Postexposure prophylaxis with oseltamivir reduced influenza transmission in households

Hayden FG, Belshe R, Villanueva C, et al. **Management of influenza in households: a prospective, randomized comparison of oseltamivir treatment with or without postexposure prophylaxis.** J Infect Dis. 2004;189:440-9.

QUESTION

In household contacts (HHCs) (after treatment of all index influenza patients with oseltamivir), is postexposure prophylaxis (PEP) more effective than treatment with oseltamivir at the time of developing illness (expectant treatment) for preventing influenza (flu) transmission in households?

METHODS

Design: Cluster (household level) randomized controlled trial.

Allocation: {Concealed}†.*

Blinding: Unblinded.*

Follow-up period: 30 days.

Setting: Households in Europe and North America.

Participants: 812 HHCs (age range 1 to 83 y, 55% girls/women) of index patients presenting with a flu-like illness during a documented community flu outbreak. Eligible households had 3 to 8 members, including ≥ 1 index patient and ≥ 2 eligible contacts ≥ 1 year of age. Exclusion criteria included households that contained women who were pregnant or breastfeeding and patients with cancer, immunosuppression, or HIV infection.

Intervention: Households were stratified by presence or absence of an infant and by presence or absence of a second index patient, and allocated to PEP (n = 138 households with 410 HHCs) or expectant treatment (n = 139 households with 402 HHCs). All index patients and HHCs developing illness in the expectant treatment group received oseltamivir treatment (adults and adolescents 75-mg capsules and children 1 to 2, 3 to 5, and 5 to 12 y of age, 30-, 45-, and 60-mg suspension, respectively, twice daily) for 5 days, beginning within 48 hours of the reported onset of symptoms. HHCs in the PEP group began oseltamivir prophylaxis (same age-adjusted dosage as for treatment but given once daily) within 48 hours of the first onset of flu-like symptoms in the index patient(s).

Outcome: Number of households with ≥ 1 secondary patient who had laboratory-confirmed flu during the 10-day period after the start of treatment in the index patient.

Patient follow-up: 97% (intention-to-treat analysis).

MAIN RESULTS

Fewer households in the PEP group than in the expectant-treatment group had ≥ 1 secondary contact with laboratory-confirmed flu during the 10-day period after the start of treatment in the index patient (Table).

CONCLUSION

In household contacts (after treatment of all index influenza [flu] patients with oseltamivir), postexposure prophylaxis was more effective than treatment with oseltamivir at the time of developing illness for reducing flu transmission in households.

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*See Glossary.

†Information provided by author.

Postexposure prophylaxis vs expectant treatment with oseltamivir at the time of developing influenza in household contacts (after treatment of all index influenza patients with oseltamivir)‡

Outcomes at 10 d	Household population	Postexposure prophylaxis	Expectant treatment	RRR§ (95% CI)	NNT‖ (CI)
Households with ≥ 1 secondary patient with confirmed influenza	All	7.4%	19.9%	63% (27 to 81)	9 (5 to 23)
	Index patient had LCI	10.7%	25.8%	59% (18 to 80)	7 (4 to 28)

‡LCI = laboratory-confirmed influenza. Other abbreviations defined in Glossary; RRR, NNT, and CI calculated from data in article.
§Referred to as protective efficacy in original article.
‖NNT refers to number of households needed to treat.

COMMENTARY

The study by Hayden and colleagues showed that oseltamivir is effective for reducing flu transmission from an infected family member to others in the household. The efficacy was greatest in a subgroup of HHCs who were not infected at baseline (relative risk reduction or protective efficacy 79%, 95% CI 41 to 92, number needed to treat 6) compared with that in the overall intention-to-treat population (Table).

A number of other practical considerations are worth noting about the clinical use of oseltamivir or zanamivir (another neuraminidase inhibitor with proven effectiveness). First, the avian flu, which has peppered most countries in southeast Asia and China, should be susceptible to these 2 drugs, and their use could have reduced the corresponding mortality and morbidity that occurred. Second, the severe acute respiratory syndrome, caused by a variant of the coronavirus group, may be difficult to distinguish from flu. Both can occur at the same time in a population. It is important to note that flu is treatable, whereas the severe acute respiratory syndrome is not.

Neuraminidase inhibitors should be part of a comprehensive flu prevention and treatment program. The drugs are not just for the elderly, but for the whole population. We are all "at risk" for sinusitis, a prolonged illness with loss of time from work and possibly death. However, it is important to remember that as good as these drugs are, they are a supplement to flu vaccination. The flu vaccine has been shown to have a 50% to 90% protective efficacy depending on the vaccine strain and population group (1). The vaccine also reduces hospitalization for pneumonia as well as reducing the risk for heart failure, stroke, and death from all causes—not insignificant positive side effects.

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Reference

1. **Gross PA, Hermogenes AW, Sacks HS, Lau J, Levandowski RA.** Ann Intern Med. 1995;123:518-27.