

Comparative Postmarketing Safety Assessment of Baloxavir Marboxil vs Oseltamivir using TreeScan™

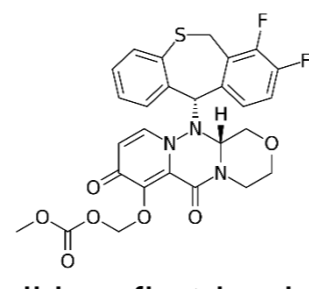
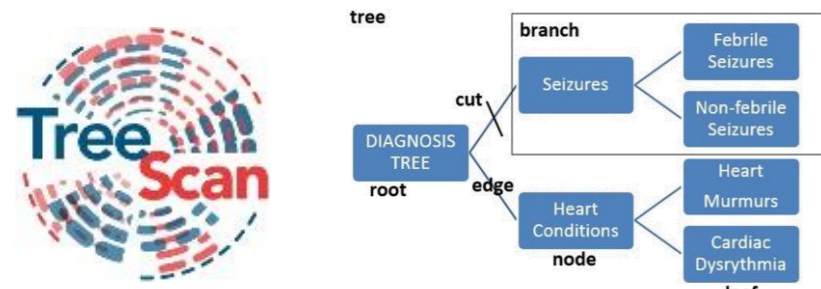
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Background



Baloxavir marboxil is a first-in-class influenza endonuclease inhibitor approved in 2018 for influenza treatment or prophylaxis in ages 12 and older with a single dose.

Tree-based scan statistics detect safety signals using a hierarchical outcome tree and controlling for multiplicity inherent in evaluating overlapping outcome groups.

Objectives

Assess whether baloxavir new users have a statistically significant increased frequency of incident safety outcomes compared to oseltamivir (a first-line influenza treatment).

Methods

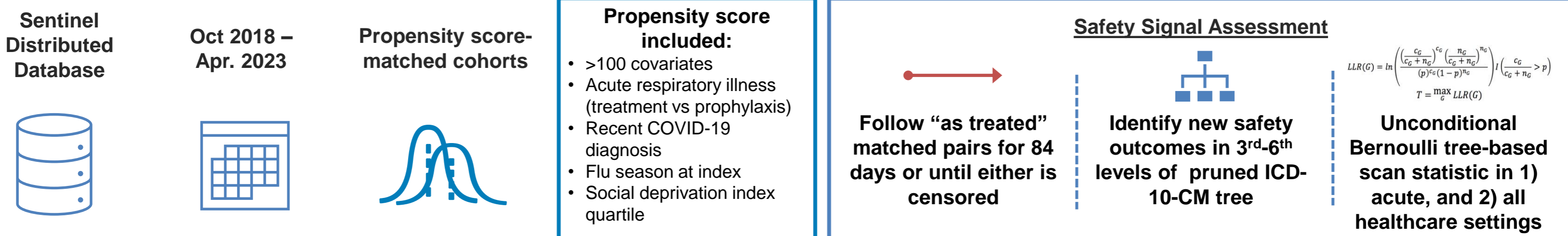
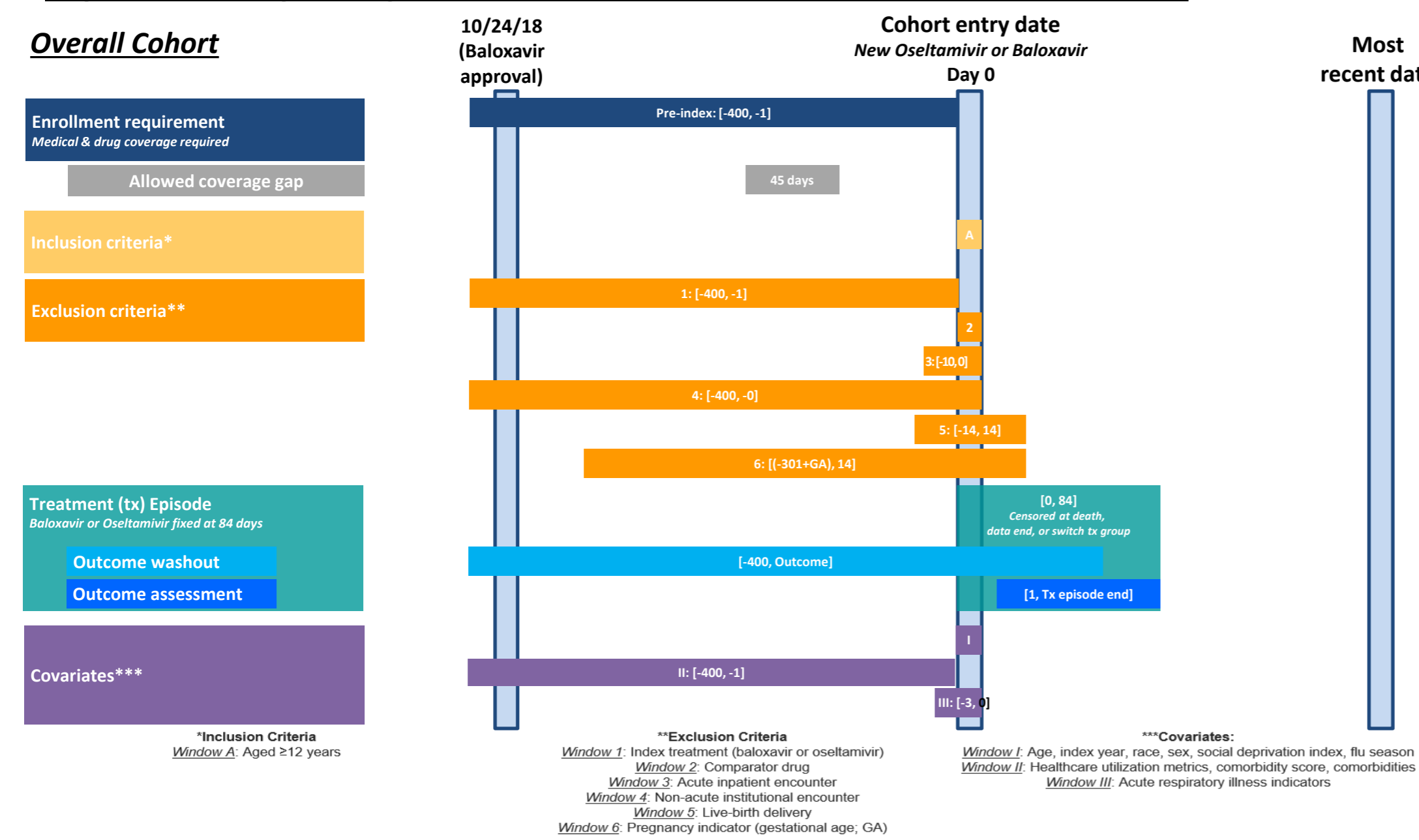


Figure 1. Design Diagram for Cohort Entry and Outcome Assessment

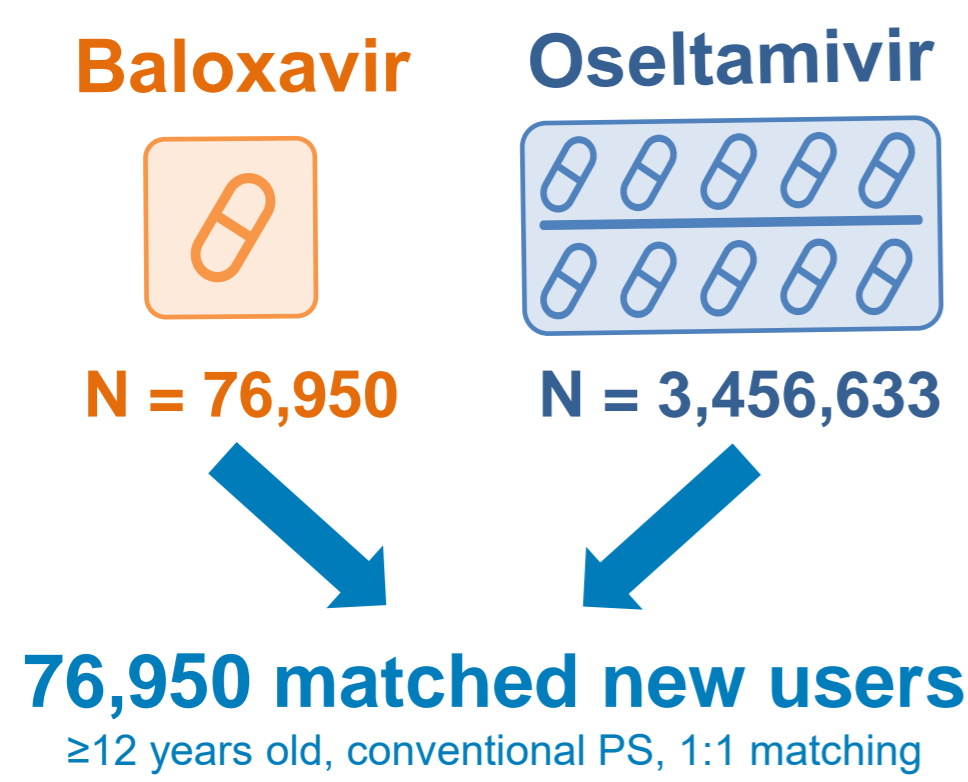


Healthcare setting	Age	Propensity score model	Match ratio
IP/ED	≥12	Conventional	1:1
IP/ED	≥12	High-dimensional	1:1
IP/ED	≥12	Conventional	1:2
IP/ED	≥12	High-dimensional	1:2
IP/ED	12–<19	Conventional	1:1
IP/ED	≥19	Conventional	1:1
IP/ED	≥19	High-dimensional	1:1
IP/ED	≥19	Conventional	1:2
IP/ED	≥19	High-dimensional	1:2
IP/ED/OP	≥12	Conventional	1:1
IP/ED/OP	12–<19	Conventional	1:1
IP/ED/OP	≥19	Conventional	1:1
IP/ED	≥65	High-dimensional	1:2

Abbreviations: ED: emergency department; IP: inpatient; OP: outpatient

Results

Figure 2. Histograms of Propensity Score (PS) Distributions for Selected Assessments



≥12 years old, conventional PS, 1:1 matching

≥19 years old, conventional PS, 1:1 matching

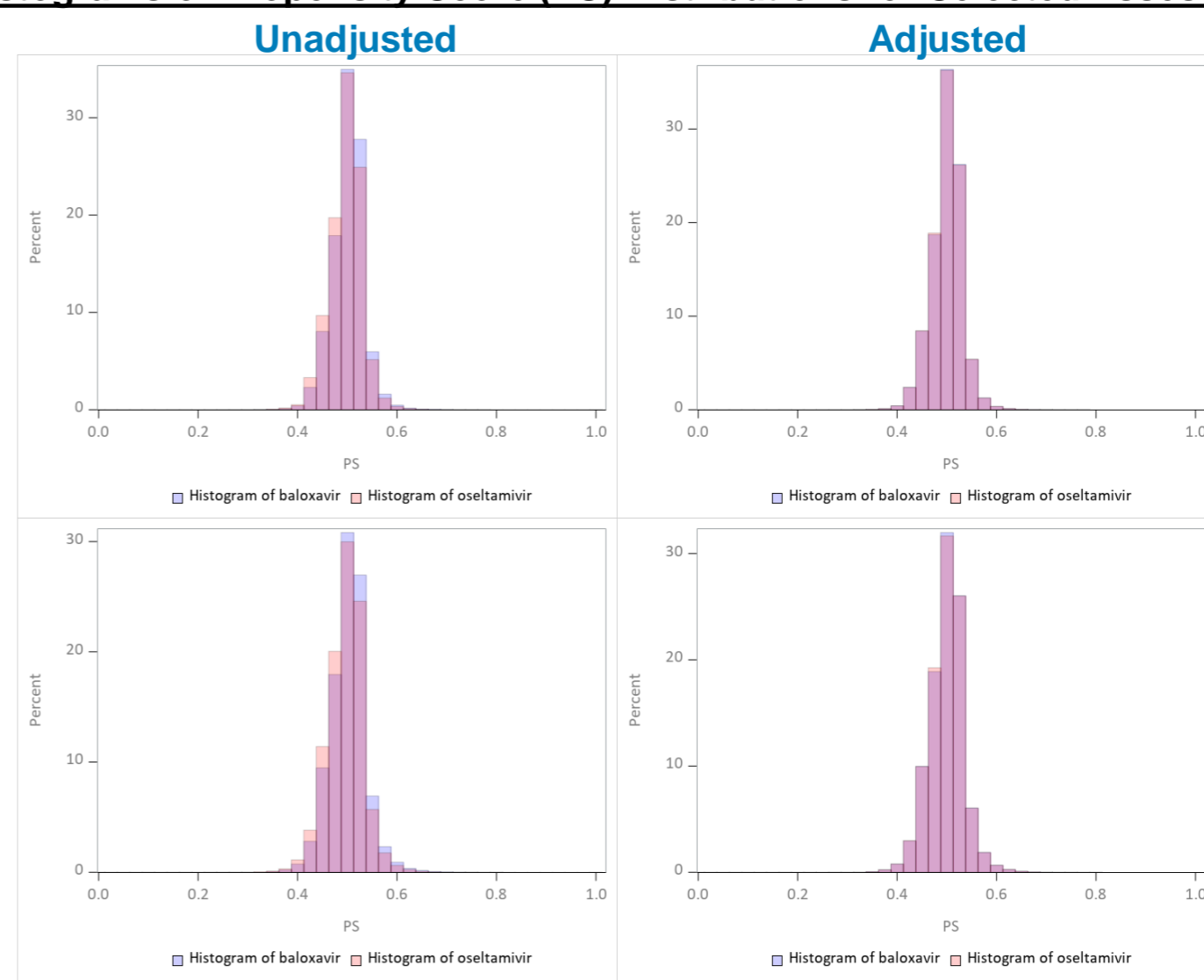


Table 2. Safety Signal Assessments Results

Assessment Parameters				Statistical Alerts (P≤0.05)						
Care setting	Age	Propensity score model	Match ratio	ICD-10-CM Diagnosis (code)	Observed outcomes (baloxavir and oseltamivir)	Observed outcomes (baloxavir only)	Expected outcomes (baloxavir only)	Relative risk	Test statistic	P-value
IP/ED/OP	≥19	Conventional	1:1	Acute Bronchitis, Unspecified (J209)*	2,362	1,290	1,181	1.09	10	0.01
All other assessments				No statistically significant alerts						

*The statistical alert for Acute Bronchitis, Unspecified (J209) was triaged and not found to be clinically meaningful.

Conclusion

Our study did not identify new safety issues with baloxavir marboxil as treatment or prophylaxis for influenza compared to oseltamivir in a large sample of real-world adult and pediatric patients, adding to the larger body of safety evidence.