Chapter 1

Viral Rhinitis

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Goals of Therapy

■ Prevent infection
■ Lessen interference with activities of daily living
■ Reduce the discomfort and emotional distress of rhinorrhea
■ Relieve the discomfort of nasal congestion
■ Minimize the potential adverse effects of pharmacologic agents
■ Prevent person-to-person transmission

Investigations

■ Diagnosis of the common cold, which is most commonly due to a rhinovirus infection, requires no specific laboratory investigation
■ History with particular attention to intensity, frequency and severity of symptoms
  ‒ early symptoms of a cold include headache, chills, sneezing and sore throat. Later symptoms include nasal discharge, nasal obstruction, cough and malaise. Symptoms may last from a few days to 2 weeks[1]
  ‒ symptoms of the flu are more severe than those of colds and typically include abrupt onset of fever, severe myalgias, anorexia, sore throat, headache and cough[2] (see Influenza)
  ‒ symptoms of a sinus headache, difficulty breathing or chest pain suggest bacterial infection

Therapeutic Choices

Viral rhinitis is usually a benign, self-limited condition. Typical symptoms of rhinorrhea and nasal congestion resolve untreated in 7–10 days. There is no evidence that treatment of the rhinitis lessens the risk of developing a complication such as middle ear effusion, otitis media, sinusitis, febrile seizure or asthma exacerbation.[3] To improve these symptoms and the patient’s quality of life, nonpharmacologic and pharmacologic approaches are available. Each pharmacologic agent employed should be directed against a specific symptom.

Nonpharmacologic Choices

■ Avoid close contact with someone who has a cold as a key to prevention.[3]
■ Limit the risk of inoculation and transmission by adhering to strict hand-washing techniques;[4][5] abstaining from touching eyes or nose; and sneezing or coughing into the elbow or into a facial tissue, which is then discarded immediately.
■ Maintain usual fluid intake.[6]
■ Rest.
Pharmacologic Choices

Figure 1 provides an approach to the symptomatic treatment of viral rhinitis. Dosing information for the medications discussed can be found in Table 1.

**Analgesics and Antipyretics**

Nonsteroidal anti-inflammatory drugs have not been shown to improve respiratory symptoms associated with the common cold, but may improve pain-related symptoms.\[8\]

Acetaminophen or ibuprofen may be helpful for fever or headache in preschool children. ASA should not be used in children due to the increased incidence of Reye syndrome associated with its use during influenza virus infections.\[9\]

**Antibiotics**

Antibiotic use is not effective in the treatment of the common cold in children or adults. Gastrointestinal adverse effects are significantly increased in adults who take antibiotics for their colds.\[10\] In addition, their use may contribute to antibiotic resistance in the community.

**Anticholinergic Agents**

Intranasal ipratropium blocks cholinergic-mediated vasodilatation. It is effective for rhinorrhea and relief of sneezing, but does not improve nasal congestion.\[11\] Adverse effects include nasal dryness, blood-tinged mucous and epistaxis.

**Antihistamines**

The anticholinergic effects of some first-generation antihistamines may reduce nasal secretions, but there is no evidence in children or adults that they improve recovery time from colds when used as monotherapy. In addition, the incidence of sedation is higher than with placebo for these medications.\[12\] Antihistamine/decongestant combinations have been shown to improve short-term nasal symptoms in adolescents and adults with viral rhinitis.\[13\]

Second-generation or nonsedating antihistamines have no anticholinergic activity.\[3\] There is no evidence to support their use alone in controlling rhinorrhea or nasal congestion secondary to viral rhinitis.\[14\]

**Decongestants (Alpha-Adrenergic Agents)**

Decongestants are used to relieve nasal congestion and improve rhinorrhea. They help most adults by improving nasal air flow. There may be a small positive effect on nasal congestion in adults with the common cold who take multiple doses of decongestants; however, the effectiveness of a single-dose of decongestant is unknown.\[15\] There is insufficient evidence to support their use in children under 12 years of age.\[16\] Decongestants are available in oral or intranasal dosage forms. Pseudoephedrine is an effective oral treatment for nasal congestion in adults.\[17\][18] Multiple doses of pseudoephedrine over a 3-day period are safe.\[18\] Evaluations of the effectiveness of oral phenylephrine have yielded conflicting results.\[19\][20] Prolonged use (usually over 5 days) of topical nasal decongestants is associated with rebound congestion (rhinitis medicamentosa).\[21\]

**Saline Nasal Irrigation**

Nasal irrigation with saline may offer some relief of the symptoms of acute upper respiratory tract infections (e.g., reduced nasal secretion and obstruction, reduced need for decongestants) in children and adults.\[22\]
**Vitamin C**

Daily vitamin C (ascorbic acid) supplementation is not effective in the prevention of colds in the general population, but may be useful in those exposed to brief periods of extreme physical stress (e.g., marathons, Arctic expeditions). Daily supplementation (1 g) is associated with a reduction in duration and possibly severity of symptoms. Ingestion of high “treatment” doses (4–8 g) at the onset of cold symptoms has not been shown to reduce the duration of cold symptoms or their severity.

**Vitamin D**

Randomized controlled trials have not shown a benefit of regular vitamin D supplementation on the incidence, severity or duration of upper respiratory tract infections.

**Zinc Lozenges**

A meta-analysis of 3 randomized placebo-controlled trials demonstrated that the use of zinc lozenges shortened the average duration of the common cold by just under 3 days. It is difficult to make recommendations with respect to dose and duration. Zinc has an unpleasant taste and may cause nausea.

**Natural Health Products**

**Camphor, Eucalyptus and Menthol**

Inhaled menthol does not seem to affect nasal airflow; however, it is associated with increased patient perception of nasal patency. No significant reduction in cough is observed. A study in 138 children found that parents reported superior relief of their children’s nocturnal cough, congestion and sleep difficulty caused by upper respiratory tract infection with vapor rub ointment (containing menthol, camphor and eucalyptus) compared with petrolatum and no treatment. The vapor rub was applied to the child’s chest and neck before bedtime. Due to concerns of increased production and decreased clearance of mucus potentially leading to respiratory distress in children, menthol and camphor rubs should never be placed directly under or in the nostrils. In addition, menthol and camphor rubs should not be used in children <2 years of age. Camphor-containing products can pose a risk of toxicity in children when used inappropriately.

**Chinese Herbal Medicines**

There are no studies to support the use of Chinese herbal medicines in the treatment of the common cold.

**Echinacea**

Echinacea products are extracted from different species and parts of the plant, making it difficult to compare studies. A Cochrane review found that although none of the 12 individual prevention studies using various Echinacea products demonstrated a significant difference in participants experiencing a cold, a significant 10–20% relative risk reduction was observed when the studies were pooled. While statistically significant, it is unclear if this small decrease is of clinical relevance. In the same review, treatment trials were mixed with no clear conclusions. In addition, conclusions regarding use of Echinacea in children could not be drawn from this review; however, 1 study reported a 5% increase in rash in the Echinacea treatment group.

**Garlic**

There is no evidence to support the use of garlic in the treatment of the common cold.
North American Ginseng Extract

A systematic review of 5 heterogeneous trials found insufficient evidence that North American ginseng extract (Panax quinquefolius), or COLD-FX (see Table 1), reduces the incidence or severity of the common cold when used acutely; however, if used daily for up to 4 months, ginseng may reduce the total time with upper respiratory tract symptoms by about 6 days.[36] The main side effect was GI upset. There are no efficacy studies for use of ginseng in children or for treatment of the common cold. In conclusion, evidence is insufficient to recommend ginseng for the prevention or treatment of the common cold.

Probiotics

Low-quality evidence exists that probiotics may be beneficial in preventing upper respiratory tract infections when compared with placebo.[37]

Nonprescription Cough and Cold Medications

There is no evidence to support the use of these agents for the symptomatic treatment of cough in children and adults.[38] Furthermore, Health Canada now requires manufacturers to label nonprescription cough and cold medications to indicate they should not be used by children <6 years of age.[39][40]

Appropriate Treatment for Specific Age Groups

Breast- or bottle-fed infants who are obligate nose breathers may benefit from regular administration of normal saline drops, which aid in cleaning the nose and may improve mucociliary clearance in young infants.[9] Studies examining the use of antihistamines, decongestants or antihistamine/decongestant combinations in children <6 years of age have failed to show benefit.[41][42] In addition, accidental ingestion and dosing errors with these products can do much harm.

There have been few trials in school-aged children. An antihistamine/decongestant/antitussive combination is superior to an antihistamine/expectorant combination in reducing nasal symptoms.[13] There are no published trials that evaluate topical nasal decongestants in children. Antihistamine/decongestant combinations may be of benefit, but risks of treatment should be carefully considered.[12]

In adolescents and adults, decongestants (topical or oral) and antihistamine/decongestant combinations have been shown to improve short-term nasal symptoms.[13] Oral decongestants are associated with an increased number of adverse effects.[13] Anticholinergic agents have also been shown to improve rhinorrhea.[14] A short course of topical decongestants or topical anticholinergic agents is first-line therapy.

Choices during Pregnancy and Breastfeeding

Women may experience symptoms of the common cold with increased frequency during their pregnancy.[43] The common cold in the 1st trimester may be a modest risk factor for birth defects.[44]

Few trials have studied the effects of viral rhinitis treatment during pregnancy. First-generation antihistamines, including brompheniramine, chlorpheniramine and diphenhydramine, are considered safe.[45][46][47][48] Due to conflicting reports of possible malformations with 1st-trimester use of oral decongestants (phenylephrine and pseudoephedrine),[47][49][50][51][52] more evidence is required before a clear recommendation can be made regarding their use during the 1st trimester.

Although data are limited and conflicting,[53][54] oxymetazoline and xylometazoline are considered safe during pregnancy for short-term use.[43][55] The extent of systemic absorption of nasally administered topical decongestants is unknown[43] and systemic side effects have been reported with
the use of xylometazoline nasal spray.\(^{[56]}\) There are no published data regarding the use of anticholinergics during pregnancy for patients with asthma or rhinitis.\(^{[57]}\)

The recommended dietary allowance of vitamin C increases in pregnancy (80–85 mg/day) and adequate intake is an important consideration in pregnancy.\(^{[58]}\) However, a higher incidence of intrauterine growth restriction was observed in women taking vitamin C (1 g) in combination with vitamin E (400 units) in a study designed to evaluate their role in prevention of pre-eclampsia.\(^{[59]}\)\(^{[60]}\)

This brings into question the safety of high-dose vitamin C in pregnancy and that its use is not recommended for this self-limiting condition. The safety of Echinacea use during pregnancy has not been established.\(^{[61]}\)\(^{[62]}\) The active component of ginseng, ginsenoside Rb1, was teratogenic in animal studies; therefore, caution is advised in pregnancy.\(^{[63]}\)

There are no published studies of zinc therapy for viral rhinitis during pregnancy.

Caution is advised with Echinacea and ginseng during breastfeeding due to insufficient data. Many nonprescription products are compatible with breastfeeding. Pseudoephedrine has been linked to irritability in the infant and decreased milk production at commonly used doses.\(^{[64]}\)\(^{[65]}\) Intranasal saline and topical decongestants (oxymetazoline, xylometazoline) are preferred over oral agents.

A discussion of general principles on the use of medications in these special populations can be found in Drug Use during Pregnancy and Drug Use during Breastfeeding. Other specialized reference sources are also provided in these appendices.

**Therapeutic Tips**

- Hand hygiene and cough hygiene (coughing into sleeve or tissue that is discarded) are key to reducing the spread of viral rhinitis.
- The incubation period for rhinovirus illness is short, generally 1–2 days; virus shedding coincides with the onset of illness or may begin shortly before symptoms develop.
- There is insufficient evidence to support the practise of inhaling steam.\(^{[66]}\)
- There is evidence that multiple-dose oral or nasal decongestants are effective for the relief of congestion in adults.\(^{[15]}\)\(^{[41]}\)
- There is no evidence to support the use of intranasal corticosteroids for the treatment of the common cold.\(^{[67]}\)
Figure 1: Management of Viral Rhinitis

- Rhinorrhea/nasal congestion
  - Preschool children (≤ 5 y)
    - Fever
      - Yes: Acetaminophen or ibuprofen
      - No: Saline nose drops for infants
  - School-aged children (6-11 y)
    - Fever
      - Yes: Acetaminophen or ibuprofen
      - No: Consider oral antihistamine/decongestant for 3 days
  - Adolescents, adults (≥ 12 y)
    - Fever
      - Yes: Acetaminophen or ibuprofen (or ASA in adults)
        - Topical decongestant for 3 days or topical anticholinergic for 4 days
      - No: Symptom relief?
    - Discontinue
      - Yes: Oral decongestant or antihistamine/decongestant for 3 days
      - No
<table>
<thead>
<tr>
<th>Class</th>
<th>Drug</th>
<th>Dosage</th>
<th>Adverse Effects</th>
<th>Drug Interactions</th>
<th>Comments</th>
<th>Cost[^a]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticholinergics, nasal</td>
<td>ipratropium bromide Atovent Nasal Spray, generics</td>
<td>Adults and children ≥12 y: 0.06%: 2 sprays in each nostril TID–QID PRN</td>
<td>Nosebleeds, nasal dryness, dry mouth or throat.</td>
<td></td>
<td>Avoid accidental release of nasal spray into eyes.</td>
<td>$$$</td>
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<tr>
<td>Decongestants, nasal</td>
<td>oxymetazoline Claritin Allergy Decongestant, Dristan Long Lasting Nasal Spray, Drixoral, generics</td>
<td>Adults and children ≥12 y: 0.05%: 2–3 sprays in each nostril Q10–12H PRN; maximum: 2 doses/24 h</td>
<td>Transient burning, stinging and dryness of nasal mucosa. Rebound congestion may occur with &gt;3–5 days of continuous use. Topical products are associated with fewer systemic adverse effects than oral decongestants.</td>
<td>MAOIs: avoid combination. Risk persists for 2 wk following discontinuation of nonselective MAOIs (e.g., phenelzine).</td>
<td>Use with caution in patients with hypertension, diabetes, cardiovascular disease, prostatic hyperplasia or hyperthyroidism. Caution is advised around young children as ingestion of small amounts (1–2 mL) can lead to serious adverse events such as coma, decreased heart rate, decreased breathing and sedation.[^7]</td>
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<td></td>
<td>phenylephrine(ingredient in combination products) Dristan Nasal Mist, Soframycin Nasal Spray</td>
<td>Adults and children ≥12 y: 0.25% or 0.5%: 2–3 sprays in each nostril no more than Q4H; maximum: 6 doses/24 h</td>
<td>See oxymetazoline.</td>
<td>See oxymetazoline.</td>
<td>See oxymetazoline.</td>
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<tr>
<td></td>
<td>xylometazoline Balminil Nasal Decongestant, Otrivin, generics</td>
<td>Adults and children ≥12 y: 0.05% or 0.1%: 1–2 sprays or 2–3 drops in each nostril Q6–10H PRN; maximum: 3 doses/24 h</td>
<td>See oxymetazoline.</td>
<td>See oxymetazoline.</td>
<td>See oxymetazoline.</td>
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### Table 1: Drugs Used in the Management of Symptoms of Viral Rhinitis (cont’d)

<table>
<thead>
<tr>
<th>Class</th>
<th>Drug</th>
<th>Dosage</th>
<th>Adverse Effects</th>
<th>Drug Interactions</th>
<th>Comments</th>
<th>Cost[a]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decongestants, oral</strong></td>
<td><strong>pseudoephedrine</strong></td>
<td>Dose based on pseudoephedrine content:</td>
<td>Insomnia, tremor, irritability, headache, palpitations, tachycardia, urinary retention.</td>
<td>Beta-blockers: antihypertensive effects may be reduced. MAOIs and ergot derivatives may enhance the hypertensive effect of pseudoephedrine. Concurrent use and use within 14 days of discontinuation of MAOIs is contraindicated. SNRIs (e.g., venlafaxine) may enhance the tachycardic and vasopressor effects of pseudoephedrine.</td>
<td>No published evidence to support use of antihistamines, decongestants or antihistamine/decongestant combinations in children &lt;6 y of age. In addition, accidental ingestion and dosing errors can do much harm. Contraindicated in patients with severe hypertension and coronary artery disease. Use with caution in cardiovascular disease, diabetes, hyperthyroidism, prostatic hyperplasia and angle-closure glaucoma. Slow-release formulations are not recommended in children &lt;12 y.</td>
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<td><strong>Eltor 120, generics. Also contained in combination products:</strong>[b]</td>
<td>Adults and children ≥12 y: 60 mg Q4–6H PO PRN or 120 mg SR Q12H PO; max: 240 mg/24 h Children 6–11 y: 30 mg Q4–8H PO PRN; max: 120 mg/24 h</td>
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<td></td>
<td><strong>Benylin, Robitussin, Tylenol Children’s, others</strong></td>
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<tr>
<td><strong>Decongestant/ Antihistamine, first-generation combinations</strong></td>
<td><strong>brompheniramine/phenylephrine</strong></td>
<td>Dose based on phenylephrine content:</td>
<td>Antihistamine: drowsiness, fatigue, anticholinergic effects such as dry eyes, dry mouth and urinary retention. Paradoxical stimulatory effects may occur in children and the elderly. Decongestant: See pseudoephedrine.</td>
<td>Antihistamine: additive CNS depressive effects with alcohol and other CNS depressants. Decongestant: See pseudoephedrine.</td>
<td>See pseudoephedrine.</td>
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<td></td>
<td><strong>Dimetapp Preparations, Robitussin Children’s Cold[b]</strong></td>
<td>Adults: 10 mg Q4H PO; max: 60 mg/24 h Children 6–11 y: 5 mg Q4H PO; max: 30 mg/24 h</td>
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</tr>
<tr>
<td><strong>Natural Health Products</strong></td>
<td><strong>North American ginseng—Panax quinquefolius COLD-FX, generics</strong></td>
<td>Prevention: 200 mg BID PO for 4 months on an empty stomach at the onset of cold season[b][c]</td>
<td>Decreased INR with concomitant warfarin use.</td>
<td>May cause hypoglycemia; use with caution in diabetes.</td>
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**a** Cost of 1 unit (spray pump, drops) or 100 mL of liquid or 12 tablets; includes drug cost only.

**b** For combination products, consult individual product labels for dosing information

**c** Dosage adjustment may be required in renal impairment; see Appendix I.

**Abbreviations:** CNS = central nervous system; INR = international normalized ratio; MAOI = monoamine oxidase inhibitor; SNRI = serotonin-norepinephrine reuptake inhibitor

**Legend:** $ < $10 $5 $10–20 $20–30 $30–50 $50–100 $100–200 $200–300
Suggested Readings


References


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