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REVIEW ARTICLE

Cochrane review summary: influenza vaccines for preventing acute otitis media in infants and children

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Review question

Is influenza vaccine effective in reducing the incidence of acute otitis media (AOM) in infants and children?

Relevance to primary care and nursing

Primary health care professionals including nurses have a key role in delivering influenza vaccination for all children aged two to eight years (Public Health England, 2015).

Characteristics of the evidence

This Cochrane review contained 10 randomised controlled trials targeting infants and children aged six months to six years with or without a history of AOM (n = 16 707) (Norhayati *et al.*, 2015). Six were based in high-income countries and four were multicentre trials from high-, middle- and low-income countries. They were delivered in health care settings, hospital and day centres. Included studies had to evaluate any influenza vaccine with placebo or no intervention and report a minimum six months follow-up after vaccination for primary outcomes. Treatment included trivalent vaccine, reassortant and a combination of monovalent and bivalent with seven trials administering live attenuated vaccine. They were given intranasally, intramuscularly or subcutaneously as one or two courses from one to three doses. AOM had to be diagnosed by clinicians and excluded studies were those in which diagnosis was based solely on participant or carer report. Nine trials declared funding from vaccine manufacturers.

Summary of key evidence

Included studies were overall of high to moderate quality based on the Grades of Recommendation, Assessment, Development and Evaluation. Five trials were included in the meta-analysis for the primary outcomes. Risk ratio (RR), risk differences (RD) and numbers needed to treat for an additional beneficial outcome (NNTB) are given with 95% confidence intervals (CI). The number of studies and participants are shown in parentheses where appropriate. Evidence is summarised according to outcomes.

Primary outcomes

Number of participants having at least one episode of AOM during the follow-up period: There was a small but significant reduction in AOM from five trials (n = 4736; RR 0.80, 95% CI 0.67 to 0.96; RD −0.04, 95% CI −0.07 to −0.02; NNTB 25, 95% CI 15 to 50), an absolute reduction of 4% (estimated between 2 and 7%). There were no significant differences by number of courses, settings, seasons or types of vaccines. It was not

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possible to analyse the number of episodes of AOM from only one trial.

Secondary outcomes

There was a 15% (estimated between 0 and 30%) reduction in the use of antibiotics in vaccinated children from two trials ($n = 1223$; RR 0.70, 95% CI 0.59 to 0.83; RD –0.15, 95% CI –0.30 to –0.00). There was no conclusive evidence from one trial on visits to the health care facilities or hospital admissions. Whilst no major adverse events were reported, a significant increase in febrile reaction was reported in the vaccine group from six trials ($n = 10\,199$; RR 1.15, 95% CI 1.06 to 1.24; RD 0.02, 95% CI –0.00 to 0.05), and in the number of children with rhinorrhoea ($n = 10\,563$; RR 1.17, 95% CI 1.07 to 1.29; RD 0.09, 95% CI 0.01 to 0.16) but no effect on pharyngitis (three trials).

Implications for practice

Whilst influenza vaccine showed a small beneficial effect in AOM, this may not justify its use without considering its efficacy in reducing influenza and safety as little evidence is available particularly for children. Although the vaccine reduced use of antibiotics, more safety data is required to assess its impact as current practice is to avoid antibiotic over use.

Implications for research

Further studies should provide detailed safety data. More contextual information is required about antibiotic use in the settings where any further studies are conducted.

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Conflicts of Interest

None.

Ethical Standards

Not applicable. This is a summary based on secondary research and is not dealing with animals.

References

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Norhayati, M.N., Ho, J.J. and **Azman, M.Y.** 2015: Influenza vaccines for preventing acute otitis media in infants and children. *Cochrane Database of Systematic Reviews*, Issue 3. Art. No.: CD010089; doi: 10.1002/14651858.CD010089.pub2.