnic minorities were associated with lower odds of adherence, with the lowest odds of adherence observed among Black or African American patients

Figure 3: Prescriber and patient factors associated with adherence (PDC ≥ 80%)[a] to any AP at 12 months



AP, antipsychotic; CCI, Charlson Comorbidity Index; CI, confidence interval; DSM-5-TR, Diagnostic and Statistical Manual of Mental Disorders, 5th Edition Text Revision; ER, emergency room; IP, inpatient; LAI, long-acting injectables; OP, outpatient; PDC, proportion of days covered; Ref, reference category; SVI, Social Vulnerability Index.
*and red dots indicate statistical significance at 5%.
[a]PDC was defined as the sum of non-overlapping days of supply divided by a fixed period of 12 months.
[b]Odds ratios and *P*-values were generated using logistic regression models.
[c]Rural and urban areas are defined using the Rural-Urban Commuting Area Codes (RUCA).[1]
[d]See note a of Figure 1 for the definition of SVI.
*For patients who had multiple payers over the data period, the payer with whom they were enrolled with the longest was reported.

Limitations

- Data were obtained from administrative claims data sources, and thus inaccuracies in coding of diagnosis, procedure, and medications may lead to case misidentification
- Results may not be generalizable to uninsured patients
- Prescription fills do not account for whether the medication dispensed was taken as prescribed, potentially overestimating AP adherence
- Results could be subject to residual confounding due to unmeasured patient and index prescriber characteristics (e.g., patient-prescriber relationship and medication beliefs)

Conclusions

- Irrespective of the mode of administration, patients treated by high-LAI prescribers had statistically significant higher rates of adherence, suggesting that prescriber awareness and prescribing behaviors play a role in improving adherence in patients with schizophrenia
- Disparities in adherence observed among patients in areas with higher social vulnerability and among racial and ethnic minority groups highlight a potential health equity gap in schizophrenia care and outcomes
- The results also support that initiating LAIs may improve adherence to antipsychotic medication, further demonstrating the potential of LAIs to improve outcomes in schizophrenia management

Acknowledgements

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Disclosures

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