

Healthcare Resource Utilization Among Influenza Patients Treated with Baloxavir Marboxil Compared with Oseltamivir With Medicaid Insurance Coverage

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BACKGROUND

- Influenza (flu) is a common respiratory infection that presents with fever, **sore** throat, and headache; although generally mild, flu can be associated with severe complications.^{1,2}
 - Patients with certain risk factors such as advanced age, chronic conditions, or immunocompromised status have been shown to be at greater risk for flu complications.³
- The clinical (e.g., mortality) and economic burdens of flu are substantial, with costs are estimated at \$11.2 billion annually in the United States.⁴
- Prior studies have reported on the cost-effectiveness of antiviral treatment in the management of flu;⁵⁻⁷ however, real-world data on flu outcomes among patients with Medicaid coverage following treatment with antiviral therapies are limited.

OBJECTIVE

- To compare all-cause healthcare resource utilization (HRU) among patients with Medicaid insurance diagnosed with flu and treated with antiviral agents baloxavir marboxil (BALOX) or oseltamivir (OSELT).

METHODS

Data Source

- This study used administrative claims data from the U.S. Merative™ MarketScan® Multi-state Medicaid Databases from 11/1/2017 to 6/30/2020.
 - The MarketScan Databases contain the full inpatient (IP), outpatient, and outpatient pharmacy administrative claims records for individuals covered under fee for service and capitated Medicaid health plans.

Study Design

- The study sample was comprised of patients ≥12 years of age with ≥ 1 claim for BALOX or OSELT antiviral treatment during the 2018-2019 (11/1/2018 – 5/31/2019) or 2019-2020 (11/1/2019 – 5/31/2020) flu seasons; the first antiviral prescription claim served as the index date.
- Patients had to have a flu diagnosis code in an outpatient setting on index or in the 2 days prior and be continuously enrolled with medical and pharmacy benefits for ≥12 months (baseline period) prior through ≥30 days following index (follow-up period).
- Patients with evidence of prophylactic use of OSELT, a COVID-19 diagnosis in the 2019-2020 flu season, or multiple types of antiviral treatment during the study period were excluded.
- Antiviral cohorts (BALOX or OSELT) were defined based on the specific antiviral received.
 - Subgroups of patients at high-risk of flu complications were defined based on CDC criteria.³Patients with any of the following in the 12-month baseline qualified as being at high-risk: diagnosis of asthma, chronic lung disease, heart disease, blood disorders, endocrine disorders, kidney disorders, liver disorders, metabolic disorders, extreme obesity, or pregnancy; age ≥65 on index; immunomodulator use; neurologic and neurodevelopmental conditions in children aged <18 years or stroke.

METHODS

- BALOX and OSELT patients were propensity-score matched at a 1:5 ratio.
 - Propensity score covariates included: age, sex, race, population density, insurance type, flu season, days from flu diagnosis to index, Charlson Comorbidity Index (CCI), baseline or index IP admission or emergency department (ED) visit, and total baseline healthcare costs.
- HRU outcomes (IP, ED visits, outpatient office visits, and outpatient pharmacy fills) over follow-up were compared between the matched BALOX and OSELT cohorts, as well as the high-risk subsets, using either Student's t-tests or chi-squared tests with a critical α =0.05.
 - Demographics (examined on index) and baseline characteristics were also reported.

RESULTS

Study Population and Baseline Characteristics

- A total of 104,871 patients qualified for the study; 206 were treated with BALOX and 104,665 were treated with OSELT (Figure 1).
 - Within the BALOX cohort 138 (67.0%) were classified as high-risk; 71,697 (68.5%) of OSELT patients were considered high risk.
- After matching the final study population was composed of 206 BALOX and 1,030 OSELT patients (Figure 1).
 - The high-risk subgroups included 138 BALOX and 690 OSELT patients.
- Demographics and baseline characteristics were similar between the matched BALOX and OSELT cohorts, in the overall cohorts as well as the high-risk subgroups (Table 1).

Healthcare Resource Utilization

- There was extremely limited use of IP services, with no differences between BALOX and OSELT patients.
 - A single BALOX patient and 9 OSELT patients had an IP admission over follow-up.
- OSELT patients showed a trend towards increased utilization of ED services compared to BALOX patients over follow-up.
 - OSELT patients had a higher number of ED visits over follow-up compared to BALOX patients (Figure 2A).
 - High-risk OSELT patients were significantly more likely to have ≥1 ED visit and had a significantly greater number of ED visits during follow-up compared to high-risk BALOX patients (Figure 2A).
- Utilization of outpatient medical and pharmacy services was higher than that observed for IP or ED services in both cohorts.
 - There were similar proportions of BALOX and OSELT patients with ≥1 outpatient office visit or outpatient pharmacy fill during follow-up (Figure 2B-2C).
 - Numbers outpatient office visits and outpatient pharmacy fills were also similar between cohorts (Figure 2B-2C).
 - The high-risk subgroups showed similar trends as the overall cohorts for outpatient medical and pharmacy services over follow-up (Figure 2B-2C).

RESULTS

Figure 1. Sample Attrition

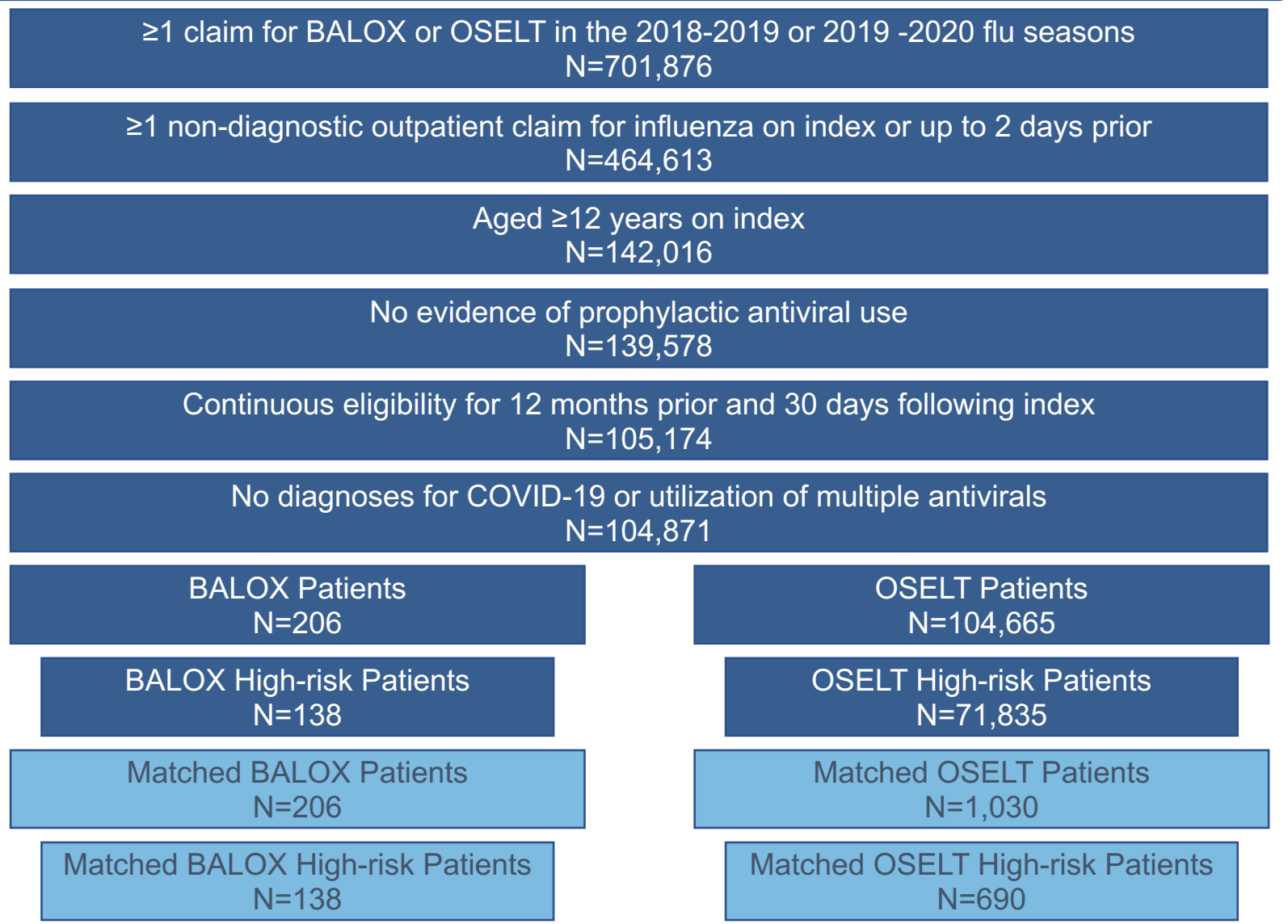


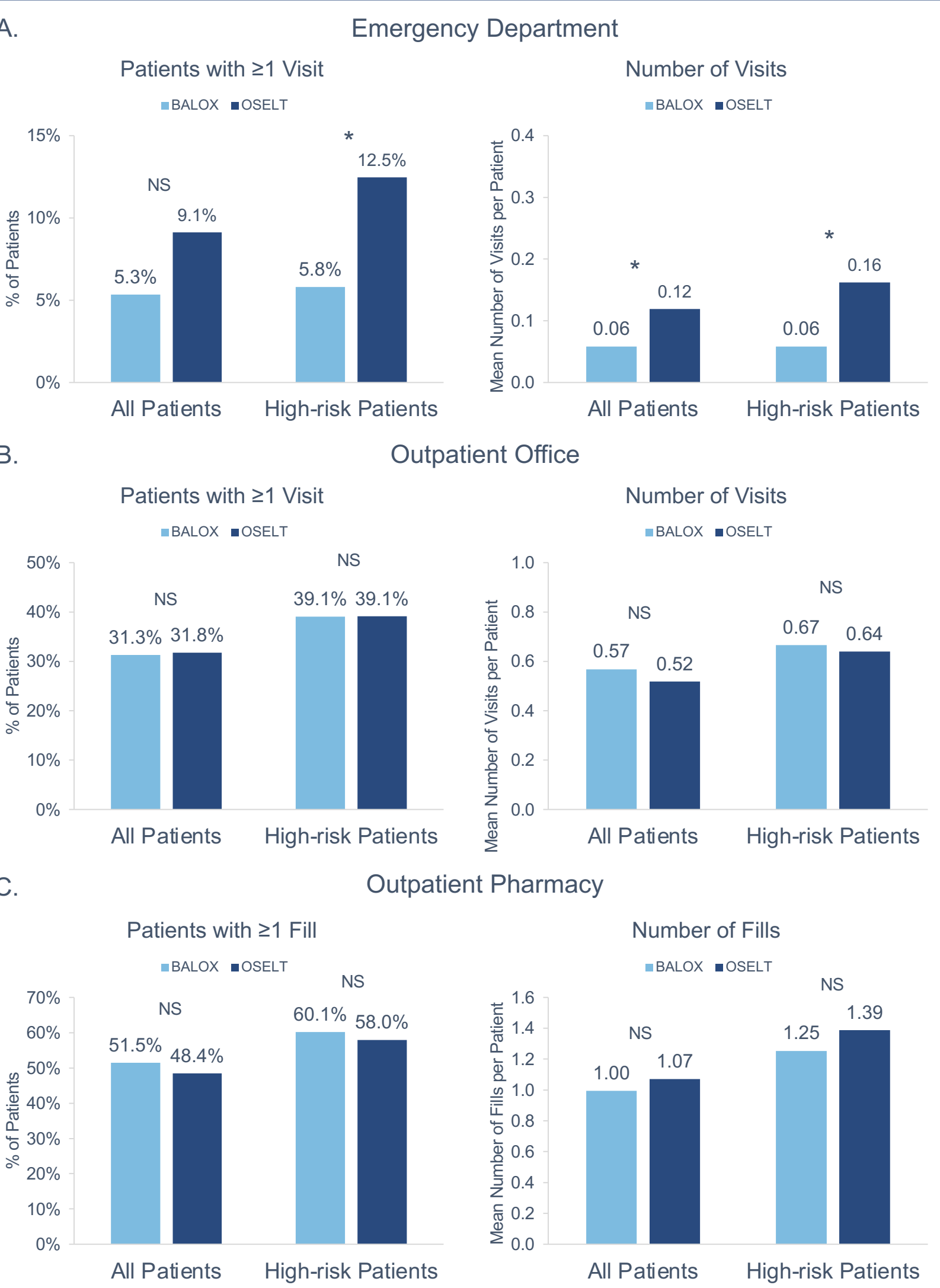
Table 1. Post-Matching Baseline Characteristics of BALOX and OSELT Patients

	BALOX		OSELT		<i>p</i>	BALOX High-risk		OSELT High-risk		<i>p</i>
	N = 206		N = 1,030			N = 138		N = 690		
	N/Mean	%/SD	N/Mean	%/SD		N/Mean	%/SD	N/Mean	%/SD	
Mean Age	25.0	12.2	25.0	12.4	0.946	26.4	11.6	26.7	12.8	0.800
Sex										
Male	74	35.9%	341	33.1%	0.435	40	29.0%	190	27.5%	0.729
Female	132	64.1%	689	66.9%		98	71.0%	500	72.5%	
Race					0.936					0.962
White	145	70.4%	738	71.7%		98	71.0%	494	71.6%	
Black	40	19.4%	202	19.6%		31	22.5%	148	21.5%	
Hispanic	5	2.4%	21	2.0%		2	1.5%	12	1.7%	
Other	11	5.3%	45	4.4%		6	4.4%	25	3.6%	
Unknown	5	2.4%	24	2.3%		1	0.7%	11	1.6%	
Population density					0.912					0.868
Urban	142	68.9%	714	69.3%		94	68.1%	465	67.4%	
Rural	64	31.1%	316	30.7%		44	31.9%	225	32.6%	
Insurance plan type					0.462					0.127
Comprehensive	32	15.5%	140	13.6%		22	15.9%	78	11.3%	
HMO	174	84.5%	890	86.4%		116	84.1%	612	88.7%	
Index Flu Season					0.757					0.624
2018-2019	24	11.7%	128	12.4%		14	10.1%	80	11.6%	
2019-2020	182	88.4%	902	87.6%		124	89.9%	610	88.4%	
Flu diagnosis to index					0.206					0.624
0	176	85.4%	895	86.9%		114	82.6%	585	84.8%	
1	29	14.1%	116	11.3%		23	16.7%	90	13.0%	
2	1	0.5%	19	1.8%		1	0.7%	15	2.2%	
Mean CCI	0.5	1.4	0.4	0.9	0.092	0.7	1.6	0.5	1.0	0.138
Mean Baseline Costs	\$1,339	\$8,124	\$778	\$2,725	0.076	\$1,918	\$9,879	\$976	\$3,139	0.041

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Figure 2. All-cause Healthcare Resource Utilization during Follow-up



NS – not significant; * *p*<0.05

CONCLUSION

- Treatment with BALOX versus OSELT was associated with significantly lower utilization of ED services in both the overall cohorts and high-risk patients.
 - The mean number of ED visits in OSELT patients was 2-fold higher than in BALOX patients; results were similar for high-risk patients
 - The proportion of high-risk OSELT patients with ≥1 ED visit was 2-fold higher than for high-risk BALOX patients.