Hospitalization and Costs in Patients with Bipolar Disorder Initiating LAIs

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Introduction

- Bipolar disorder (BD) is a chronic and relapsing mood disorder, affecting approximately 2% of the US adult population.[1]
- Even with treatment, approximately one-third of patients with BD relapse within 1 year.[1]
  - Hospitalization, which is a useful proxy for relapse,[2] is one of the major drivers of healthcare costs associated with BD.
- The estimated annual direct health care costs for treating BD were over $30 billion.[3]
- Existing studies have not investigated the effectiveness of one long-acting injectable antipsychotic (LAI) versus another in preventing hospitalizations among patients with BD.

Objective

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

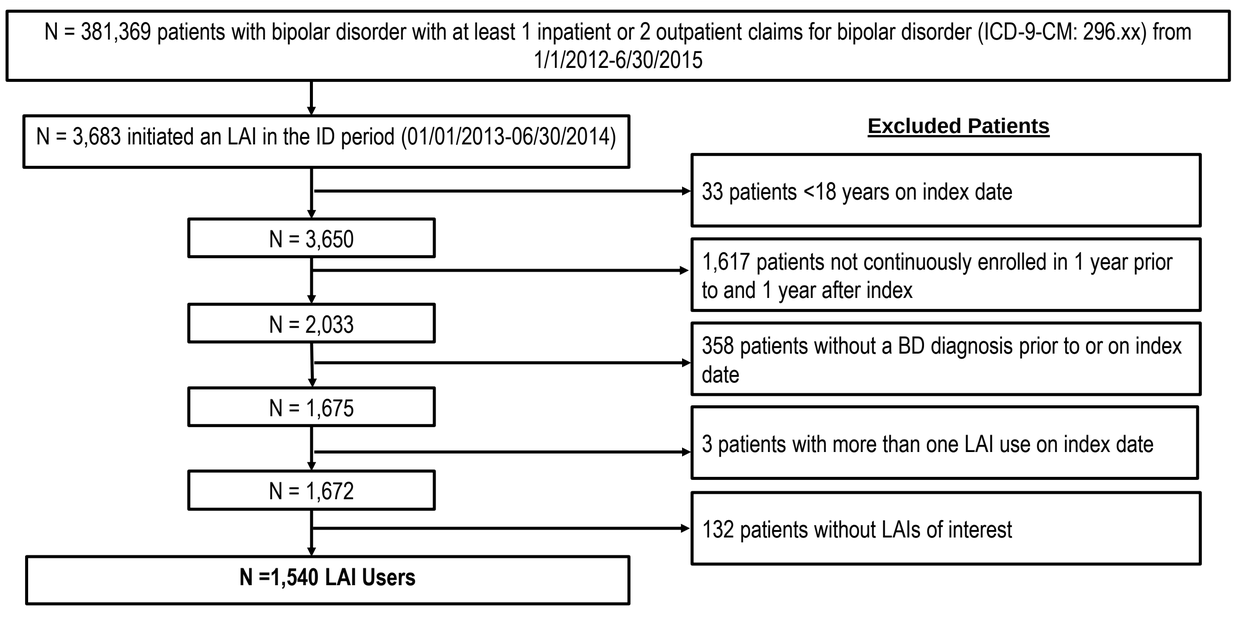
Methods

- Retrospective cohort analysis used the Truven Health Analytics MarketScan® Commercial and Medicaid claims database
- Patient identification
  - Existing or newly diagnosed patients with BD (≥1 inpatient or ≥2 outpatient claims for ICD-9-CM codes: 296.0x, 296.1x, 296.4x, 296.6x, 296.7x, 296.8x)
  - LAI cohort:
    - Initiated one of the following LAIs during the ID period (01/01/2013 to 06/30/2014):
      - aripiprazole; haloperidol; paliperidone palmitate, four-week; and risperidone
    - Index date: first LAI use
    - No index LAI use 1 year prior to the index date (use of a different LAI was allowed)
  - Exclusion criteria
    - <18 years old on index date
    - Without 1-year continuous enrollment prior to and after index date
    - First BD diagnosis after index date
- Outcome measure
  - 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 1,540 patients with BD initiated an LAI: 14.5% aripiprazole, 16.3% risperidone, 21.0% haloperidol, and 48.1% paliperidone (Table 1, Figure 1).
- Mean (SD) age of the total population was 35.7 (13.1) years, 49.9% were female, and 83.8% were insured through Medicaid (Table 1).
- In unadjusted analyses, 38.8% of LAI users had an inpatient hospitalization during the 1-year post-index period, ranging from 31.3% of aripiprazole users to 45.8% 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): 1.49 (1.01 - 2.19] and risperidone [1.78 (1.19 - 2.66)] 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): 1.33 (1.03 - 1.73)] and risperidone-LAI [HR (95% CI): 1.33 (1.01 - 1.75)] (Figure 2).
- Among LAI initiators having any inpatient hospitalizations, the adjusted mean all-cause inpatient costs were lowest in the aripiprazole cohort ($26,002), followed by risperidone, haloperidol, and paliperidone, although the cost differences were not statistically significant (Figure 3).

Figure 1. Patient Identification



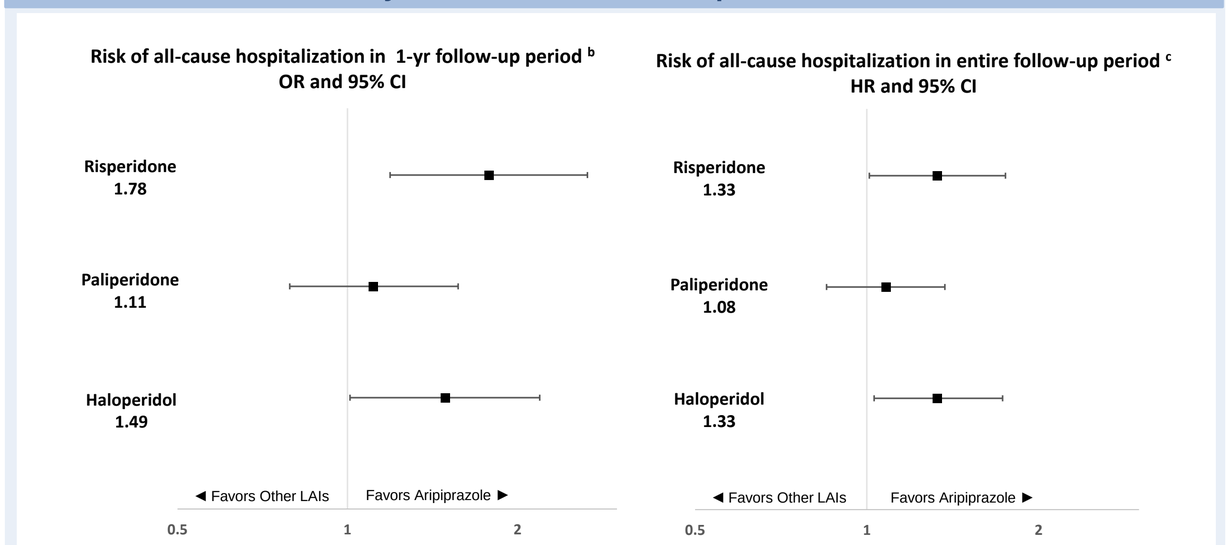
Results (cont'd)

Table 1. Patient Characteristics

	Aripiprazole N = 224; 14.5%	Haloperidol N = 324; 21.0%	Paliperidone N = 741; 48.1%	Risperidone N = 251; 16.3%	All N = 1,540	P Value
Demographics						
Age, year, mean (SD)	33.6 (12.5)	37.2 (12.9)	35.1 (12.8)	37.0 (14.2)	35.7 (13.1)	0.003
Medicaid, n (%)	185 (82.6)	277 (85.5)	638 (86.1)	191 (76.1)	1,291 (83.8)	0.002
Female, n (%)	118 (52.7)	162 (50.0)	362 (48.9)	127 (50.6)	769 (49.9)	0.785
Comorbidities						
Charlson comorbidity index, mean (SD)	1.2 (1.8)	1.3 (1.9)	1.1 (1.7)	1.3 (2.0)	1.2 (1.8)	0.213
No. chronic conditions, mean (SD)	4.0 (2.3)	4.1 (2.3)	3.9 (2.3)	3.9 (2.2)	4.0 (2.3)	0.695
Psychiatric comorbidities, n (%)	196 (87.5)	306 (94.4)	679 (91.6)	231 (92.0)	1,412 (91.7)	0.038
Depression	119 (53.1)	189 (58.3)	398 (53.7)	132 (52.6)	838 (54.4)	0.450
Anxiety	107 (47.8)	152 (46.9)	385 (52.0)	116 (46.2)	760 (49.4)	0.262
Personality disorder	48 (21.4)	71 (21.9)	153 (20.6)	45 (17.9)	317(20.6)	0.675
Substance abuse disorders	121 (54.0)	202 (62.3)	466 (62.9)	137 (54.6)	926 (60.1)	0.021
Schizophrenia	117 (52.2)	250 (77.2)	494 (66.7)	167 (66.5)	1,028 (66.8)	<0.001
Somatic comorbidities, n (%)	125 (55.8)	192 (59.3)	416 (56.1)	132 (52.6)	865 (56.2)	0.462
Baseline healthcare service use						
Use of any oral anti-psychotic medication, n (%)	196 (87.5)	288 (88.9)	638 (86.1)	227 (90.4)	1,349 (87.6)	0.273
Any inpatient hospitalization or ED visit, n (%)	161 (71.9)	275 (84.9)	610 (82.3)	207 (82.5)	1,253 (81.4)	<0.001

[a] Somatic comorbidities included obesity, diabetes, hyperlipidemia, and hypertension.

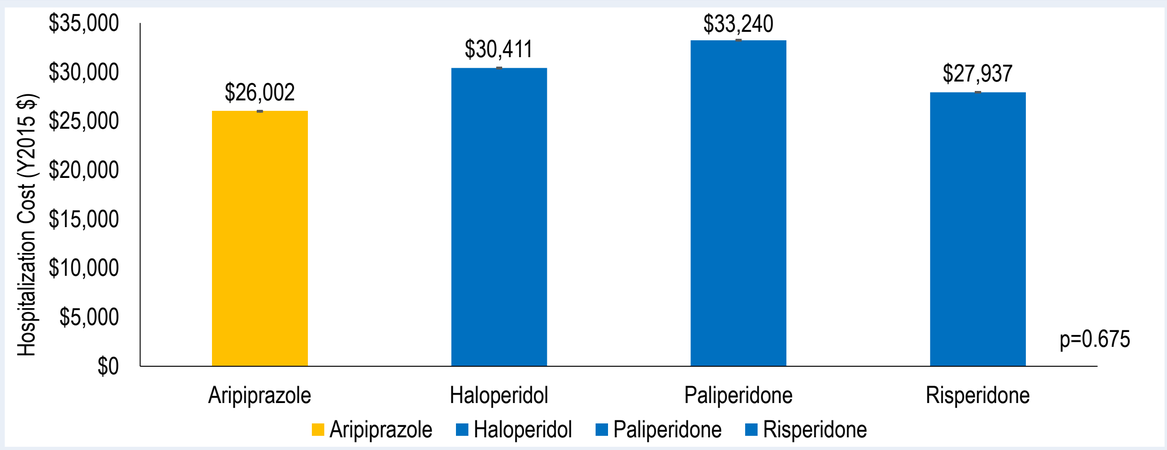
Figure 2. Risk[a] of All-Cause Hospitalization in Patients with Bipolar Disorder in the 1 year and Entire Follow-up Periods



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, schizophrenia, any use baseline psychiatric medication use, and any baseline somatic medication use. [b] Logistic regression model. [c] Cox regression model

Figure 3. Adjusted[a] All-cause Inpatient Hospitalization Costs among Patients Hospitalized 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, schizophrenia, any use baseline psychiatric medication use, and any baseline somatic medication use.

Limitations

- Only risperidone is FDA-approved for treatment of BD. Aripiprazole once-monthly, haloperidol LAI, and paliperidone LAI may have been used off-label.
- Study results may be subject to confounding variables that are not contained in the claims databases, such as attitudes of clinicians and patients to LAIs.
- BD diagnoses were identified from healthcare claims coded for reimbursement rather than diagnostic purposes, thus misclassification was possible.

Conclusions

- This study suggests the superiority of aripiprazole once-monthly over haloperidol-LAI and risperidone-LAI in reducing risk of relapse for patients with BD in a real-world setting.
- The sample size for aripiprazole once-monthly was smaller, indicating that it was prescribed less often than other LAIs.

References

1. Hamilton JE, et al. Aust N Z J Psychiatry. 2016;50(6):584-93.
2. Olivares JM, et al. Ann Gen Psychiatry. 2013;12(1):32.
3. Jann MW. Am Health Drug Benefits. 2014 Dec;7(9):489–99.

Disclosures: Greene is an employee of Otsuka Pharmaceutical Development and Commercialization, Inc., Princeton, NJ. Chang, Yan, and Broder are employees of Partnership for Health Analytic Research, LLC, Beverly Hills, CA. Hartry is an employee of Lundbeck, Deerfield, IL. Funding for the study and this poster was received from Otsuka Pharmaceutical Development and Commercialization, Inc. and Lundbeck.