

Timely Antiviral Therapy for Influenza-Associated Hospitalizations in Pediatric Solid Organ Transplant Recipients in the United States

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1. BACKGROUND

Pediatric solid organ transplant (SOT) recipients are at high risk of complications from influenza and those with documented or suspected influenza should receive antivirals as soon as possible. We aimed to compare outcomes between pediatric SOT recipients who did or did not receive timely antiviral therapy for an influenza-associated hospitalization (IAH).

2. METHODS

- **Data source:** We linked the Pediatric Health Information System (PHIS) and Scientific Registry of Transplant Recipients (SRTR) databases.
- **Population:** We queried the merged database for single SOT recipients <18 years old who were transplanted between 1/1/2006 and 6/1/2016 and had at least one IAH within 3 years. We excluded children who contracted influenza or died during the transplant encounter and those who did not have follow-up data.
- **Analysis:** We defined “timely” antiviral therapy as the receipt of antivirals no more than 2 days after hospitalization and compared the outcomes of children who did or did not receive timely antiviral therapy using Pearson’s χ^2 test or the two-sample *t*-test with unequal variances, as appropriate.

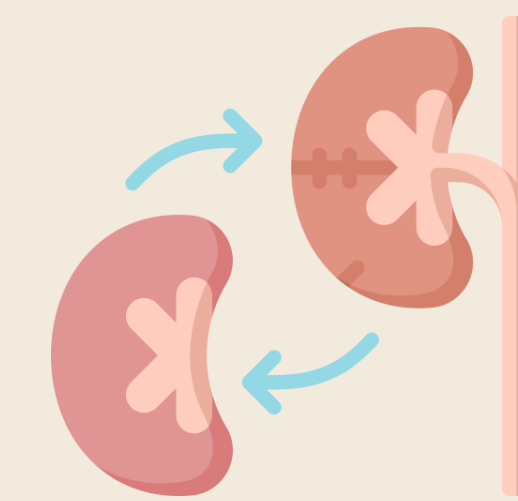
3. RESULTS



COHORT
12,419 CHILDREN

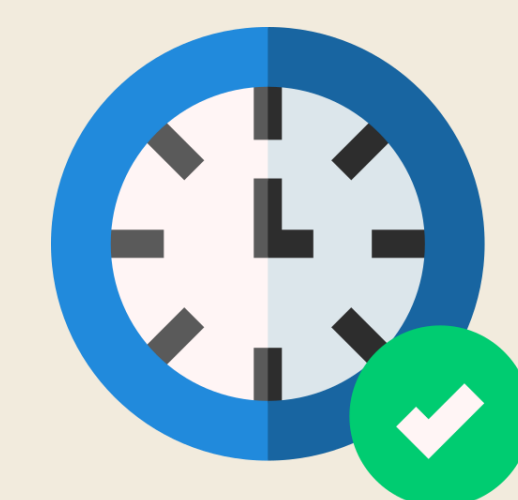


AT LEAST ONE IAH
379 (3.1%)



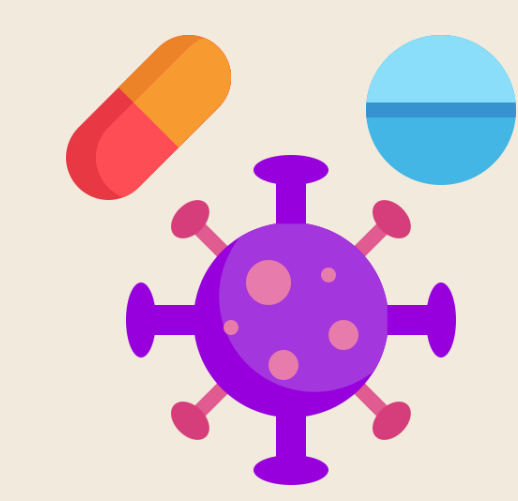
ORGAN TRANSPLANT

The most common organ transplant among those who had at least one IAH was the kidney (*n*=133 [35.1%]).



TIMELY ANTIVIRAL THERAPY

Of 270 children (71.2%) who received antivirals, 225 (83.3%) received them within 2 days of hospitalization.



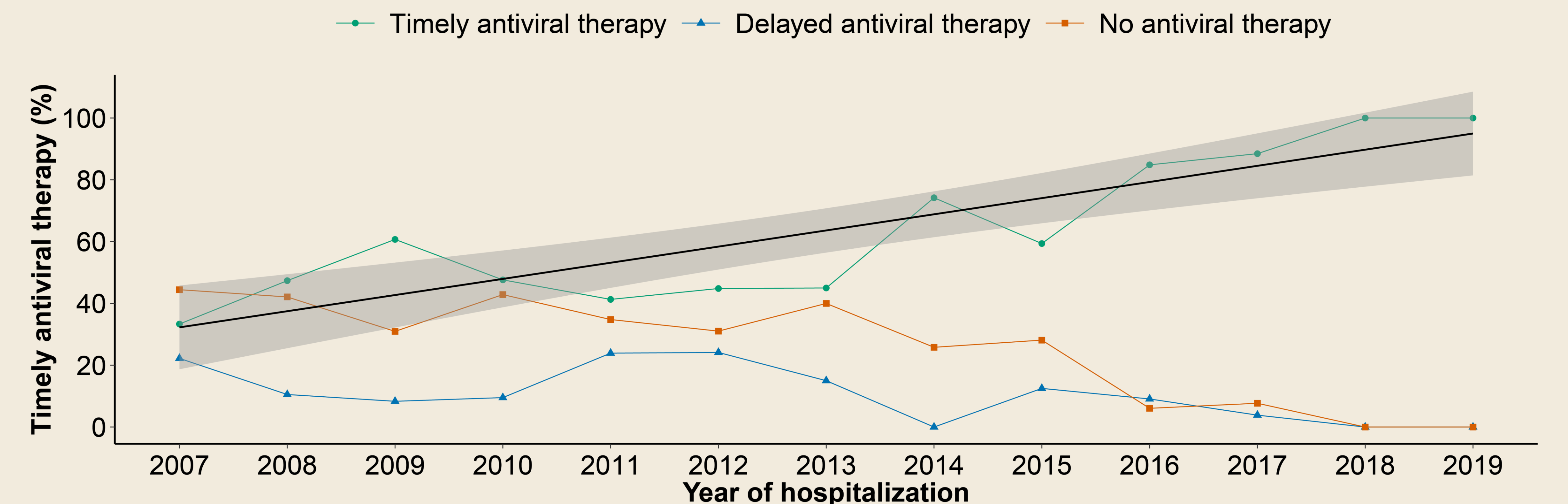
TYPE OF ANTIVIRAL THERAPY

Oseltamivir was the most frequently administered influenza-specific antiviral (*n*=268 [99.3%]).

The outcomes of children who did or did not receive timely antiviral therapy are compared below.

	Timely (<i>n</i> =225)	Delayed (<i>n</i> =45)	<i>p</i> value	None (<i>n</i> =109)	<i>p</i> value
Demographics					
Age at hospitalization in years—mean (SD)	7.6 (5.6)	5.9 (5.5)	0.061	5.5 (5.3)	0.001
Male— <i>n</i> (%)	128 (56.9)	27 (60.0)	0.70	56 (51.4)	0.34
Months since transplant—mean (SD)	15.4 (9.9)	13.0 (9.5)	0.13	14.5 (9.5)	0.43
Outcomes					
ICU admission— <i>n</i> (%)	27 (12.0)	10 (22.2)	0.069	23 (21.1)	0.029
Mechanical ventilation— <i>n</i> (%)	13 (5.8)	8 (17.8)	0.006	8 (7.3)	0.58
Days in hospital—mean (SD)	5.2 (12.9)	18.4 (25.9)	<0.001	8.3 (15.1)	0.070
Encounter cost in USD—mean (SD)	20,532 (61,294)	103,264 (201,014)	0.006	44,313 (168,510)	0.15
ECMO— <i>n</i> (%)	1 (0.4)	0 (0.0)	NA	1 (0.9)	NA
Death— <i>n</i> (%)	1 (0.4)	1 (2.2)	NA	1 (0.9)	NA

The proportion of children who received timely antiviral therapy increased from 33.3% to 100%.



4. CONCLUSION

Timely influenza-specific antiviral therapy was associated with better outcomes in pediatric SOT recipients with IAH. Importantly, more than one-third of children did not receive timely antiviral therapy. Further studies are needed to identify and address barriers to timely antiviral therapy.