

# COVID-19 MYTHBUSTING: COMMON FALSEHOODS ABOUT MASKS AND VACCINES

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*Note: This is an update of an explainer originally published in September 2021.*

## Common Mask Myths

### **Myth: Masks do not prevent the transmission of COVID-19.**

**FALSE:** Masks prevent respiratory droplets from being released into the air or from landing on shared surfaces. The fibers in masks are small enough to catch respiratory droplets, which may contain virus particles, to prevent the spread of COVID-19.<sup>1</sup> Multiple studies have confirmed that when masks are worn properly and combined with other recommended mitigation measures, they provide both individual-level protection and community-level protection.<sup>2</sup>

In light of the omicron variant surge, the Centers for Disease Control and Prevention (CDC) in early 2022 updated their recommendations for mask wearing and urged people to use the most protective and best fitting masks that are also comfortable to wear.<sup>3</sup> According to the updated recommendations, well-fitting NIOSH-approved N95 respirators (i.e., specialized filtering masks) provide the most protection at 95% filtration of particles when worn properly, and cloth masks, especially those made with loosely woven cloth, provide the least protection. Surgical masks provide more protection than cloth masks, and KN95 masks add a layer of protection above surgical masks.

### **Myth: Children do not need to wear masks in school because they are unlikely to get or become severely ill from COVID-19.**

**FALSE:** While children were less likely to contract serious COVID-19 infection earlier in the pandemic, the delta and omicron variants have had greater impacts on children because they cause more infections and spread faster than earlier strains of SARS-CoV-2 (the virus which causes COVID-19). The American Academy of Pediatrics and the Children's Hospital Association have reported a significant increase in the number of COVID-19 cases among children during the omicron variant surge.<sup>4</sup> On January 25, the CDC reported high relative increases in emergency department visits and hospitalizations among children during omicron's dominance, which may be due to lower vaccination rates among the 18 and under population.<sup>5</sup>



Children under age 5 are not eligible to receive vaccination against COVID-19, further reinforcing the need for masks.

A study of mask requirements in Michigan school districts during the start of the 2021–22 school year found that by late September 2021, COVID-19 case rates were 62% higher in school districts without mask requirements, compared to those with mask requirements. The average rate of infection was about 45 cases per 100,000 students in school districts with mask requirements compared to 73 cases per 100,000 students in districts without mask requirements.<sup>6</sup> In Arkansas, preliminary results from a study of 233 school districts by the Arkansas Department of Health during the start of the 2021–22 school year showed that compared to school districts without mask requirements, those with mask requirements had 25% fewer COVID-19 cases among children and adults by November 2021.<sup>7</sup>

As of January 27, 2022, there were 20,443 active cases among children 0 to 18 years old in Arkansas, comprising about 26% of all active cases.<sup>8</sup>

**Myth: Wearing a mask will cause a person to become sick with carbon dioxide poisoning.**

FALSE: While it is true that people release carbon dioxide when they exhale, carbon dioxide is a gas made up of very small molecules. These molecules are so small that they easily pass through most mask materials and are unable to build up inside of a person’s mask. Healthcare providers have also been wearing masks for a long time without any carbon dioxide-related issues.<sup>9</sup>

**Myth: Children, particularly young children, are not capable of properly wearing masks consistently to prevent COVID-19 transmission.**

FALSE: Children, including younger children, have proven to be capable of wearing masks during the pandemic. A study from France, which surveyed parents and pediatricians, found that despite some reported inconveniences, children were compliant with mask wearing.<sup>10</sup> Children also learn by following the actions of adults. Adults who demonstrate proper mask wearing, including covering both their nose and mouth, can set a great example for children.<sup>11</sup>

The CDC currently recommends parents choose masks that fit well, are comfortable, and can be worn properly for children age 2 or older.<sup>3</sup> For a more specific mask recommendation, St. Jude Children’s Hospital Research Hospital suggests the use of N-95 white duck-bill masks for that age group. The hospital also recommends that other masks should not be used as they do not provide as much protection.<sup>12</sup>

**Myth: Children’s masks are dirty and likely cause illnesses worse than COVID-19.**

FALSE: While N-95 masks are the gold standard, if cloth masks are used, proper laundering of cloth masks will remove any contagions such as viruses, bacteria, or other substances that may build up on a child’s mask. It is also important to ensure that children have a clean mask to wear every day. Sending an extra mask with your child to school can also help in the event a mask becomes wet or otherwise compromised during the school day.<sup>10</sup>

## Common Vaccine Myths

**Myth: COVID-19 vaccines are dangerous for children.**

FALSE: There has been extensive review by experts of the Pfizer vaccine, the only vaccine that is currently available for use in children age 5 and older. Pfizer studied the use of the vaccine in approximately 4,500 children aged 5 to 11<sup>13</sup> and 2,260 children aged 12 to 15 before the U.S. Food and Drug Administration granted an emergency use authorization for its use in children in these age ranges. The risk of serious adverse events is low for the vaccine, and reported side effects in children were similar to what was reported in adults, including injection-site pain, fatigue, and body aches.<sup>14-15</sup>

On January 3, 2022, the FDA authorized Pfizer booster doses for children aged 12 to 15 and third doses for immunocompromised children aged 5 to 11 after reviewing booster dose data of 6,300 children aged 12 to 15 from Israel. The data showed no new safety concerns for this age group.<sup>16-17</sup>

**Myth: Natural immunity gained from COVID-19 infection is better than getting vaccinated.**

FALSE: While it is true that some level of immunity is gained after recovering from COVID-19, it is unknown how long that immunity lasts. It is also possible for a person to become reinfected with COVID-19 after recovering from a prior infection. A study of COVID-19 reinfections in Kentucky found that unvaccinated people were twice as likely to be reinfected as people who were fully vaccinated after they initially contracted the virus.<sup>18</sup>

The CDC recommends that all people 5 or older be fully vaccinated and all people 12 or older have booster doses,<sup>19</sup> including individuals who have had COVID-19 and recovered.<sup>20</sup> Vaccination after COVID-19 infection can provide added protection.<sup>21</sup> A study found that the antibody titers of healthcare workers who were vaccinated seven to 11 months after infection were twice as high as what they were one month after the infection.<sup>22</sup>

### **Myth: COVID-19 vaccines cause fertility issues.**

FALSE: There is no evidence that COVID-19 vaccines cause infertility, with the American College of Obstetricians and Gynecologists stating in 2021 that “no loss of fertility has been reported among trial participants or among the millions who have received the vaccines since their authorization.”<sup>23</sup> A recent study by Boston University School of Public Health among couples trying to conceive found that COVID-19 vaccination does not cause infertility in women or men. However, further reinforcing the benefits of vaccination, the study did find that men who tested positive for COVID-19 within 60 days of a given cycle experienced reduced fertility compared to men who did not test positive.<sup>24</sup>

### **Myth: COVID-19 vaccines were developed too quickly to be safe.**

FALSE: The technology used to develop messenger RNA (mRNA) COVID-19 vaccines is not new and has been studied for years. Additionally, no shortcuts were taken in the clinical trials for the COVID-19 vaccines, which adhered to the same standards and rigors that would be required of any other vaccine trial. Vaccine trials occur in three phases, and phases were overlapped to speed up the process during the development of the COVID-19 vaccines. No trial phases were missed.<sup>25</sup> Collaboration between government entities, private partners, and vaccine developers allowed for the vaccine to become available in a relatively short timeframe.<sup>26</sup>

### **Myth: COVID-19 vaccines alter a person’s DNA.**

FALSE: Both mRNA (Pfizer and Moderna) and viral vector (Johnson & Johnson) COVID-19 vaccines do not alter or interact at all with a person’s DNA. Both types of vaccines simply deliver instructions to the cells of our immune system, which allows them to identify and build protection against the virus which causes COVID-19. The vaccine material never enters into the nucleus of the cell, which houses our DNA.<sup>22</sup>

### **Myth: COVID-19 vaccines are not effective.**

FALSE: COVID-19 vaccines reduce the risks associated with COVID-19 and its potentially severe complications. Studies on vaccine effectiveness have shown that COVID-19 vaccines provide protections in real-world conditions similar to the protections shown in clinical trials.<sup>27</sup> For example, the CDC reported in October 2021 that two doses of the Pfizer vaccine among people aged 12 to 18 were 93% effective against hospitalization from June 2021 to September 2021.<sup>28</sup> Additionally, the majority of people currently hospitalized with COVID-19 are unvaccinated, with 83% of all hospitalizations in Arkansas among individuals not fully vaccinated as of January 27, 2022.<sup>29</sup>

No vaccines are 100% effective, including the COVID-19 vaccines, and breakthrough infections are occurring. However, full vaccination greatly decreased severity of illness and poor outcomes in earlier versions of the virus that causes COVID-19, including the delta variant.<sup>30</sup> However, for the greatest protection from severe infection, hospitalization, and death as a result of the omicron variant, a booster dose of the COVID-19 vaccine is necessary. A recent CDC study found that during the start of the omicron variant surge, unvaccinated adults had a risk of infection almost five times higher than boosted adults and a risk nearly three times greater than fully vaccinated adults.<sup>31</sup>

During the delta variant surge, the third dose was 94% effective at preventing COVID-19-related hospitalizations among adults and was 90% effective after omicron became the dominant strain. This further exemplifies the need for eligible individuals to complete their primary series and booster doses as soon as possible.<sup>32</sup>

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