THE INCIDENCE AND ECONOMIC BURDEN OF EXTRAPYRAMIDAL SYMPTOMS IN PATIENTS WITH SCHIZOPHRENIA TREATED WITH ATYPICAL ANTIPSYCHOTICS

Aditi Kadakia,[1] Brenna L. Brady,[2] Huan Huang,[1] Carole Dembek, [1] G. Rhys Williams, [1] Justine M. Kent [1]
[1]Sunovion Pharmaceuticals Inc., Marlborough, MA, USA; [2]IBM Watson Health, Cambridge, MA, USA

KEY FINDINGS

- Over 20% of patients with schizophrenia (SCZ) developed extrapyramidal symptoms (EPS) within a year following the initiation of atypical antipsychotic (AAP) treatment in a Medicaid population
- EPS patients had significantly higher rates of hospitalizations and higher healthcare costs compared to Non-EPS patients during the one-year post-index period

INTRODUCTION

- EPS, including movement disorders, tremors, and muscle contractions are common side effects of AAP treatments in patients with SCZ[1,2]
- EPS symptoms have been reported in up to of 37% of patients taking AAPs[3]
- EPS can negatively impact patient quality of life and is associated with increased morbidity and mortality[1]
- Although the economic burden of EPS has previously been described, updated analyses using more recent data are needed[4]

OBJECTIVE

- To assess the one-year incidence and economic burden of EPS in adult patients with schizophrenia newly initiating AAP

METHODS

Data Source

- The study utilized the IBM MarketScan Multi-state Medicaid Database from January 1, 2012 through December 31, 2018
- The Multi-state Medicaid database includes complete medical and pharmacy insurance claims and represents 5-13 states on an annual basis

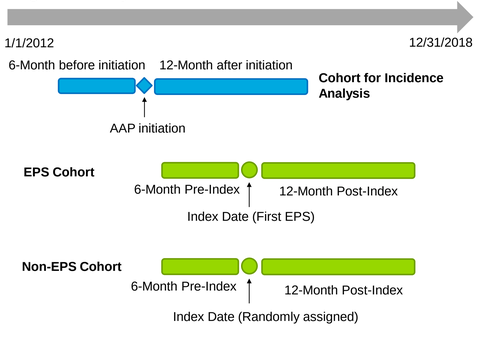
Study Population

- The study included patients with SCZ (ICD-9-CM:295.x; ICD-10-CM: F20.x) newly initiating AAPs with no prior evidence of EPS event (Figure 1)
  - AAPs : aripiprazole, asenapine, brexpiprazole, cariprazine, clozapine, iloperidone, lurasidone, olanzapine, paliperidone, quetiapine, risperidone, ziprasidone
  - EPS event was defined as EPS diagnoses or fills for EPS medications
    - EPS diagnoses ICD codes: 332.1, 333.1, 333.5, 333.72, 333.79, 333.81, 333.82, 333.83, 333.85, 333.89, 333.90, 333.99, 781.0, G21.1x, G21.2, G21.8, G24.01,G24.02, G24.2, G24.3, G24.4, G24.5, G24.8, G24.9, G25.1, G25.2, G25.4, G25.61, G25.7x, G25.89, G25.9, , R25.xx
    - EPS medications: benztropine, trihexyphenidyl, amantadine, biperiden, deutetrabenazine, valbenazine and tetrabenazine
- The one-year incidence of EPS following AAP initiation was assessed within the cohort for incidence analysis
- Other study outcomes were assessed and compared between groups of patients with and without evidence of EPS event
  - The date of the first EPS event was the index date for the EPS cohort
  - The non-EPS cohort was assigned a random index date and matched to the EPS cohort at a 1:1 to 1:3 ratio based on age group and gender[6-10]

Outcomes and Analyses

- All-cause and SCZ-related health resource utilization and costs were examined over the 12-month post-index period in the EPS and Non-EPS cohorts
- Differences between cohorts were assessed using student's t-tests or Chi-squared tests

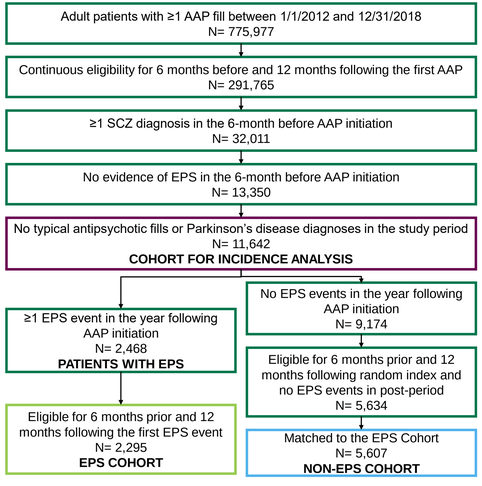
Figure 1. Study Schematic



Supported by funding from Sunovion Pharmaceuticals Inc.
Poster presented at the US Psych Congress; September 10-13, 2020; Virtual Event

RESULTS

Figure 2. Patient Selection



- Of the 11,642 patients with SCZ (Figure 2), 2,468 (21.2%) developed EPS in the year following AAP initiation (incidence rate: 25.5/100 person-years)
  - Among patients with EPS, mean time to the first EPS event was 76.5 (SD: 105.8) days (median 16 days)
- Demographics and pre-index clinical characteristics were similar for the EPS and Non-EPS cohorts (Table 1)
- During the 12-month post-index period, the EPS cohort had significantly higher rates of hospitalizations (all-cause: 30.2% vs. 24.6%; SCZ-related: 22.5% vs. 12.9%, both $p<0.001$) and total healthcare costs (all-cause: $25,911 vs. $21,550; SCZ-related: $12,134 vs. $6,230, both $p<0.001$) compared to the Non-EPS cohort (Figure 3 and 4)

DISCUSSION

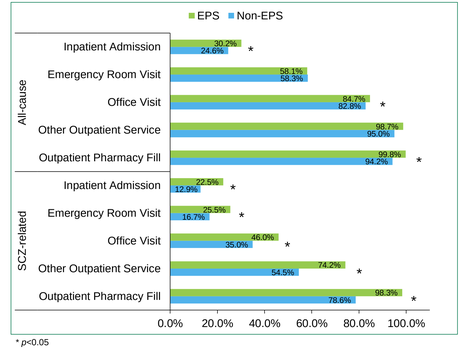
- Patients with EPS had significantly higher health resource utilization and costs than patients without EPS
- Treatment options that minimize EPS may reduce the economic burden associated with EPS

Table 1. Demographic and Pre-Index Clinical Characteristics

Characteristic	EPS (n=2,295)	Non-EPS (n=5,607)
Age, y, mean (SD)*	38.2 (13.0)	39.5 (12.7)
Male, n (%)*	1,397 (60.9)	3,189 (56.9)
Race		
White, n (%)	663 (28.9)	1,747 (31.2)
Black, n (%)	1,186 (51.7)	2,838 (50.6)
Hispanic, n (%)	39 (1.7)	83 (1.5)
Missing, n (%)	407 (17.7)	939 (16.7)
Insurance Plan Type*		
Comprehensive, n (%)	1,566 (68.2)	3,428 (61.1)
HMO, n (%)	711 (31.0)	2,138 (38.1)
PPO, n (%)	1 (0.0)	6 (0.1)
POS with Capitation, n (%)	17 (0.7)	35 (0.6)
Index Year		
2012, n (%)	517 (22.5)	1,236 (22.0)
2013, n (%)	550 (24.0)	1,177 (21.0)
2014, n (%)	338 (14.7)	874 (15.6)
2015, n (%)	320 (13.9)	860 (15.3)
2016, n (%)	323 (14.1)	849 (15.1)
≥2017, n (%)	247 (10.8)	611 (10.9)
Charlson Index, mean (SD)*	0.6 (1.2)	0.7 (1.5)
Physical Comorbidities		
Diabetes, n (%)	275 (12.0)	759 (13.5)
Cardiovascular Disease, n (%)*	404 (17.6)	1,116 (19.9)
Hypertension, n (%)	688 (30.0)	1,806 (32.2)
Hyperlipidemia, n (%)	295 (12.9)	806 (14.4)
Obesity, n (%)	198 (8.6)	521 (9.3)
Psychiatric Comorbidities		
Bipolar Disorder, n (%)	781 (34.0)	1,927 (34.4)
Anxiety, n (%)*	284 (12.4)	541 (9.6)
Depression, n (%)	789 (34.4)	1,919 (34.2)
Personality Disorders, n (%)*	167 (7.3)	335 (6.0)
Alcohol/substance Abuse, n (%)	1,169 (50.9)	2,750 (49.0)
Dementia, n (%)	56 (2.4)	138 (2.5)

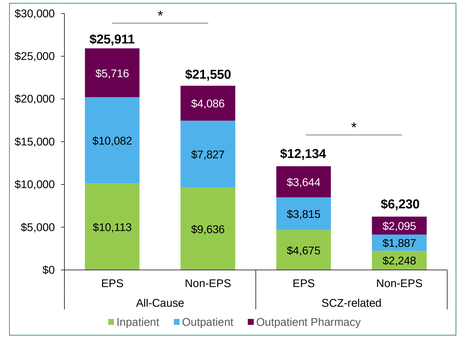
SD: standard deviation; HMO: Health maintenance organization; PPO: Preferred provider organization; POS: Point of service
Demographics were measured on index; Clinical characteristics were measured in the 6-month pre-index period
* $p<0.05$

Figure 3. Health Resource Utilization During the 12-month Post-Index Period



* $p<0.05$

Figure 4. Healthcare Costs During the 12-month Post-Index Period



* $p<0.05$; Bolded costs represent total healthcare costs (inflated to 2018 USD)

LIMITATIONS

- This analysis of Medicaid patients may not be generalizable to patients with commercial insurance or the uninsured
- Administrative claims are collected for billing purposes; thus there is potential for misclassification or data coding limitations
- Clinical data (e.g., Positive and Negative Syndrome Scale) were not available in this dataset; therefore analyses were not able to control for disease severity

DISCLOSURES

Aditi Kadakia, Huan Huang, Carole Dembek, G. Rhys Williams, and Justine K. Kent are employees of Sunovion Pharmaceuticals Inc. Brenna L. Brady is an employed of IBM Watson Health who received funding from Sunovion Pharmaceuticals Inc. to conduct this analysis

REFERENCES

1. Tandon R, et al. *Ann Clin Psychiatry*. 2002;14(2):123-129. **2.** Shirzadi AA, et al. Harv Rev Psychiatry. 2006;14(3):152-164. **3.** Caroff SN et al. *Neurol Clin*. 2011;29(1):127-148. **4.** Abouzaid et al. Community Ment Health J. 2014;50:51-58. **5.** McEvoy J et al. Qual Life Res. 2019;28(12):3303-3312. **6.** Suh D, et al. *J Manag Care Pharm*. 2007;13(9):778-789. **7.** Johnson DA, et al. *Clin Gastroenterol Hepatol*. 2017;15(6):883-891. **8.** Johannes CB. *Chest*. 2005;127(1):89-97. **9.** Capkun G, et al. Mult Scler Relat Disord. 2015;4(6):546-554. **10.** Bickston SJ, et al. J Manag Care Pharm. 2008;14(4):352-362.