

# RSV is surging among kids—but scientists have a plan to stop it

New antibody treatments and vaccine candidates promise long-awaited relief from the respiratory virus that's a leading cause of childhood death worldwide.

In recent weeks, children's hospitals across the United States [have raised the alarm](#) that their beds have filled up with young patients struggling to breathe and in dire need of oxygen. This year, the culprit is not coronavirus but respiratory syncytial virus—more commonly known as RSV.

RSV is not a new pathogen. The virus infects some [64 million people a year worldwide](#). But it [poses a particularly high risk to adults over 65 and to children](#), who are more likely to require hospitalization. Globally, RSV causes about [160,000 deaths a year](#)—including [more than 100,000 children under the age of five](#). Still, there isn't a vaccine for the disease or any treatments available for general use.

But solutions are on the way. Experts say that a [monoclonal antibody treatment for RSV](#) could be approved by the end of the year, and a vaccine could be rolled out in time for the 2023 RSV season. (*Why vaccines are critical to keeping diseases at bay.*)

“This could be a huge game changer globally,” says [Keith Klugman](#), director of the pneumonia program at the [Bill & Melinda Gates Foundation](#), which is [funding Pfizer's maternal vaccine candidate](#).

Here's what you need to know about RSV, why cases are so high right now in the U.S., and why experts say these new developments are so promising.

## What is RSV?

[According to the U.S. Centers for Disease Control and Prevention](#), RSV is a respiratory virus that primarily spreads through coughing, sneezing, and

other forms of close contact. It's also seasonal: In the U.S., RSV is at its worst in the winter months. Anyone can catch or spread RSV, but people with healthy immune systems tend to suffer only mild cold-like symptoms.

Older adults with weakened immune systems have a harder time staving off the virus—as do young children, whose still-developing immune systems have never been exposed to the pathogen. They are more likely to have severe RSV infections, which can include symptoms such as dehydration and difficulty breathing.

“RSV was unequivocally the most important cause of serious respiratory disease in infants and young children” before COVID-19 came along, says [Kathleen Neuzil](#), director of the University of Maryland School of Medicine's Center for Vaccine Development and Global Health. Young children are also especially vulnerable because their airways are narrow: Among children younger than one, RSV is the leading cause of bronchiolitis, the inflammation of airways in the lung.

## Why are cases surging?

It's not unusual for the U.S. to see this many cases in an RSV season, but it is a bit unusual to see RSV surging so early in the year. Neuzil suspects that COVID-19 is to blame: “COVID-19 has really wreaked havoc on the seasonality of our respiratory viruses,” she says. Now that many people are no longer regularly wearing masks, [experts hypothesize](#) that the viruses have begun circulating out of season simply because people are more vulnerable to infection after two years of not getting sick.

Neuzil says that it's unclear whether this change is permanent or whether RSV will ultimately revert to its [normal seasonal pattern](#), which begins as early as mid-September but peaks from late December to mid-February. It also remains to be seen whether the current surge represents the peak of this year's RSV season—or whether the worst is yet to come.

## Why don't we already have an RSV vaccine?

Researchers have spent decades attempting to prevent RSV deaths. But an effort to develop a vaccine in the 1960s [was a colossal failure](#)—sickening

children rather than protecting them.

[Bill Gruber](#), senior vice president of vaccine clinical research and development at Pfizer, says it was clear then that the goal was to “attack the business end of the virus,” or the protein that allows the virus to fuse with the membrane of a human lung cell.

But the fundamental breakthrough came in 2013, Gruber says, when scientists discovered they needed to stabilize the viral protein used in the vaccine to keep it in its pre-fusion form. That’s the idea behind most of the treatments currently under development. ([How COVID-19 is changing our expectations for other vaccines.](#))

## What new RSV treatments are in development?

The RSV treatment that’s furthest along in the pipeline is [Nirsevimab](#), a monoclonal antibody developed by AstraZeneca. Given to infants by injection at birth or soon after, Nirsevimab directly delivers RSV antibodies directly to their bloodstreams, allowing their immune systems to neutralize the virus and keep it from replicating.

In March, a study of the phase 3 clinical trial showed a 75 percent efficacy in protecting infants from lower respiratory tract infections severe enough to require medical care. In early October, the World Health Organization’s Strategic Advisory Group of Experts on Immunization (SAGE) reviewed clinical trial data and [reported](#) that regulatory authorization is “imminent.”

Neuzil—a member of SAGE and its RSV vaccine technical advisory group—says it’s possible the U.S. Food and Drug Administration could authorize the treatment by the end of 2022.

## How about RSV vaccines?

There’s a [robust pipeline of RSV vaccine candidates](#) in development, Neuzil says. But the first that’s likely to cross the finish line is Pfizer’s maternal vaccine, which is designed for pregnant people. The idea behind this vaccine is to protect babies before they’re even born by vaccinating the

mother who makes antibodies which then pass to the fetus through the blood.

In April, a [study of phase 2b clinical trials](#) showed that Pfizer's vaccine produced a high level of antibodies, [earning it a Breakthrough Therapy Designation from the FDA](#), meaning that the agency plans to expedite the development and review of the vaccine. Gruber says it's "highly likely" that regulatory officials monitoring the trials will allow Pfizer to wrap them up later this year. Klugman of the Gates Foundation says that FDA approval could come in 2023.

"This is something I've been looking forward to my whole professional life," Gruber says. "We are making the right sort of antibody, so I think we are in a very good position to be successful."

Meanwhile top-line results from Pfizer's phase three trials among older adults [showed an 85 percent efficacy](#). And a slew of other RSV vaccine candidates are not far behind. [Some of these candidates contain adjuvants](#), or substances that increase the immune response, which Neuzil says are not ideal for use during pregnancy.

## **That's great, but how can you protect people now?**

"It's so exciting what we're seeing with the new RSV vaccines and the antibodies, but it's not going to help the babies this winter," Neuzil says. She recommends that people continue to take precautions like masking, particularly if they spend time around newborns or older people who are especially vulnerable to severe RSV.

"We're getting close, but we won't be there this year," she says. "So it's really, really important to be very careful."