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The Common Cold

Sneezing, scratchy throat, runny nose--everyone knows the first signs of a cold, probably the most common illness known. Although the common cold is usually mild, with symptoms lasting 1-2 weeks, it is a leading cause of doctor visits and of school absenteeism.

According to some estimates, in the course of a year, individuals in the United States suffer 1 billion colds. Colds are most prevalent among children, and seem to be related to children's relative lack of resistance to infection and to contacts with other children in day-care centers and schools.

It is normal for children have about six to ten colds a year. In families with children in school, the number of colds per child can be as high as 12 a year. Adults average about two to four colds a year.. Women, especially those aged 20 to 30 years, have more colds than men, possibly because of their closer contact with children.

The Causes

The Viruses: More than 200 different viruses are known to cause the symptoms of the common cold. Some, such as the rhinoviruses, rarely produce serious illnesses. Others, such as parainfluenza and respiratory syncytial virus, produce mild infections in adults but can cause severe lower respiratory infections in young children.

The same viruses that produce colds in adults appear to cause colds in children. The relative importance of various viruses in pediatric colds, however, is unclear because of the difficulty in isolating the precise cause of symptoms in studies of children with colds.

Rhinoviruses (from the Greek rhin, meaning "nose") cause an estimated 30 to 35 percent of all adult colds, and are most active in early fall, spring and summer. More than 110 distinct rhinovirus types have been identified. These agents grow best at temperatures of about 91 degrees Fahrenheit (F)], the temperature of the human nasal mucosa.

Coronaviruses are believed to cause a large percentage of all adult colds. They induce colds primarily in the winter and early spring. Of the more than 30 isolated strains, three or four infect humans. The importance of coronaviruses as causative agents is hard to assess because, unlike rhinoviruses, they are difficult to grow in the laboratory.

Does Cold Weather Cause A Cold?

Although many people are convinced that a cold results from exposure to cold weather, or from getting chilled or overheated, studies have found that these conditions have little or no effect on the development or severity of a cold. Nor is susceptibility apparently related to factors such as exercise, diet, or enlarged tonsils or adenoids.

On the other hand, research suggests that psychological stress, allergic disorders affecting the nasal passages or pharynx (throat), and menstrual cycles may have an impact on a person's susceptibility to colds.

The Cold Season

In the United States, most colds occur during the fall and winter. Beginning in late August or early September, the incidence of colds increases slowly for a few weeks and remains high until May, when it declines. The seasonal variation may relate to the opening of schools and to cold weather, which prompt children to spend more time indoors and increase the chances that viruses will spread from person to person.

Seasonal changes in relative humidity also may affect the prevalence of colds. The most common cold-causing viruses survive better when humidity is low (the colder months of the year). Cold weather also may make the nasal passage lining drier and more vulnerable to viral infection.

Cold Symptoms

Symptoms of the common cold usually begin two to three days after exposure to a virus and include nasal discharge, blockage of nasal breathing, swelling of the sinus membranes, sneezing, sore throat, cough, and headache. In infants and young children, a fever over 101 ° F is not unusual. Fever may last 1-4 days. Cold symptoms can last from two to 21 days. If symptoms occur often or last much longer than three weeks, these symptoms may be the result of an allergy rather than a cold.

Colds occasionally can lead to secondary bacterial infections of the middle ear (ear infections) or sinuses (sinusitis), requiring treatment with antibiotics. High fever, swollen glands, severe facial pain in the sinuses, or a cough that lasts longer than 10 days, may indicate an illness that requires treatment with an antibiotic.

How Cold Viruses Cause Disease

Viruses cause infection by overcoming the body's complex defense system. The body's first line of defense is mucus, produced by the cells in the nose and throat. Mucus traps the material we inhale: pollen, dust, bacteria and viruses. When a virus gets through the mucus and enters the body, it becomes capable of spreading this virus to other parts of the body.

Cold symptoms: the body fights back. Cold symptoms are the body's immune system responding to the viral invasion. Virus-infected cells in the nose send out signals that bring special white blood cells to the site of the infection. These white cells release chemicals called kinins. These chemicals lead to the symptoms of the common cold by causing swelling and inflammation of the nasal membranes, leakage of proteins and fluid from capillaries and lymph vessels, and the increased production of mucus.

How Colds are Spread

Depending on the virus type, any or all of the following routes of transmission may be common:

- Touching infectious respiratory secretions on skin and on environmental surfaces and then touching the eyes or nose.
- Inhaling relatively large particles of respiratory secretions transported briefly in the air.
- Inhaling droplet nuclei: smaller infectious particles suspended in the air for long periods of time.

Studies suggest a person is most likely to transmit rhinoviruses in the second to fourth day of infection, when the amount of virus in nasal secretions is highest.

Prevention

- Handwashing is the simplest and most effective way to keep from getting rhinovirus colds.
- Not touching the nose or eyes is another.
- Individuals with colds should always sneeze or cough into a facial tissue, and promptly throw it away. If possible, one should avoid close, prolonged exposure to persons who have colds.
- Because rhinoviruses can survive up to three hours outside the nasal passages on inanimate objects and skin, cleaning environmental surfaces with a virus-killing disinfectant might help prevent spread of infection.

A Cold Vaccine?

The development of a vaccine that could prevent the common cold has been difficult to develop because there are so many different cold viruses. Each virus carries its own specific antigens. These antigens are substances that trigger the body to form specific antibodies that can fight off the virus. It has been shown that changes have occurred in the common cold virus antigens and this has made it even more difficult to develop an effective vaccine.

Treatment

There is no cure for the common cold. Only symptomatic treatment is available for uncomplicated cases of the common cold: bed rest, plenty of fluids, gargling with warm salt water, petroleum jelly for a raw nose, and acetaminophen (Tylenol) or ibuprofen (Motrin or Advil) to relieve headache or fever.

A word of caution: several studies have linked the use of aspirin to the development of Reye's syndrome in children recovering from influenza or chickenpox. Reye's syndrome is a rare but serious illness that usually occurs in children between the ages of three and 12 years. It can affect all organs of the body, but most often injures the brain and liver. While most children who survive an episode of Reye's syndrome do not suffer any lasting consequences, the illness can lead to permanent brain damage or death. The American Academy of Pediatrics recommends children and teenagers not be given aspirin or any medications containing aspirin when they have any viral illness, particularly chickenpox or influenza.

Nonprescription cold remedies, including decongestants and cough suppressants, may relieve some cold symptoms but will not prevent, cure, or even shorten the duration of illness. Some of these medicines may cause side effects, such as drowsiness, dizziness, insomnia, or upset stomach. These side effects can be eliminated when the medicine is either decreased or stopped.

Antihistamines (Benadryl or Chlorpheniramine) may have some effect in relieving inflammatory

responses such as runny nose and watery eyes that are commonly associated with colds.

Decongestants (Sudafed-pseudoephedrine) may help to relieve nasal congestion, sniffing and postnasal drip.

Antibiotics do not kill viruses. These prescription drugs should be used only for bacterial infections, such as sinusitis or ear infections, that may develop as secondary infections to the cold. The use of antibiotics "just in case" will not prevent secondary bacterial infections.

Does Vitamin C Have A Role?

Many people are convinced that taking large quantities of vitamin C will prevent colds or relieve symptoms. To test this theory, several large-scale, controlled studies involving children and adults have been conducted. To date, these studies have not shown that large doses of vitamin C prevent colds.

Taking vitamin C over long periods of time and in large amounts, may be harmful. Too much vitamin C can cause severe diarrhea, a particular danger for elderly people and small children. In addition, too much vitamin C distorts results of tests commonly used to measure the amount of glucose in urine and blood. Combining oral anticoagulant drugs and excessive amounts of vitamin C can produce abnormal results in blood-clotting tests.

Inhaling steam also has been proposed as a treatment of colds on the assumption that increasing the temperature inside the nose inhibits rhinovirus replication. Recent studies found that this approach had no effect on the symptoms or amount of viral shedding in individuals with rhinovirus colds. But steam may temporarily relieve symptoms of congestion associated with colds.

Alpha-interferon has been studied extensively for the treatment of the common cold. Investigators have shown interferon, given in daily doses by nasal spray, can prevent infection and illness. Interferon, however, causes unacceptable side effects such as nosebleeds and does not appear useful in treating established colds. Most cold researchers are concentrating on other approaches to combating cold viruses.

The Outlook

Thanks to basic research, scientists know more about the rhinovirus than almost any other virus, and have powerful new tools for developing antiviral drugs. Although the common cold may never be uncommon, further investigations offer the hope of reducing the huge burden of this universal problem.

*Adapted from: Office of Communications and Public Liaison
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