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


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

Design
Randomised [allocation concealed*†, blinded [patients, healthcare providers, data collectors, judicial assessors of outcomes, data analysts, data safety and monitoring committee, and manuscript writers]]†* placebo controlled trial with 2 years of follow up.

Setting
University medical centres in 7 cities in the USA.

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 1996–1997 and 1997–1998 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 US 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.

*See glossary.
†Information provided by author.

COMMENTARY
In the USA, 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 et al 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 (eg, at day care) or administering a single dose in the first vaccination year, the former will probably not be acceptable to most paediatricians and the latter will probably be inconsistent with the schedule licensed by the US Food and Drug Administration. A strategy to reduce costs consistent with licensed indications would be to use a cheaper 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.

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 paediatric 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 effectiveness is unknown.

Current recommendations include paediatric influenza vaccination issues that may affect the extent of intranasal vaccine cost, provider reimbursement, the feasibility of widespread seasonal immunisation in paediatrics, 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 in answering these questions.

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