

Early use of antiviral medications may help prevent lung failure in children with the flu, reduce hospitalizations

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(Medical Xpress)—Children hospitalized for the flu are much less likely to require breathing support from a mechanical ventilator if they receive antiviral drugs like oseltamivir (Tamiflu) as soon as possible after admission, according to researchers at Boston Children's Hospital.

The findings, based on an analysis of pediatric hospital data nationwide, suggest that early use of such drugs may help prevent lung failure in children with severe [flu infections](#), and argue for their early use in a pediatric hospital setting during [flu season](#).

A team of [investigators](#) led by Boston Children's Carl Eriksson, MD, MPH (now at Oregon Health & Science University's Doernbecher Children's Hospital), Adrienne Randolph, MD, MSc, and Timothy Uyeki, MD, MPH, from the U.S. Centers for Disease Control and Prevention (CDC) reported these results November 5 in the journal *Pediatric Critical Care Medicine*.

The 2009 H1N1 influenza pandemic led to a significant increase in the numbers of children hospitalized for the flu or flu-related complications.

"Early in the 2009 pandemic, reports from Mexico of lung failure and death due to H1N1 influenza raised concerns that this strain of the virus would be more likely to cause life-threatening pulmonary complications," according to Randolph, an intensivist in Boston

Children's Division of Critical Care Medicine. "Since it appeared to be so bad, we decided to measure whether children hospitalized for influenza during the pandemic were more likely to require [mechanical ventilation](#) than children hospitalized for seasonal flu."

Using data from the Pediatric Health Information System (PHIS), an administrative database of inpatient admissions from 43 not-for-profit, tertiary care pediatric hospitals in the United States—Randolph, Eriksson, Uyeki and their team compared diagnosis, treatment and discharge data on more than 9,800 children hospitalized with a diagnosis of influenza during the 2009 pandemic against those of nearly 10,200 children hospitalized in total over the three previous flu seasons.

They found that while nearly three times as many children were indeed hospitalized during the pandemic season than would have been expected based on the previous three seasons, the percent of children put on mechanical ventilation during the pandemic was much lower than would have been expected.

Delving deeper, the team also noted that Tamiflu was prescribed much more frequently during the pandemic than other years.

"About 70 percent of children hospitalized for the flu during the 2009 pandemic were prescribed antiviral medication, mostly Tamiflu," Randolph explained, "whereas only 19 percent of such children received antiviral treatment during the three previous flu seasons."

When the researchers looked at the risk factors for mechanical ventilation for both seasonal and pandemic flu, one thing stood out: children prescribed Tamiflu shortly after [admission](#) for the flu were much less likely than children who did not receive the antiviral to require a ventilator at day 3 or later of their hospital stay. The association held for children hospitalized for seasonal influenza and for those admitted

during the 2009 [pandemic](#).

The results suggest that because these children received early antiviral treatment in the hospital, their flu infection was less likely to worsen to the point that their lungs started to fail.

"The use of [Tamiflu](#) in a hospital setting has been on the rise, and some have questioned whether it is effective," said Randolph. "These data suggest that early use of influenza antivirals among children hospitalized for the flu might decrease the frequency of respiratory failure occurring after hospitalization. This is important because respiratory failure is a strong risk factor for [flu](#)-related death and is associated with the significant costs and morbidity related to mechanical ventilation and intensive care."

Provided by Children's Hospital Boston

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