Treatment of the Common Cold

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The common cold is a viral illness that affects persons of all ages, prompting frequent use of over-the-counter and prescription medications and alternative remedies. Treatment focuses on relieving symptoms (e.g., cough, nasal congestion, rhinorrhea). Dextromethorphan may be beneficial in adults with cough, but its effectiveness has not been demonstrated in children and adolescents. Codeine has not been shown to effectively treat cough caused by the common cold. Although hydrocodone is widely used and has been shown to effectively treat cough caused by other conditions, the drug has not been studied in patients with colds. Topical (intranasal) and oral nasal decongestants have been shown to relieve nasal symptoms and can be used in adolescents and adults for up to three days. Antihistamines and combination antihistamine/decongestant therapies can modestly improve symptoms in adults; however, the benefits must be weighed against potential side effects. Newer non-sedating antihistamines are ineffective against cough. Topical ipratropium, a prescription anticholinergic, relieves nasal symptoms in older children and adults. Antibiotics have not been shown to improve symptoms or shorten illness duration. Complementary and alternative therapies (i.e., Echinacea, vitamin C, and zinc) are not recommended for treating common cold symptoms; however, humidified air and fluid intake may be useful without adverse side effects. Vitamin C prophylaxis may modestly reduce the duration and severity of the common cold in the general population and may reduce the incidence of the illness in persons exposed to physical and environmental stresses. (Am Fam Physician 2007;75:515-20, 522. Copyright © 2007 American Academy of Family Physicians.)

Patient information: A handout on the common cold, written by the authors of this article, is provided on page 522.

See related editorial on page 476.
Adults have an average of two to four episodes annually, and young children may have as many as six to eight episodes. A common cold is characterized by sore throat, malaise, and low-grade fever at onset. These symptoms resolve within a few days and are followed by nasal congestion, rhinorrhea, and cough within 24 to 48 hours after onset of the first symptoms. The second set of symptoms are what prompt most patients to see a physician for relief.\(^1\) Symptoms usually peak around day 3 or 4 and begin to resolve by day 7.\(^{12}\) Nasal discharge, appearing at the peak of illness, can become thick and purulent and may be misdiagnosed as a bacterial sinus infection.\(^{13}\)

### Traditional Pharmacologic Therapy

Because there are no effective antivirals to cure the common cold and few effective measures to prevent it, treatment should focus on symptom relief. The most commonly used treatments include over-the-counter antihistamines, decongestants, cough suppressants, and expectorants. These treatments can be used alone or in combination.

Although a cold is a viral illness, antibiotics often are inappropriately prescribed to patients, even when bacterial complications (e.g., pneumonia, bacterial sinusitis) are not present. Studies of antibiotics for the treatment of the common cold focus on cure rate, symptom persistence, prevention of secondary bacterial complications, and adverse effects. Systematic reviews have shown that antibiotics have no role in the treatment of the common cold.\(^{14,15}\) This is because antibiotics are ineffective at reducing symptom duration or severity and because of the risk of adverse gastrointestinal effects, cost of treatment, and increased resistance of bacteria to antibiotics.\(^{14,15}\)

### COUGH

A Cochrane review showed that there is a lack of good evidence to determine the effectiveness of any over-the-counter product at reducing the frequency or severity of cough in children or adults.\(^5\) Some authors explicitly recommend against the use of these medications.\(^{16,17}\) The American College of Chest Physicians guideline does not recommend centrally acting cough suppressants (e.g., codeine [Robitussin AC], dextromethorphan [Delsym]) for cough secondary to upper respiratory tract infection.\(^{18}\)

Despite these conclusions, two of the three studies included in the Cochrane review suggest that dextromethorphan provides a modest clinical benefit.\(^5,19\) One of these studies (a meta-analysis) showed a reduction in the frequency and severity of cough for persons 18 years or older without significant adverse effects.\(^{19}\) The average treatment difference was 12 to 17 percent in favor of dextromethorphan for cough bouts, cough components, and cough effort.\(^{19}\)

One study included in the Cochrane review showed...
that combination antihistamine/decongestant medications have a modest benefit but with significantly increased adverse effects. In contrast, newer-generation, nonsedating antihistamines do not effectively reduce cough.18 Because of the conflicting evidence, physicians must weigh the risks and benefits of dextromethorphan or combination antihistamine/decongestant medications (Table 3).11,20

No medication available in the United States has been shown to effectively treat cough in children.5,10 Although clinical trials have reported a low incidence of minor adverse effects, anecdotal reports of serious adverse effects and dosing errors have prompted the American Academy of Pediatrics and other experts to caution against the use of these preparations in children.21-24 There also is little evidence to support the use of codeine and its derivative hydrocodone (Hycodan) to relieve cough caused by the common cold in adults and children.5 One small study of codeine use in children25 and two small studies in adults26,27 failed to show a benefit. Hydrocodone commonly is prescribed for suppression of cold-related acute cough. There are no studies of hydrocodone use in patients with the common cold, although the drug’s effectiveness has been demonstrated in patients with other conditions.28,29

NASAL CONGESTION AND RHINORRHEA

Several mechanisms can cause cold-related nasal congestion and rhinorrhea.12 Although these mechanisms differ from those that cause allergy-related symptoms, antihistamines remain a popular therapy for the common cold. Although some randomized controlled trials (RCTs) of older first-generation antihistamines have shown positive results for certain end points, a Cochrane review concluded that antihistamines do not alleviate cold-related sneezing or nasal symptoms to a clinically significant degree and do not affect subjective improvement in children or adults.6 Even if a slight clinical benefit exists, there are risks and adverse effects, especially with first-generation antihistamines.11 Therefore, antihistamine monotherapy is not recommended for children and should be used cautiously in adults.

Although a first-generation oral antihistamine and decongestant combination may have some effect on nasal obstruction, rhinorrhea, and sneezing in adolescents and adults, studies generally are of poor quality, and effects are small and may not be clinically significant. Antihistamine/decongestant treatment has not been shown to benefit young children.6 Two systematic reviews have examined the use of nasal decongestants.7,30 The reviews included four trials that studied the short-term benefits of a single-

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Overview of the Evidence for Cold Therapies in Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cough (one Cochrane review [17 studies])</strong></td>
<td>Study findings</td>
</tr>
<tr>
<td>Antihistamine/decongestant combination</td>
<td>Two studies: one showed benefit with unfavorable side effects; one showed no benefit</td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Three studies: no benefit</td>
</tr>
<tr>
<td>Codeine (Robitussin AC)</td>
<td>Two studies: no benefit</td>
</tr>
<tr>
<td>Dextromethorphan (Delsym)</td>
<td>Three studies: two showed benefit; one showed no benefit</td>
</tr>
<tr>
<td>Dextromethorphan plus salbutamol*</td>
<td>One study: limited benefit with unfavorable side effects</td>
</tr>
<tr>
<td>Guaifenesin (Mucinex)</td>
<td>Two studies: one showed benefit; one showed no benefit</td>
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<tr>
<td>Moguisteine*</td>
<td>One study: very limited benefit</td>
</tr>
<tr>
<td>Mucolytic (e.g., Bisolvon linctus*)</td>
<td>One study: benefit</td>
</tr>
<tr>
<td><strong>Congestion and rhinorrhea (two Cochrane reviews [30 studies]; two RCTs)</strong></td>
<td>Study findings</td>
</tr>
<tr>
<td>Antihistamine/decongestant combination</td>
<td>Seven studies: five showed some benefit for nasal obstruction; two showed no benefit</td>
</tr>
<tr>
<td>Six studies: five showed some benefit for rhinorrhea; one showed no benefit</td>
<td></td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Five studies: no benefit for nasal obstruction</td>
</tr>
<tr>
<td>Seven studies: benefit for rhinorrhea (first-generation antihistamines only)</td>
<td></td>
</tr>
<tr>
<td>Intranasal ipratropium (Atrovent)</td>
<td>One study: benefit</td>
</tr>
<tr>
<td>Oral or topical decongestants (single dose)</td>
<td>Four studies: benefit for nasal obstruction</td>
</tr>
<tr>
<td>Oral decongestants (repeated doses)</td>
<td>Two studies: one showed benefit for nasal obstruction; one showed no benefit</td>
</tr>
</tbody>
</table>

RCT = randomized controlled trial.
*—Not available in the United States.
Information from references 5 through 9.
dose topical (intranasal) or oral decongestant and one trial that studied the effects of repeated dosing. The single-dose decongestant had a moderate short-term benefit for adolescents and adults with nasal congestion. Although a repeated dose of oral pseudoephedrine (Sudafed) over five days had no benefit, another clinical trial showed that a 60-mg dose repeated four times a day over three days improved nasal airway resistance and subjective scores in adults. Given these findings, the use of topical or oral decongestants for a few days is reasonable and consistent with standard practice. Studies of single-ingredient decongestants have not included children younger than 12 years, and there have been anecdotal reports of serious toxicity in young children using oral decongestants.

Finally, a recent study supports the use of topical ipratropium (Atrovent) for rhinorrhea caused by perennial rhinitis and the common cold. However, it is expensive, requires a prescription, and is approved only for children older than six years.

**Complementary and Alternative Therapies**

Nontraditional complementary and alternative therapies used for the common cold include Echinacea, vitamin C, zinc, and humidified air and fluid intake.

**ECHINACEA**

A Cochrane review concluded that, despite some studies that showed benefit, there is no solid evidence that Echinacea products effectively treat or prevent the common cold. The review cited concerns about publication bias (i.e., positive studies were more likely to be published), poor study quality, and variability of study results.

Two well-conducted studies showed no benefit from *Echinacea angustifolia* root or the aerial portion of *Echinacea purpurea*. Because three species are available for medical use, plant parts used and extraction methods differ, and some preparations contain additional ingredients, it is difficult to make specific product or dosage recommendations.

**VITAMIN C**

A Cochrane review showed that taking 200 mg or more of vitamin C daily does not significantly decrease symptom severity or duration when initiated after the onset of cold symptoms. Data regarding prophylactic use of vitamin C are more varied. Thirty trials involving 9,676 cold episodes showed a statistically significant decrease in illness duration with vitamin C taken before onset of symptoms: an 8 percent decrease (95% confidence interval [CI], 3 to 13 percent) in adults and a 13.5 percent decrease (95% CI, 5 to 21 percent) in children. Likewise, 15 trials involving 7,045 cold episodes demonstrated a decrease in severity scores and in days confined to the home. Vitamin C did not decrease the incidence of cold in the general population. However, a subgroup of six trials involving runners, skiers, and soldiers participating in subarctic exercises demonstrated a 50 percent relative reduction in the risk of developing a cold (95% CI, 32 to 62 percent).

**ZINC**

The use of zinc has been shown to inhibit viral growth, and an RCT suggested that zinc could reduce the duration of cold symptoms. However, this has not been substantiated in subsequent RCTs. Specifically, four of eight subsequent trials showed no benefit, and the other four may have been biased by the patients’ ability to recognize the adverse effects of zinc. Because of these inconsistent study results, zinc cannot be recommended.

**TABLE 2**

<table>
<thead>
<tr>
<th>Therapy</th>
<th>Study findings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cough (Cochrane review [seven studies])</strong></td>
<td></td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Two studies: no benefit</td>
</tr>
<tr>
<td>Antihistamine/decongestant combination</td>
<td>Two studies: no benefit</td>
</tr>
<tr>
<td>Codeine plus guaifenesin (Robitussin AC)</td>
<td>One study: no benefit</td>
</tr>
<tr>
<td>Dextromethorphan (Delsym)</td>
<td>Two studies: no benefit</td>
</tr>
<tr>
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<tr>
<td>Dextromethorphan plus salbutamol*</td>
<td>One study: no benefit</td>
</tr>
<tr>
<td>Mucolytic (e.g., Letosteine*)</td>
<td>One study: benefit</td>
</tr>
<tr>
<td>Other combinations</td>
<td>One study: no benefit</td>
</tr>
<tr>
<td><strong>Congestion and rhinorrhea (Cochrane reviews [four studies])</strong></td>
<td></td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Two studies (one using astemizole): benefit</td>
</tr>
<tr>
<td>Antihistamine/decongestant combination</td>
<td>Two studies: no benefit</td>
</tr>
<tr>
<td>Decongestants</td>
<td>No studies</td>
</tr>
</tbody>
</table>

*RCR = randomized controlled trial.

— Not available in the United States.

† — Withdrawn from U.S. market in 1999.

Information from references 5, 6, and 10.
HUMIDIFIED AIR AND FLUID INTAKE

Studies of Rhinotherm (an apparatus that delivers humidified air at a controlled temperature of about 104 to 116.6°F [40 to 47°C]) have had conflicting results despite using similar equipment and methodology.37 Because of these inconsistent results and the lack of universal access to this equipment, Rhinotherm cannot be recommended. However, except for the theoretical risks associated with fluid intake,38 humidified air and fluid intake are considered benign and possibly beneficial for the relief of common cold symptoms.11

NOTE: Adverse effects may be more significant in young children and older adults.

Information from references 11 and 20.

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Author disclosure: Nothing to disclose.

REFERENCES

The Common Cold


