

Upper Respiratory Infection (URI) in Children: The Emerging Need for Botanical Strategies

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Overview

Upper respiratory tract infection (URI) is an acute infection that involves inflammation of the respiratory mucosa from the nose to the lower bronchi, not including the alveoli. Conditions categorized as URI include: the common cold (viral rhinosinusitis), pharyngitis (redness and inflammation of the throat), sinus infection (sinusitis), cough (bronchitis), and ear infection (otitis media). Influenza, laryngitis, and respiratory syncytial virus are also considered URIs. Most URI is viral, with over 200 known causative viruses (Barton et al 2001). URI may also be caused by bacterial infection, however this is infrequent and generally a secondary infection. Most disease transmission occurs via hand-to-hand contact, with infection subsequently spread through the eyes or nostrils, and also occurs through airborne droplets and handling infected items.

URI is exceedingly common; individual children experience as many as 6 to 8 infections per year (AAP 2001), and 10% to 15% experience as many as 12 colds per year (Rosenstein et al 1998). Rates are also higher in children in day care and those with siblings. This leads to marked day care and school absenteeism, work absenteeism for parents, and visits to the doctor's office or emergency room.

Conventional treatment

Because URI is predominantly viral in origin, it is non-responsive to antibiotics. It is also typically self-limiting. Nonetheless, until recently most physicians prescribed antibiotics for its treatment. Data from 1998 indicates that approximately 75% of all outpatient antibiotics were prescribed for otitis media, sinusitis, bronchitis, pharyngitis, or non-specific URI (Dowell et al 1998). The Centers for Disease Control and Prevention (CDC)

reported the consumption of 235 million doses of antibiotics in 2001. It is estimated that 20-50 percent of these were unnecessarily prescribed for viral infections (MacKay 2003). Antimicrobial drug use rates have been highest for children (Dowell et al) with inappropriate prescription of antibiotics accounting for at least 40 % of antibiotic prescriptions (Besser 2003).

Much of the rationale for antibiotic prescription, in spite of known lack of efficacy, lies in the premise of preventing complications (i.e. pneumonia) from secondary bacterial infection, or to address the rare possibility of meningitis or other serious disease underlying a febrile condition (Rosenstein et al). Data suggests that this practice is an ineffective strategy, with meta-analysis of five randomized clinical trials showing no evidence of a protective effect against secondary infection (Ibid.). Complications from disease such as meningitis are exceptionally rare in the in-office care population (Finkelstein et al 2000).

Moreover, this practice has created a medical backlash. It is primarily due to excessive antibiotic overuse that some pneumococci are resistant to **all** oral antibiotics. Recent antibiotic use is now actually considered a risk factor for developing invasive illness with pneumococci and there is increased risk of clinical treatment failure when treating pediatric disease (Centers for Disease Control and Prevention 1998a, 1998b, 1998c; Dowell et al).

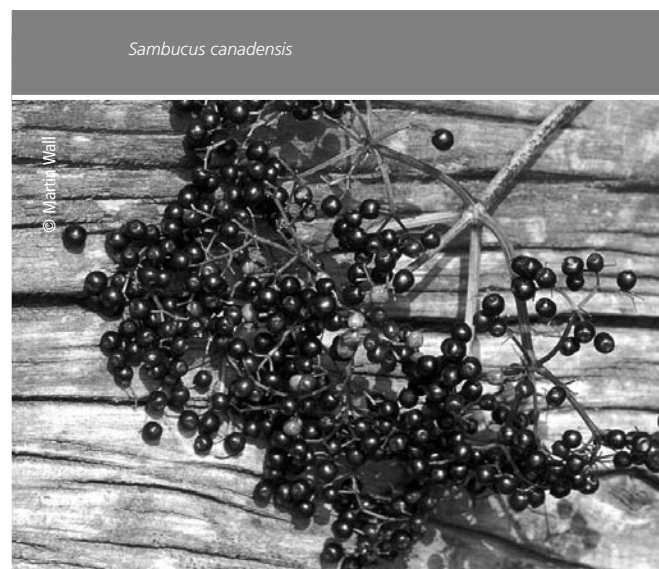
Antibiotic prescription is also influenced by several non-illness factors; for example, imminent school examinations and occurrence of illness just prior to the weekend or a holiday may predispose a physician to prescribe an antibiotic (Wang 2003). In recent years parents have come to expect antibiotics for their children, thus many physicians admit to prescribing

antibiotics, even in the absence of clinical indications, solely on the basis of parental request (Dowell et al; Wang). The CDC and other health care agencies are working toward changing the behaviors of physicians, and physicians in turn are working to change their own practices as well as the expectations of parents for antibiotic prescriptions.

Evidence of efficacy for treating URI with antibiotics, unless serious and complicated by bacterial infection (which is rare), is limited. A systematic meta-analysis by the editors of *Clinical Evidence* yielded no evidence to support a clinically important effect of antibiotics on undifferentiated colds, and only a minimal to modest effect was found for the treatment of acute bronchitis, sore throat, and sinusitis (Barton). According to Dowell et al, the evidence to support the treatment of uncomplicated acute otitis media with a 10 to 14 day course of antibiotics is “practically non-existent” (Dowell et al).

There are no randomized, placebo controlled antibiotic trials of children with cough or bronchitis defined by sputum production, and no studies done on the use of antibiotic therapies for the treatment of cough have shown any benefit (O’Brian et al). A meta-analysis of nine trials evaluating the role of antibiotic treatment for the prevention of bacterial complications of viral respiratory infections has not shown any benefit in prevention or reduction of bacterial complications (Ibid.).

Recent awareness of the serious global health implications of antibiotic resistance has led to heightened efforts by the Centers for Disease Control and Prevention, the American Association of Pediatrics,



the American Academy of Family Physicians, the World Health Organization, and the American Society for Microbiology to limit over prescription of antibiotics for common pediatric complaints (Dowell et al). These ongoing efforts appear to be effective: Between 1989 and 2000 office-based antibiotics prescription for children declined by 47% (Besser).

Other conventional therapies for URI include aspirin, acetaminophen, and ibuprofen for fever management and reduction of associated complaints, decongestants, expectorants, and antihistamines. These are strictly palliative therapies and most show no benefit as compared with placebo, or very limited benefit (Rosenstein; Barton). Some also carry risk. Acetaminophen, the most frequently used medication for children, can result in serious toxicity (Kearns et al 2000, Sztajnkrzyer & Bond 2001).

There is a role for antibiotics in the treatment of severe and complicated URI, for infants and children under 2, for those with compromised immunity, and in intractable cases. However, the role is clearly less than it was once believed to be, and avoiding unnecessary antibiotic use is an important part of the current medical and public health agenda.

Movement toward “alternative” therapies?

The crisis of widespread antibiotic resistance is causing some researchers to suggest that solutions might be found in “alternative” therapies, with suggestions for further research into herbs appearing in the literature (MacKay 2003). One author suggests: “...if symptomatic relief is sought by patients, selected home remedies or preparations designed to treat symptoms may provide similar, although marginal, benefits without the risk of antimicrobial-resistant bacterial colonization or infection” (Rosenstein et al).

The American Academy of Pediatrics Subcommittee on Management of Sinusitis and Committee on Quality Improvement states:

“Physicians treating children and young adults should be aware that many of their patients are using complementary therapies...Most of these remedies are harmless and, whether through pharmacological or placebo effect, a perception of efficacy has stood the test of time” (AAP).

Herbalists are in an excellent position to not only offer therapies that provide symptomatic relief for children’s discomforts associated with URIs but to suggest life style changes that can play an important role in preventing frequent recurrence while promoting optimal health.

Botanical care of children with URI

Parents are most likely to seek care when they believe an illness requires treatment, when there is high fever, earache, or the perception that the illness is atypical in severity or duration, or worsening (Wang). It is important for herbalists to be able to differentiate typical URI from serious infection. When in doubt as to the nature and severity of an illness in an infant or child, always refer to a more experienced practitioner for an evaluation.

I have found it helpful to establish overarching guidelines for caring for children with upper respiratory infection. First, I ascertain the following information:

- A comprehensive history of recent activities and possible exposure to infectious illness.
- A thorough vaccination history to rule out unsuspected illness in non-vaccinated children.
- A thorough history of the course of the current illness and any recent illnesses, to include:
 - Onset of symptoms
 - Specific symptom picture
 - Severity of symptoms and whether they appear to be increasing, diminishing, or remaining the same
 - Child's typical behavior patterns/temperament and behavior since ill
 - Constitutional information (i.e., typically hot or cold; calm or fussy; frequency of illnesses and type)
 - Bowel and urinary habits
 - Diet prior to and during illness
 - Volume of fluid intake
 - All treatments given for this or a prior illness
 - Typical course an illness follows in the child if you have never before worked with this child
 - If the herbalist includes any form of physical assessment, this can be done in an office visit. Looking at the tongue for signs of heat or dampness, as well as the nature and color of the sputum if there is a productive cough, can help determine the botanical treatment protocol.

It is essential to make it a priority to rule out the signs and symptoms of serious illness, or if serious illness is suspected, refer out for medical care immediately and document history of referral.

After considering the above information the practitioner can develop a plan and protocol with the parent(s). This plan includes two components:

- 1) The herbal plan
- 2) The progress assessment plan

The herbal plan

Establishing an understanding with the parents of specific dosing strategy, the importance of following the protocol, and the ability of the family to provide the type of care that is necessary to insure a full and speedy recovery with minimal likelihood of complications or recurrence is essential. The parents must understand that a common reason for recurrence of URI in children is that they don't completely recover from one infection before they are ill with the next.

As part of developing the herbal plan it is also important to ascertain what forms of administration the parents will be able to obtain, afford, and prepare, and what types the child will likely accept. The latter will vary greatly with the child's age and temperament. Giving herbs to very young children can sometimes present challenges; older children (>7 yo) will take most preparations offered, particularly if it is explained that the products will help them to feel better.

The progress assessment plan

It is useful to have some external parameters upon which to measure whether the protocol is effective or whether/when medical care is required. For continued evaluation I have found it helpful to establish a baseline of symptom intensity and to set time parameters at which to evaluate and reformulate the plan if necessary. Time limits ("check points") are determined based on the severity of the illness and the parents' and practitioner's comfort with the situation (and of course, the child's feedback on how she or he is feeling). For example, with a simple cold and low grade fever, 24 hour reassessment is often adequate; for a child with a painful earache, severe cough, and fever > 102° F, assessment may need to be made every two to four hours. This requires that the parents be able to accurately communicate by phone with the practitioner some objective measure of the child's condition and changes. It also assumes that the practitioner is accessible to the family, an important facet of caring for children with herbs.

Here is a simple algorithm for decision making and re-evaluating the efficacy of a protocol:

1. If at a given check point the child's symptoms

have improved, assume the protocol is helpful or at least the condition is improving. Establish the next checkpoint and continue to monitor. Either reduce the frequency at which the protocol is given, or continue for an additional given number of hours/days, gradually reducing or changing the protocol to reflect the new status.

2. If at a given check point the child's symptoms have neither improved nor worsened, either continue the protocol more aggressively or re-evaluate and change to a stronger protocol that is appropriate for the child's status. If non-improvement persists, medical care may be required.

3. If at a given check point, **or at any point in the course of the illness even if prior to the check point** the child's symptoms worsen, seek qualified care. (See Table 1: Warning Signs During URI: Seek Medical Care)

URI symptoms and medical protocol

The symptoms of URI vary with the site of infection. Most children have some combination of the following: fever, cough, sinus discharge, sore throat, musculoskeletal discomfort, and sometimes otitis media. These symptoms may also present as discrete conditions.

Acute URI generally lasts for a week to ten days. Children may appear quite sick and run seemingly high temperatures, particularly younger children (see below "Fever"). Symptoms such as cough or fluid in the ear (a clinical finding) may persist for several weeks after the infectious stage. The frequency of relapse means there is often little time separating one illness from the next, thus the duration of illness may appear to extend for months.

Prior to overt symptoms children typically display diminished activity level and reduced appetite; they may be fussy, irritable or show malaise. In the robust child symptoms may come on suddenly, such as a hot, painful throat or fever. Early treatment can offset the illness, reduce its severity, and prevent it from progressing into other symptoms.

Table 1 Warning Signs During URI: Seek Medical Care

Persistent fever (>3-5 days) with no improvement
Stiff neck
Forceful vomiting
Severe/unremitting headache
Incoherence or unresponsiveness
Deterioration of symptoms
Visual disturbance
Severe facial pain
Painful breathing; difficulty breathing
Persistent sore throat (>3-5 days) with no improvement
Drainage from the ear
Dehydration; unwillingness to accept fluids
Any signs of illness/infection in children under 6 months old
Signs of serious illness: such as measles, pertussis, pneumonia, and meningitis.

General and specific botanical protocol for URI

While the body has incredible healing capability left to its own devices, herbal protocol can improve children's overall health and resistance to illness, complementing and augmenting the body's abilities. Additionally, the implications of introducing children to the healing powers of the natural world are significant and invaluable for long-term environmental sustainability, but are beyond the scope of this paper.

Numerous trials have demonstrated the immune activity of a wide range of herbs *in vivo* and *in vitro*, as well as in clinical settings with adults. Few clinical trials have been conducted on the role of botanicals in treating URI in children. Several echinacea trials have yielded conflicting results on its efficacy, and there have been trials on garlic, elder, andrographis, and other herbs showing some improvement or prevention of URI. There is extensive evidence of traditional use, as well as expert consensus from contemporary practitioners treating kids with herbs. It is this combination of evidence that I draw upon for the following protocol.

Dosing strategies

Dose and safety information may be based on such sources as the German Commission E Monographs, the WHO monographs, or clinical trials. Frequency of dosing should be based on severity of illness. Severe acute

“Antibiotics do not effectively treat URI (upper respiratory infection), or prevent subsequent bacterial infections.” (Centers for Disease Control and Prevention)

conditions require frequent dosing; chronic illness typically suggests a less frequent dosing strategy (i.e., every 1-2 hours in acute illness vs. 2-4 times daily in chronic illness). It is important to be mindful not to exceed a reasonable daily dose; however, when using gentle herbs there is little cause for concern over herb safety. In fact, under dosing appears to be a common reason for lack of efficacy when treating children, particularly when using echinacea. It is generally best to avoid all combining of herbs with medications for children and to consult with other health providers in the health team regarding medications the child may be taking (i.e., insulin, Ritalin).

Specific herbs

The possible materia medica for URI is enormous. The following charts represent an annotated selection of herbs most commonly used in pediatric clinical practice

by western herbalists, along with the strategies for each condition/symptom. Several herbs and concepts from traditional Chinese medicine that have been widely adopted by western herbalists are also included. Practitioners can combine herbs to create formulae specific to each child's symptoms and unique needs. For example, overall herbs for cold may be combined with herbs to treat cough and herbs to reduce musculoskeletal symptoms of fever.

General URI herbs

- **Fresh garlic** can be given easily to children over 7 y.o. by chopping a clove, covering with honey in a teaspoon, and having the child swallow the garlic without chewing. Younger children may be given garlic in the form of a garlic-honey-lemonade: Finely mince 2 cloves fresh garlic and place in a 1-quart glass jar. Fill the jar with boiling water and cover for thirty minutes. Strain out the

Key to forms of administration: Tea/infusion: (T), Decoction: (dec), Tincture: (tnc), Syrup: (syr), Fresh (fr), Pills, capsules, tablets (tab), Steam inhalation (stm), Bath (B). Forms may be combined or used interchangeably.

Energetic key:
W= warming herb, C= cooling herb, N= neutral herb
Warming and cooling herbs can be combined to create the desired therapeutic effect.

Common Cold	
Strategy	Botanical Choices
<p>Dispel Chill and Wind Use when there is chill or dampness, especially if there has been exposure to wind/cold</p>	<p>Cinnamon twig (<i>Cinnamomum spp.</i>) (T)-W Kudzu (<i>Pueraria lobata</i>) (T)-N Ginger root (<i>Zingiber off.</i>) (T)-W</p>
<p>Reduce Internal Heat Use as mild diaphoretics when there are symptoms of heat and infection; aperients (i.e. dandelion, yellow dock) can be used when there is constipation as an accompanying symptom. Antimicrobials (i.e., coptis, goldenseal) relieve heat and inflammation by reducing infection.</p>	<p>Elder flower (<i>Sambucus nigra</i>) (T)-C Echinacea (<i>Echinacea spp</i>) (tnc)-C Lemon balm (<i>Melissa officinalis</i>) (T, tnc)-C Honeysuckle (<i>Lonicera japonica</i>) (T, dec)-C Goldthread (<i>Coptis chinensis</i>) (tnc)-C Goldenseal (<i>Hydrastis canadensis</i>) (tnc, tab)-C Dandelion (<i>Taraxacum off</i>) (dec, syr, tnc)-C Yellow dock (<i>Rumex crispus</i>) (dec, syr, tnc)-C</p>
<p>Support Immunity/General antimicrobial for URI</p>	<p>Echinacea (<i>Echinacea spp</i>) (tnc)-C Elderberry (<i>Sambucus nigra</i>) (syr; tnc)- C Astragalus (<i>Astragalus membranaceus</i>) (dec, tnc)- N/W Andrographis (tnc, tab)- C Garlic (fr, T, syr, tab)- W Lemon, rose hips fruit- C Propolis- N</p>
<p>Treat Fever, Cough, Rhinitis, etc.</p>	<p>See below</p>

garlic. To the liquid add the juice of one whole lemon. Sweeten to taste with honey. Give as warm as possible, and offer as much as the child can drink.

- **Nutritive Warming Broth:** This is particularly good for warming the hands and feet and for chills accompanying a cold. To prepare, chop one onion and mince two cloves of garlic and 1 tablespoon of fresh ginger root. Sauté in 1 tablespoon olive or sesame oil for two to three minutes. Add 4 cups water and simmer for thirty minutes. To this add 1 tablespoon (or more to taste) of miso paste and stir until dissolved. Next dissolve 1 tablespoon kudzu root in 1/4-cup cold water. Add this to the broth, stirring constantly while you cook for another minute. Serve warm. Just the broth can be given, or some of the onions as well.

- **Kudzu Apple Juice:** Kudzu is known in TCM for relieving chills, aches, indigestion, and other symptoms of colds. To prepare, heat 3/4 cup unfiltered apple juice in a saucepan until it begins to simmer. Dissolve 1 teaspoon kudzu root into 1/4 cup cold apple juice. Stir this into the saucepan, and continue to stir until it comes

to a boil. Reduce the temperature to low, and stir continuously for two to three minutes more. Cool until drinkable and then enjoy. The juice can be used as the child's main nourishment for a day. You can use pear juice in place of apple juice. A pinch of cinnamon can be added if the child has severe chills, diarrhea, or stomach upset.

Fever

Fever is a symptom, not a disease. Furthermore, fever is an intrinsically valuable physiologic response to infection that should not be suppressed unless it becomes dangerously high for the child. Various opinions exist on what constitutes a dangerously high fever. Serious disease can be accompanied by low-grade fever, and high fever can occur in the absence of serious infection. Young children will often "spike" a considerably high fever—even up to 104°F. Determining at what point to intervene must be based on the child's status and the parents' and practitioner's experience and scope of practice. Generally when a temperature rises above

...many physicians prescribe antibiotics, even in the absence of clinical indications, solely on the basis of parental request...

Fever	
Strategy	Botanical Choices
<p>Analgesic/Antispasmodic Use for musculoskeletal complaints accompanying fever, headache, restlessness</p>	<p>Kudzu (<i>Pueraria lobata</i>) (T)-N Black cohosh (<i>Cimicifuga racemosa</i>) (tnc)-C Cramp bark (<i>Viburnum opulus</i>) (tnc)-C Chamomile (<i>Matricaria recutita</i>)- (T, tnc)-C Lavender (<i>Lavendula off</i>)- (T, tnc)-C</p>
<p>Antimicrobial</p>	<p>Echinacea (<i>Echinacea spp</i>) (tnc)-C Elderberry (<i>Sambucus nigra</i>) (syr; tnc)-C Andrographis (tnc, tab)- C Garlic (fr, T, syr, tab)- W Thyme (<i>Thymus vulgaris</i>)- (T, tnc)- W Calendula (<i>Calendula off</i>)-(tnc)-C</p>
<p>Diaphoretic; Antipyretic; febrifuge Elder, yarrow, linden, and catnip may be used in hot infusion to promote diaphoresis when there is a tight fever with no sweating. Care must be taken not to cause heavy fluid lost with excessive use of diaphoretics. Lemon balm and spearmint may also be added as gentle febrifuge herbs.</p>	<p>Elder flower (<i>Sambucus nigra</i>) (T)- C Yarrow (<i>Achilles millefolium</i>) (T)- C Linden (<i>Tilia europea</i>) (T)-C Catnip (<i>Nepeta cataria</i>) (T)-C Lemon balm (<i>Melissa off</i>) (T)-C Spearmint (<i>Mentha spicata</i>) (T)-C Lemon, rose hips fruit- (Juice, tea, dilute concentrate)- C</p>
<p>External treatment (warm bath)</p>	<p>Catnip (<i>Nepeta cataria</i>) (T/B)- C Lavender (<i>Lavendula off</i>) (T/essential oil/B)- C Chamomile (<i>Matricaria recutita</i>) (T/B)- C</p>

Sore Throat	
Strategy	Botanical Choices
<p>Anti-inflammatory Tea and dilute tincture can be taken internally as well as used as a gargle or topical application directed at the throat.</p>	<p>Licorice (<i>Glycyrrhiza glabra</i>) (dec, tnc)-N Calendula (<i>Calendula off</i>) (tnc)-C Liquid chlorophyll (juice)-C Sage (<i>Salvia off</i>) (T, tnc)- W/C</p>
<p>Antimicrobial While viral sore throat is painful, it is generally self-limiting. However, in the absence of clinical testing, it can be hard to differentiate viral pharyngitis from strep A infection. Therefore, it is beneficial to include antimicrobials, many of which may also possess antiviral activity. Frequent application and internal use is important in strep A, which can often be managed without antibiotic therapy.</p>	<p>Thyme (<i>Thymus vulgaris</i>)- (T, tnc)- W Echinacea (<i>Echinacea spp</i>) (tnc)-C Garlic (fr, T, syr, tab)- W Calendula (<i>Calendula off</i>) (tnc)-C Usnea (<i>Usnea barbata</i>)- (tnc)-C</p>
<p>Astringent To be used as a gargle—topically anti-inflammatory and anticatarrhal, as well as some antimicrobial activity.</p>	<p>Sage (<i>Salvia off</i>) (T, tnc)- W/C</p>
<p>Demulcent Soothing for an irritated, inflamed throat.</p>	<p>Licorice (<i>Glycyrrhiza glabra</i>) (dec, tnc)-N Slippery elm (<i>Ulmus rubra</i>) (Lozenge, T)-N</p>

103°F, I suggest gentle febrifuge teas to keep the fever from exceeding this range. This, however, may be more of a reassurance to parents and practitioners than a benefit to the child. Children with high fevers may sleep for prolonged periods. It is critical that fluids be given often to prevent dehydration—the greatest danger of a high fever. If at any time the child exhibits warning signs (see Table 1 above), seek medical care immediately.

Marked improvement will generally be seen in 2-12 hours. Complete resolution will usually be seen in 1-3 days. With URI fever can normally persist for 5-7 days. However, when there is persistent fever with unknown underlying cause, medical consultation is advised.

Sore Throat

Some improvement will generally be seen in 4-8 hours. Complete resolution will usually be seen in 1-3 days.

Lymph System Tonic

Consider this for children with chronically swollen glands, which may or may not be tender, as well as for children with recurrent sore throats. A healthy lymph system will allow the body to rid itself of infections quickly and effectively. Constipation may also be present

and should be treated as discussed above.

Mix the following tinctures:

cleavers	15 mL
echinacea root	15 mL
calendula blossoms	15 mL
burdock	15 mL

Give 1/4 teaspoon to 1 teaspoon up to three times daily for up to three months

Constipation

The following preparation can be used to alleviate persistent constipation and heat signs during an URI or febrile infection.

Mix together the following:

dandelion root tincture	15 mL
yellow dock root	15 mL
licorice root tincture	7.5 mL
fennel tincture	7.5 mL
vegetable glycerin	15 mL

Give 1/2 tsp 2-3 times daily until relieved.

Cough/Bronchitis

Often a combination of strategies is most effective for cough. When there is dryness and irritation of the respiratory passages, include demulcents; for irritable or hacking cough use antispasmodics. It is generally best not to suppress a cough unless it is unproductive and irritating. Often giving a mucolytic herb in the formula will help to thin the mucus and facilitate expectoration. An expectorant can be included to help this process. Antispasmodics can be used to quiet and facilitate easier expectoration. Antimicrobial herbs can be included for

prolonged cough. Many are also mucolytic, and can thus be included from the onset of cough.

Some improvement will generally be seen in 2-24 hours. Complete resolution will usually be seen in 3-7 days.

• **Sample Formula: Cough Syrup**

The following cough syrup can be given 1 teaspoon to 1 tablespoon as needed:

- angelica root 15 mL
- elecampane 15 mL

Cough	
Strategy	Botanical Choices
<p>Expectorant Tea and dilute tincture can be taken internally as well as used as a gargle or topical application directed at the throat.</p>	<p>Mullein (<i>Verbascum thapsus</i>) (T, dec., tnc)-N Elecampane (<i>Inula helenium</i>) (dec, tnc)-W Coltsfoot * (<i>Tussilago farfara</i>) (T, tnc)-N Angelica (<i>Angelica archangelica</i>) (dec, tnc)-W</p>
<p>Mucolytic While viral sore throat is painful, it is generally self-limiting. However, in the absence of clinical testing, it can be hard to differentiate viral pharyngitis from strep A infection. Therefore, it is beneficial to include antimicrobials, many of which may also possess antiviral activity. Frequent application and internal use is important in strep A, which can often be managed without antibiotic therapy.</p>	<p>Anise seed (<i>Pimpinella anisum</i>) (T, tnc)-N/W Thyme (<i>Thymus vulgaris</i>) (T, tnc)- N/W Ginger root (<i>Zingiber off.</i>) (T)- W</p>
<p>Antispasmodic/ Antitussive</p>	<p>Black cohosh (<i>Cimicifuga racemosa</i>) (tnc)-C Cramp bark (<i>Viburnum opulus</i>) (tnc)-C Anise seed (<i>Pimpinella anisum</i>) (T, tnc)-N/W Thyme (<i>Thymus vulgaris</i>) (T, tnc)-N/W Red clover (<i>Trifolium pratense</i>) (T, dec) N/C Mullein (<i>Verbascum thapsus</i>) (T, dec., tnc)-N Wild cherry bark (<i>Prunus serotina</i>) (dec, syr, tnc)-N Sundew (<i>Drosera rotundifolia</i>)-tnc-C</p>
<p>Antimicrobial</p>	<p>Anise seed (<i>Pimpinella anisum</i>) (T, tnc)- N/W Thyme (<i>Thymus vulgaris</i>) (T, tnc)-N/W Elderberry (<i>Sambucus nigra</i>) (syr; tnc)- N/C Licorice (<i>Glycyrrhiza glabra</i>) (dec, tnc)-N Astragalus (<i>Astragalus membranaceus</i>) (dec, tnc)- N/W Garlic (fr, T, syr, tab, tnc)-W Ginger root (<i>Zingiber off</i>) (T, tnc)-W</p>
<p>Other: external</p>	<p>Eucalyptus or thyme essential oil (stm) Mustard plaster- with deep cough (older children only)</p>

* Both the leaves and flowers contain pyrrolizidine alkaloids (PA), which is known to be associated with venoocclusive liver disease with excessive or prolonged use. Coltsfoot should not be taken during pregnancy and lactation (McGuffin et al 1997), and should not be given to children under 6 years old (Chevallier 1996). Most herbalists consider short-term use of coltsfoot for acute URI quite safe in older children.

dried mullein leaves	15 mL
marshmallow root	15 mL
licorice root	15 mL
thyme	15 mL
anise seed	15 mL
wild cherry bark	7.5 mL
burdock root	7.5 mL
lobelia	7.5 mL
slippery elm bark	7.5 mL

Prepare syrup using either whole herbs and honey or tinctures and glycerin. The demulcent herbs are not as effective in tincture form.

Otitis media

Marked improvement will generally be seen in 4-8 hours. Complete resolution will usually be seen in 1-2 days.

Rhinitis/Sinusitis

Sinusitis can be intractable and may require ongoing and general systemic treatment to improve immunity and reduce inflammation. Allergies and other factors may predispose to chronic sinusitis.

Some improvement will generally be seen in 24-48 hours. Complete resolution will usually be seen in 3-7 days.

Influenza

Treating “flu” is not much different than treating a very bad cold. Typically the fever is high for several days, the musculoskeletal aching can be dramatic, there can be significant chill, and other symptoms of a cold may accompany the condition. Promoting sleep, reducing aches and pains, and dispelling chill can provide the most important relief. It is also essential to maintain adequate hydration.

Diet during upper respiratory illness

At the onset of URI symptoms it is best to simplify the diet—whole grains and steamed vegetables, warm beverages, soups, porridges, and fresh seasonal fruit. During the early stages of the illness don't force the child to eat much if not hungry; anorexia is a natural response to illness. The appetite will return of its own accord. Small amounts of legumes or light meat such as poultry cooked with vegetables in soup (i.e. lentil, chicken, or miso soup), or even the broth from such soups, can be given if the child is hungry and can help to maintain a supply of nutrients needed to fight and heal infection. During convalescence a high quality diet with adequate protein and minerals is important for restoring strength and prevent relapse.

Fluids are essential at all times and should be given frequently throughout the course of the illness. At no time should a sick child go without fluids—dehydration is the greatest danger with fever. If fluids are not

Rhinitis/Sinusitis	
Strategy	Botanical Choices
Anticatarrhal	Plantain (<i>Plantago lanceolata</i>) (T, dec)- N/C Elder flower (<i>Sambucus nigra</i>) (T)-C Thyme (<i>Thymus vulgaris</i>)- (T, tnc)- W Eyebright (<i>Euphrasia spp</i>) (T, tnc)-C Sage (<i>Salvia off</i>) (T, tnc)- W/C
Antimicrobial	Echinacea (<i>Echinacea spp</i>) (tnc)-C Andrographis (tnc, tab)- C Garlic (fr, T, syr, tab)- W Calendula (<i>Calendula off</i>)-(tnc)-C Wild indigo (<i>Baptisia tinctoria</i>) (tnc)-C Goldenseal (<i>Hydrastis canadensis</i>) (tnc, tab)-C
Other: External	Eucalyptus, Thyme, Lavender, Rosemary, Tea tree, and other essential oils should be considered for use in steam inhalation.

Otitis media	
Strategy	Botanical Choices
Analgesic	<p>Use oil in ear* 2-4 times/day depending upon severity, combined with analgesic herbs:</p> <p>Mullein flower (<i>Verbascum thapsus</i>) St. John's wort (<i>Hypericum perforatum</i>) Lobelia (<i>Lobelia inflata</i>)</p> <p>Internally in tincture: Chamomile (<i>Matricaria recutita</i>) Jamaican dogwood (<i>Piscidea piscipula</i>)-C Black cohosh (<i>Cimicifuga racemosa</i>)- C Cramp bark (<i>Virburnum opulus</i>)-C</p>
<p>Anticatarrhal While viral sore throat is painful, it is generally self-limiting. However, in the absence of clinical testing, it can be hard to differentiate viral pharyngitis from strep A infection. Therefore, it is beneficial to include antimicrobials, many of which may also possess antiviral activity. Frequent application and internal use is important in strep A, which can often be managed without antibiotic therapy.</p>	<p>Ginger root (<i>Zingiber off.</i>) (T, tnc)-W Elder flower (<i>Sambucus nigra</i>) (T)-C Garlic (fr, T, syr, tab)- W Thyme (<i>Thymus vulgaris</i>)- (T, tnc)- W</p>
Antimicrobial	<p>Use oil in ear* 2-4 times/day depending upon severity, combined with antimicrobial herbs: Calendula (<i>Calendula off</i>)-(tnc)-C Garlic (fr, T, syr, tab)- W</p> <p>Tincture internally: Echinacea (<i>Echinacea spp</i>) (tnc)-C Andrographis (tnc, tab)- C Wild indigo (<i>Baptisia tinctoria</i>) (tnc)-C Goldthread (<i>Coptis chinensis</i>) (tnc)-C Goldenseal (<i>Hydrastis canadensis</i>) (tnc, tab)-C</p>
<p>* Note: Do not put anything into the ear if there is drainage from the ear or rupture of the tympanic membrane</p>	

tolerated well due to sore throat or nausea, then give in small but frequent portions. Sipping liquid through a straw sometimes helps.

Warm beverages are preferable; teas and broths may be given freely. It is best not to give bottled, pasteurized juices because they are sugar-laden, which can reduce immune activity, and they are virtually devoid of nutrients. However, providing adequate fluids over-rides this concern; if the child is young and will take nothing but juice, provide the freshest juices possible, and dilute

them as much as the child will tolerate. It is better to give warm or room temperature fluids; while cold drinks may feel temporarily soothing to a sore throat or during a fever, traditional wisdom (i.e., TCM) suggests avoiding cold or chilled beverages during illness. This guideline should also be observed between illnesses in children with tendency to recurrent illness.

*Hydrastis Canadensis***References**

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