

Vaccination against COVID-19 supports a healthy pregnancy by protecting both mother and child

October 14 2021, by Matthew Woodruff



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The CDC issued an [urgent health advisory](#) for those currently pregnant,

planning a pregnancy or breastfeeding on Sept. 29, 2021. The statement reiterated the importance of vaccination in preventing severe illness and death resulting from COVID-19. It also highlighted the wide gap in vaccination rates with pregnant people who are [less than half](#) as likely to have been vaccinated than a member of the [general public](#).

The CDC advisory also brought attention to the widening racial gaps in vaccination during pregnancy, with [less than 16%](#) of Black pregnant females reporting having been vaccinated.

As [an immunologist](#) who has been studying [immune responses to COVID-19](#) since the beginning of the pandemic, I know the reason for the agency's urgency is clear. Pregnancy is a significant risk factor for serious illness and death from COVID-19—both for the mother and the child. Detailed research into pregnancy during the pandemic has shown that mothers who contract COVID-19 are five times more likely to be admitted to an ICU and 22 times more likely to die [than their noninfected counterparts](#).

The same study found that mothers infected with COVID-19 during pregnancy are twice as likely to require ICU care for their newborns, or to lose their children shortly after birth.

As a father of two, with a third expected in December, I understand the intense stress that health decisions can bring on during pregnancy. In dealing with our own high-risk pregnancy, my wife—who is a health care worker—was recently given the go-ahead to receive a Pfizer booster following its recent FDA/CDC approval. Even with high medical competency and [my own expertise as an immunologist](#), I would be lying if I said the decision was an easy one.

Data is hard to listen to when it conflicts with our gut feelings, but that can be when people need it the most. In this case, the data is clear:

COVID-19 poses a significant threat to both the mother and child, and vaccination can help mitigate that risk.

The immunology of pregnancy is complicated

Pregnancy is an immunological tightrope. At the most basic level, a maternal [immune system](#)'s job is to welcome a foreign organism that is consuming considerable resources, and allow it to grow unmolested for months. This doesn't come naturally—to prevent the identification and rejection of a growing fetus as a parasitic invader, maternal immune systems [undergo an overhaul](#) that fundamentally alters their responses to infection in order to support the pregnancy.

But those changes don't shut down immune responses completely. Compromising immune function to a point where infections are allowed to run rampant would not be a successful survival strategy for mother or child.

Instead, a new partnership is struck. The maternal immune systems [selectively chooses](#) not to react to foreign tissues and cells associated with the growing fetus, and instead enters into a [coordinated dance](#). Over the course of nine months, it will guide the attachment of the placenta to the uterine wall, promote growth and development of the fetus and ultimately [initiate labor](#) to kickoff the delivery.

This is complicated work and requires a measure of immuno-zen: An environment of calm and balance is carefully maintained around the uterus. But inflammation—a catch-all term used to describe the physical manifestations of intense immune activation—is a threat to that balance. Researchers have long understood that serious infectious diseases, which frequently trigger intense inflammatory immune responses throughout the body, pose a serious threat to the mother-fetus duo. The list of infectious diseases capable of complicating a pregnancy [is long](#).

So it is not surprising that COVID-19, which can create chaos in normal immune responses through both [runaway inflammation](#) and [misdirected antibody responses](#), has made that list.

Vaccination protects both mother and child

This balancing act that the immune system undergoes during pregnancy is precisely why vaccination is so important. While there is no doubt that [getting a vaccine](#) activates the immune system—that's exactly what it is supposed to do—this mild [immune response](#) to the vaccine is nowhere close to the risks that the pregnancy faces if the mother contracts COVID-19.

When your body meets a harmless lookalike of SARS-CoV-2 in the form of the vaccine, [the immune system is trained](#) to recognize the virus in a safe and controlled environment—without the threat of an actual COVID-19 infection. This way, if you encounter the real virus, your immune system is much more prepared and capable of fending it off. As a result, your immune system will be less likely to need to resort to the high-inflammation, high-risk tactics that it would have to deploy against severe infection.

Even with a vaccine that is not 100% effective due to [waning antibodies](#) or the emergence of the [delta variant](#), studies have shown that the reduction of symptoms associated with partial protection is enough to [lower the risk](#) of poor outcomes in both mother and child.

COVID-19 vaccines protect the baby too

In addition to the maternal protection that vaccines offer, [a new study](#) has revealed that antibodies created in response to COVID-19 vaccination can also be effectively passed to the baby through umbilical

cord blood. This finding is critical because while COVID-19 infections have not been shown to directly infect the fetus in utero, an infection can be passed from mother to child during birth.

In one study, nearly 15% of children [delivered by Cesarean section](#) to COVID-19-infected [mothers](#) tested positive for the virus after birth. In this early stage of life, newborns do not yet possess the ability to produce antibodies effectively on their own. Instead, they are entirely reliant on mom—holding onto antibodies that were shared between them in the blood before birth, and getting new ones transferred through breastmilk.

Medical decisions around pregnancy are hard, and the urge to protect the pregnancy by just leaving it alone is a strong one. It can feel like the small risks associated with vaccination are avoidable—so why take the chance? The problem, of course, is that the virus does not allow you to choose. Opting not to vaccinate is, unfortunately, a choice to roll the dice with a virus that has [killed millions](#) and has led to [catastrophic outcomes](#) for both mother and child.

COVID-19 vaccines have been shown to be [safe and effective during pregnancy](#). And now, research has made it clear that they can be an ally to the maternal immune system, helping it to maintain a healthy and balanced environment for a thriving [pregnancy](#).

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