PARENTS PACK

MONTHLY UPDATES ABOUT VACCINES ACROSS THE LIFESPAN

What is RSV?

December 2022

In recent weeks, a virus known as respiratory syncytial virus, or RSV, has been in the news as pediatric hospitals have been inundated with patients. This has led many to wonder about what RSV is and whether infants are the only ones at risk. So, this month, we thought we would talk about RSV.

Spoiler alert: You should keep reading even if you don't have a young infant in your family because anyone at any age can be severely infected (and reinfected) with RSV.

What is RSV?

Some people may be surprised to find out that RSV is a "cousin" to measles and mumps viruses. All three of these viruses, among others, belong to a family known as *Paramyxoviridae*. However, like cousins are from different siblings in a family, RSV is from a different subgroup than measles and mumps. Where these cousins are similar is that they all have a lipid-based envelope and several proteins, and their genetic code is made from a single strand of ribonucleic acid, or RNA. When they infect a cell, they replicate directly in its cytoplasm, rather than taking control of its nucleus, and rather than breaking open the cell to get out, they push out of the side and envelop themselves in a portion of the lipid surface of the cell that is now altered to include viral proteins. This process is known as budding.

RSV was first isolated in the mid-1950s. It replicates in and destroys cells that line the nose, large breathing tubes (bronchi), small breathing tubes (bronchioles), and lungs. This disruption, coupledwith immune responses that cause inflammation and mucus production, leads to airways that are narrower than usual and filled with an excess accumulation of mucus, debris and fluids.

Unlike its measles and mumps cousins, RSV virus does not typically infect the blood or travel to other parts of the body. As a result, symptoms tend to be limited to the respiratory tract and can include:

- Coughing
- Sneezing
- Runny nose
- Infection of the larger airways (bronchitis), smaller airways (bronchiolitis) or air sacs (pneumonia)
- Infection of the voice box (croup)
- Wheezing
- Fast, shallow breathing
- Low levels of blood oxygenation
- Shortness of breath
- Worsening of pre-existing lung conditions, such as asthma

Trivia Corner

Why is separating, spacing out or withholding some vaccines detrimental?

a) Infants will be susceptible to disease for longer periods of time

b) It can increase the amount of stress a child may experience if they must return to the doctor more frequently than they would if the recommended vaccine schedule was followed

c) There is an increased potential for administration errors

d) All of the these

Some people will also develop fever and may experience lack of energy or loss of appetite due to the struggle to breathe amid the excess fluids and coughing. Ear infections are also common during or shortly following infection.

Abnormalities in lung function, such as wheezing, recurrent cough, or asthma, can persist for years following an RSV infection.

How does RSV spread?

RSV spreads through respiratory secretions from close contact with infected people and from contaminated objects, such as when a person touches an object and then touches their eyes, nose or mouth. It takes about three to five days after exposure for symptoms to start, and they typically last one to two weeks.

[Continued on next page]

Trivia Answer: *The correct answer is D.* Separating, spacing out or withholding some vaccines can be detrimental because infants will be susceptible to diseases for longer periods of time. The recommended vaccine schedule is designed to make sure that vaccines are given at times that will allow infants and children to be protected when they are most likely to get the diseases. Administration errors, such as giving the wrong vaccine or not allowing enough time between doses, may also occur if vaccines are separated, spaced out or withheld.

Go to **vaccine.chop.edu/trivia** *to play* ***Just the Vax***, the Vaccine Education Center's trivia game, where you can find this question and others like it.

What is RSV? [cont.]

Who gets RSV?

Anyone can get RSV, and people typically experience multiple bouts of RSV throughout their lifetime. For most, they do not realize that they have RSV; instead, they describe having mild, cold-like symptoms. However, three groups are at particular risk from RSV:

Infants and young children — Because of their narrow airways and limited pre-existing protection against this virus, RSV is one of the most common respiratory infections causing young babies to be hospitalized every year. While maternal antibodies may help, the variability in maternal antibody levels, coupled with the still developing infant immune system, leave babies among the most susceptible. It's been estimated that up to 7 of every 10 babies are infected with RSV during the first year of life, and virtually all of them have been infected by the age of 2. Babies infected between 6 weeks and 6 months of age are the most likely to be hospitalized.

Young children are not spared either, as it is estimated that 2 million to 4 million children less than 5 years of age are medically treated for RSV-related infections each year in the U.S. This translates to about 1 of every 38 children being taken to the emergency room and about 1 of every 13 being taken to their doctor.

Reinfections are more likely during the first few years of life and tend to occur more frequently than for other respiratory viruses.

Babies and young children at higher risk for RSV include those who:

- Were born prematurely
- Attend daycare
- Have siblings younger than 5 years of age
- Are hospitalized during RSV season
- Have diseases of the lungs, immune system, or neuromuscular system
- Were born with heart defects

A family history of asthma and exposure to tobacco smoke can also increase a child's risk.

Adults — Adults who work in hospitals or have young children in the home infected with RSV are more likely to be infected; however, those most at risk of severe disease, including hospitalization and death, are those older than 65 years of age. Between 6,000 and 10,000 elderly adults in the U.S. die every year from RSV. Indeed, it is estimated that almost 80% of the annual deaths from RSV in the U.S. occur in this age group. In contrast, in less affluent countries, most deaths occur among pediatric patients.

Those with chronic conditions that increase their risk — Older children and adults with chronic diseases of the lungs or heart and those with immune-compromising conditions are at increased risk for severe disease if infected with RSV.

Is there a vaccine against RSV?

No. Effective vaccines against RSV have been difficult to make. However, it is likely that a vaccine for older adults and pregnant women could be available in the next few years:

- Adult RSV vaccines — August 2022 *Vaccine Update* "In the Journals" article
- Recent update at CDC meeting, including information about the adult vaccine and the antibody treatment for children — November 2022 *Vaccine Update* "Technically Speaking" article

For links to referenced resources, visit the online version of the Feature Article, **bit.ly/3Vlu3mi**.

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