

# Quick Evidence Synopsis

## Effectiveness of Neuraminidase Inhibitors for Hospitalized Children with H1N1 Influenza A

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**Clinical question this report is addressing:** What are the efficacy and safety of neuraminidase inhibitors in hospitalized children with H1N1 influenza A?

**What does the evidence conclude?**

| Intervention                                                                                          | Quality of Evidence <sup>a</sup> | Balance Between Benefits and Harms <sup>b</sup> |
|-------------------------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------|
| Neuraminidase inhibitors including oseltamivir, zanamivir, and peramivir administered in the hospital | Low                              | Likely ineffective                              |

<sup>a</sup> Quality of evidence scale (GRADE): high, moderate, low, and very low. For more information on the GRADE rating system, see <http://www.gradeworkinggroup.org/>.

<sup>b</sup> The Guideline Elements Model <http://gem.med.yale.edu/default.htm>.

**What are the parameters of our evidence search?**

| PICO             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Population       | Children hospitalized with H1N1 influenza A<br>Patient characteristics contributing to treatment effect: age, gender, ethnicity, duration of symptoms, socioeconomic status, immunocompetence, seasonal influenza vaccination status, pregnancy<br>Severity of the condition, need for mechanical ventilation<br>Method of diagnosis of H1N1 influenza A, whether clinical or laboratory diagnosis (reverse-transcription polymerase chain reaction, direct fluorescent antibody test, viral culture, rapid antigen test)<br>Other important characteristics: risk factors for H1N1 influenza A, including smoking status; respiratory comorbidities (eg, asthma, chronic obstructive pulmonary disease); other comorbidities; concurrent and concomitant medications (eg, corticosteroids, antipyretics); country of residence |
| Intervention     | Neuraminidase inhibitors including oseltamivir, zanamivir, peramivir<br>Drug dose, frequency, timing, duration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Comparator       | No antiviral treatment, active comparators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Primary outcomes | All-cause in-hospital mortality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Settings         | Inpatient                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**What is the basis for the conclusions?**

**Population:** Children hospitalized with H1N1 influenza A  
**Settings:** Inpatient  
**Intervention:** Neuraminidase inhibitors including oseltamivir, zanamivir, and peramivir  
**Comparator:** No antiviral treatment

**Table 1**  
**Neuraminidase inhibitors including oseltamivir, zanamivir, and peramivir for children hospitalized with H1N1 influenza A**

| Outcome                                                                     | Risk with Intervention per 1000 | Risk with Comparator per 1000 | Relative Measure of Association | Number of Participants (Studies)                                           | Quality (GRADE) | Comments      |
|-----------------------------------------------------------------------------|---------------------------------|-------------------------------|---------------------------------|----------------------------------------------------------------------------|-----------------|---------------|
| All hospitalized children                                                   |                                 |                               |                                 |                                                                            |                 |               |
| Mortality in children treated irrespective of timing of drug administration | NR                              | NR                            | OR <sup>a</sup> 0.8 (0.6–1.2)   | 9218 (meta-analysis of 78 observational studies) <sup>1</sup>              | Low             | No difference |
| Mortality in children with early treatment ≤2 d after symptoms onset        | NR                              | NR                            | OR <sup>a</sup> 0.9 (0.5–1.5)   | 5696 <sup>b</sup> (meta-analysis of 78 observational studies) <sup>1</sup> | Low             | No difference |
| Mortality in children with later treatment >2 d after symptoms onset        | NR                              | NR                            | OR <sup>a</sup> 1.3 (0.8–2.2)   | 5282 <sup>b</sup> (meta-analysis of 78 observational studies) <sup>1</sup> | Low             | No difference |
| Children in intensive care units                                            |                                 |                               |                                 |                                                                            |                 |               |
| Mortality in children treated irrespective of timing of drug administration | NR                              | NR                            | OR <sup>a</sup> 0.7 (0.4–1.2)   | 1725 (meta-analysis of 78 observational studies) <sup>1</sup>              | Low             | No difference |
| Mortality in children with early treatment ≤2 d after symptoms onset        | NR                              | NR                            | OR <sup>a</sup> 0.8 (0.3–1.7)   | 572 <sup>b</sup> (meta-analysis of 78 observational studies) <sup>1</sup>  | Low             | No difference |
| Mortality in children with later treatment >2 d after symptoms onset        | NR                              | NR                            | OR <sup>a</sup> 0.8 (0.4–1.6)   | 644 <sup>b</sup> (meta-analysis of 78 observational studies) <sup>1</sup>  | Low             | No difference |

*Abbreviations:* GRADE, Grading of Recommendations Assessment, Development and Evaluation; NR, not reported; OR, odds ratio.

<sup>a</sup> Adjustment for propensity score (probability of treatments with neuraminidase inhibitors, corticosteroids, and antibiotics based on patient demographics and severity of the disease).

<sup>b</sup> Children with missing data on antiviral were excluded from the analyses.

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