Respiratory tract infections

Practice points

- Andrographis may reduce multiple symptoms in upper respiratory tract infections (URTIs) (cough, expectoration, nasal discharge, headache, fever and sore throat).
- Pelargonium may reduce symptom severity and duration in acute bronchitis in adults and children and acute sinusitis in adults, and is well tolerated.
- Ivy leaf may be effective for reducing cough and expectoration in adults and children.
- *Echinacea angustifolia* and *Echinacea purpurea* may reduce symptoms of the common cold, but evidence is conflicting.
- Zinc is important for normal immune function. A deficiency may increase risk for infections, and supplementation may reduce common cold incidence and severity.
- Vitamin C is known to be important for immune function. Evidence for benefit in the common cold is mixed, however it may assist some individuals, and is well tolerated.

Description

- Respiratory tract infections (RTIs) can occur anywhere in the respiratory tract (i.e. the nose, throat and lungs). The infection can be caused by bacteria, a virus or even fungi.
- Aetiology of coughs, colds and flu is often viral. Antibiotics only work on infections caused by bacteria, not those caused by viruses.
- RTIs account for three to four million visits to general practitioners (GPs) each year in Australia. And cost taxpayers due to absenteeism and loss of productivity.
- Each year, most children get about five colds, and most adults get two or three.

Management principles

Symptomatic relief is mainstay treatment involving home remedies and over-the-counter (OTC) medicines. However some OTC medicines may be ineffective or unsuitable:

- No benefit and potential harm with OTC cough and cold medications in children.
- Inhaled corticosteroids and oral prednisolone are ineffective in children.
- Pseudoephedrine, phenylephrine, inhaled ipratropium modestly reduce the severity and duration of symptoms for adults.
- Antihistamines, intranasal corticosteroids, codeine are ineffective for cold symptoms in adults.

Complementary medicines

Primary recommendation

**ANDROGRAPHIS (Andrographis paniculata)**

Mechanism of action

- Immunomodulatory
- Antibacterial and antiviral activity noted in vitro
- Antipyretic
- Anti-inflammatory

Research

A randomised, double-blind, placebo-controlled trial in patients with ≥2 common cold symptoms (n=223) found:
- At day 5, treatment decreased cough, expectoration, nasal discharge, headache, fever, sore throat, fatigue and sleep disturbance compared to placebo where symptoms were unchanged or aggravated.
- Overall efficacy over placebo and was 2.1 times higher than placebo (52.7%) (p ≤ 0.05) Systematic reviews have suggested superiority to placebo in alleviating subjective symptoms of URTIs.
- One trial of 107 subjects reported a protective effect against common cold that became evident during the 3rd month.

Dosage and formulation

- 100 mg twice daily of standardised andrographis.
extract providing 60 mg andrographolide per day\textsuperscript{11,13}

**Adverse effects**
- Generally well tolerated in clinical trials. Unpleasant chest sensation, intensified headaches and urticaria have been reported.\textsuperscript{18}
- A number of case reports of hypersensitivity reactions exist\textsuperscript{19}
- Insufficient evidence to determine safety in pregnancy\textsuperscript{11}

**Interactions**
- No interactions reported\textsuperscript{11}
- Inhibition of platelet aggregation observed in vitro, although the clinical effect is uncertain. Suspend use 1 week before high risk surgery\textsuperscript{11}

**PELARGONIUM** (Pelargonium sidoides)

**Mechanism of action**\textsuperscript{11}
- Antibacterial
- Antiadhesive
- Immune enhancement
- Antiviral

**Research**
Randomised, double-blind, placebo-controlled trials indicate pelargonium may significantly improve recovery time and relieve symptoms in acute bronchitis and acute sinusitis:
- In adults with acute bronchitis, two studies (n=592) found after 7 days, pelargonium significantly decreased the Bronchitis Severity Score (BSS) compared with placebo.\textsuperscript{7,8} At day 7, 84.4% of patients were assessed by physicians as completely recovered or with major improvement compared to 30% with placebo\textsuperscript{7}
- In children and adolescents 1-17 years with acute bronchitis, pelargonium significantly decreased the BSS from baseline compared to placebo.\textsuperscript{9} At day 7, 48.5% of the treatment group had returned to kindergarten, school or work, compared to 12.4% of placebo

In 103 adults with acute sinusitis there was a greater reduction in Sinus Severity Score and major symptom improvement at day 7 with pelargonium compared to placebo.\textsuperscript{10} Improvements occurred in the patients’ quality of life and wellbeing and reduced time away from work.

**Dosage and formulation**
Proprietary extract Kaloba® has been the subject of the majority of clinical trials

**Acute Bronchitis**
- **Adults:** 30 drops (1.35 ml) 3 times daily
- **6-12 years:** 20 drops (0.9 ml) 3 times daily
- **2-5 years:** 10 drops (0.45 ml) 3 times daily

**Acute sinusitis**
- **Adults:** 60 drops (2.7 ml) 3 times daily

**Common cold**
- **Adults:** 30 drops (1.35 ml) 3 times daily\textsuperscript{11}

**Adverse effects**
- Mild side effects limited to gastrointestinal symptoms such as nausea, vomiting, diarrhoea or heartburn and rashes. Allergic skin reactions have been report in trials\textsuperscript{11}
- Animal models suggest pelargonium is safe in pregnancy. No human studies\textsuperscript{11}

**Interactions**
- Contains coumarin which may reduce platelet aggregation. Theoretically, concomitant use might increase the effects of some anticoagulant and antiplatelet drugs and increase bleeding risk. Until more is known, use with caution\textsuperscript{12}

**ECHINACEA** (*E. purpurea, E. angustifolia*)

**Mechanism of action**\textsuperscript{11}
- Immunomodulator
- Anti-inflammatory
- Antibacterial
- Antiviral

Due to the wide assortment of constituents found in Echinacea, it has varied pharmacological and clinical uses.\textsuperscript{11}

**Research**
- Clinical studies investigating the use of echinacea in the treatment of URTIs have produced inconsistent results due in part to different plant parts and extracts used and methodological problems.\textsuperscript{20}
- There is some evidence to support the use of extracts of above-ground parts of *E. purpurea* if taken soon after the onset of cold symptoms\textsuperscript{19}
- There is mixed data for prevention of the common cold\textsuperscript{20}

**Dosage and formulation**
Equivalent to 3-10 g/d dried herb\textsuperscript{11}

The cold-pressed juice and ethanolic extract of the aerial parts of *E. purpurea* and the hydroethanolic extracts from the roots of the *E. angustifolia* are the most studied preparation for URTIs.\textsuperscript{11}

**Adverse effects**
- Echinacea is well tolerated. Systematic reviews have found a slight risk of transient, reversible and self-limiting gastrointestinal symptoms and rashes\textsuperscript{11}
- No adverse events associated with use in pregnancy. Insufficient evidence to determine safety in lactation\textsuperscript{11}

**Interactions**
- Theoretical interaction with immunosuppressant medications\textsuperscript{21}
REFERENCES
11. Natural Medicines 2016. Echinacea Professional Monograph
23. Prasad A, Beck F, Bao B, Fitzgerald J, Snell D, Flach J. Vitamin C: A 2013 Cochrane review found mixed evidence regarding the effectiveness of vitamin C in reducing symptoms and severity of the common cold. In one trial, regular supplementation with > 0.2 g/day vitamin C reduced common cold duration by 8% in adults and by 14% in children; 1-2 g/day vitamin C reduced common cold duration by 18% in children. Overall, regular use of vitamin C was not effective, however, taking into consideration the low cost and safety profile of vitamin C and its modest but consistent effect on the common cold duration and severity, the authors suggest it may it be worthwhile for common cold patients to test on an individual basis.