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Original Investigation

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Association of Early Oseltamivir With Improved Outcomes in Hospitalized Children With Influenza, 2007-2020

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Key Points

Question Among children hospitalized with influenza, is the early use of oseltamivir associated with improved outcomes?

Findings In this cohort study, a multicenter propensity score-weighted retrospective analysis of data for 55 799 children hospitalized with influenza between 2007 and 2020 found that early (hospital day 0 or 1) oseltamivir use was associated with shorter hospital stay and lower odds of 7-day readmission, transfer to the intensive care unit, and in-hospital mortality or use of extracorporeal membrane oxygenation when adjusting for confounders.

Meaning These data support current recommendations for early initiation of oseltamivir in children hospitalized with influenza.

Abstract

Importance Oseltamivir is recommended for all children hospitalized with influenza, despite limited evidence supporting its use in the inpatient setting.

Objective To determine whether early oseltamivir use is associated with improved outcomes in children hospitalized with influenza.

Design, Setting, and Participants This multicenter retrospective study included 55 799 children younger than 18 years who were hospitalized with influenza from October 1, 2007, to March 31, 2020,

in 36 tertiary care pediatric hospitals who participate in the Pediatric Health Information System database. Data were analyzed from January 2021 to March 2022.

Exposures Early oseltamivir treatment, defined as use of oseltamivir on hospital day 0 or 1.

Main Outcomes and Measures The primary outcome was hospital length of stay (LOS) in calendar days. Secondary outcomes included 7-day hospital readmission, late (hospital day 2 or later) intensive care unit (ICU) transfer, and a composite outcome of in-hospital death or use of extracorporeal membrane oxygenation (ECMO). Inverse probability treatment weighting (IPTW) based on propensity scoring was used to address confounding by indication. Mixed-effects models were used to compare outcomes between children who did and did not receive early oseltamivir treatment. Outcomes were also compared within high-risk subgroups based on age, presence of a complex chronic condition, early critical illness, and history of asthma.

Results The analysis included 55 799 encounters from 36 hospitals. The median (IQR) age of the cohort was 3.61 years (1.03-8.27); 56% were male, and 44% were female. A total of 33 207 patients (59.5%) received early oseltamivir. In propensity score-weighted models, we found that children treated with early oseltamivir had shorter LOS (median 3 vs 4 days; IPTW model ratio, 0.52; 95% CI, 0.52-0.53) and lower odds of all-cause 7-day hospital readmission (3.5% vs 4.8%; adjusted odds ratio [aOR], 0.72; 95% CI, 0.66-0.77), late ICU transfer (2.4% vs 5.5%; aOR, 0.41; 95% CI, 0.37-0.46), and the composite outcome of death or ECMO use (0.9% vs 1.4%; aOR, 0.63; 95% CI, 0.54-0.73).

Conclusions and Relevance Early use of oseltamivir in hospitalized children was associated with shorter hospital stay and lower odds of 7-day readmission, ICU transfer, ECMO use, and death. These findings support the current recommendations for oseltamivir use in children hospitalized with influenza.



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