Bronchitis

Bronchitis is an inflammation of the trachea and bronchial tree. Bronchitis can be either acute or chronic. Acute bronchitis may be caused by viral or bacterial infections and is often preceded by an upper respiratory tract infection. In addition, acute bronchitis can result from irritation of the mucous membranes by environmental fumes, acids, solvents, or tobacco smoke. Bronchitis usually begins with a dry, non-productive cough. After a few hours or days, the cough may become more frequent and produce mucus. A secondary bacterial infection may occur, in which the sputum (bronchial secretions) may contain pus. People whose cough and/or fever continues for more than seven days should visit a medical practitioner.

Chronic bronchitis may result from prolonged exposure to bronchial irritants. Cigarette smoking, environmental toxins, and inhalant allergens can all cause chronic irritation of the bronchi. The cells lining the bronchi produce excess mucus in response to the chronic irritation; this excess mucus production can lead to a chronic, productive cough.

Bronchitis can be particularly dangerous in the elderly and in people with compromised immune systems. These individuals should see a doctor if they develop a respiratory infection.

Lifestyle changes that may be helpful: Breast-feeding provides important nutrients to an infant and improves the functioning of the immune system. Studies have shown that breast-feeding prevents the development of lower respiratory tract infections during infancy.\(^1\)\(^2\) Whether that protective effect persists in adulthood is not known. Exposure to environmental chemicals, including passive smoke, can increase the incidence of respiratory illness in children.\(^3\)

Chronic bronchitis is frequently associated with smoking and/or environmental exposure to chemicals or allergens. These exposures should be avoided to allow the cells of the bronchi to recover from chronic irritation and to decrease the burden on the immune system.

Dietary changes that may be helpful: Dietary factors may influence both inflammatory activity and antioxidant status in the body. Increased inflammation and decreased antioxidant activity each may lead to an increased incidence of chronic diseases, such as chronic bronchitis. People suffering from chronic bronchitis may experience an improvement in symptoms when

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consuming a diet high in anti-inflammatory fatty acids, such as those found in fish.

In a double blind study of thirty-eight children with recurrent respiratory tract infections, a daily essential-fatty acid supplement (containing 855 mg of alpha linolenic acid and 596 mg of linoleic acid) reduced both the number and the duration of recurrences. In individuals with bronchitis, lipids in the lung tissue may undergo oxidation damage (also called free-radical damage), particularly when the bronchitis is a result of exposure to environmental toxins or cigarette smoke.

A diet high in antioxidants may protect against the free radical-damaging effect of these toxins. Studies comparing different populations have shown that increasing fruit and vegetable consumption may reduce the risk of developing chronic bronchitis.

Food and environmental allergies may be triggering factors in some cases of chronic bronchitis. Some doctors of natural medicine believe that dairy products can increase mucus production, and that people suffering from either acute or chronic bronchitis should therefore limit their intake of dairy products. Ingestion of simple sugars (such as sucrose or fructose) can lead to suppression of immune function; therefore, some doctors of natural medicine believe simple sugars should be avoided during illness.

**Nutritional supplements that may be helpful:** In a study of elderly patients hospitalized with acute bronchitis, those who were given 200 mg per day of vitamin C improved to a significantly greater extent, compared with those who were given a placebo. The common cold may lead to bronchitis in susceptible individuals. A double blind study has shown that vitamin C (500 mg per day preventively, 1,500 mg on the first day of a cold, and 1,000 mg per day for the next four days) can decrease the severity and duration of the common cold in otherwise healthy individuals.

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Vitamin C and vitamin E may prevent oxidative damage to the lung lipids by environmental pollution and cigarette smoke exposure. It has been suggested that amounts in excess of the RDA (recommended dietary allowance) are necessary to protect against the air pollution levels currently present in North America.\(^\text{11}\)

In a double blind study, individuals with chronic bronchitis who received N-acetyl cysteine (NAC; 600 mg a day, three days a week by mouth) had a significant reduction in the number of exacerbations of their illness.\(^\text{12}\) Smokers have also been found to benefit from taking NAC.\(^\text{13}\) In addition to helping break up mucus, NAC may reduce the elevated bacterial counts that are often seen in the lungs of smokers with chronic bronchitis.\(^\text{14}\)

In another study, people with chronic bronchitis who took NAC showed an improved ability to expectorate and a reduction in cough severity.\(^\text{15}\) These benefits may result from NAC’s capacity to reduce the viscosity (thickness) of sputum.\(^\text{16}\)

Vitamin A status is low in children with measles,\(^\text{17}\) an infection that can result in pneumonia or other respiratory complications. Supplementation with vitamin A has been found to decrease morbidity and mortality from measles.\(^\text{18}\) In another study, supplementing with vitamin A reduced the number of respiratory tract infections in children who were prone to such infections;\(^\text{19}\) however, other research found that vitamin A did not exert a preventive effect.\(^\text{20}\) Large amounts of vitamin A were not found to benefit children with acute respiratory


infections.\textsuperscript{21}

The thymus gland plays a number of important roles in the functioning of the immune system. An extract from calf thymus gland known as thymomodulin has been found, in a double blind study, to decrease the frequency of respiratory infections in children who were prone to such infections.\textsuperscript{22}

**Herbs that may be helpful:** Practitioners of herbal medicine have used many herbs to help fight respiratory tract infections and bronchitis. The following herbs have been used traditionally for these ailments, although scientific studies have not yet confirmed their effectiveness:

*Pimpinella anisum* (anise) has been found to relieve coughs and bronchitis. This herb appears to loosen bronchial secretions, making it easier to expectorate. This effect may be due to the chemical constituents (creosol and alphapinene) found in this plant.

Horehound has expectorant properties, possibly due to the presence of a diterpene lactone in the plant known as marrubiin.

*Asclepias tuberosa* (pleurisy root) is an expectorant and is thought to be helpful against all types of respiratory infections.

Lobelia contains many active alkaloids, of which lobeline is considered the most active. Very small amounts of this herb are considered helpful as an antispasmodic and antitussive agent. Anti-inflammatory properties of the herb have been demonstrated, which may be useful, since bronchitis is associated with inflammation in the bronchi.\textsuperscript{23}

Elecampane has been used to treat coughs associated with bronchitis, asthma, and whooping cough. Although there have been no modern clinical studies with this herb, its use for these indications is based on its high content of soothing mucilage as inulin and alantalactone.

The following herbs have undergone scientific study and are found to be beneficial in a variety of ailments, including colds and flu, which often precede acute bronchitis. One or a combination of these herbs, depending on the cause of the bronchitis and the symptoms experienced, may assist in preventing or relieving acute bronchitis:

Licorice acts as an anti-inflammatory and antitussive agent. These properties


may be due to the presence of 18-beta-glycyrhrinic acid.\textsuperscript{24}

Thyme contains an essential oil (thymol) and certain flavonoids. This plant has anti-spasmodic and expectorant properties and antibacterial actions, and it is considered helpful in cases of bronchitis.\textsuperscript{25}

\textit{Hederae helicis folium} (ivy leaf) can also be used against chronic inflammatory bronchial conditions.\textsuperscript{26}

Echinacea is widely used by herbalists for individuals with acute respiratory infections. This herb stimulates the immune system in several different ways, such as enhancing macrophage function and increasing T-cell response.\textsuperscript{27}

Echinacea also contains a natural antibiotic compound known as echinacoside.\textsuperscript{28}

This herb may therefore be useful for preventing a cold, flu, or viral bronchitis from progressing to a secondary bacterial infection.

Barberry contains numerous alkaloids, of which berberine is considered of primary significance. Berberine appears to have both antibiotic\textsuperscript{29} \textsuperscript{30} \textsuperscript{31} and immune-stimulating effects.\textsuperscript{32}

Goldenseal has actions similar to those of barberry. Goldenseal contains berberine and hydrastine, which are considered the primary active constituents. Although this herb has not been tested specifically in people with bronchitis, the alkaloids present in goldenseal appear to have broad-spectrum antibiotic activity.\textsuperscript{33}

Garlic has been shown to have mild antimicrobial activity and therefore may be


of value for people with bronchitis.$^{34}$

Elderberry has been found to have antiviral activity against influenza B virus, and to reduce the duration of illness in individuals with the flu.$^{35}$

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