Quick Evidence Synopsis

Effectiveness of Neuraminidase Inhibitors in Hospitalized Adults with H1N1 Influenza A

Date completed: May 1, 2015
Authors: Tatyana A. Shamliyan, MD, MS, and David R. Goldmann, MD

Clinical question: What are the efficacy and safety of neuraminidase inhibitors in hospitalized adults with H1N1 influenza A?

What does the evidence conclude?

Intervention	Quality of Evidence[a]	Balance Between Benefits and Harms[b]
Neuraminidase inhibitors including oseltamivir, zanamivir, and peramivir administered within 48 h from symptom onset	Moderate	Beneficial for hospitalized adults, including pregnant women
Neuraminidase inhibitors including oseltamivir, zanamivir, and peramivir administered after 48 h from symptom onset	Low	Likely ineffective for hospitalized adults, including pregnant women, but may still be beneficial in adults in an ICU setting

[a] Quality of evidence scale (GRADE): high, moderate, low, and very low. For more information on the GRADE rating system, see http://www.gradeworkinggroup.org/.
[b] The Guideline Elements Model http://gem.med.yale.edu/default.htm.

What are the parameters of our evidence search?

	PICO
Population	Adults hospitalized with H1N1 influenza A Patient characteristics contributing to treatment effect: age, gender, ethnicity, duration of symptoms, socioeconomic status, immunocompetence, seasonal influenza vaccination status, pregnancy Severity of the condition, need for mechanical ventilation 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) 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 Drug dose, frequency, timing, duration
Comparator	No antiviral treatment, active comparators
Primary outcomes	Primary: mortality, all-cause; mortality, disease-specific; influenza-related pneumonia; duration of illness; need for mechanical ventilation Secondary: length of stay in ICU and/or in hospital; readmission Safety outcomes: all harms
Settings	Inpatient

Infect Dis Clin N Am 30 (2016) 1077–1083
http://dx.doi.org/10.1016/j.idc.2016.08.003
0891-5520/16

What is the basis for the conclusions?

Population: Adults hospitalized with H1N1 influenza A
Settings: Inpatient
Intervention: Neuraminidase inhibitors including oseltamivir, zanamivir, and peramivir
Comparator: No antiviral treatment (**Table 1**)

Population: Pregnant women hospitalized with H1N1 influenza A
Settings: Inpatient
Intervention: Neuraminidase inhibitors including oseltamivir, zanamivir, peramivir
Comparator: No antiviral treatment (**Table 2**)

WHAT DO CLINICAL GUIDELINES SAY?

Seasonal Influenza in Adults and Children—Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management. Clinical Practice Guidelines of the Infectious Diseases Society of America, 2009.[5] Currently under review.

- Influenza viruses and their susceptibilities to available antiviral medications evolve rapidly. Clinicians should maintain familiarity with local patterns of influenza circulation in their communities throughout influenza season. Current and frequently updated information on antiviral resistance and recommendations on antiviral use may be found on the Centers for Disease Control and Prevention's (CDC) influenza Web site.

Background and Guidance on the Use of Influenza Antiviral Agents. Centers for Disease Control and Prevention, 2015.[6] (AGREE II Score: unavailable).

- Among outpatients, antiviral treatment with a neuraminidase inhibitor is recommended for all persons with suspected or confirmed influenza who are at higher risk for influenza complications because of age or underlying medical conditions. Although all children aged younger than 5 years are considered at higher risk for complications from influenza, the highest risk is for those aged younger than 2 years, with the highest hospitalization and death rates among infants aged younger than 6 months. Based on epidemiologic studies of patients with seasonal influenza or 2009 H1N1, persons at higher risk for influenza complications who are recommended for antiviral treatment of suspected or confirmed influenza include:
  - Children aged younger than 2 years
  - Adults aged 65 years and older
  - Persons with chronic pulmonary (including asthma), cardiovascular (except hypertension alone), renal, hepatic, hematological (including sickle cell disease), metabolic disorders (including diabetes mellitus) or neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle, such as cerebral palsy, epilepsy [seizure disorders], stroke, intellectual disability [mental retardation], moderate to severe developmental delay, muscular dystrophy, or spinal cord injury)
  - Persons with immunosuppression, including that caused by medications or by human immunodeficiency virus infection
  - Women who are pregnant or postpartum (within 2 weeks after delivery)