Inpatient Hospitalizations and Costs in Patients with Schizophrenia Initiating LAIs

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Introduction

- Schizophrenia is a chronic mental disorder, affecting approximately 1% of the US adult population.[1]
- Schizophrenia accounts for 1.5-3% of national healthcare expenditures.[2]
  - Hospitalization is a major driver of healthcare costs and is also a useful proxy for relapse.[1]
- The estimated annual direct and indirect healthcare costs for treating schizophrenia were at over $150 billion in 2013.[3]
- Existing studies on the clinical effectiveness and economic impact of selecting one long acting injectable antipsychotic (LAI) versus another is limited and do not include all recently approved LAIs, such as aripiprazole once-monthly.[2]

Objective

The objective of this study was to compare all-cause inpatient healthcare utilization and associated costs among patients with schizophrenia who initiated LAIs.

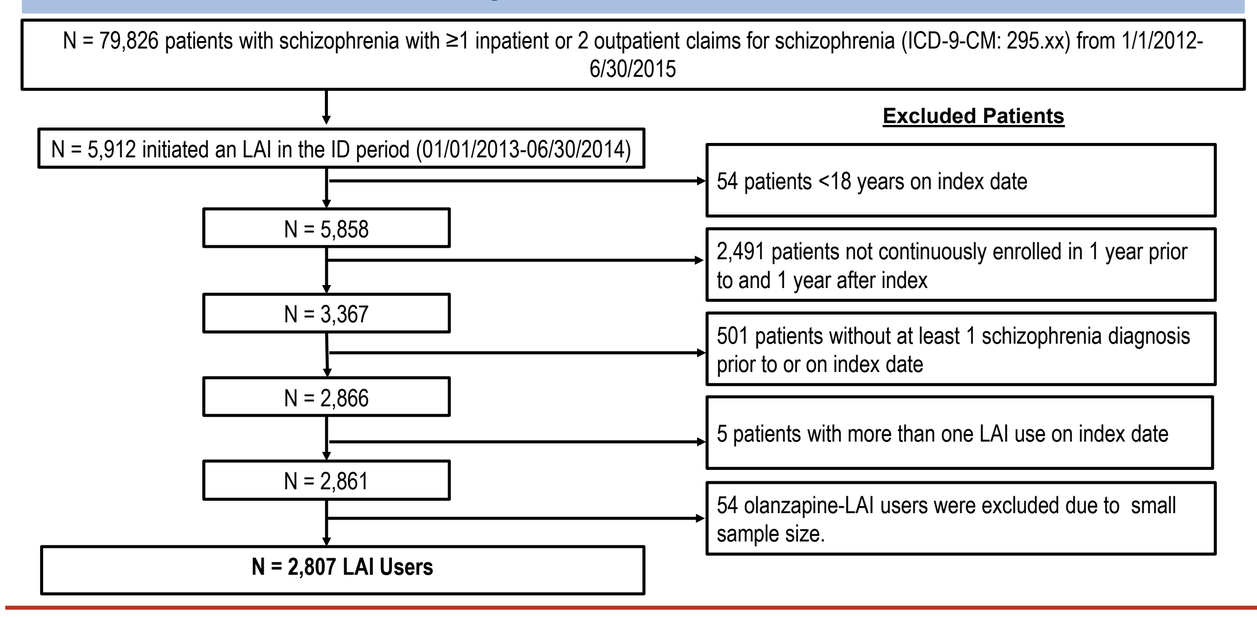
Methods

- Retrospective cohort analysis used the Truven Health Analytics MarketScan® Medicaid claims database
- Patient identification
  - Existing or newly diagnosed patients with schizophrenia (≥1 inpatient or ≥2 outpatient claims for ICD-9-CM code: 295.xx)
  - LAI cohort:
    - Initiated one of the following LAIs between 01/01/2013 to 06/30/2014 (identification period):
      - aripiprazole; fluphenazine; haloperidol; paliperidone palmitate, four-week; and risperidone
    - Index date: first LAI use
  - Exclusion criteria
    - <18 years old on index date
    - Without 1-year continuous enrollment prior to and after index date
    - First schizophrenia diagnosis after index date
- Outcome measures
  - All-cause inpatient hospitalizations during the 1-year post-index and entire follow-up period
  - All-cause hospitalization medical costs among hospitalized patients during the 1-year post-index follow-up period
- Statistical analysis
  - A logistic regression model and a Cox regression model used to estimate risks of hospitalization during the 1-year post-index and entire follow-up period, respectively
  - A general linear regression model conducted to estimate associated costs of hospitalization among hospitalized patients during the 1-year post-index follow-up period
  - All models adjusted for patient demographic and clinical characteristics, baseline medication, and baseline emergency department (ED) visits or hospitalizations

Results

- A total of 2,807 Medicaid patients with schizophrenia initiated an LAI (Figure 1): 9.2% aripiprazole, 6.6% fluphenazine, 26.4% haloperidol, 44.0% paliperidone, and 13.8% risperidone (Table 1).
- Mean (SD) age of the total population was 39.9 (13.2) years, and 43.2% were female (Table 1).
  - Aripiprazole users were the youngest compared with the other LAIs
- In unadjusted analyses, 30.1% of LAI users had an inpatient hospitalization during the 1-year post-index period, ranging from 24.0% of aripiprazole users to 33.9% of risperidone users (p<0.001).
- Adjusting for baseline variables, with the aripiprazole cohort as the reference group, the odds of having any inpatient hospitalizations were significantly higher in haloperidol [OR (95% CI): 1.51 (1.05 – 2.16] and risperidone [1.58 (1.07 - 2.33)] cohorts (Figure 2).
- For the entire follow-up period, the results of the Cox regression showed consistent findings, with the risk of having any hospitalizations significantly higher in haloperidol-LAI [HR (95% CI): 1.35 (1.05 - 1.73)] and risperidone-LAI [HR (95% CI): 1.33 (1.01 - 1.74)] (Figure 2).
- Among LAI initiators having any inpatient hospitalizations (N=854), the adjusted mean all-cause inpatient costs were lowest in the aripiprazole cohort ($25,616), followed by haloperidol, paliperidone, risperidone, and fluphenazine, although the cost differences were not statistically significant (Figure 3).

Figure 1. Patient Identification



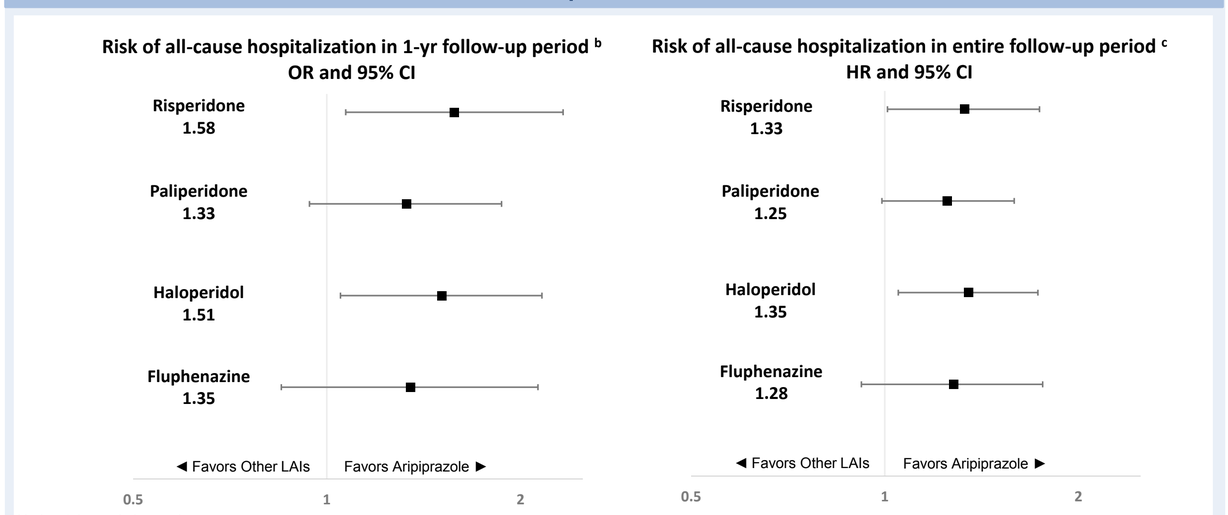
Results (cont'd)

Table 1. Patient Characteristics

	Aripiprazole N = 258; 9.2%	Fluphenazine N = 186; 6.6%	Haloperidol N = 741; 26.4%	Paliperidone N = 1,235; 44.0%	Risperidone N = 387; 13.8%	All N = 2,807	P Value
Demographics							
Age, year, mean (SD)	37.0 (12.5)	44.0 (14.1)	41.7 (13.2)	38.2 (12.7)	41.9 (13.8)	39.9 (13.2)	<.001
Female, n (%)	113 (43.8)	83 (44.6)	331 (44.7)	507 (41.1)	179 (46.3)	1,213 (43.2)	0.327
Race, n (%)							<.001
White	117 (45.3)	53 (28.5)	168 (22.7)	375 (30.4)	116 (30.0)	829 (29.5)	
Black	122 (47.3)	112 (60.2)	478 (64.5)	689 (55.8)	221 (57.1)	1,622 (57.8)	
Other	19 (7.4)	21 (11.3)	95 (12.8)	171 (13.8)	50 (12.9)	356 (12.7)	
Comorbidities							
CCI, mean (SD)	1.0 (1.8)	1.3 (1.9)	1.2 (2.0)	1.0 (1.6)	1.3 (2.0)	1.1 (1.8)	<.001
No. chronic conditions, mean (SD)	3.5 (2.3)	3.8 (2.2)	3.5 (2.3)	3.4 (2.2)	3.8 (2.3)	3.5 (2.2)	0.005
Psychiatric comorbidities, n (%)	188 (72.9)	145 (78.0)	556 (75.0)	957 (77.5)	297 (76.7)	2,143 (76.3)	0.458
Depression	97 (37.6)	72 (38.7)	351 (47.4)	579 (46.9)	171 (44.2)	1,270 (45.2)	0.016
Anxiety	96 (37.2)	73 (39.2)	228 (30.8)	462 (37.4)	131 (33.9)	990 (35.3)	0.025
Personality disorder	37 (14.3)	29 (15.6)	97 (13.1)	170 (13.8)	54 (14.0)	387 (13.8)	0.926
Substance abuse disorder	123 (47.7)	103 (55.4)	366 (49.4)	683 (55.3)	196 (50.6)	1,471 (52.4)	0.036
Bipolar disorder	103 (39.9)	67 (36.0)	218 (29.4)	461 (37.3)	153 (39.5)	1,002 (35.7)	<.001
Somatic comorbidities, n (%)	145 (56.2)	122 (65.6)	428 (57.8)	665 (53.8)	230 (59.4)	1,590 (56.6)	0.020
Baseline healthcare service use							
Use of any oral anti-psychotic medication, n (%)	219 (84.9)	151 (81.2)	555 (74.9)	978 (79.2)	324 (83.7)	2,227 (79.3)	<.001
Any inpatient hospitalization or ED visit, n (%)	146 (56.6)	134 (72.0)	482 (65.0)	845 (68.4)	261 (67.4)	1,868 (66.5)	0.002

CCI: Charlson comorbidity index

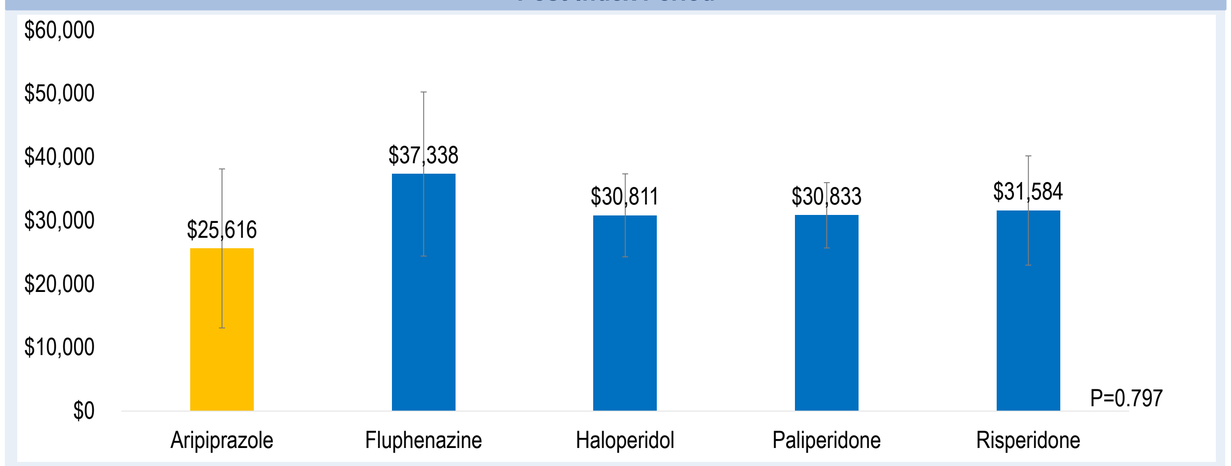
Figure 2. Risk[a] of All-Cause Hospitalization in Patients with Schizophrenia in the 1 year and Entire Follow-up Periods



Horizontal axes in log scale

[a] Adjusted for age group, gender, race (White vs. non-White), Charlson comorbidity index, number of chronic conditions, any baseline inpatient hospitalization or ED visit, depression, anxiety, bipolar, any baseline psychiatric medication use, and any baseline somatic medication use.
[b] Logic regression model. [c] Cox regression model.

Figure 3. Adjusted[a] All-cause Inpatient Hospitalization Costs among Hospitalized Patients during the 1-year Post-Index Period



[a] Adjusted for age group, gender, race (White vs. non-White), Charlson comorbidity index, number of chronic conditions, any baseline inpatient hospitalization or ED visit, depression, anxiety, bipolar, any baseline psychiatric medication use, and any baseline somatic medication use.

Limitations

- Schizophrenia was identified using claims, which are coded for reimbursement, not research, and misclassification may have occurred.
- Results may not be generalizable to non-Medicaid patient populations, and future studies are warranted to determine if outcomes would be different in different populations.

Conclusions

- This study suggests the superiority of aripiprazole once-monthly over haloperidol- and risperidone-LAIs in reducing risk of relapse for patients with schizophrenia in a real-world setting.
- All-cause inpatient hospitalization costs were lower in aripiprazole once-monthly users when compared to other LAIs, although the difference was not significant.

References

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2. Brissos S, et al. Ther Adv Psychopharmacol. 2014;4(5):198-219.
3. Cloutier M, et al. J Clin Psychiatry. 2016;77:764-771.

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