Review: Oral *Haemophilus influenzae* vaccination reduces the number and severity of recurrent bronchitis episodes

Foxwell AR, Cripps AW. ***Haemophilus influenzae* oral vaccination against acute bronchitis.** Cochrane Review, latest version 1 Sep 1999. In: The Cochrane Library. Oxford: Update Software.

QUESTION

Does an oral, whole-cell, nontypeable *Haemophilus influenzae* (NTHi) vaccine protect against recurrent episodes of acute bronchitis?

DATA SOURCES

Studies were identified by searching MEDLINE (1965 to 1998), Extramed (1994 to 1998), *ISI Current Contents* (1993 to 1998), Carl Uncover (1988 to 1998), and the Cochrane Controlled Trials Register with the terms bronchitis, haemophilus, vaccine, bronchostat, and bucaline burna; by scanning relevant books, bibliographies of articles, and conference abstracts; and by contacting authors and experts in the field.

STUDY SELECTION

Published studies were selected if they were randomized controlled trials that compared the effects of oral monobacterial NTHi vaccination with placebo in patients between 19 and 93 years of age who had recurrent exacerbations of acute bronchitis or chronic obstructive pulmonary disease; patients in vaccine and placebo groups were matched by age; and main outcomes were number of patients using antibiotics (an indication of the severity of exacerbation), bronchitis episodes, or rate of NTHi carriage in the respiratory tract.

DATA EXTRACTION

2 reviewers independently extracted data on study quality and characteristics, patient characteristics, interventions, and outcomes.

MAIN RESULTS

6 studies (440 patients) met the selection criteria. 5 studies were done in patients with chronic bronchitis (mean age range 51 to 71 y), and 1 was done in patients with recurrent episodes of acute bronchitis (mean age 46 y). 5 studies were done in Australia, and 1 was done in New Guinea; all studies used a concealed allocation procedure; and study duration ranged from 3 to 12 months. At 6 months, fewer patients who received NTHi vaccination used antibiotics than did those who received placebo (Table); no difference existed at 3 months. NTHi vaccination reduced bronchitis episodes at 3 and 6 months more than did placebo (Table). NTHi vaccination and placebo did not differ for rates of NTHi carriage in the respiratory tract at 3 or 6 months.

CONCLUSION

An oral whole-cell, nontypeable *Haemophilus influenzae* vaccine reduces the number and severity of recurrent episodes of acute bronchitis.

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Oral *Haemophilus influenzae* vaccination vs placebo for recurrent bronchitis*

Outcomes	Follow-up	Weighted event rates		RRR (95% CI)	NNT (CI)
		Vaccine	Placebo		
Antibiotic use	6 mo	32%	59%	46% (13 to 66)	4 (3 to 12)
		Weighted mean decrease (CI)			
Bronchitis episodes	3 mo	6.69 (6.42 to 6.96)			
	6 mo	4.47 (4.30 to 4.64)			

*Fixed-effects model used for all outcomes. Abbreviations defined in Glossary; NNT and CI calculated from data in article.

COMMENTARY

Foxwell and Cripps reviewed data from 6 studies to determine whether an oral, whole-cell NTHi vaccine would protect against recurrent episodes of bronchitis. The review is titled "*Haemophilus influenzae* Oral Vaccination against Acute Bronchitis" and appears to be misnamed. Acute bronchitis is caused by viral infection (1). The authors addressed the issue of acute exacerbations of chronic bronchitis.

A recent classification (2) has defined 4 categories of bronchitis: 1) acute tracheobronchitis, which is usually of viral nature and requires no antibiotic therapy; 2) simple chronic bronchitis, which is associated with an FEV_1 > 50% of normal, increased sputum volume, and purulence (in this group, *Haemophilus influenzae, Moraxella catarrhalis,* and *Streptococcus pneumoniae* are the usual pathogens); 3) complicated chronic bronchitis, which is defined as increased sputum volume; purulence; and 1 of the following: FEV_1 < 50%, advanced age, ≥ 4 exacerbations/y, or comorbid conditions (this group is associated with pathogens similar to those of category 2); and 4) chronic bronchial infection, which is defined similarly as category 3 with continuous sputum production throughout the year (possible pathogens include enterobacteriaceae and *Pseudomonas aeruginosa*). Without stratification for the type of bronchitis at randomization, the results of this analysis are difficult to interpret.

Given the short-term effects of this vaccine, it is probably better to focus on prevention of chronic bronchitis with antismoking campaigns aimed at teenagers and to develop a more effective strategy to enable current smokers to quit.

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References

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