

The Doctor is in

The ABC's of RSV

BY DR. DAVID HILL

Some people hear the letters “RSV” and think Really Soggy Vermicelli or Routinely Squeaky Violinists or even Regrettably Short Vacation. But parents of infants know RSV means something even more frightening than grating fiddlers: Respiratory Syncytial Virus.

Respiratory what?

Respiratory syncytial virus is a member of the Paramyxoviridae family responsible for cold symptoms in older children and adults. But in small children and infants RSV can cause a potentially life-threatening lower respiratory infection called bronchiolitis. Between 75,000 and 125,000 babies are hospitalized each year for RSV, most between two and five months of age. Infections may occur year-round, but the incidence rises dramatically in November and tapers off around April.

How do you get RSV?

RSV is usually transmitted by hand contact. The virus is excreted in mucous and may live for hours on countertops, door-knobs, or grocery cart handles. You touch the virus, then you touch your nose or eyes, and the RSV has a new home. People who contract RSV do make antibodies against the virus which are somewhat protective, but they're not perfect, so it's possible to acquire RSV multiple times in your lifetime (I suspect I've had it multiple times in the last month). The good news is that subsequent infections are usually less severe than the first one. By age two most children test positive for RSV antibody, meaning they've been infected at some point.

So what exactly does it do?

For the first two to eight days, nothing (that's the incubation period). But RSV rarely remains asymptomatic. Symptoms always start in the upper airway, with nasal congestion, cough, and runny nose. RSV frequently causes middle ear infections (otitis media) In many patients that's where it stops, as a “common cold.” But in half of first-time RSV patients the virus works its way down into the lungs causing a bronchiolitis.

Don't you mean “bronchitis”?

No, it's really the bronchioles, not the bronchi that are affected. If you imagine the airway as an upside-down tree, the trunk is the trachea, which then divides into two large branches, or bronchi. Multiple branchings follow until you reach the air sacs (alveoli). The very smallest tubes are

called the bronchioles, and that's where RSV causes the greatest problem.

Then what's bronchitis?

The term “bronchitis” really lacks a medical definition in children. Bronchial infections in adults (usually smokers) may be bacterial and sometimes respond to antibiotics. In children such infections are almost always viral and antibiotics don't help. Childhood coughs that do respond to antibiotics usually result from sinusitis, pneumonia, or *Bordatella pertussis* infection.

What does RSV do in the lungs?

When the RSV virus infects the lungs the bronchioles produce excess mucous and dead epithelial cells, which block air movement. White blood cells (lymphocytes) move into the area around the bronchioles to fight the infection, and they may contribute to the blockage as well. When you breathe in the bronchioles open up a little, so air gets into the alveoli. But when you breathe out, the bronchioles are compressed, so air gets trapped in the lungs. This condition is called “hyper-expansion”: more air gets into the lungs than can escape. Wheezing is the high-pitched, whistling sound the air makes as it tries to exit the lungs through thousands of narrowed air passages. RSV may also infect the alveoli themselves, causing pneumonia.

How can I tell my child is having breathing problems?

We mentioned wheezing, but wheezing is often very difficult to hear without a stethoscope. A more obvious sign is tachypnea (fast breathing). Infants may breathe as often as sixty times a minute, but usually their respiratory rates are in the thirties or forties. The trick, especially with smaller infants, is to count the breaths for a whole minute, as they'll often alternate short periods of slower and faster breathing. Also, babies who can't breathe can't eat, so poor feeding can be a sign of respiratory distress. Babies may also flare their nostrils or grunt with each breath as they work harder to move air. Sometimes you'll see the skin between the ribs pull inward as they inhale (retractions). You may even notice the infant using his or her abdominal muscles to help force air out of the lungs.

How do you diagnose RSV?

If the history and physical exam suggest RSV, your doctor may use saline drops and a syringe to withdraw some mucous from

the baby's nose. Most labs can analyze this sample for RSV within a couple of hours. Chest x-rays may sometimes be suggestive, but often the x-ray doesn't look nearly as bad as the clinical picture would suggest.

How do you treat RSV?

Therapy for RSV infection remains largely supportive. While wheezing from asthma responds well to bronchodilators (albuterol, levalbuterol, pirbuterol, salmeterol) the wheeze in RSV is by a different mechanism. Bronchodilators are almost always tried, but results are rarely satisfying. Corticosteroids, which work well for asthma, don't improve RSV at all. Antiviral drugs like Ribavirin have been tried, but they don't seem to help. So for now we administer oxygen and IV fluids if needed and monitor breathing until the patient gets better, usually over the course of a few days.

Who is at greatest risk from RSV?

Older children and adults seem to tolerate RSV with few consequences unless they have serious underlying lung or heart disease. Smaller infants are more likely to be hospitalized, and premature babies can be at very high risk depending on how early they are. Immunocompromised patients, such as bone-marrow transplant recipients, can be at very high risk as well.

Is there some way to avoid RSV infection?

Hand washing remains your best bet. Alcohol hand sanitizers seem at least as good, especially when there's an older sibling in the home who attends school or daycare. Premature babies and infants with severe lung or heart disease may receive monthly antibody injections throughout the winter to minimize RSV infection. Hopefully with these precautions you and your children can maintain your Radically Superb Vitality.

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