

# COVID-19 Adolescent Vaccine

## Seven Parental Concerns, Addressed

### The vaccine was not rushed

**Speed does not mean rushed. It meant leveraging a whole lot of smart people, money and decades of previous work to get us a vaccine in nine months. This includes:**

1. Previous research, which started in 2003 with severe acute respiratory syndrome (SARS), which is genetically related to COVID-19
2. Lots of money and resources were made available to help fund scientists around the world
3. Production started before clinical trials were complete because the government financially supported the effort
4. High rates of disease in the community meant we didn't have to wait for a minimum number of COVID-19 cases during clinical trials
5. Over 150,000 people offered to participate in the United States trials

### Adolescents will likely experience side effects

- More than seven million adolescents have been vaccinated
- Mild-to-moderate side effects were experienced. This includes fever, fatigue, headaches, chills, diarrhea and muscle and joint pain
- Worse side effects were experienced with the second dose, in comparison to the first
- Myocarditis, inflammation of the heart, a rare side effect, has been reported among 397 adolescents. Of which, the majority were mild and resolved within days

### The vaccine is effective

- There was 100% effectiveness of the COVID-19 vaccines in clinical trials (16 cases of COVID-19 in placebo and 0 in vaccinated)
- There were no severe cases of COVID-19 during this study
- Research shows the vaccines help avoid long COVID-19, which is the lingering of side effects from the virus. They can last weeks or months past infection dates. The vaccines also help improve symptoms of those already with long COVID-19

### There is a need to become vaccinated

#### COVID-19 in kids can range from mild to severe illness

- As of July 22, over 4.1 million COVID-19 pediatric cases have been reported. The Center for Disease Control and Prevention (CDC) estimates that a more accurate number is almost 27 million
- Hospitalization rates for COVID-19 are higher than the 2009-2010 H1N1 pandemic
- More than 400 pediatric deaths have been reported since the beginning of the pandemic. Although this seems low compared to adults, COVID-19 is now a top ten cause of death for adolescents in the United States
- Mortality is not the only negative outcome. Long COVID-19, or long-lasting side effects of COVID-19, has been reported among kids

### Messenger RNA (mRNA) does not change DNA

**It is biologically impossible for mRNA to alter DNA. In order for an mRNA vaccine to alter someone's DNA, several events would have to occur**

1. mRNA cannot enter the cell nucleus, where DNA lives. mRNA does not have the "secret door code," called the nuclear access signal, that would allow it to enter
2. mRNA can't be converted to DNA. This would require a tool called "reverse transcriptase," which the vaccine doesn't have
3. mRNA cannot insert itself into the DNA. The mRNA would need a tool called "integrase" to do this, which the vaccine does not have

The biotechnology has never been approved by the FDA before. It's not because the past mRNA vaccines for cancer, allergies and SARS have been deemed unsafe. It's because past mRNA vaccines haven't been very effective. mRNA breaks down very quickly, so it needs to be transported by something. Finding that "something" has been a challenge. For COVID-19, scientists found that fat bubbles for COVID-19 work well. These fat bubbles are called lipids.

### Long-term side effects, like infertility, are highly unlikely

**We do not know the long-term effects of mRNA COVID-19 vaccines. However, based on our knowledge of mRNA and the human body, we do not expect long-term side effects**

- Vaccine ingredients are cleared from the body very quickly. mRNA is very fragile and degrades within 72 hours of injection. The "fat bubbles," or lipids, leave within days
- mRNA vaccines are not made up of the actual pathogen. This means that they don't contain weakened, dead or noninfectious parts of a virus
- In the history of vaccines, serious adverse side effects have only popped up in the first two months of receiving the vaccine
- Individuals who got pregnant after receiving the vaccine had no complications from the vaccine

There are anecdotal reports that women's menstrual cycles changed after a COVID-19 vaccine. The body is mounting an immune response and this is likely a side effect, like a fever.

### Previously recovered adolescents still need the vaccine

**The effectiveness of natural immunity is high, but adolescents should still get the vaccine**

- Getting a vaccine, even for people who have already recovered from COVID-19, strengthens your immune response through antibodies and T-cell protection
- The vaccine better protects against variants of concern