



## RSV

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The use of this acronym to describe the wheezy respiratory illness that many families know and respect is itself an inaccuracy that deserves comment. RSV (Respiratory Syncytial Virus) is a common contagious respiratory virus that infects all ages, produces the illness better known as bronchiolitis (not bronchitis) in infants and young children, and can be the source of a significant illness with potential for a fatal outcome in the very young or the very old, especially if that individual is living at the margin of respiratory health.

Bronchiolitis, by definition, is an infection of the smallest airways (bronchioles) and the air sacs (alveoli) where, at the microscopic level, oxygen and carbon dioxide exchange with the blood takes place in the lungs. The illness is caused by a handful of viruses, and the habit of referring to bronchiolitis as RSV ignores the important reality that the absence of an infection caused by RSV does not mean a baby is spared the potentially serious illness of bronchiolitis. Rather, it means that a baby with bronchiolitis, who is not infected with RSV, is likely infected with one of the other similar viral illness. This can be important because in an office, clinic or emergency room setting, if the doctor in charge of the care of the patient fails to mention that the baby with a negative RSV test is not necessarily out of the woods, an oversight has occurred.

A gentle majority of bronchiolitis (perhaps sixty percent) is caused by RSV and the remainder by other viral agents like metapneumovirus, bocavirus, adenovirus, influenza, parainfluenza and rhinovirus to mention some of the others. RSV gets most of the attention because at the bedside many patients will have a rapid antigen detection test done (much like a pregnancy test) that can yield a result in minutes. Though an antigen test exists to look for most of the viruses that produce bronchiolitis, only RSV can be searched for with a truly rapid test that is widely available. The antigen detection test to look for most of the viruses that produce bronchiolitis as a single "panel of tests" is not as rapid as the bedside RSV test (results available in hours to days as opposed to minutes), and though considerably more sensitive than the bedside RSV tests in wide use, requires technology that generally increases expense and limits its availability to the hospital or largest commercial / reference labs.



So the doctors and the patients have sometimes become lazy and accept the shortcut of referring to bronchiolitis as RSV. Though RSV causes much of the most serious cases of bronchiolitis, case-by-case exceptions do occur where the most critically ill of patients is infected by one of the non-RSV viruses. As a parent, knowing all this, you won't now likely be misled into a false sense of relief if a doctor says the baby has a respiratory illness linked to some virus other than RSV. Instead you'll understand that the bedside test is not the most accurate test and a falsely negative result may occur in a baby who truly has RSV. You will also remember that the other viruses do not at the present time have a rapid antigen detection test that can be routinely done at the bedside.

So, you'll need to know more about bronchiolitis than just 'is my test positive or negative for RSV'. For all the reasons mentioned above, knowing the results of the test for RSV may be far less important than what follows next. Bronchiolitis (or if you prefer, RSV), is for babies and young children in commercial daycare centers and to a somewhat lesser extent, home daycare, church nursery, and mother's day out, where group care of babies and children takes place, so common an illness as to occur nearly every year in every infant and young child. As children age and some measure of personal hygiene begins to set in, spread is more limited and the illness can become less common than an every year event. Equally confounding is the reality that with the passage of years, acquired immunity to the viral agents producing bronchiolitis from prior years' illnesses and therefore attenuated (milder) symptoms makes it such that the illness is difficult to recognize as anything more than a "cold".

So if your baby develops bronchiolitis, expect an illness that begins with congestion and mostly clear runny nose early on. Over the next day or two, cough will develop and to a varying extent the babies begin to wheeze. The cough will have a characteristic harsh moist character and will become more frequent with time. The wheeze and cough will gradually worsen in some babies for the first four to five days. Usually by this time, the illness will stabilize for another couple of days and then begin to improve slowly over the next week or two. This illness virtually always has a lower respiratory component (infection in the lungs) so the duration of the illness will typically exceed two weeks from start to finish by a few days. Fever is not always present and when it is, it is often mild. Bronchiolitis can be a severe respiratory illness requiring hospitalization. Most of this burden is thrust on the infant population. The good news, if there is some, is that hospitalization is a bit less common than one percent of the overall infected population.



The infant who's headed for trouble will begin to breathe faster and most of the time will show an increasing effort to perform each breath. The healthy one year old will have a sleeping (resting) respiratory rate of about thirty breath cycles per minute. Each cycle includes one breath in and one out. You should practice counting and keep record of the number of breath cycles per minute. If the breath cycles per minute rise beyond fifty breaths per minute, respiratory compromise is sufficient to be seen or to be in a conversation with a resource familiar with children's respiratory care. Severely ill infants can push the breath rate beyond sixty breaths per minute. The work of the chest to draw in a breath will increase with worsening disease and as the baby breathes in, the skin between / above and below the ribs may suck in between the ribs. With worsening distress, the baby may flare nostrils and may grunt with exhaling. These babies are critically ill and emergent care is imperative. As the respiratory rate rises, the ability to suckle or drink and swallow may be impaired and a reduction in liquid intake may result. This too can become an issue of evolving dehydration. With rising respiratory rates and diminished oral intake and urine output, seeking pediatric respiratory care would be reasonable. If you're concerned as a parent and you're seeing signs of worsening respiratory distress, we'd much prefer to see a baby early rather than late in the progress toward respiratory distress.

This is an illness that deserves respect, as it remains one of the leading causes of infant and young child hospitalization. Hospitalized infants often require oxygen supplementation, intravenous fluids for hydration and respiratory medications to help open and stabilize the airways. Most hospital stays are only for a few days. Even today, for an illness as common as this, there remains no active immunization for this disease. Despite efforts to develop a vaccine, progress has been undeniably slow and no product is near release. For the most vulnerable premature and at risk infants, a monthly administration of an RSV antibody (Synagis®) is available. The cost is prohibitive and this approach is not expected to become a widespread technique for prevention.