

Codeine for acute cough in children

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ABSTRACT

QUESTION Owing to Health Canada's recent recommendations to avoid the use of over-the-counter cough and cold medications in preschool children, I was looking at other antitussive medications for acute cough. Codeine was recommended in the past for this indication. What is the evidence for its use and how effective and safe is it?

ANSWER Cough is one of the most common symptoms in children, and the opioid codeine has known antitussive qualities mediated by a central nervous system pathway. However, current evidence finds codeine to be no more effective than placebo for acute cough in children. Its safety profile and recent advances in understanding codeine's variable effectiveness prohibit recommending codeine for cough in children.

RÉSUMÉ

QUESTION À la suite des récentes recommandations de Santé Canada d'éviter les médicaments en vente libre contre la toux et le rhume pour les enfants d'âge préscolaire, je cherche d'autres médicaments antitussifs pour la toux aiguë. On recommandait la codéine par le passé pour cet usage. Quelles sont les données scientifiques entourant son utilisation et dans quelle mesure est-elle sécuritaire?

RÉPONSE La toux est l'un des symptômes les plus fréquents chez les enfants et la codéine est reconnue pour ses propriétés antitussives médiées par une voie du système nerveux central. Par ailleurs, selon les données scientifiques actuelles, la codéine n'est pas plus efficace qu'un placebo pour la toux aiguë chez les enfants. Son profil d'innocuité et les récents progrès dans la compréhension de l'efficacité variable de la codéine empêchent de recommander la codéine pour la toux chez les enfants.

Cough is one of the most common symptoms presented by children,¹ resulting in discomfort and substantial health care utilization. The use of over-the-counter cough and cold medication, especially in children between 2 and 5 years old, is very common.² Owing to rising concerns about the safety of over-the-counter cough and cold medications in children, Health Canada and the Food and Drug Administration amended their positions about these products in 2008.^{3,4} Health Canada suggested that certain nonprescription cough and cold medications should not be labeled for use in children younger than 6 years of age. A Cochrane meta-analysis (consisting of 25 studies, including 8 pediatric trials, representing almost 4000 individuals including more than 600 children) reviewed the safety of over-the-counter cough and cold medications in ambulatory patients with viral-induced cough. No evidence was found for or against the use of over-the-counter medications in either pediatric or adult populations when frequency and severity of cough, cough counts, sputum production, and physician assessments were compared.⁵

Codeine as an antitussive drug

Codeine is one of the most widely prescribed antitussive drugs in pediatrics.⁶ While codeine is mostly used in combination with other drugs for analgesia,⁷ when used

in smaller doses, it has an antitussive effect mediated by the central nervous system.

Most studies examined codeine's usefulness in patients with chronic cough and did not examine its effectiveness for acute cough due to respiratory infection. The latter is the most common cause of acute cough in children.⁸ Dextromethorphan and codeine have been reported to decrease cough frequency in adults and children with chronic cough.^{9,10} Improved comfort and sleep quality in children might be indications for their use.^{11,12}

Studies focusing on acute cough due to upper respiratory infection in children and adults have found conflicting results.^{6,8-16} Eccles et al¹⁴ measured cough frequency and subjective severity in a double-blind study of 91 adult patients with upper respiratory tract infection in a 3-hour laboratory phase and a 4-day home phase while patients were taking codeine syrup or placebo. The laboratory phase reported reduction in cough in both codeine and placebo groups, but there was no statistically significant difference between the groups in either phase.¹⁴ Another randomized controlled trial with 82 adult patients suffering from acute cough due to upper respiratory infection used 3 separate means of measuring cough to judge improvement: cough-sound-pressure levels, frequency of cough, and a subjective symptom score. There was no significant difference

between codeine and placebo in treating cough, and patients in both groups felt relief after administration of the study drug, compared with baseline.¹⁵

Similar results were reported in children. In a review of trials from 1950 to 1991, Smith and Feldman¹⁷ found over-the-counter drugs to have no beneficial effect for preschool children and combination drugs to reduce cold symptoms in adolescents and adults. Only one randomized controlled trial assessed the efficacy of codeine in children with acute cough among 57 patients 18 months to 12 years of age with no prior history of lung disease. There was no statistical difference between codeine and placebo on a cough-frequency scale and a symptom-rating scale ($P=0.7$).¹⁸ Dextromethorphan did not have a better effect compared with placebo either.

Owing to the lack of evidence for the efficacy of codeine and the evidence of its possible ineffectiveness, the American Academy of Pediatrics Committee on Drugs suggested that the use of codeine for suppression of cough in pulmonary diseases (eg, cystic fibrosis, bronchopulmonary dysplasia), inflammatory diseases, and other illnesses causing increased or abnormal secretion might be contraindicated and dangerous. It also stated that acute cough due to respiratory infections is self-limiting and might be treated adequately with humidity and fluids, and that dosage guidelines for cough medications in children are merely extrapolated from adult research and cannot be viewed as precise for children.⁶

Continue to use codeine?

In the past several years, the use of codeine in children, even for pain management, has become questionable.¹⁹ Recent genomic advancements have shed light on the mechanisms leading to variability in the efficacy of codeine.²⁰ With the lack of evidence to support an effective role for codeine in children with acute cough, and in light of potentially harmful adverse effects, codeine should not be indicated as an antitussive medication. ❁

Competing interests

None declared

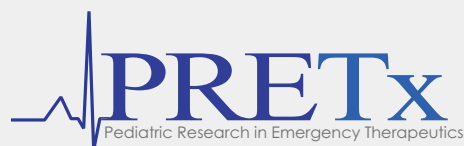
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