

Real-World Comparative Effectiveness of Baloxavir Marboxil Versus Oseltamivir on Influenza-Related Complication and Resource Utilization

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INTRODUCTION

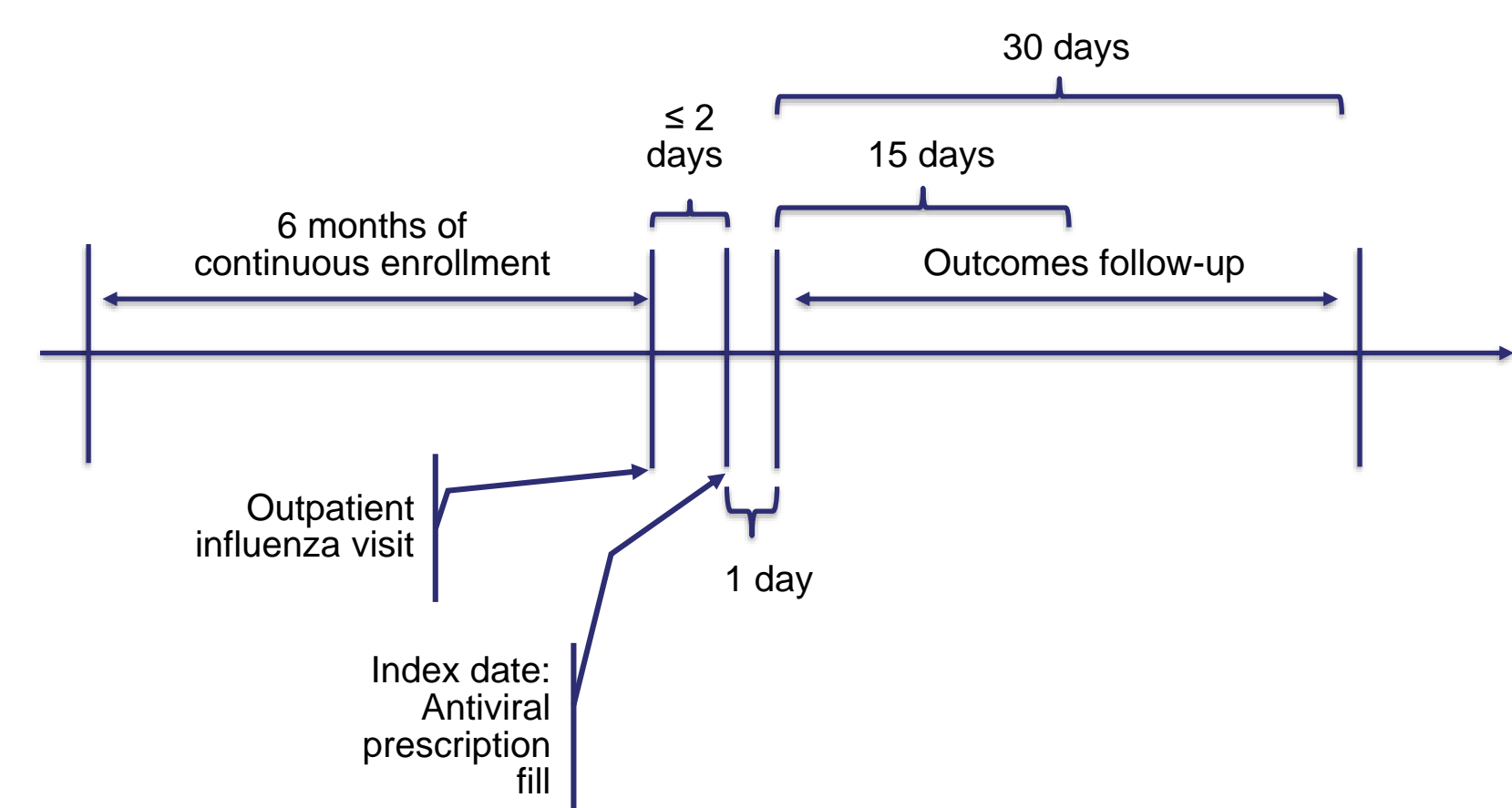
- Seasonal influenza is associated with high clinical and economic burden^{1,2}
- Airway inflammation triggered by influenza virus can result in lower respiratory complications³
- Antiviral therapy within 48 hours of symptom onset shortens the duration of symptoms and improves health outcomes in patients with influenza^{4,5}
- Baloxavir marboxil, a cap-dependent endonuclease inhibitor, is a new oral single-dose treatment for influenza⁶
 - Baloxavir significantly shortened the time to symptom alleviation in both non-high-risk and high-risk patients with influenza compared with placebo and was as effective as oseltamivir⁷
 - In high-risk patients, the rate of influenza-related complications was lower with baloxavir than with placebo (2.8% vs 10.4%; $P < .0001$)⁸
- We compared complications between baloxavir- and oseltamivir-treated patients in the real world over the 2018-19 influenza season

METHODS

Study Design [Figure 1]

- Retrospective cohort study that used data from the MarketScan® Commercial Claims and Encounters Database and the MarketScan® Medicare Supplemental and Coordination of Benefits Database (IBM Watson Health, Cambridge, MA)
- Study period: November 2018–June 2019
- Outcomes through days 15 and 30 were compared between baloxavir-treated and oseltamivir-treated patients in the outpatient setting starting 1 day after prescription fill

Figure 1. Study Design



METHODS continued

Study Population

- Key selection criteria:
 - Patients who filled a prescription for baloxavir or oseltamivir between November 2018 and May 2019 within 2 days following an outpatient visit for influenza
 - Age ≥ 12 years
 - Continuously enrolled in health plan for 6 months preceding and 1 month following index date
- Baloxavir-treated patients were propensity-score matched 1:2 to oseltamivir-treated patients for age, sex, geographic region, type of health plan, month of index event, preindex Charlson comorbidity index (CCI) score, preindex health care resource utilization (HRU) emergency department (ED) visit or hospitalization, and days between outpatient visit and prescription fill

Outcomes

- HRU and costs were determined for any cause, all respiratory-related, and select respiratory-related conditions [Supplementary Table 1]
 - Select respiratory-related conditions included infection, asthma, and chronic obstructive pulmonary disease (COPD)
- HRU and costs were assessed by healthcare setting—hospitalization, ED visits, and outpatient visits
 - All-cause pharmacy encounters and costs were recorded

Statistical Analysis

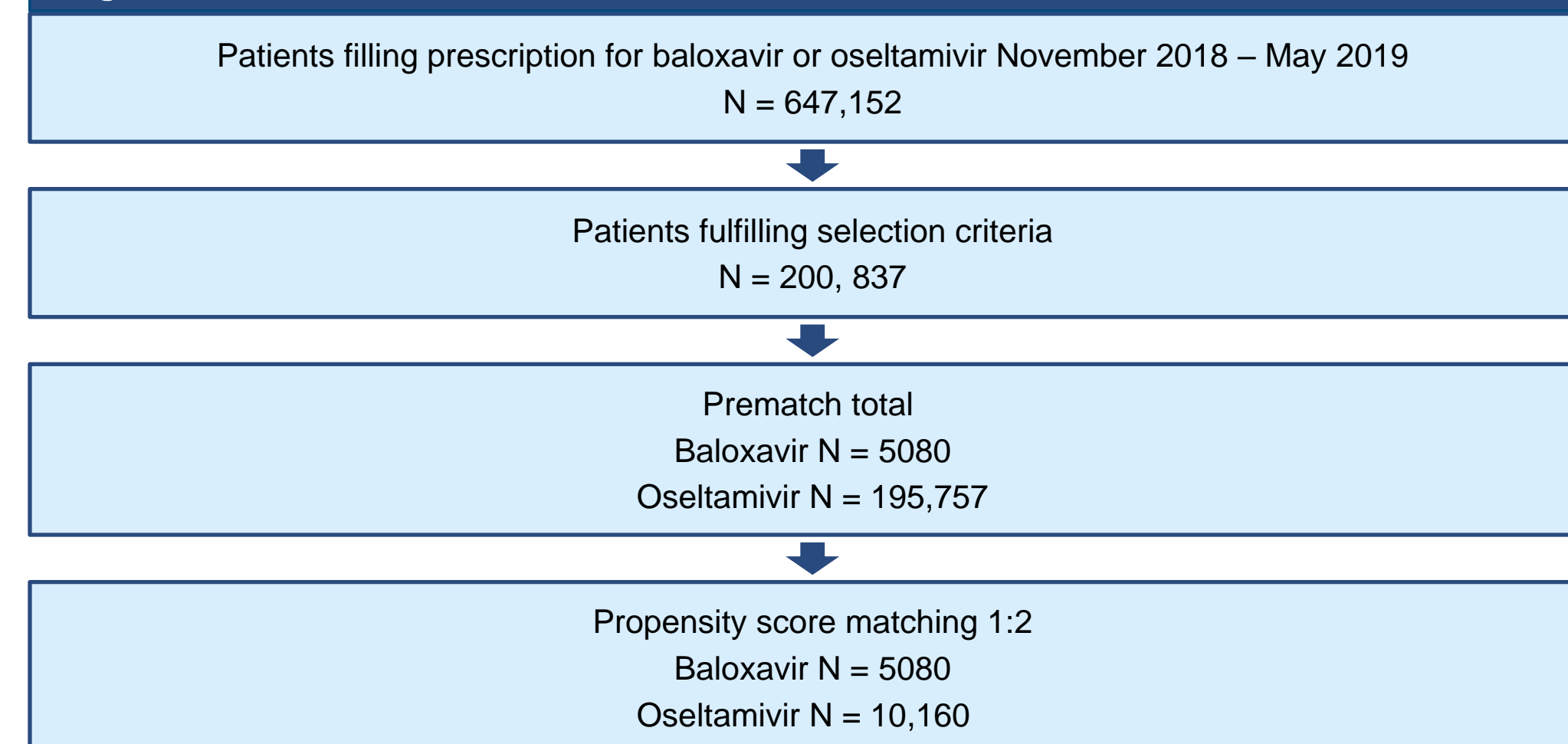
- Baloxavir-treated and matched oseltamivir-treated cohorts were compared using the chi-squared test and Fisher's exact test (for frequency ≤ 5) for categorical measures and the Wilcoxon signed-rank test for costs

RESULTS

Study Population

- After matching, there were 5080 patients in the baloxavir-treated group and 10,160 patients in the oseltamivir-treated group [Figure 2]
- Demographic and clinical characteristics in the two groups were comparable after matching [Table 1]. (Pre-match characteristics are shown in Supplementary Table 2.)

Figure 2. Patient Flow Chart



RESULTS continued

Table 1. Post-match Baseline Demographic and Clinical Characteristics

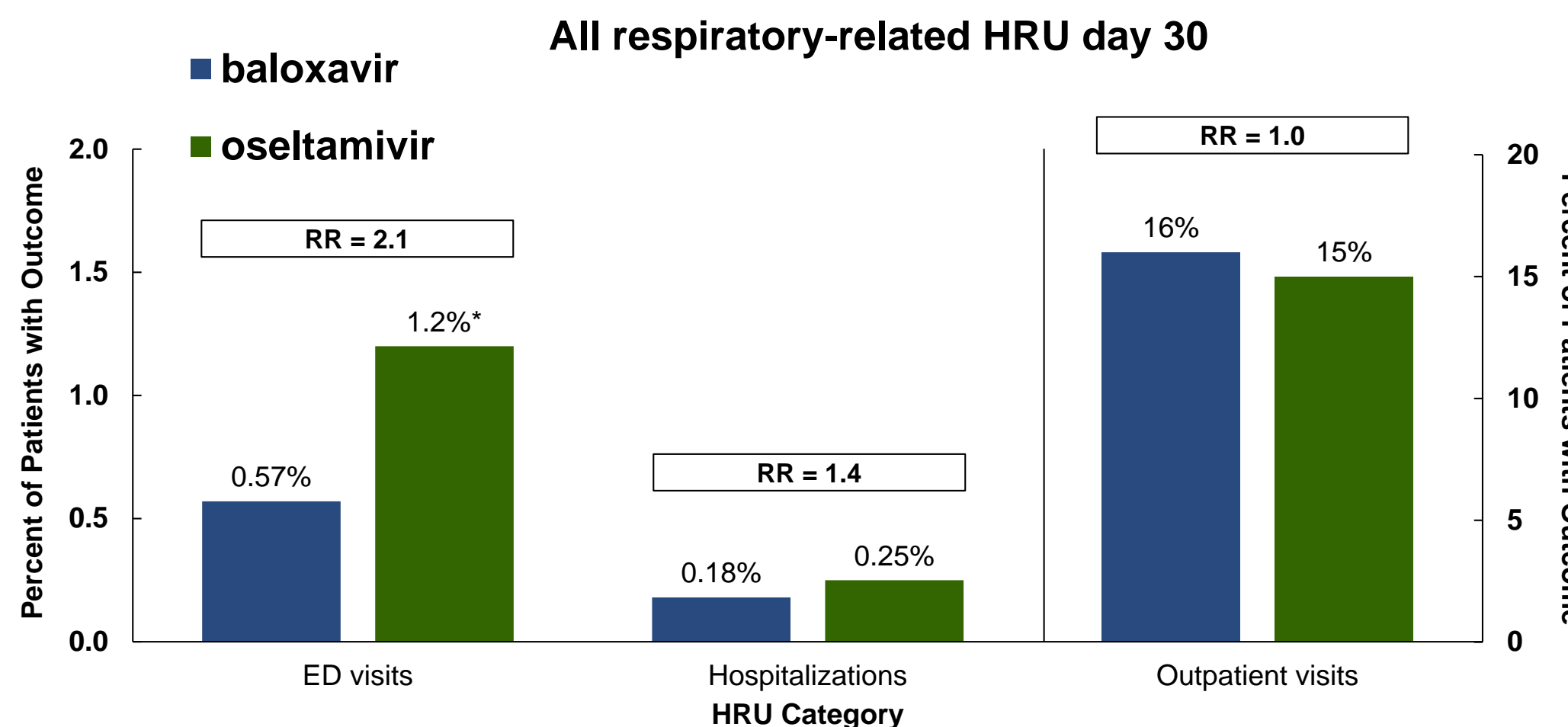
	Baloxavir (N = 5080) n (%)	Oseltamivir (N = 10,160) n (%)	P value
Age group (y)			0.99
12–17	1090 (21)	2168 (21)	
18–49	2859 (56)	5724 (56)	
50–64	1074 (21)	2148 (21)	
65+	57 (1)	120 (1)	
Sex			0.94
Male	2816 (55)	5625 (55)	
Female	2264 (45)	4535 (45)	
Region			0.99
North Central	483 (10)	978 (10)	
Northeast	527 (10)	1045 (10)	
South	3824 (75)	7674 (75)	
West	246 (5)	493 (5)	
CCI category			0.97
0	4321 (85)	8669 (85)	
1	568 (11)	1118 (11)	
2	111 (2)	214 (2)	
3+	80 (2)	159 (2)	
High risk	1958 (38)	3949 (39)	0.71

CCI, Charlson comorbidity index

Health Care Resource Utilization

- In general, HRU was lower in baloxavir-treated patients compared with oseltamivir-treated patients, particularly for respiratory-related conditions
 - At day 30, significantly fewer patients in the baloxavir-treated group had an ED visit for all-respiratory conditions [Figure 3] or for select-respiratory conditions or were hospitalized for any cause [Supplementary Figure 1]
 - HRU was similarly lower with baloxavir than with oseltamivir over the first 15 days [Supplementary Table 3]

Figure 3. All Respiratory-Related Health Care Resource Utilization in Baloxavir- or Oseltamivir-Treated Patients at Follow-Up Day 30



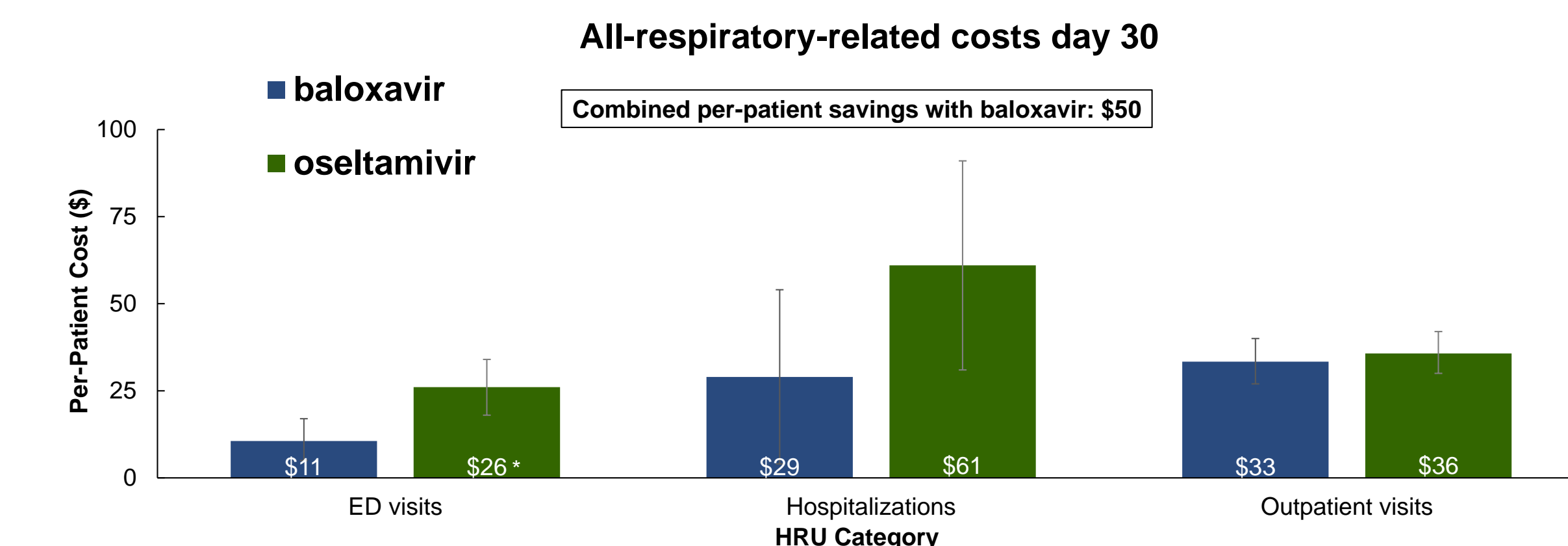
ED, emergency department; HRU, health care resource utilization; RR, relative risk (oseltamivir vs. baloxavir) * $P < 0.001$

RESULTS continued

Costs

- Consistent with HRU, costs were generally lower with baloxavir treatment than with oseltamivir treatment in all HRU categories except all-cause prescription costs
 - For all-respiratory conditions, 30-day per-patient cost savings were \$50 over all HRU categories; ED visit costs were significantly lower in baloxavir-treated patients (\$11 vs \$26; $P < 0.01$) [Figure 4]
 - Similarly, overall per-patient cost savings for select-respiratory and all-cause costs over 30 days were \$51 and \$79, respectively [Supplementary Figure 2]
 - Cost savings with baloxavir accrued in all HRU categories at day 15 also [Supplementary Table 3]

Figure 4. Mean All-Respiratory Costs in Baloxavir- or Oseltamivir-Treated Patients at Follow-Up Day 30



ED, emergency department * $P < 0.001$

CONCLUSIONS

- 15- and 30-day HRU and costs were lower in nearly all health care categories following treatment of influenza patients
 - ED visits and outpatient visits for all respiratory complications and for composite specific respiratory conditions, including asthma, COPD, and infections, were significantly lower following baloxavir treatment
- Costs in baloxavir-treated patients were lower than for oseltamivir-treated patients across multiple health care settings, despite higher prescription fills and costs
- Limitations include potential unmeasurable confounding in the claims data, and a limited sample size resulting in low power to detect statistically significant differences for rare outcomes such as hospitalizations
- These results in the general commercially insured population with influenza warrant assessment of outcomes following baloxavir treatment specifically in patients at increased risk of influenza complications

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ACKNOWLEDGMENTS

This research was funded by Genentech, Inc., South San Francisco, CA.

