PARENTS PACK

MONTHLY UPDATES ABOUT VACCINES ACROSS THE LIFESPAN

A NEW VACCINE ... AND IT'S FOR ADULTS! FIND OUT MORE ABOUT RSV AND THE VACCINE.

September 2023

Have you started to notice commercials about RSV? Do you know what RSV is? Wondering why you are just seeing these commercials now? These are all good questions, and the short answer is that for the first time ever, we can now prevent a respiratory infection that kills more than 10,000 adults over 65 years of age each year in the U.S.

What is RSV?

Respiratory syncytial virus, or RSV, is an RNA virus that is from the same family of viruses as mumps and measles viruses (*Paramyxoviridae*), albeit each of these viruses represent separate branches of the family tree. RSV causes infection in cells that line the upper and lower respiratory tract, and it is spread through contact with large droplets, like nasal secretions, and from contaminated surfaces, where it can survive for several hours.

RSV tends to occur from late fall through early spring in the U.S., but it can occur at other times of year as well, depending on the climate and other factors. For example, RSV is a year-round virus in some tropical climates, but it only occurs during the rainy season in others. In addition, after the COVID-19 pandemic, when large groups of young children were susceptible due to distancing measures, the seasonality shifted in the U.S.

Only people are infected with RSV; it is not known to infect any types of animals.

Who is at risk of severe disease and why?

RSV infects people of all ages, and people can be reinfected with this virus throughout life. However, two groups are at particular risk for severe disease — young babies and the elderly. The virus can also be more severe for some specific immune-compromised groups (see "Adults, including the elderly" section for more details).

Infants and children

Infants are at the greatest risk from RSV; however, vaccine development has proven difficult. Young infants, particularly those of American Indian or Alaska Native descent and those born prematurely or with chronic lung conditions, cystic fibrosis, heart disease, or impaired immune systems, are particularly susceptible. Like pertussis, RSV causes inflammation of the breathing tubes, making it difficult for babies to breathe given the small size of their airways.

Typically, all infants have been infected with RSV by the age of 2 years. Some children experience only mild cold-like symptoms, while others must be hospitalized for infections of the breathing tubes (bronchiolitis) or the lungs (pneumonia). Sadly, each year, some children die from RSV. RSV is the most common virus to cause ear infections in young children, and RSV infections early in life are also related to recurrent wheezing and reactive airway disease, which cause breathing issues long after the infection has resolved. The relationship between the infection and these long-term effects is not completely understood. However, for all of these reasons, prevention of RSV in infants is an important goal.

Adults, including the elderly

Many adults will have RSV infections that are mild, and because they do not require healthcare services, they don't even realize that they had RSV. Typical symptoms include watery eyes, cough and fever. However, some adults will experience more severe disease. They can develop wheezing or pneumonia, ending up in the hospital or even dying. The risk for severe RSV infection increases with age and is also elevated for younger adults with certain health conditions, such as cancers of the blood, stem cell transplants or lung transplants. These groups of adults are at increased risk for severe RSV due to their aging or compromised immune systems.

How is the RSV vaccine made?

Until 2023, RSV vaccines were not available; however, recently two new RSV vaccines were approved for use in adults. Called Arexvy (produced by Glaxo Smith Kline) and Abrysvo™ (produced by Pfizer), both are made from a single surface protein from the virus (known as protein F). Using genetic engineering, the gene for this protein is added to a mammalian cell line, so that when the cells replicate in the lab, they also produce the RSV protein. The protein is then purified and freeze-dried for shipping. In both cases, a liquid is supplied to resuspend the freeze-dried material prior to vaccination.

The two vaccines differ in a couple of ways. First, RSV exists in two types, called A and B. Abrysvo contains the F protein from both types, whereas Arexvy only contains a single F protein. Importantly, this particular protein is virtually identical across RSV types, and both vaccines contain the same total quantity of F protein (120 micrograms), so this difference is not likely to translate into clinical differences across the vaccines. Second, Arexvy contains an adjuvant, whereas Abrysvo does not. The adjuvant in Arexvy includes monophosphoryl A and QS21, the same combination used in the shingles vaccine. As would be expected, inclusion of the adjuvant resulted in slightly higher rates of protection and slightly higher rates of side effects for Arexvy in clinical trials; however, it will take time to evaluate the relative protection and side effect rates in the general population for both vaccines compared with what was observed in clinical trials.

Both vaccines also contain salts, sugars and polysorbate 80 to stabilize the vaccine. Neither has preservatives, but both may contain very small quantities of protein and DNA from the mammalian cells used to produce the vaccine. These residual amounts are minute and highly fragmented due to the purification process. As such, neither would present safety concerns. No latex is used in the packaging for either vaccine.

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TRIVIA CORNER

What famous author nearly died after intentionally exposing himself to a friend who had measles?

A. Mark Twain

B. Ralph Waldo Emerson

C. Walt Whitman

D. Margaret Fuller

Who should get the RSV vaccine?

The vaccine is approved for use in those 60 years of age and older. Adults in this age group are recommended to discuss their need for the vaccine with a healthcare provider. This recommendation for "shared decision-making" was because not all adults are at equal risk of severe RSV infections. Those at highest risk include people with chronic heart or lung disease or diabetes.

The RSV can be given at the same visit as other vaccines; however, if you can separate them in time, it will help with determining which vaccine might be causing any side effects. The CDC does not express a preference for either version of the RSV vaccine.

Combatting RSV in the future

The two RSV vaccines for adults represent important progress. You may also be hearing about a new product for infants, called Beyfortus, as well as clinical trials of some potential vaccines for expectant moms, which would be given to protect babies in the first months of life. Stay tuned to future *Parents PACK* issues to learn more about these tools for combatting RSV.

Additional resources

- RSV: What is it?, video featuring Dr. Handy
- Dr. Offit discusses Beyfortus™, video
- A Look at Each Vaccine: RSV Vaccine, webpage

For links to resources in the Feature Article, visit *bit.ly/Sept2023FA*.

DR. HANDY'S CORNER – TREATING PNEUMONIA: WHAT TO CONSIDER

Pneumonia is an infection of the lungs caused by a virus or bacteria. In this video, Dr. Lori Handy talks about the causes, symptoms, treatments and prevention of pneumonia.

Watch the video: *bit.ly/pneumonia-treatment*.

NEWS & NOTES

Fall means planning for vaccinations

As summer winds down and schools reopen, we start to think about getting back to routines, watching football games (Go Birds!) and preparing for the holidays. Don't forget to add planning for vaccines to your list! Annual influenza vaccines should be scheduled for the fall, preferably September and October for most people.

The updated recommendations related to COVID-19 vaccinations should be coming in the next few weeks, but we expect that certain high-risk groups will be recommended to get a booster once updated COVID-19 vaccines are available.

And as described above, some older adults can also now take advantage of RSV vaccines. Likewise, some babies will be recommended to get the new monoclonal antibody preparation, called Beyfortus™, to protect them against RSV this winter. Watch for more details about this new tool in a future issue of *Parents PACK*.

A closer Look: Carrying the legacy forward

The greatest vaccine scientist of all time, Dr. Maurice Hilleman, was born on August 30, 1919, as the "Spanish flu" pandemic wound down. To celebrate Dr. Hilleman's birthday and his life's accomplishments, the August issue of *The Hilleman Chronicle*, the Vaccine Education Center's newsletter for science and history enthusiasts, featured an article describing vaccine progress since Dr. Hilleman's death in 2005. As stated by Isaac Newton, "If I have seen farther, it is by standing on the shoulders of giants." In that spirit, we hope you will take a moment to check out the article in memory of and gratitude for Dr. Hilleman and his accomplishments.

- Read the article.
- Sign up for *The Hilleman Chronicle*.

For links, visit News & Notes online, *bit.ly/Sept2023NN*.

TRIVIA ANSWER

The correct answer is A. When Mark Twain was 12 years old, a measles epidemic swept through his town. Feeling like a prisoner in his own house, he decided to visit his friend who was sick with measles. Mark Twain wrote about this experience in "The Turning-Point of My Life."

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.