

Runny nose and productive coughing

Upper Respiratory Tract Infection (URTI) and Acute Bronchitis (Merck Manual)

URTI

Children develop on average six viral respiratory tract infections each year. Viral respiratory tract infections include the common cold and influenza. Doctors often refer to these as upper respiratory infections (URIs), because they produce symptoms mainly in the nose and throat. In small children, viruses also commonly cause infections of the lower respiratory tract—the windpipe, airways, and lungs. These infections include croup, bronchiolitis, and pneumonia. Children sometimes have infections involving both the upper and lower respiratory tracts.

In children, rhinoviruses, influenza viruses (during annual winter epidemics), parainfluenza viruses, respiratory syncytial virus (RSV), enteroviruses, and certain strains of adenovirus are the main causes of viral respiratory infections.

Most often, viral respiratory tract infections spread when children's hands come into contact with nasal secretions from an infected person. These secretions contain viruses. When the children touch their mouth, nose, or eyes, the viruses gain entry and produce a new infection. Less often, infections spread when children breathe air containing droplets that were coughed or sneezed out by an infected person. For various reasons, nasal or respiratory secretions from children with viral respiratory tract infections contain more viruses than those from infected adults. This increased output of viruses, along with typically lesser attention to hygiene, makes children more likely to spread their infection to others. The possibility of transmission is further enhanced when many children are gathered together, such as in child care centers and schools. Contrary to what people may think, other factors, such as becoming chilled, wet, or tired, do not cause colds or increase a child's susceptibility to infection.

Symptoms and Complications

When viruses invade cells of the respiratory tract, they trigger inflammation and production of mucus. This situation leads to nasal congestion, a runny nose, scratchy throat, and cough, which may last up to 14 days. Fever, with a temperature as high as

101 to 102° F (about 38.3 to 38.9° C), is common. The child's temperature may even rise to 104° F (40° C). Other typical symptoms in children include decreased appetite, lethargy, and a general feeling of illness (malaise). Headaches and body aches develop, particularly with influenza. Infants and young children are usually not able to communicate their specific symptoms and just appear cranky and uncomfortable.

Because newborns and young infants prefer to breathe through their nose, even moderate nasal congestion can create difficulty breathing. Nasal congestion leads to feeding problems as well, because infants cannot breathe while suckling from the breast or bottle. Because infants are unable to spit out mucus that they cough up, they often gag and choke.

The small airways of young children can be significantly narrowed by inflammation and mucus, making breathing difficult. Children breathe rapidly and may develop a high-pitched noise heard on breathing out (wheezing) or a similar noise heard on breathing in (stridor). Severe airway narrowing may cause children to gasp for breath and turn blue (cyanosis). Such airway problems are most common with infection caused by parainfluenza viruses and RSV. Affected children need to be seen urgently by a doctor.

Some children with a viral respiratory tract infection also develop an infection of the middle ear (otitis media) or the lung tissue (pneumonia). Otitis media and pneumonia may be caused by the virus itself or by a bacterial infection that develops because the inflammation caused by the virus makes tissue more susceptible to invasion by other germs. In children with asthma, respiratory tract infections often lead to an asthma attack.

Diagnosis

Doctors and parents recognize respiratory tract infections by their typical symptoms. Generally, otherwise healthy children with mild upper respiratory tract symptoms do not need to see a doctor unless they have trouble breathing, are not drinking, or have a fever for more than a day or two. X-rays of the neck and chest may be taken in children who have difficulty breathing, stridor, wheezing, or audible lung congestion. Blood tests and tests of respiratory secretions are rarely helpful.

Acute Bronchitis

Acute bronchitis is inflammation of the upper airways, commonly following a URI. The cause is usually a viral infection though it is sometimes a bacterial infection; the pathogen is rarely identified. The most common symptom is cough with or without

fever and/or sputum production. In patients with COPD, hemoptysis, burning chest pain, and hypoxemia may also occur. Diagnosis is clinical. Treatment is supportive; antibiotics are necessary only for patients with chronic lung disease. Prognosis is excellent in patients without lung disease, but in patients with COPD, acute respiratory failure may result.

Acute bronchitis is frequently a component of a URI caused by rhinovirus, parainfluenza, influenza A or B, respiratory syncytial virus, coronavirus, or other viral infection. Less common causes may be *Mycoplasma pneumoniae*, *Bordetella pertussis*, and *Chlamydia pneumoniae*. Patients at risk include those who smoke and those with COPD and other diseases that impair bronchial clearance mechanisms, such as cystic fibrosis or conditions leading to bronchiectasis.

Symptoms, Signs, and Diagnosis

Symptoms are a nonproductive or minimally productive cough accompanied or preceded by URI symptoms. Subjective dyspnea results from chest pain with breathing, not hypoxia, except in those with underlying lung disease. Signs are often absent but may include scattered rhonchi and wheezing. Sputum may be clear, purulent, or, occasionally, bloody. Sputum characteristics do not correspond with a particular etiology (ie, viral vs bacterial).

Diagnosis is based on clinical presentation. Chest x-ray is only necessary if fever, dyspnea, or other symptoms and signs suggest pneumonia. Sputum gram stain and culture have no role.