An intranasal influenza vaccine for the prevention of influenza in healthy children was cost-effective

Luce BR, Zangwill KM, Palmer CS, et al. **Cost-effectiveness analysis of an intranasal influenza vaccine for the prevention of influenza in healthy children.** Pediatrics. 2001 Aug;108:e24.

QUESTION

In healthy children, is an intranasal influenza vaccine for the prevention of influenza cost-effective?

DESIGN

Randomized {allocation concealed*}†, blinded {patients, health care providers, data collectors, judicial assessors of outcomes, data analysts, data safety and monitoring committee, and manuscript writers}†,* placebo-controlled trial with 2-year follow-up.

SETTING

University medical centers in 7 cities in the United States.

PATIENTS

2960 healthy children who were 15 to 71 months of age (mean age 42 mo, 52% girls). Follow-up was > 97%.

INTERVENTION

Children were allocated to receive 1 or 2 doses of a live, attenuated, trivalent, intranasal influenza vaccine (n = 1987) or placebo (n = 973) for the 1996 to 1997 and 1997 to 1998 seasons.

MAIN COST AND OUTCOME MEASURES

Cost per febrile influenza-like illness (ILI) day avoided. A break-even analysis was also done to calculate the vaccine-plus-administration cost below which its use would be cost saving. Per-child cost-effectiveness analyses were done separately for an individual-based and group-based vaccination delivery scenario from the societal and third-party payer perspectives. Costs were assessed in U.S. dollars and were discounted at a rate of 3% in year 2.

MAIN RESULTS

Over 2 years, children who received the vaccination had a mean of 1.2 fewer febrile ILI days/child than those who were unvaccinated. In an individual-based vaccination scenario, the mean per-child cost-effectiveness was $29.67/febrile ILI day avoided, assuming a vaccine-plus-administration cost of $20. At vaccination-plus-administration costs of $10 to $40/dose, cost-effectiveness ranged from $9.98 to $69.03, respectively, per febrile ILI day avoided. Break-even analyses showed that the vaccine-plus-administration cost below which its use would be cost saving was $28 for a group-based vaccination scenario and $4.93 for an individual-based vaccination scenario.

CONCLUSION

In healthy children, an intranasal influenza vaccine for the prevention of influenza may be cost-effective.

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*See Glossary.

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COMMENTARY

In the United States, professional medical societies and the Advisory Committee on Immunization Practices are considering potential recommendations for routine influenza vaccine use in children. Discussions focus primarily on the effect of vaccination on serious disease in young infants. Cost-effectiveness data may affect vaccination recommendations for older children.

The study by Luce and colleagues using the intranasal influenza vaccine provides point estimates for cost-effectiveness using 2 vaccination scenarios from various perspectives. Although the authors suggest that influenza vaccination costs would be reduced by group vaccination (e.g., at day care) or administering a single dose in the first vaccination year, the former will probably not be acceptable to most pediatricians, and the latter will probably be inconsistent with the schedule licensed by the U.S. Food and Drug Administration. A strategy to reduce costs consistent with licensed indications would be to use the least expensive vaccine, whether it be the currently available injection or the intranasal preparation. Head-to-head comparisons of the 2 types of vaccines among healthy children and adults show no difference in efficacy (1, 2).

How much confidence can one place in cost-effectiveness estimates from a study done over 2 influenza seasons? Isolation of influenza viruses from patients in the placebo group was 44% higher in the first than in the second year, reflecting substantial variation in cost-effectiveness by season. Cost-effectiveness also varies with the match between the circulating virus and the vaccine strains. The effect of pediatric vaccination on disease transmission and infection in adults may result in substantial disease burden and cost reductions, but the relation between age-specific coverage and these indirect effects is unknown.

Current issues that may affect the extent of pediatric influenza vaccination recommendations include intranasal vaccine cost, provider reimbursement, the feasibility of widespread seasonal immunization in pediatrics, and parental acceptance of a vaccine that will reduce but not eliminate upper respiratory illness. Vaccine cost, a major factor in the results of this cost-effectiveness analysis, will probably be a key factor.

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References

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