

# LONG-TERM SIDE EFFECTS

## What side effects from the COVID-19 vaccine are considered normal or expected?

**Most people will experience mild short-term side effects, such as pain at the injection site.** Vaccines, the COVID-19 vaccine in particular, activate the immune system which then gets to work on creating a blueprint on how to fight and protect the body against infection. While the body is creating this plan, our immune system believes it is fighting an actual virus and this can cause side effects like fever, chills, muscle pain, etc. This is completely normal and may last a day or two [1].

## How do we know the COVID-19 vaccine won't have long-term side effects?

**History!** Billions of people throughout time have been vaccinated and while extremely rare side effects can happen with any vaccine, nearly all these side effects can also occur more seriously through normal infection of a virus. Records show that side effects, if any, occur within 2 months of vaccination [2]. They do **not** develop years after they are used. mRNA, which is the technology used in the Pfizer and Moderna vaccines, degrades in the body naturally after a few days, and the spike protein it creates only stays for a couple weeks [3]. If a severe side effect were to occur, it would be during that time. Only the antibodies your body creates to fight the disease are left behind.

## Should I be worried about other adverse side effects being reported?

**No!** As it stands, millions of people have been vaccinated already, and one vaccine has even received **full FDA approval**. Adverse events can be reported to the Vaccine Adverse Event Reporting System (VAERS), an early warning system designed to provide surveillance of safety concerns related to vaccination. While it's very useful in finding safety signals and finding hypotheses, it's a passive surveillance system. This means anyone can report a case here and it's not verified. In multiple places on the VAERS website you can find warnings like: "The reports may contain information that is incomplete, inaccurate, coincidental, or unverifiable" or "The inclusion of events in VAERS data does not imply causality". VAERS is not comprehensive and certainly not rigorous enough to make sweeping statements about the safety of vaccines [4].

**CITATIONS:**

1. Yale Health. COVID-19 Vaccine Side Effects. Accessed Aug 19, 2021.
2. Children's Hospital of Philadelphia. Long-term Side Effects of COVID-19 Vaccine? What We Know. Feb 04, 2021.
3. Nebraska Medicine. How long do mRNA and spike proteins last in the body? July 02, 2021.
4. Center for Disease Control. Selected Adverse Events Reported after COVID-19 Vaccination. Aug 23, 2021.

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COVID-19 infections, on the other hand, do come with a risk of long-term side effects...

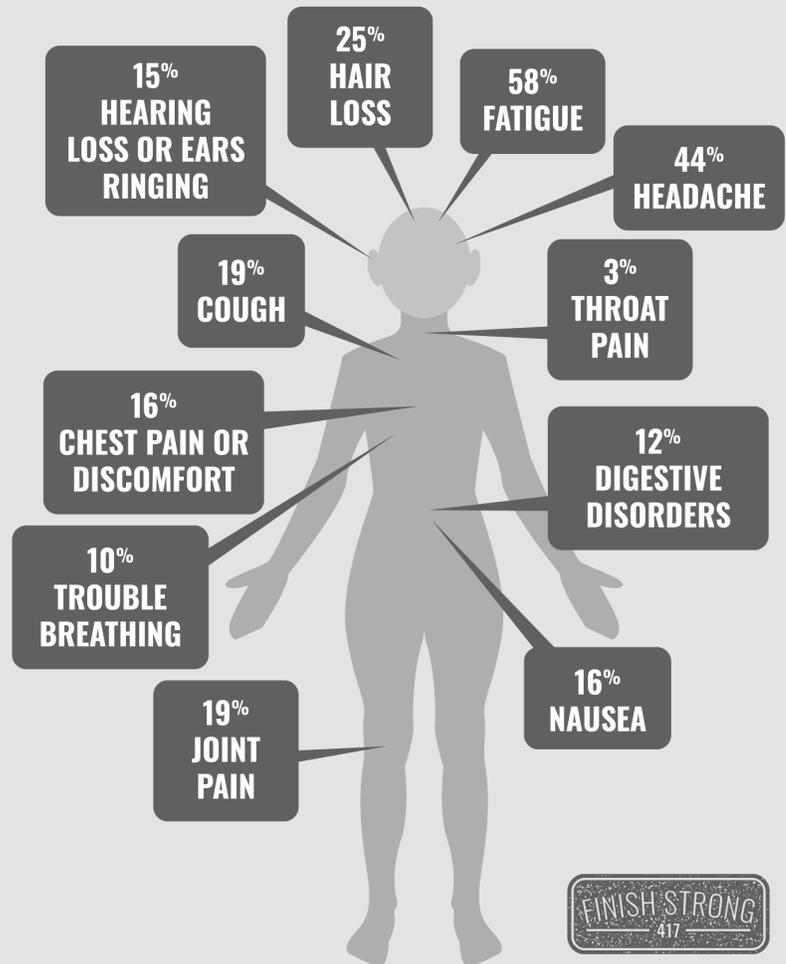
COVID-19 has documented long term side effects and while vaccines do not have prolonged side effects, this virus **does**. Also known as post-COVID-19 syndrome, or "long COVID-19," This virus infects and damages not only the lungs but also the heart, brain and various other bodily systems leading to a variety of long-term side effects [5]. Studies show that **80% of the patients with COVID-19 have long-term symptoms**. A total of 55 long-term symptoms were identified including fatigue, headache, attention disorder and even hair loss. [6].

## LONG-TERM EFFECTS OF COVID-19

80% of COVID-19 survivors experience at least one of the following long-term symptoms.

### NEUROLOGICAL ISSUES

- 27% ATTENTION DISORDER
- 16% MEMORY LOSS
- 13% ANXIETY
- 12% DEPRESSION



(Adapted from: Lopez-Leon et al., 2021)