# COVID-19 AND THE CHURCH:
## IN-PERSON, VIRTUAL & HYBRID SERVICES


**PRESENTED BY**

*National Baptist Convention, USA, Inc.*
*H.O.P.E. Health Ministry*


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***National Baptist Convention, USA, Incorporated***
**H.O.P.E. Health Ministry COVID-19 and the Church**
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## Overview

Since Spring 2020, nearly all our National Baptist Convention, USA, Incorporated, churches have been conducting some level of virtual worship. Some of our congregations have returned to in-person worship while others have continued virtually. A growing number of congregations are conducting hybrid worship with in-person worship and simultaneous online streaming. Whatever your congregation chooses to conduct worship, we want everyone to be safe.

More than 51 million people in the U.S. have had confirmed coronavirus infections and more than 800,000 have died of COVID-19. Thousands of new cases are reported daily nationwide.[1]

We know that many of you all want to know what the appropriate steps are to take in returning to in-person worship. In this guide, we will provide some suggested steps. Your congregation's return to in-person worship action plan must include these following components:

1. Congregation-wide vaccinations (including booster shots)
2. Proper mask wearing
3. Physical distancing
4. Good ventilation

Many congregations require temperature checks. However, an individual is most contagious, especially with the Delta or Omicron Variants, prior to having a fever. Additionally, unvaccinated children need attention especially those too young to wear masks. Some congregations are requiring proof of vaccination in order to attend worship.

Composed as a series of questions and answers, this guide is not a comprehensive, one-size- fits-all resource. National, state, and local medical and legal guidelines will need to be consulted and followed. While your congregation will need to interpret and adapt the resources shared in this guide for your local context. Let's be clear. With in-person worship, the risk of COVID-19 infection is always a possibility. This guide seeks to

[1] Source: https://www.npr.org/sections/health-shots/2020/09/01/816707182/map-tracking-the-spread-of-the-coronavirus-in-the-u-s

guide your congregation in reducing the level of risk for your congregation.

Your pastor and congregational leaders will want to carefully consider:

- recommendations from the Centers for Disease Control and Prevention
- state and/or local health orders from elected officials and/or health departments,
- the safety of your congregation and the community you serve, and
- liability (check your insurance policy).

In this time of a "new" normal, every congregation should make virtual worship a permanent part of their Sunday worship experience. There are two options in our "new" normal environment:

1. Your congregation may host virtual worship only.
2. Your congregation may offer hybrid worship: in-person and virtual

In either case, congregations should have a virtual worship moderator or associate minister. Why? This moderator interacts with the "virtual" congregation. In this way, the virtual and in-person congregations share in the worship experience simultaneously. The NBCUSA is planning a webinar to show how the virtual worship moderator position functions.

## Part 1. Q and A for Attending In-person Church Activities[2]

**1. Is it safe to go to religious gatherings?**

The answer depends on a variety of factors, CNN medical analyst Dr. Leana Wen said. Attendees should wear masks such as a 3-ply surgical mask or a KN95 mask, Wen said. And if you take communion, do so very quickly.

"Use common-sense measures that reduce your risk – don't take off your mask for 30 minutes while awaiting communion," Wen said. "Keep it on the entire time you're there, put the wafer in your mouth and then put your mask on immediately after."

It's also a good idea to ask your house of worship whether it uses a HEPA filtration system; whether windows can be opened; and whether it can accept offerings either online or with stationary collection boxes (rather than a basket that's passed among congregants).

**2. If I have already received two doses of the Pfizer vaccine or the one-shot Johnson and Johnson vaccine, am I in the clear with the Omicron Variant so contagious?**

If you are age 18 or older and it has been more than six months after your initial Pfizer or Moderna series or 2 months after your initial J&J vaccine, you should get a booster shot.

**3. What if I am immunocompromised or living with people who are immunocompromised?**

You should be particularly cautious regardless of vaccination status, since immune-weakening conditions make someone at higher risk for serious disease and death if they get COVID-19.

**4. What about mask wearing and physical distancing during church worship?**

[2] Source: https://www.cnn.com/2021/04/10/health/church-safety-pandemic-wellness/index.html

Even if you're vaccinated, wearing a mask to protect yourself and others is still a good idea since you or others could have an infection without knowing. Mask-wearing and physical distancing -- staying at least 6 feet away from people who don't live in your household -- are especially important if you're in an area of substantial or high transmission of COVID-19, according to the CDC. Everyone should also follow local public health guidelines.

5. **What kind of mask should I wear?**

"Quality of mask really matters. There is no place for cloth face masks at this point," CNN Medical Analyst Dr. Leana Wen said. "We need to be wearing at least a three-ply surgical mask. You can wear a cloth mask on top of that, but do not just wear a cloth mask alone." KN95 and N95 masks are great options, she added.

6. **Given how contagious the Omicron Variant is should I consider getting tested before and after I attend an in-person church activity?**

In addition to being vaccinated and boosted, it's a good idea to get tested shortly before an in-person gathering as well as 3 days afterward — just in case you get infected at the event, Wen said.

7. **What about air circulation in our sanctuary?**

You should avoid poorly ventilated spaces -- well-ventilated spaces have the ability to open windows and doors and use window fans. They also have properly operating ventilation systems and HEPA (high-efficiency particulate air) filtration systems that enhance air cleaning. Ask your house of worship whether it uses a HEPA filtration system, and if staff are regularly cleaning, with soap or detergent, frequently touched surfaces like pews, pens or offering plates. You could bring sanitizing wipes to use if needed. The risk of getting infected with coronavirus by touching contaminated surfaces is generally low, the CDC has said. But it depends on several factors, including the infection rate in your community.

The likelihood of surface transmission can be further reduced by properly wearing masks and handwashing. Before and after the service, wash your hands with soap and warm water for at least 20 seconds, or use hand sanitizer -- especially after greetings that involve touching.

**8. What about sharing materials during worship?**

The CDC has recommended a few steps to reduce the potential risk involved with sharing materials:

- Avoid or limit use of shared objects such as pens, hymnals, religious texts, bulletins or other worship aids.
- Ask whether your church can instead photocopy or electronically display or project prayers, songs and texts.
- Houses of worship can also use stationary collection boxes for offerings instead of passing a basket or accept contributions online.

**9. What about congregational fellowship meals?**

If food is offered at or after services, choose pre-packaged foods instead of buffet or potluck meals, if possible. "I would not advise for people to take part in gatherings with food with

members of your church," Wen said, but "if you're removing your mask, everybody needs to be vaccinated and tested. Or it needs to be outdoors."

**10. What about communion?**
Taking communion is an important sacrament, but does increase risk. Regardless of congregants' vaccination or test status, if you take communion, do so very quickly. "Use common-sense measures that reduce your risk -- don't take off your mask for 30 minutes while awaiting communion," Wen said. "Keep it on the entire time you're there, put the wafer in your mouth and then put your mask on immediately after." The same is true for the grape juice or wine.

**11. What about children?**
If you have children, the CDC has also provided resources for preventing the spread of coronavirus in child care settings. Whether children should attend Sunday school depends on the setting, Wen said. For unvaccinated children older than 2, "there should be enforced masking at all times, ideally (6-feet) distancing," she said.

"Outside is much better than inside," Wen added. "If it's inside, at least have it be in a well-ventilated space. We should consider Sunday school to be the same as regular school, which is that transmission can be quite low if the proper mitigation measures are followed."

## Part 2. General Q and A

In this section, we address general questions about the COVID-19 pandemic. ***Note: Questions 12 through 139 are adapted from CNN's "You Asked, We're Answering: Your Top Questions about COVID-19 and Vaccines"*** [3]

**12. What should I do if I can't get a COVID-19 test (or test results) before traveling or seeing family?**
"So, I would say consider the risk level of the people who you're meeting with," said Mercedes Carnethon, vice chair of preventive medicine at Northwestern University Feinberg School of Medicine. She said anyone unable to get tested may want to reconsider meeting with:

- Anyone who is unvaccinated.
- Anyone who is over age 65, regardless of vaccination status. "Vaccinations help. Boosters help. They obviously help to mitigate the severity of the symptoms," Carnethon said. "But the reality is that the immune response to vaccination and boosting is a little bit lower in older adults whose immune systems aren't quite as robust and strong."
- Anyone with underlying conditions such as diabetes, hypertension, obesity, cancer, or severe asthma.
- Infants, since it's unclear how they might fare with COVID-19 — particularly the new Omicron variant.

Families with unvaccinated children who can't get tested in time should also reconsider meeting with vulnerable relatives, Carnethon said, as those children might be infected but asymptomatic. But even testing does not guarantee safety, said Dr. Jorge Rodriguez, a Los Angeles internal medicine specialist.

[3] Source: https://www.cnn.com/interactive/2020/health/coronavirus-questions-answers/

For example, a test taken immediately after a new infection might not detect the virus – "and the test wouldn't have been positive until tomorrow or the next day," Rodriguez said.
While testing can help, vaccination and booster shots are critical, Rodriguez said. But it takes 2 weeks for the shots to fully kick in.

**13. Does "fully vaccinated" mean two shots or three now?**
The US Centers for Disease Control and Prevention still says people are fully vaccinated:

- 2 weeks after their second dose in a 2-dose series, such as the Pfizer or Moderna vaccines, or
- 2 weeks after a single-dose vaccine, such as Johnson & Johnson's Janssen vaccine

But the CDC has recommended additional booster shots for all adults who are 2 months past their Johnson & Johnson vaccination or 6 months past their Moderna vaccination.
The CDC has also recommended a booster shot of the Pfizer vaccine for everyone ages 16 and up who are 6 months past their second dose.

***Some doctors say the definition of "fully vaccinated" needs to change to include booster doses.***
"I've always said this is a three-dose vaccine," said vaccinologist Dr. Peter Hotez, a professor and dean of the National School of Tropical Medicine at Baylor College of Medicine. "The reason is when you get that third dose, you get a 30- to 40-fold rise in virus-neutralizing antibodies, and therefore there's more spillover protection against new variants – including Omicron," Hotez said December 15.

"The third dose gives you 70% to 75% protection against symptomatic illness." Dr. Anthony Fauci said it's inevitable that the definition of "fully vaccinated" will change. "It's going to be a matter of when, not if," said the director of the National Institute of Allergy and Infectious Diseases.
"For me, as a public health person, I just say get your third shot," Fauci said, referring to eligible Pfizer and Moderna vaccine recipients. "Forget about what the definition is. I just want to see people be optimally protected. And for me, that's unequivocally and unquestionably getting a third shot boost."

**14. Who should get a booster shot?**
Those who got the two-dose Moderna vaccine ***should get a booster dose 6 months after the second dose***, the US Centers for Disease Control and Prevention said. Everyone ages 16 and up who got the Pfizer vaccine should get a booster 6 months after their second dose. And those who got the single-dose ***Johnson & Johnson vaccine should get a booster shot after 2 months***.
For booster shots, you don't have to get the same brand of vaccine that you got for your initial vaccination. The US Food and Drug Administration said ***it's OK to mix and match brands for the booster dose.***

But the CDC now recommends the Pfizer and Moderna vaccines over the Johnson & Johnson vaccine due to new data suggesting a rare blood clotting syndrome is more common among people who recently got a J&J vaccine.

**15. What do we know about how well booster shots work against the Omicron variant?**
Early lab studies suggest booster doses of the Pfizer/BioNTech vaccine neutralize the Omicron variant, the companies said December 8 — but more research is needed. "While these results are preliminary, the companies will continue to collect more laboratory data and evaluate real-world effectiveness to assess and confirm protection against Omicron and inform the most effective path forward," Pfizer and BioNTech said.

And preliminary data suggests Moderna's current, 50-microgram booster shot increased antibody levels 37-fold against Omicron, compared the antibody levels of a person who got two doses of the Moderna vaccine and no booster, the company announced December 20. Moderna said a larger-dose booster — 100 micrograms — increased antibody levels 83-fold. But it's not clear what these antibody increases mean in terms of real-life protection against Omicron.

Moderna vaccine recipients already get 100-microgram doses for the first two doses of vaccine. Moderna's booster shot has been authorized at 50 micrograms for most adults and 100 micrograms for people who are severely immunocompromised.

**16. How fast is the Omicron variant spreading? How widespread is Omicron in the US?**
"This Omicron variant is extraordinarily contagious," CNN medical analyst Jonathan Reiner said. "It's as contagious as measles, and that's about the most contagious virus that we've seen." In just one week, the Omicron variant soared from an estimated 2.9% of US COVID-19 cases to an estimated 73% of US cases as of December 18, according to the US Centers for Disease Control and Prevention. It has been detected in all 50 states.

"Omicron is spreading at a rate we have not seen with any previous variant," the director-general of the World Health Organization said.

At least 77 countries have reported cases, and "the reality is that Omicron is probably in most countries, even if it hasn't been detected yet," WHO Director-General Tedros Adhanom Ghebreyesus said.
As of December 18, Omicron cases were doubling every 1.5 to 3 days in the countries with documented spread, the World Health Organization said.

**17. I've already had COVID-19. Can I still get infected with the Omicron variant?**
Yes. In fact, the first confirmed Omicron-related death in the US was a man who previously had COVID-19. The Texas man, in his 50s, had not been vaccinated, Harris County health officials said. For months, the US Centers for Disease Control and Prevention has said vaccines give stronger protection against COVID-19 than previous infection does.

"If you have had COVID-19 before, please still get vaccinated," CDC Director Dr. Rochelle Walensky said in August, citing research published during a Delta variant surge. "This study shows you are twice as likely to get infected again if you are unvaccinated."

With the new Omicron variant, the risk of getting reinfected is 5.4 times higher with Omicron than it was with Delta, according to a team of disease modelers at Imperial College London.

"This suggests relatively low remaining levels of immunity from prior infection," the team wrote in a December report.
Health experts say the best way to help protect against the Omicron variant is to get vaccinated and boosted.

**18. What should I do if I was recently exposed to someone who now has COVID-19? How long do I have to quarantine?**

It depends on whether you're fully vaccinated, the US Centers for Disease Control and Prevention says. "People who are fully vaccinated do NOT need to quarantine after contact with someone who had COVID-19 unless they have symptoms," the CDC said December 9.

"However, fully vaccinated people should get tested 5-7 days after their exposure, even if they don't have symptoms and wear a mask indoors in public for 14 days following exposure or until their test result is negative."

If you're not fully vaccinated and had close contact with someone with COVID-19, the CDC offered these recommendations:

- Stay home for 14 days after your last contact with a person who has COVID-19.
- Watch for fever (100.4◦F), cough, shortness of breath, or other symptoms of COVID-19.
- If possible, stay away from people you live with, especially people who are at higher risk for getting very sick from COVID-19.
- If you have symptoms, immediately self-isolate and contact your local public health authority or health care provider.

However, "local public health authorities make the final decisions about how long quarantine should last, based on local conditions and needs," the CDC said. For example, quarantine times might be shortened to 7 days if a test taken 5 days after exposure turns out to be negative.

**19. I'm fully vaccinated, but my kids are too young to get shots -- and we're visiting family members this week. With the new Omicron variant spreading, what should we do?**

"I think that depends on people's individual risk tolerance," CNN medical analyst and emergency physician Dr. Leana Wen said. Some, like Dr. Peter Hotez, decided to cancel a planned visit from in-laws this holiday season. "Unfortunately, I had to ask them not to come because I thought that it was a little too risky for them in terms of travel with all the Omicron circulating," said Hotez, dean of the National School of Tropical Medicine at Baylor College of Medicine.

For families who still want to get together with extended relatives, Wen suggests following the **"2-out-of-every-3 rule."** "We have 3 major tools at our disposal: vaccination, testing and masking," she said. "We should have 2 out of every 3 things. And so if you're not vaccinated, you should be masking, and if you're gathering with people, testing," Wen said.

"If you are vaccinated, also get that booster, too. But if you want to get together with people indoors without masks, then make sure that people are tested that same day. If you're unable to get that test, people should still be wearing masks indoors." For children too young to get vaccinated — and who obviously can't wear a mask while eating — "the key in that case is to

surround the unvaccinated kids with others who are vaccinated," Wen said. "This is classic herd immunity — others protect the young kids who can't mask. And if everyone tests, that's the second layer of protection."

**20. What should I do if I test positive for COVID-19?**
Whether you have symptoms or not, you should isolate from others for 10 days, the US Centers for Disease Control and Prevention recommends. "To calculate your 10 full day isolation period, day 0 is your first day of symptoms. Day 1 is the first full day *after* your symptoms developed," the CDC said December 9.

"If you test positive for COVID-19 and **never** develop symptoms, day 0 is the day of your positive viral test (based on the date you were tested) and day 1 is the first full day *after* your positive test. If you develop symptoms after testing positive, your 10-day isolation period must start over. Day 0 is your first day of symptoms. Day 1 is the first full day *after* your symptoms developed."

But if you're fully vaccinated, you're generally less likely to get infected in the first place. The CDC says "the risk of infection, hospitalization, and death are all much lower in vaccinated compared to unvaccinated people. Therefore, everyone ages 5 years and older should get vaccinated to protect themselves and those around them."

**21. Can vaccinated people get infected with the Omicron variant?**
Yes — but early research suggests fully vaccinated people are not likely to get severely sick from the Omicron variant. In South Africa, where the Omicron variant quickly became dominant, one study suggests two doses of the Pfizer vaccine were 33% protective against infection — but 70% effective in preventing severe illness, including hospitalization. (The researchers did not examine the effects of vaccine booster doses.)

But as Omicron variant spreads rapidly around the world, health experts say they believe those who are not vaccinated at all remain the most vulnerable. "This virus will eventually seek out and land on the people who are the most susceptible, and those are the ones that have not been vaccinated, A, and also the ones that have not been boosted," Los Angeles internal medicine specialist Dr. Jorge Rodriguez said. "It's not a matter of if. It's a matter of when."

**22. What should I do if I think I'm sick with COVID-19?**
If you have COVID-19 or think you might have it, the US Centers for Disease Control and Prevention says:

- **Stay home.** Most people with COVID-19 have mild illness and can recover at home without medical care. Do not leave your home, except to get medical care. Do not visit public areas.
- **Take care of yourself.** Get rest and stay hydrated. Take over-the-counter medicines, such as acetaminophen, to help you feel better.
- **Stay in touch with your doctor.** Call before you get medical care. Be sure to get care if you have trouble breathing, have any other emergency warning signs or if you think it is an emergency.
- **Avoid public transportation**, ride-sharing or taxis.

If you take a COVID-19 test, it's important to stay away from others while waiting for your test results, the CDC says. This includes staying away from other members of your household.

**23. If Omicron doesn't seem to cause more severe disease so far, why are doctors still concerned?**

Researchers are still learning about the new variant, so it's too early to say for sure whether Omicron causes milder illness on a broad scale. But Omicron is highly contagious, the director-general of the World Health Organization said. "Even if Omicron does cause less severe disease, the sheer number of cases could once again overwhelm unprepared health systems," WHO Director-General Tedros Adhanom Ghebreyesus said.

And that could be disastrous for parts of the US that are already seeing a holiday season surge of COVID-19 hospitalizations. It's also unclear how much Omicron might impact long Covid, as the variant was discovered only in November.

**24. What exactly is in the COVID-19 vaccines? I've heard so many rumors and don't know what to believe.**

The CDC lists active and inactive ingredients for each of the three coronavirus vaccines used in the US. "None of the vaccines contain eggs, gelatin, latex, or preservatives," the CDC said. And contrary to popular myths, the vaccines don't have microchips and can't make you magnetic.

"All COVID-19 vaccines are **free from metals** such as iron, nickel, cobalt, lithium, rare earth alloys or any manufactured products such as microelectronics, electrodes, carbon nanotubes, or nanowire semiconductors."

**25. Can a PCR or rapid test tell me which type of variant I might have if I have COVID-19?**

No, diagnostic tests like PCR tests and rapid antigen tests can help detect whether you've been infected with coronavirus. But they can't tell you exactly which strain you have. It takes another layer of testing, involving genetic sequencing, to determine what strain or variant caused the infection.

**26. If vaccine makers are already working on Omicron-specific boosters, shouldn't I just wait to get one of those doses instead of getting a booster shot now?**

"The answer is no," said Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases. "If you are eligible — namely, if you've had the Moderna or the Pfizer (vaccines), and you're 6 months following your primary regimen of vaccination, or you're 2 months following J&J — don't wait," Fauci said.

"Get that extra boost now because we know when you do that, the level of antibodies that rise and go up following a boost is much, much higher than the peak level that you get after your second dose of a two-dose vaccine," he said. "Our experience with variants such as the Delta variant is that even though the vaccine isn't specifically targeted to the Delta variant, when you get a high enough level of an immune response, you get spillover protection even against a variant that the vaccine wasn't specifically directed at."

Pfizer and Moderna have been working on Omicron-specific booster shots — just in case they might be needed. But even if Omicron-specific shots are needed, it would take a while to get them rolled out to the public.

**27. How did the Omicron variant get its name? Didn't they skip some letters in the Greek alphabet?**

Since May, the World Health Organization has been assigning Greek letters to notable new coronavirus variants. Before Omicron, the last two variants of interest or concern were called Lambda and Mu. The next letter in the Greek alphabet is Nu, followed by Xi. But WHO skipped over Nu and Xi and went straight to Omicron for the latest variant of concern, which has the scientific name B.1.1.529.

The reason? "Nu is too easily confounded with 'new' and Xi was not used because it is a common surname," WHO said in an email to CNN. "And WHO best practices for naming new diseases suggest 'avoiding causing offense to any cultural, social, national, regional, professional or ethnic groups.'"

**28. What makes the Omicron variant so different from other variants? Don't we get new COVID-19 variants all the time?**

As coronavirus keeps spreading, new mutations and new variants are expected to develop. But the new Omicron variant has an unusually high number of mutations, including dozens on the spike protein — the structure used by a virus to latch onto and get inside cells under attack. "It has a lot of mutations — more than 50. That's a new record," said Dr. Francis Collins, director of the US National Institutes of Health.

More than 30 of those mutations are in the spike protein — the part of the virus targeted by leading COVID-19 vaccines. Scientists are trying to learn how much the Omicron variant might evade the antibodies produced from vaccination or natural infection. "We worry if the spike protein is of a different shape, maybe the antibodies won't stick quite as well. That's the reason for the concern," Collins said. "On the other hand, all of the previous variants, which have also had differences in the spike protein, have responded to vaccines — and especially boosters," he said.

**29. What should I do if I'm physically unable to go out and get a vaccine or booster shot?**

"If you have difficulty reaching a vaccination site, you may be able to get an in-home vaccination," the CDC says. The CDC suggests contacting the following to see if they provide at-home vaccination in your area:

- Your doctor or health care provider
- The hotline for Medicare recipients at 1-800-633-4227 (TTY 1-877-486-2048)
- Your state health department or 211
- The Disability Information and Access Line (DIAL) 1-888-677-1199
- Services for older adults and their families at the Eldercare Locator or 1-800-677-1116

**30. What do we know about the safety and efficacy of COVID-19 vaccines in younger children? Are there any side effects?**

Pfizer said its vaccine is safe and 90.7% effective against symptomatic COVID-19 in children ages 5 to 11, based on clinical trial data. Trial participants who got the vaccine received two doses, spaced three weeks apart. After monitoring trial participants for three months after the shots, there were no serious side effects such as myocarditis or pericarditis, Pfizer said.

"The side effects we're seeing in the kids are really identical to what we're seeing in adults," said Dr. Bob Frenck, director of the Vaccine Research Center at Cincinnati Children's Hospital, one of the Pfizer pediatric trial sites. Such side effects include a sore arm, fatigue, headache and fever in about 10% of children. Those side effects don't last more than a day or two. Separately, Moderna has been testing various doses of its COVID-19 vaccine in children. On October 25, Moderna said interim trial results showed its vaccine was well tolerated and generated a robust immune response in children ages 6 to 11. Some participants had side effects such as fatigue, headache, fever and pain at the injection site. Moderna said planned to submit its data to the FDA.

**31. Could I have the flu and coronavirus at the same time? If so, what does that do to your body?**

"You can certainly get both the flu and COVID-19 at the same time, which could be catastrophic to your immune system," said Dr. Adrian Burrowes, a family medicine physician in Florida. In fact, getting infected with one can make you more vulnerable to getting sick with the other, epidemiologist Dr. Seema Yasmin said.

"Once you get infected with the flu and some other respiratory viruses, it weakens your body," she said. "Your defenses go down, and it makes you vulnerable to getting a second infection on top of that." On their own, both COVID-19 and the flu can attack the lungs, potentially causing pneumonia, fluid in the lungs or respiratory failure, the CDC said. "The two (illnesses) together definitely could be more injurious to the lungs and cause more respiratory failure," said Dr. Michael Matthay, a professor of medicine at the University of California, San Francisco. And just like with COVID-19, even young, healthy people can die from the flu. Doctors say the easiest way to help avoid a flu/COVID-19 double whammy is to get vaccinated.

**32. Can I get a COVID-19 vaccine (or booster shot) and a flu shot at the same time?**

"Yes, you can get a COVID-19 vaccine and a flu vaccine at the same time," the US Centers for Disease Control and Prevention said. "If you haven't gotten your currently recommended doses of COVID-19 vaccine, get a COVID-19 vaccine as soon as you can," the CDC said. The ability to get both vaccines at the same time can make it more convenient for Americans to try to stay healthy, said Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases.

"If that means going in and getting the flu shot in one arm (and) the Covid shot in the other, that's perfectly fine," Fauci said. But don't assume you're protected right afterward. "Remember, after you are vaccinated, your body takes about two weeks to develop antibodies that protect against flu," the CDC said. Similarly, you're not fully vaccinated against COVID-19 until two weeks after the final dose.

**33. If my child is 11, should I wait until she turns 12 to get a larger dose of COVID-19 vaccine? Or should she get a pediatric dose of the Pfizer vaccine for kids ages 5 to 11?**

"I wouldn't wait," said Dr. Paul Spearman, a member of the US Food and Drug Administration's Vaccines and Related Biological Products Advisory Committee. He said data presented to the committee by Pfizer "showed that a 10-microgram dose — so a third of the dose that is licensed for adults — was equally effective in terms of generating neutralizing antibodies, one of the most important means of protecting people from COVID-19."

One advantage of the smaller (but equally effective) doses for children was reduced side effects, said Dr. Bob Frenck, director of the Vaccine Research Center at Cincinnati Children's Hospital — one of the Pfizer pediatric trial sites. "So, one-third of the dose that we're giving adults, or even one-third of the dose that was used in 12-year-olds and above, was just as immunogenic. We got just as good an immune response as the 30-microgram dose, and there were less side effects," Frenck said.

"A lot of people are asking us: 'Does this mean you're giving us less of a vaccine?' I said, well, we're giving you less antigen, but their immune response is so good that they're making the same immune response – so there's no need to give more vaccine," he said. For parents of larger 10- or 11-year-olds who are worried a pediatric dose might not be enough, weight is not important when it comes to vaccines, said Dr. Paul Offit, director of the Vaccine Education Center at Children's Hospital of Philadelphia.

**34. How many kids were in Pfizer's COVID-19 trial for ages 5 to 11? Do kids get the same doses as adults? And do kids get one shot, or two?**

Pfizer said data from its vaccine trial that included 2,268 children ages 5 to 11 showed the vaccine is safe and generates "robust" antibody response. It said the "preferred dose for safety, tolerability and immunogenicity" among that age group was 10 micrograms per dose – one-third the dosage for those ages 12 and older. But just like with teens and adults, children ages 5 to 11 need to get two doses spaced three weeks apart.

**35. Why were kids in vaccine trials divided by age groups and not weight? Wouldn't size or weight matter more than age when determining dosage?**

In this case, weight isn't important, said Dr. Paul Offit, director of the Vaccine Education Center at Children's Hospital of Philadelphia. "I think people have a misconception about the way vaccines work. They think of them in the same way as drugs. If you give, for example, an antibiotic like amoxicillin, your weight matters because the antibiotic is distributed throughout your bloodstream," Offit said.

"That's not true with vaccines. With vaccines, you get those as a shot in the arm, and that's taken up by the local draining lymph nodes. So really weight doesn't matter." Adolescents ages 12 and up who get the Pfizer/BioNTech vaccine get the same dosage that adults get – 30 micrograms per dose. Researchers have been trying to see which doses give the best combination of high efficacy and minimal side effects among younger children.

In September, Pfizer announced its COVID-19 vaccine was safe and generated a "robust" antibody response in children ages 5 to 11. It said the "preferred dose for safety, tolerability and

immunogenicity" among that age group was 10 micrograms per dose – one-third the dosage for teens and adults.

**36. Why bother getting vaccinated if there's still a chance you could get COVID-19?**
No vaccine is 100% effective, but the COVID-19 vaccines significantly reduce the chances of severe illness and death — across multiple age groups. For adults under age 50, the rate of COVID-19 hospitalizations among those unvaccinated was 15 times higher than for those fully vaccinated, according to August data from the US Centers for Disease Control and Prevention. Among those ages 50 to 64, the hospitalization rate is 31 times higher for unvaccinated people. And the risk of dying from COVID-19 is more than 11 times higher for unvaccinated adults than it is for vaccinated adults, according to the CDC data.

For seniors, who are more susceptible to severe COVID-19, that gap is smaller. Among those 80 and older, the risk of dying from COVID-19 in August was about five times higher among those unvaccinated compared to those fully vaccinated.

Of the breakthrough cases resulting in death, 85% were among people age 65 and older, according to the CDC. But those cases are extremely rare. As of October 12, about 7,178 breakthrough COVID-19 infections resulting in death had been reported, and 187 million people had been fully vaccinated, according to the CDC. In other words, about 0.004% of fully vaccinated people died of COVID-19.

**37. Is it true children can't get very sick from COVID-19? How many kids have actually been hospitalized with COVID-19?**
More than 72,000 children have been hospitalized with COVID-19 since August 2020, according to the CDC. And it's not just children with preexisting conditions getting hospitalized. Almost half – 45.7% – of children hospitalized with COVID-19 between March 2020 and October 2021 had no known underlying condition, according to CDC data from almost 100 US counties. And while pediatric COVID-19 deaths are rare, at least 1,015 children in the US have died from COVID-19, according to CDC data.

During the Delta variant surge, some hospitals saw an increase in pediatric COVID-19 patients. At the University of Mississippi Medical Center, "we've had infants as small as 6 to 8 months old up to the teenage years," Associate Vice Chancellor for Clinical Affairs Dr. Alan Jones said in July. "It appears as though this particular variant, the Delta variant, while being more infectious is also causing more children to be symptomatic," he said.

"Whether that just is that it causes a little more severe illness than other variants or that it is just more prevalent — and so we're seeing more symptomatic cases — we're not sure … but it's probably multifactorial." Some youngsters have suffered long-term effects from COVID-19 or multisystem inflammatory syndrome in children (MIS-C) – a rare but potentially serious condition that can happen in children weeks after a coronavirus infection. More than 5,900 children have suffered from MIS-C, according to the CDC.

**38. My kids don't want to wear a mask. What should I do?**

If possible, buy a few different brands of masks and see which one is most comfortable for your child, emergency physician and CNN Medical Analyst Dr. Leana Wen said. “Different people have different comfort levels,” she said. For example, some children might like one brand of kid-sized surgical masks over another.

Other children might feel more comfortable wearing kid-sized KN95 masks, which allow more room for the nose and mouth. “The most important thing is to find the best that you can consistently wear throughout the day,” Wen said. “You don’t want to find a mask that you’re trying to pull off your face every 20 minutes.”

Buying masks with fun designs or with your child’s favorite characters on them can also help, psychologist Christopher Willard said. Children can also customize their masks by drawing on them with markers. And, of course, parents can set a good example by also wearing a mask.

**39. What are the side effects of a COVID-19 vaccine booster?**
Data suggests side effects from a booster dose of a mRNA COVID-19 vaccine have been similar in frequency and type to those seen after second doses — and were “mostly mild or moderate and short-lived,” CDC Director Dr. Rochelle Walensky said September 28. The two-shot vaccines from Moderna and Pfizer both use genetic material called messenger RNA, or mRNA, to deliver immunity.

Walensky cited a study published that day by the CDC. It covers 22,191 people who received a third dose of an mRNA vaccine and made reports to CDC’s v-safe system, a voluntary, smartphone-based app that lets people report how they feel after they’ve been vaccinated. The reports were made from August 12 (when the US Food and Drug Administration OK’d additional doses for certain immunocompromised people) through September 19.

Among those 22,191 who made reports, about 7,000 – nearly 32% – reported any health impacts. More than 6,200 – about 28% – reported they were unable to perform normal daily activities, mostly commonly on the day after vaccination. The most common complaints were injection site pain (71%), fatigue (56%) and a headache (43.4%). Of those who reported general pain, only about 7% described it as “severe.” Severe was defined as pain that makes “daily activities difficult or impossible.”

Nearly 2% said they sought medical care and 13 people were hospitalized, but it was not clear from the v-safe reports why these people sought medical care or were hospitalized. Those who sought medical attention are contacted by staff members from the Vaccine Adverse Event Reporting System and encouraged to make a report, it said.

Of the 22,191 people, 12,591 happened to have tracked how they felt after all three doses. Out of that smaller group, 79.4% reported a local reaction to the third shot and 74.1% reported a systemic reaction. That’s similar to what they reported after a second dose, when 77.6% reported local reactions and 76.5% reported systemic reactions.

No unexpected patterns of adverse reactions were identified, the report said. Some people reported getting a booster from different company than their original vaccine or getting a second

dose of the single-dose Johnson & Johnson vaccine, but the report's authors said the numbers in both cases were too small to draw any conclusions.

**40. What should I do if I lost my COVID-19 vaccination card?**
Contact the vaccination provider site where you received your vaccine. "Your provider should give you a new card with up-to-date information about the vaccinations you have received," the CDC said. "If the location where you received your COVID-19 vaccine is no longer operating, contact your state or local health department's immunization information system (IIS) for assistance," the CDC said.

"Please contact your state or local health department if you have additional questions about vaccination cards or vaccination records." To be clear: "CDC does **not** maintain vaccination records or determine how vaccination records are used, and CDC does **not** provide the CDC-labeled, white COVID-19 vaccination record card to people. These cards are distributed to vaccination providers by state and local health departments," the agency said. And don't try to use a forged or fraudulent vaccination card — that could land you in prison.

**41. Should pregnant women get vaccinated?**
"COVID-19 vaccination is recommended for all people 12 years and older, including people who are pregnant, breastfeeding, trying to get pregnant now, or might become pregnant in the future," the CDC said. "Evidence about the safety and effectiveness of COVID-19 vaccination during pregnancy has been growing," the CDC said in an August 11 update.

Scientists say COVID-19 — not the COVID-19 vaccine — can put a woman at higher risk of severe illness during pregnancy. COVID-19 can lead to "adverse pregnancy outcomes, such as preterm birth," said Sascha Ellington, team lead for emergency preparedness and response in the CDC's Division of Reproductive Health. "This vaccine can prevent COVID-19, and so that's the primary benefit."

**42. What are the chances of long Covid if someone fully vaccinated gets a breakthrough infection?**
"Infections in fully vaccinated people (breakthrough infections) happen in only a small proportion of people who are fully vaccinated, even with the Delta variant," the CDC said. "Moreover, when these infections occur among vaccinated people, they tend to be mild." Even for those who get breakthrough infections, a study published in September found vaccines can reduce the chances of having long-term COVID-19 symptoms.

"We found that the odds of having symptoms for 28 days or more after post-vaccination infection were approximately halved by having two vaccine doses," researchers wrote in the study published in the journal The Lancet Infectious Diseases. "This result suggests that the risk of long COVID is reduced in individuals who have received double vaccination, when additionally considering the already documented reduced risk of infection overall."

**43. If I've already had COVID-19, should I still get vaccinated? What if I got monoclonal antibody treatment?**

"Yes, you should be vaccinated regardless of whether you already had COVID-19," the CDC says. "Evidence is emerging that people **get better protection by being fully vaccinated** compared with having had COVID-19. One study showed that unvaccinated people who already had COVID-19 are more than 2 times as likely than fully vaccinated people to get COVID-19 again," the CDC's website says.

"If you were treated for COVID-19 with monoclonal antibodies or convalescent plasma, you should wait 90 days before getting a COVID-19 vaccine. Talk to your doctor if you are unsure what treatments you received or if you have more questions about getting a COVID-19 vaccine." The concept that immunity gained through vaccination may be stronger or lasts longer than the immunity achieved from previous infection isn't new. "Many of the vaccines that we've made in history are actually stronger than the virus is itself at creating immunity," epidemiologist Dr. Larry Brilliant said.

**44. Is it true you're just as likely to get the Delta variant from any vaccinated person as you are from any unvaccinated person?**

No. "The greatest risk of transmission is among unvaccinated people who are much more likely to get infected, and therefore transmit the virus," the CDC said about the Delta variant on August 26. A study published by the CDC in late August showed vaccinated people were 5 times less likely to get infected than unvaccinated people. When a fully vaccinated person does get a breakthrough infection, "your chances of having symptoms go down by 8-fold" compared to an unvaccinated person, National Institutes of Health Director Dr. Francis Collins said August 1.

"People infected with the Delta variant, including fully vaccinated people with symptomatic breakthrough infections, can transmit the virus to others," the CDC said. "CDC is continuing to assess data on whether fully vaccinated people with asymptomatic breakthrough infections can transmit the virus." Even if a vaccinated person gets a breakthrough infection and is contagious, "vaccinated people appear to spread the virus for a shorter time," the CDC said.

"For people infected with the Delta variant, similar amounts of viral genetic material have been found among both unvaccinated and fully vaccinated people. However, like prior variants, the amount of viral genetic material may go down faster in fully vaccinated people when compared to unvaccinated people," the CDC said. "This means fully vaccinated people will likely spread the virus for less time than unvaccinated people."

**45. Why should anyone care whether I'm vaccinated if they're already vaccinated?**

Avoiding vaccination can harm your loved ones and help create even more contagious or more dangerous variants for everyone, doctors say. Full vaccination reduces the chances of getting and spreading the highly contagious Delta variant.

Children too young to be vaccinated and people who are immunocompromised also rely on the vaccination of others to help protect them, said Dr. William Schaffner, a professor in the Division of Infectious Diseases at Vanderbilt University Medical Center.

But vaccination is also important to help prevent more contagious or more dangerous variants from forming — such as one that might evade vaccines and harm those who are fully vaccinated.

"If we are going to continue to allow this virus to spread, we're going to continue to allow … variants to be created," said Dr. Paul Offit, director of the Vaccine Education Center at the Children's Hospital in Philadelphia. Viruses frequently mutate as they replicate among infected people. If the mutations are significant, they can lead to a more contagious variant. "Think of a virus as a necklace full of different-colored beads," board-certified internist Dr. Jorge Rodriguez said.

"In position No. 1, you need a red bead. Position No. 2 is a green bead. That's the genetic code – that sequence of bead colors," he said. "When a virus replicates, it is supposed to make an exact replica of those bead colors. But every once in a while, maybe a green bead gets into where a red bead is supposed to be." When mutations give the virus an advantage — such as the ability to replicate faster or to hide from the immune system – that version will outcompete others.

The only way to get rid of variants is to lower the number of infections, said Penny Moore, an expert in viruses at South Africa's National Institute for Communicable Diseases. That's a big reason why doctors say people should get vaccinated as soon as they can. Those who don't get vaccinated aren't just risking their own health — they're also jeopardizing the health of others. "Unvaccinated people are potential variant factories," Schaffner said. "The more unvaccinated people there are, the more opportunities for the virus to multiply."

**46. Do vaccines still work against the Delta variant?**

Full vaccination significantly reduces the risk of severe illness, hospitalization and death from the Delta variant, though breakthrough infections are possible. "Vaccines continue to reduce a person's risk of contracting the virus that cause COVID-19, including this variant," the CDC said in a August 2021 update.

But when the Delta variant accounted for the majority of coronavirus in the US, the effectiveness of vaccines against infection dropped from 91% to 66%, according to a study published August 24 by the CDC. The study is in line with others from the US and around the world showing Delta's increased tendency to cause largely minor infections among fully vaccinated people. Still, the effectiveness of vaccines against severe disease — including hospitalization and death — has remained high against all known variants.

And "the vast majority of hospitalization and death caused by COVID-19 are in unvaccinated people," the CDC said. Health experts say it's important not to skip a dose of any two-dose vaccine and for everyone who's eligible to get a booster shot to do so. Two doses of the Pfizer/BioNTech vaccine offered 88% protection against symptomatic COVID-19 caused by the Delta variant, according to a study published in May by Public Health England.
But those who got only one dose of the Pfizer/BioNTech vaccine had just 33% protection against the Delta variant three weeks later, according to the study.

**47. What can vaccinated people do safely? Should I be worried about the possibility of a breakthrough infection or giving coronavirus to loved ones?**

Many vaccinated people have asked whether it's safe to dine indoors or visit unvaccinated family and friends as the more contagious and more dangerous Delta variant spreads. If you're fully vaccinated, you're generally less likely to get infected in the first place (and therefore less likely

to get infected and transmit coronavirus to others). A study published by the CDC in late August showed unvaccinated people were 5 times more likely to get infected and 29 times more likely to be hospitalized with COVID-19 than vaccinated people.

For vaccinated people who do get a breakthrough infection, symptoms are generally milder — though it might still be possible to infect others. But the "vast majority of the spread of COVID-19 is by people who are unvaccinated," emergency physician Dr. Leana Wen said, echoing other doctors and the CDC.

"Vaccinated people are not a threat to public health, and they should be able to exercise their own judgment about what activities are safe enough for them," Wen said. For example, vaccinated people who live with children too young to get vaccinated or anyone at high risk for severe COVID-19 should consider wearing masks in indoor public settings, CDC Director Dr. Rochelle Walensky said.

"If you're going home to somebody who has not been vaccinated, to somebody who can't get vaccinated, somebody who might be immunosuppressed or a little bit frail, somebody who has comorbidities that put them at high risk, I would suggest you wear a mask in public indoor settings," Walensky said.

The CDC says fully vaccinated people "can resume activities that you did prior to the pandemic." But in counties with high or substantial transmission, fully vaccinated people — in addition to unvaccinated people — should wear masks in indoor public places, the CDC says. For vaccinated grandparents visiting with unvaccinated grandchildren, it's a good idea for both sides to minimize their risk of exposure and get tested in the days leading up to the visit, Wen said.

With indoor dining, a "very crowded, poorly ventilated setting will have higher risk than a venue in which you could spread out from other diners," Wen said. "Also, who are you dining with? If everyone in your party is known to be fully vaccinated, and these are the only people who will be near you, that is a safer scenario than if members of your own party are unvaccinated," she said.

**48. Now that a COVID-19 vaccine has been fully approved, what does that really mean? What's the difference between emergency use authorization and full approval?**

On August 23, the US Food and Drug Administration granted full approval for Pfizer/BioNTech's COVID-19 vaccine for people ages 16 and up. Previously, all three COVID-19 vaccines used in the US — from Pfizer/BioNTech, Moderna and Johnson & Johnson — were given emergency use authorization (EUA). The FDA had reviewed at least three months of safety and efficacy data and said the benefits of administering the vaccines outweighed the risks — especially given the public health emergency caused by COVID-19.

But an EUA status does not mean a vaccine is less safe or effective than a vaccine that has been fully approved. "Frankly, the only real difference was in length of follow-up," said Dr. Paul Offit, a member of the FDA's Vaccines and Related Biological Products Advisory Committee. There are two key differences between emergency authorization and full approval, Offit said. The first involves time, and the second involves a very detailed protocol for future production.

"Full approval, for all practical purposes, just means three more months of efficacy data," Offit said. When the FDA gave emergency use authorization for the Pfizer/BioNTech and Moderna vaccines, "we could say they're 95% effective for three months, because that's how much data we had," Offit said. "The FDA, for it to move to full approval — licensure — wants three more months," or at least six months of data, he said.

In the history of vaccines, the most severe side effects have all been caught within two months of a person getting vaccinated, Offit and other health experts said. After that, "your body has made the antibodies. It has done what it's supposed to do," said Dr. Julia Garcia-Diaz, director of clinical infectious diseases research at Ochsner Health in New Orleans. Any problems outside that window are most likely "not related to the vaccine."

Another reason why it takes a while to get full approval — or licensure — is because of a detailed validation process to help ensure future production stays precise and consistent. When the FDA fully approves a vaccine, "they don't just license the product … they also license the process," Offit said.

"Because they want to make sure that every lot is consistently produced, they validate every aspect of the production. And they validate the building. So everything – the computers, the cleaning out of the vats, everything that's done has to be validated." As part of the review for full approval, FDA experts have been poring through a massive amount of documents, running their own analyses, getting any clarification needed from vaccine companies and thoroughly inspecting the manufacturing process.

With full approval of the Pfizer/BioNTech vaccine for ages 16 and up, more workplaces will likely issue vaccine mandates to help prevent the spread of the Delta variant, US Surgeon General Dr. Vivek Murthy said. More people might want to get vaccinated on their own, too. A recent study showed some vaccine-hesitant Americans would be more likely to get a COVID-19 vaccine if it were fully approved. And with full approval, Pfizer/BioNTech are now allowed to market and advertise their vaccine, which has the brand name Comirnaty.

**49. Does a vaccine need to be fully approved by the FDA for an employer or business to mandate vaccination?**

No, businesses have been able to issue COVID-19 vaccine mandates for months, back when all three vaccines used in the US had emergency use authorization from the US Food and Drug Administration, according to the US Equal Employment Opportunity Commission.
But full FDA approval could make legal challenges against vaccine mandates more difficult.

**50. When will the other COVID-19 vaccines get fully approved by the FDA?**

The Pfizer/BioNTech vaccine is the only one that has been granted full FDA approval — specifically, for people ages 16 and up. The Moderna and Johnson & Johnson vaccines both have emergency use authorization (EUA) for use in adults ages 18 and up. Pfizer/BioNTech started applying for full approval in May. In June, Moderna announced it started applying for full approval of its coronavirus vaccine. As of August 23, Johnson & Johnson had not yet filed for full FDA approval of its vaccine.

On August 25, Moderna announced it had finished its submission for full FDA approval. The FDA has been assessing Moderna's application, US Surgeon General Dr. Vivek Murthy said. Murthy said he said he anticipates Johnson & Johnson will submit its application in the near future.

But regardless of which vaccine people receive, "getting vaccinated now with any of the three vaccines is still your fastest path to protection … particularly against hospitalization and death from the virus," the surgeon general said.

**51. When will the Pfizer vaccine be fully approved by the FDA for children ages 12 to 15?**
For months, children ages 12 to 15 have been able to get the Pfizer/BioNTech vaccine due to emergency use authorization by the FDA. In light of the FDA's full approval of the vaccine for those ages 16 and up, "I don't think it'll be long before they extend it to 12 to 15 – maybe within a few weeks to a month or so," Dr. Bob Frenck, director of the Vaccine Research Center at Cincinnati Children's Hospital, said in late August. The Pfizer/BioNTech vaccine was granted emergency use authorization for people 16 and up in December. In May, the FDA expanded that EUA to include children ages 12 to 15.

**52. What is the Delta variant? Is it worse than other strains of coronavirus?**
The Delta variant is the highly contagious B.1.617.2 strain of coronavirus first identified in India. It's fueling rapid increases in infections, hospitalizations and deaths in the US, according to the CDC. "COVID-19 cases have increased over 300% nationally from June 19 to July 23, 2021, along with parallel increases in hospitalizations and deaths driven by the highly transmissible B.1.617.2 (Delta) variant," the CDC said.

In two months, Delta jumped from 3% to more than 93% of sequenced coronavirus samples in the US, according to CDC data. The Delta variant has a cluster of mutations, including one known as L452R, that helps it infect human cells more easily. "This variant is even more transmissible than the UK (Alpha) variant, which was more transmissible than the version of the virus we were dealing with last year," US Surgeon General Dr. Vivek Murthy said.

COVID-19 patients infected with the Delta variant had about double the risk of hospitalization compared to those infected with the Alpha variant, according to the study published August 27 in the journal Lancet Infectious Diseases. But people who are fully vaccinated are much less likely to be hospitalized with the Delta variant, as "the vast majority of hospitalization and death caused by COVID-19 are in unvaccinated people," the CDC said August 26.

**53. With the Delta variant spreading, how much does vaccination reduce infection, hospitalization and death?**
Compared to unvaccinated people, "If you're (fully) vaccinated now, your chances of getting infected go down by 3 1/2-fold," National Institutes of Health Director Dr. Francis Collins said August 1. "Your chances of having symptoms go down by 8-fold. Your chance of ending up with illness significant enough to be in the hospital goes down 25-fold."

Such decreases in infections, illnesses and hospitalizations are "fantastically good for any vaccine," Collins said. "We didn't really have a right to dare they would be this good in the real world, and they are — even against Delta." The Delta variant "is highly contagious, more than 2x as contagious as previous variants," the CDC said. Delta also appears to cause more severe disease, according to an internal presentation from the CDC.

**54. Why do some people get breakthrough infections after being fully vaccinated? Are they getting COVID-19 from the vaccine?**

It's impossible to get COVID-19 from a vaccine because there is no coronavirus in any of the vaccines used in the US. The vaccines can't prevent people from breathing in the virus. What they can do is ensure that the body mounts a fast response to clear the virus if someone does get exposed. During that time, some people might actually become infected.

But more than 99.99% of people who are fully vaccinated against COVID-19 have not had a breakthrough case resulting in hospitalization or death, a CNN analysis of CDC data suggests. As of August 2, more than 164 million people in the US were fully vaccinated, according to CDC data.

Among them, 7,101 people – or less than 0.005% – were hospitalized with COVID-19, and 1,507 people — or less than 0.001% — died, according to the CDC data. Those who get breakthrough infections generally have milder symptoms than unvaccinated people or no symptoms at all, CDC research shows.

Because few people get tested after they've been fully vaccinated, there's limited data on how many vaccinated people get mild or asymptomatic infections. But about half of states have reported data on COVID-19 breakthrough cases – and in each of those states, less than 1% of fully vaccinated people had a breakthrough infection, according to a Kaiser Family Foundation analysis published July 30.

More than 90% of people who end up in the hospital or who die from COVID-19 have *not* been fully vaccinated, according to the CDC. It's important to remember you're not fully vaccinated until 2 weeks after your final dose of COVID-19 vaccine, so you're still vulnerable in the first few weeks of vaccination. "Keep taking all precautions until you are fully vaccinated," the CDC says.

**55. Do fully vaccinated people also need to wear masks because of the more contagious Delta strain?**

The US Centers for Disease Control and Prevention updated its guidance on July 27:

- If you are fully vaccinated, you can participate in many of the activities that you did before the pandemic.
- To maximize protection from the Delta variant and prevent possibly spreading it to others, wear a mask indoors in public if you are in an area of substantial or high transmission.
- Wearing a mask is most important if you have a weakened immune system or if, because of your age or an underlying medical condition, you are at increased risk for severe disease, or if someone in your household has a weakened immune system, is at increased

risk for severe disease, or is unvaccinated. If this applies to you or your household, you might choose to wear a mask regardless of the level of transmission in your area.

That guidance is stronger than in May, when the CDC said fully vaccinated people could unmask in most situations. But back then, the highly contagious Delta variant represented only about 1% of reported infections. By late July, at least 83% of sequenced samples were from the Delta variant.

"The Delta variant behaves uniquely differently from past strains of the virus that cause COVID-19," CDC Director Dr. Rochelle Walensky said July 27. "This new science is worrisome and unfortunately warrants an update to our recommendations," she said. "This is not a decision that we or CDC has made lightly."

States with below-average vaccination rates had, on average, almost triple the rate of new COVID-19 cases compared to states with above-average vaccination rates, according to data from Johns Hopkins University.

For those not fully vaccinated, the CDC says it's crucial to mask up:

- "Unvaccinated people should get vaccinated and continue masking until they are fully vaccinated. With the Delta variant, this is more urgent than ever," the CDC said.
- "Getting vaccinated prevents severe illness, hospitalizations, and death."

**56. Is it true the COVID-19 vaccines don't work as well in immunocompromised people? Can they get a third dose or a booster shot?**

The vaccines require an immune system response to work, so millions of Americans who are immunocompromised or take drugs that suppress the immune system might not get as much help from a standard vaccine course as others do. On August 12, the FDA authorized a third dose of the Pfizer/BioNTech and Moderna vaccines for certain people with compromised immune systems. That group includes "solid organ transplant recipients or those who are diagnosed with conditions that are considered to have an equivalent level of immunocompromise," the FDA said.

Immunocompromised people who took the single-dose Johnson & Johnson vaccine will also likely need an additional dose, "but we are waiting on some data from the company about a second dose," US Surgeon General Dr. Vivek Murthy said August 22.

The CDC estimates 9 million Americans are immunocompromised. They're in a tough spot because they're at higher risk of severe illness from COVID-19, but they also might not generate enough of an immune response to get the full benefits from a standard course of vaccine. That's why many Americans are counting on fellow Americans to get vaccinated to help protect them, said Dr. Francis Collins, director of the National Institutes of Health.

**57. What should I do if I'm wearing a mask but have to sneeze?**

If there are tissues nearby, you can take your mask off and sneeze into the tissue before putting your mask back on, CNN Chief Medical Correspondent Dr. Sanjay Gupta said.

For kids in school — or anyone else who might have to wear a mask all day — keep a backup mask in a baggie in case the first mask gets dirty. You can put the dirty mask in the baggie. It's also a good idea to keep backup masks in your car in case of any mask accidents.

**58. I'm not feeling well, but I've already been vaccinated. Should I get tested for coronavirus?**

If you think you might have COVID-19 symptoms, "please get tested regardless of your vaccination status," US Surgeon General Dr. Vivek Murthy said. "We know the symptoms of COVID-19 mimic the symptoms of the flu or cold initially. It can be a runny nose or fatigue or other such symptoms. In those cases, it is important for people to get tested." It's impossible to get COVID-19 from a vaccine because there is no coronavirus in any of the vaccines used in the US.

But COVID-19 vaccines don't take full effect until 2 weeks after your final dose — "so a person could get sick if the vaccine has not had enough time to provide protection," the CDC said. Those who are fully vaccinated are much less likely to get infected than unvaccinated people, the CDC said. In addition, "COVID-19 vaccines reduce the risk of people spreading COVID-19." But while COVID-19 vaccines are highly effective, they're not perfect. The vaccines require an immune system response to work, so millions of Americans who are immunocompromised or take drugs that suppress the immune system might not get as much protection from a vaccine as others do.

The good news: When rare breakthrough infections do happen in vaccinated people, they're usually less severe, CDC research shows. But it's especially important for *un*vaccinated people who have COVID-19 symptoms to get tested. Unvaccinated people can spread coronavirus more easily than vaccinated people, the CDC said.

**59. Is it safe to go on vacation?**

"Delay travel until you are fully vaccinated," the CDC says. Fully vaccinated means at least 2 weeks have passed since your last recommended dose of COVID-19 vaccine.
For those traveling within the US, you "do NOT need to get tested or self-quarantine if you are fully vaccinated or have recovered from COVID-19 in the past 3 months. You should still follow all other travel recommendations," the CDC says.

For example, face masks are still required to board public transportation. Americans traveling internationally should learn about the COVID-19 restrictions in place at their destination. Those flying back home to the US must provide proof that they have recently tested negative for coronavirus or recently recovered from COVID-19. They should also get a viral test 3 to 5 days after coming home, the CDC says.

For those who aren't fully vaccinated but must travel, the guidelines are much tougher. The CDC says it's important to wear a mask; get tested within three days before traveling; maintain physical distance from anyone not traveling with you; and quarantine for 10 days after you return home. (That quarantine period can be reduced to 7 days if you get tested 3 to 5 days after coming home.)

**60. What's the difference between the Delta and Delta Plus variants?**
The Delta Plus variant (B.1.617.2.1) is a new and slightly changed offshoot of the highly contagious Delta variant (B.1.617.2). All variants carry clusters of mutations. Delta Plus is different from Delta because it has an extra mutation called K417N. That mutation affects the spike protein – the part of the virus that attaches to human cells it infects.

The Indian government's COVID-19 genome sequencing body said the Delta Plus variant exhibits several worrying traits such as increased transmissibility, stronger binding to receptors of lung cells, and a potential reduction in antibody response. It's not yet clear what effect the mutation may have on vaccine efficacy. But it could give the variant "significant vaccine escape properties," warned Julian Tang, professor of respiratory sciences at the University of Leicester. Most of the coronavirus vaccines are designed to train the body to recognize the spike protein, or parts of it – which is where Delta Plus' extra mutation is.

But there isn't enough evidence to determine anything conclusively yet. The World Health Organization is tracking Delta Plus to determine its transmissibility and severity, said Maria Van Kerkhove, WHO's technical lead on COVID-19. The US is among at least 11 countries that have reported cases of the emerging Delta Plus variant. But Delta Plus has not made up a significant share of sequenced COVID-19 cases in the US, according to June data from the CDC. In late June, the genetic sequencing company Helix said it has seen some intermittent cases of the Delta Plus variant in the US.

**61. What should I tell friends, family or coworkers who are hesitant to get vaccinated?**
"It is a normal human reaction to be afraid," pediatrician Dr. Edith Bracho-Sanchez said. "They're having a normal reaction, and perhaps they haven't been able to sit down with their physician." She suggests finding a time to have a calm, rational conversation — when neither person is angry or likely to start a fight.

"The first thing I would say is 'I get it. I totally get where you're coming from and I understand that you're concerned about this,'" Bracho-Sanchez said. It's also important to cite scientific data — like the truth about side effects, the safety of COVID-19 vaccines and why it's important for young, healthy people to get vaccinated.

**62. Could I get coronavirus from the COVID-19 vaccine?**
No, it's literally impossible to get COVID-19 from any of the vaccines used in the US because none of them contains even a piece of actual coronavirus. This article explains how each vaccine was made.

**63. Will Americans be required to get a COVID-19 vaccine? What happens if I don't get vaccinated?**
"The federal government does not mandate (require) vaccination for people," the CDC said. "Whether a state or local government or employer, for example, can require or mandate COVID-19 vaccination is a matter of state or other applicable law." But if only half of all Americans are willing to get vaccinated, COVID-19 could stick around for years, said Dr. Francis Collins, director of the National Institutes of Health.

Health experts say if you don't get a vaccine, the consequences will extend far beyond yourself — even if you're young and healthy now. Not only would you be more vulnerable to getting severely sick with COVID-19 or "long Covid" — it will also be harder to achieve herd immunity through vaccination. In other words, doctors say: Getting vaccinated is critical for slowing or possibly ending this pandemic. And that will help everyone get back to normal, faster.

**64. How much does a COVID-19 vaccine cost?**
"It's all free. The government is paying for this," said Dr. Paul Offit, director of the Vaccine Education Center at the Children's Hospital in Philadelphia.

**65. What are the side effects of the vaccines?**
Some people have reported feeling temporary, flu-like symptoms. Don't freak out if this happens to you, health experts say. "These are immune responses, so if you feel something after vaccination, you should expect to feel that," said Patricia Stinchfield of Children's Hospitals and Clinics of Minnesota. "And when you do, it's normal that you have some arm soreness or some fatigue or some body aches or even some fever," Stinchfield said.

Read more about what to do if you do get side effects and why side effects are often a good sign. The Pfizer/BioNTech vaccine has shown no serious safety concerns, Pfizer said. Pfizer has said side effects "such as fever, fatigue and chills" have been "generally mild to moderate" and lasted one to two days.

Moderna said its vaccine did not have any serious side effects. It said a small percentage of trial participants had symptoms such as body aches and headaches. With the Johnson & Johnson vaccine, the most common side effects were pain at the injection site, headache, fatigue and muscle pain. While the CDC recommends the Johnson & Johnson vaccine, "women younger than 50 years old especially should be aware of the rare but increased risk of thrombosis with thrombocytopenia syndrome (TTS)," the agency says. "TTS is a serious condition that involves blood clots with low platelets. There are other COVID-19 vaccine options available for which this risk has not been seen."

**66. What are the long-term effects of coronavirus?**
Some COVID-19 survivors have reported problems weeks or months after testing positive. Even young adults have suffered long-lasting symptoms such as shortness of breath, chronic fatigue, brain fog, long-term fever, coughing, memory loss, and the inability to taste or smell.

One CDC study found 35% of survivors surveyed still had symptoms two to three weeks after their coronavirus tests:

- In the 18-to-34 age group, 26% said they still had symptoms weeks later.
- In the 35-to-49 age range, 32% were still grappling with the effects weeks later.
- For those 50 and older, 47% said they still had symptoms weeks later.

And the risk of death from coronavirus-related heart damage seems to be far greater than previously thought, the American Heart Association said.

Inflammation of the vascular system and injury to the heart occur in 20% to 30% of hospitalized COVID-19 patients and contribute to 40% of deaths, the AHA said. AHA President Dr. Mitchell Elkind said cardiac complications of COVID-19 could linger after recovering from coronavirus.

**67. What is aerosolized spread? What's the difference between aerosols and droplets?**
Aerosolized spread is the potential for coronavirus to spread not just by respiratory droplets, but by even smaller particles called aerosols that can float in the air longer than droplets and can spread farther than 6 feet. Respiratory aerosols and droplets are released when someone talks, breaths, sings, sneezes or coughs. But the main difference is size.

Respiratory droplets are bigger – between 5 and 10 microns in diameter. (For perspective, a human hair is typically 60 to 120 microns wide.) "If you have droplets that come out of a person, they generally go down within 6 feet," said Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases. But aerosols (aka droplet nuclei) are smaller – less than 5 microns in diameter, according to the World Health Organization.

"Aerosol means the droplets don't drop immediately," Fauci said. "They hang around for a period of time." This becomes "very relevant" when you are indoors and there is poor ventilation, he said. Multiple case studies suggest coronavirus can spread well beyond 6 feet through airborne transmission, such as during choir practices, said Dr. Amy Compton-Phillips, chief clinical officer of Providence Health System.

In Washington state, for example, 53 members of a choir fell sick and two people died after one member attended rehearsals and later tested positive for COVID-19. Last July, 239 scientists backed a letter urging public health agencies to recognize the potential for aerosolized spread.

"There is significant potential for inhalation exposure to viruses in microscopic respiratory droplets (microdroplets) at short to medium distances (up to several meters, or room scale), and we are advocating for the use of preventive measures to mitigate this route of airborne transmission," the letter said.

**68. This pandemic is taking a toll on my mental health. How can I get help if I'm feeling isolated and depressed?**
The Crisis Text Line is available texting to 741741. Trained volunteers and crisis counselors are staffed 24/7, and the service is free. The Substance Abuse and Mental Health Services Administration Disaster Distress Helpline provides 24/7, 365-day-a-year crisis counseling and support to people experiencing emotional distress related to disasters. Call 1-800-985-5990 or text TalkWithUs to 66746 to connect with a trained crisis counselor.

For health care professionals and essential workers, For the Frontlines offers free 24/7 crisis counseling and support for workers dealing with stress, anxiety, fear or isolation related to coronavirus. For more resources, check out CNN's guide to giving and getting help during the pandemic.

**69. What "underlying conditions" put people at higher risk of bad outcomes with COVID-19?**

More than 40% of US adults have at least one underlying condition that can put them at higher risk of severe complications, according to the CDC. Those conditions include obesity, chronic obstructive pulmonary disease, heart disease, diabetes, and chronic kidney disease, according to the CDC. People who have cancer, an organ transplant, sickle cell anemia, poorly controlled HIV or any autoimmune disorder are also at higher risk.

COVID-19 patients with pre-existing conditions — regardless of their age — are 6 times more likely to hospitalized and 12 times more likely to die from the disease than those who had no pre-existing conditions, CNN Chief Medical Correspondent Dr. Sanjay Gupta said. While young, healthy people are less likely to die from COVID-19, many are suffering long-term effects from the disease.

**70. What's the guidance for carpooling or riding with someone from another household?**

Unvaccinated people from different households in a car should wear face masks, said Dr. Aaron Hamilton of the Cleveland Clinic. "You should also wear one if you're rolling down your window to interact with someone at a drive-thru or curbside pickup location," Hamilton said. It's also smart to keep the windows open to help ventilate the car and add another layer of safety, said Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases.

**71. Are coronavirus and COVID-19 the same thing? How did they get their names?**

Coronavirus and COVID-19 are not the same thing, but sometimes the terms can be used interchangeably. This "novel coronavirus" is novel because it just emerged in humans in late 2019. There have been six other coronaviruses known to infect humans, such as SARS (circa 2003) and MERS (circa 2012).

"Coronaviruses are named for the crown-like spikes on their surface," or coronas, the CDC says. The scientific name for this novel coronavirus is SARS-CoV-2, which stands for "severe acute respiratory syndrome coronavirus 2." COVID-19, however, is the disease *caused* by the novel coronavirus. The letters and numbers in "COVID-19" come from "**Co**rona**vi**rus **d**isease 20**19**."

**72. If a pregnant woman gets COVID-19, will her baby be infected? Can babies get coronavirus through breastfeeding?**

About 2% to 5% of babies born to mothers with COVID-19 tested positive for coronavirus within the first four days of life, according to the American Academy of Pediatrics. But infected mothers are unlikely to pass coronavirus to their newborns when appropriate precautions are taken, according to a study published in The Lancet Child & Adolescent Health.

In that study, researchers found no cases of viral transmission among 120 babies born to 116 mothers with coronavirus — even when both shared a room and the mothers breastfed. But the babies remained 6 feet apart from their mothers, except while breastfeeding. The moms also wore surgical masks when handling their newborns and followed proper hand and breast washing procedures.

**73. Can someone who died from coronavirus still have their organs donated?**

That's not recommended right now, according to the US Organ Procurement and Transplantation Network. "This guidance may change as more becomes known about the course and treatment of COVID-19," the network said. "Donation and transplant clinicians should apply their medical judgment in instances where test results are pending at the time of organ offers."

**74. Should we clean our cell phones daily?**
Yes, that's a good idea because cell phones are basically "petri dishes in our pockets" when you think about how many surfaces you touch before touching your phone. You should regularly disinfect your mobile phone anyway, with or without a coronavirus pandemic.

"There's probably quite a lot of microorganisms on there, because you're holding them against your skin, you are handling them all the time, and also you're speaking into them," said Mark Fielder, a professor of medical microbiology at Kingston University. "And speaking does release droplets of water just in normal speech. So it's likely that a range of microbes – including COVID-19, should you happen to be infected with that virus – might end up on your phone." Watch the best ways to disinfect your cell phone here.

**75. Is it safe to go back to the gym?**
There are certainly more risks if you're not fully vaccinated. Coronavirus often spreads more easily indoors rather than outdoors — especially if you're indoors for an extended period of time. Researchers have also found that heavy breathing and singing can propel aerosolized viral particles farther and increase the risk of transmission.

During one fitness instructor workshop, about 30 participants with no symptoms trained intensely for four hours, according to research published by the CDC. Eight participants later tested positive, and more than 100 new cases of coronavirus were traced back to that fitness workshop.

To help mitigate the risk, many gyms are limiting capacity or requiring masks. And while health experts have recommended staying 6 feet away from others, it's smart to keep even more distance than that at the gym. "With all the heavy breathing, you may even want to double the usual 6 feet to 12 feet, just to be safe," CNN Chief Medical Correspondent Dr. Sanjay Gupta said.

**76. I heard you can get COVID-19 through your eyes. Should we wear goggles, too?**
Doctors say wearing eye protection (in addition to face masks) could help some people, but it's not necessary for everyone. Teachers who have younger students in the classroom are "likely to be in environments where children might pull down their masks, or not be very compliant with them," epidemiologist Saskia Popescu said. "There is concern that you could get respiratory droplets in the eyes."

If you're a health care worker or taking care of someone at home who has coronavirus, it's smart to wear eye protection, said Dr. Thomas Steinemann, clinical spokesperson for the American Academy of Ophthalmology. (Note: Regular glasses or sunglasses aren't enough, because they leave too many gaps around the eyes.)

But if you're vaccinated or not in a high-risk situation, wearing goggles isn't necessary. While it's still possible to get COVID-19 through the eyes, that scenario is less likely than getting it through your nose or mouth, Steinemann said. He said if a significant number of people were getting coronavirus through their eyes, doctors would probably see more COVID-19 patients with conjunctivitis, also known as pink eye (though having pink eye doesn't necessarily mean you have coronavirus).

**77. Should people wear face shields instead of (or in addition to) face masks?**
The CDC does not recommend using plastic face shields for everyday activities or as a substitute for face masks. There are a few exceptions, such as for those who are hearing-impaired and rely on lip-reading or those who have physical or mental health conditions that would be exacerbated by wearing a cloth face mask.

"Cloth face coverings are a critical preventive measure and are most essential in times when social distancing is difficult," the CDC says. Clinical and laboratory studies show cloth face coverings reduce the spray of droplets when worn over the nose and mouth – what the CDC refers to as "source control." And many people are contagious even when they don't have any symptoms and don't know they're infected.

Face shields worn *in addition to masks* can provide an added layer of protection and can also help people stop touching their faces. Workers who are around people for long periods of time, such as grocery store workers or hospital personnel, may want to wear face shields in addition to masks, to increase their protection.

If someone must use a face shield without a mask, the CDC says the shield "should wrap around the sides of the wearer's face and extend to below the chin. Disposable face shields should only be worn for a single use. Reusable face shields should be cleaned and disinfected after each use."

**78. Doesn't the flu kill more people than coronavirus?**
No. In fact, COVID-19 has killed more people in one year than the flu did during the last five flu seasons combined. During the 2019-2020 flu season, an estimated 22,000 people in the US died from the flu, according to the CDC. With COVID-19, the first known US death was in February 2020. By January 27, more than 427,000 people had died, according to data from Johns Hopkins University. COVID-19 has now taken more than half a million US lives.

**79. How can I tell if I have coronavirus or the flu (or both)?**
Both the flu and COVID-19 can give you a fever, cough, shortness of breath, fatigue, sore throat, body aches and a runny or stuffy nose, the CDC said. "Some people may have vomiting and diarrhea, though this is more common in children than adults," the CDC said.
But unlike the flu, COVID-19 can cause a loss of taste or smell.

And about half of coronavirus transmissions happen before any symptoms show up. (Many of those people spreading the virus silently are pre-symptomatic and are more contagious *before* they start showing symptoms.) So, the best way to know if you have the novel coronavirus or the flu (or both) is to get tested.

**80. How do I prevent my glasses or sunglasses from fogging up when I wear a mask?**
First, make sure the top of your mask fits snugly against your skin. Then put your glasses over the snug-fitting top portion of your mask. If that doesn't do the trick, soap and water can create a barrier that prevents glasses from fogging up. Here's how.

**81. Are cancer patients at higher risk of severe complications from COVID-19?**
Yes. And the increased risk applies to cancer patients of all ages, the CDC says.
"Having cancer currently increases your risk of severe illness from COVID-19," the CDC says. "At this time, it is not known whether having a history of cancer increases your risk."
Researchers found that patients whose cancer was getting worse or spreading were more than five times more likely to die in a month if they caught COVID-19.

But there are steps cancer patients can take to stay as healthy as possible:

- Make sure you have at least a 30-day supply of your medications.
- Don't delay any life-saving treatment or emergency care during this pandemic.
- Talk with your healthcare provider about your individual level of risk based on your condition, your treatment, and the level of transmission in your community.
- Don't stop taking your medicines or alter your treatment plan without talking to your healthcare provider.
- Call your healthcare provider if you think you may have been exposed to the novel coronavirus.
- Read the CDC's tips for preventing infections in cancer patients.

**82. Can central air conditioning spread COVID-19 in public places?**
Technically it can, but HVAC (heating/ventilation/air conditioning) systems are not thought to be a significant factor in the spread of coronavirus. Many modern air conditioning systems will either filter out or dilute the virus. Ventilation systems with highly effective filters are a key way to eliminate droplets from the air, said Harvard environmental health researcher Joseph Gardner Allen.

Filters are rated by a MERV system – their "minimum efficiency reporting value" that specifies their ability to trap tiny particles. The MERV ratings go from 1 to 20. The higher the number, the better the filtration. HEPA filters have the highest MERV ratings, between 17 and 20. HEPA filters are used by hospitals to create sterile rooms for surgeries and to control infectious diseases. They're able to remove 99.97% of dust, pollen, mold, bacteria and other airborne particles as small as 0.3 microns.

For context, this coronavirus is thought to be between 0.06 to 1.4 microns in size. But "HEPA filtration is not always going to be feasible or practical," Allen said. "But there are other filters that can do the job. What is recommended now by the standard setting body for HVAC is a MERV 13 filter."

High-efficiency filters in the 13-to-16 MERV range are often used in hospitals, nursing homes, research labs and other places where filtration is important. "If you're an owner of a home, building or mall, you want to have someone to assess your system and install the largest MERV number filter the system can reliably handle without dropping the volume of air that runs through

it," advised Erin Bromage, an associate professor of biology at the University of Massachusetts Dartmouth.

"In addition, virtually all modern air conditioning systems in commercial buildings have a process called makeup air where they bring in air from outside and condition it and bring it inside," Bromage said. "It's worse in regards to energy, but the more outside air we bring in, the more dilution of the virus we have and then the safer you are."

**83. What does asymptomatic mean?**
Asymptomatic describes a person who is infected but does not have symptoms. With COVID-19, asymptomatic carriers can still easily infect others without knowing it. So if you're infected but don't feel sick, you could still get others very sick.

Some medical professionals differentiate between truly asymptomatic carriers – those who don't currently have and will never have symptoms – from "pre-symptomatic" carriers – those who don't have symptoms now, but will get them later. But the general public often uses the term "asymptomatic" to describe both categories of infected people.

Regardless of which term you use, researchers have found that about half of coronavirus transmissions happen between people who don't have any symptoms. And in some cases, people are more contagious before they start showing symptoms.

**84. What's so different about coronavirus that made us shut down the economy? Why did we have to practice social distancing when we didn't during the SARS and swine flu epidemics?**
Unlike SARS and swine flu, the novel coronavirus is both highly contagious and especially deadly, CNN Chief Medical Correspondent Dr. Sanjay Gupta said. "SARS was also a coronavirus, and it was a new virus at the time," Gupta said. "In the end, we know that SARS ended up infecting 8,000 people around the world and causing around 800 deaths. So very high fatality rate, but it didn't turn out to be very contagious."

The swine flu, or H1N1, "was very contagious and infected some 60 million people in the United States alone within a year," Gupta said. "But it was far less lethal than the flu even — like 1/3 as lethal as the flu." What makes the novel coronavirus different is that "this is both very contagious … and it appears to be far more lethal than the flu as well."

**85. Is it true young people with coronavirus are also having blood clots and strokes?**
Yes, some young adults have suffered strokes after getting coronavirus. "The virus seems to be causing increased clotting in the large arteries, leading to severe stroke," said Dr. Thomas Oxley, a neurosurgeon at Mount Sinai Health System in New York. "Most of these patients have no past medical history and were at home with either mild symptoms (or in two cases, no symptoms) of Covid."

**86. Why has the guidance on wearing face masks changed so much?**
Earlier in this pandemic, scientists didn't know how easily this new virus spreads between people without symptoms, nor did they know how long infectious particles could linger in the

air. There was also a shortage of N95 respirators and face masks among health care workers who were quickly overwhelmed with COVID-19 patients.

But since then, the CDC, the former US Surgeon General and other doctors have changed their recommendations and are now urging the widespread use of face masks. The CDC now says the public needs to "cover your mouth and nose with a cloth face cover when around others." "Everyone should wear a cloth face cover when they have to go out in public, for example to the grocery store or to pick up other necessities," the CDC said.

Scientists have made many recent discoveries about the new coronavirus, including:

- It's easy to spread this virus by just talking or breathing.
- This coronavirus is highly contagious. Without mitigation efforts like stay-at-home orders, each person with coronavirus infects, on average, another two to three other people. That makes it twice as contagious as the flu.
- This virus has a long incubation period – up to 14 days – giving a wide window of opportunity for people to infect others before they even know they're infected.
- Carriers may be most contagious in the 48 hours before they get symptoms, making transmission even more blind.

In other words, it's not just people who are sneezing and coughing who can spread coronavirus. It's often people who look completely normal and don't have a fever.

**87. How can I stay safe in an elevator?**

Doctors say getting vaccinated is the best way to prevent coronavirus infection. If you're not vaccinated, it's best to take the stairs if you can. But if you can't, emergency room physician Dr. Leana Wen offers several tips:

- Wear a mask. Not only does wearing a mask reduce your risk of inhaling the virus — which can linger in the air for 8 minutes — it also helps reduce your chances of infecting others if you are an asymptomatic carrier.
- Use a tissue to push the elevator buttons. If you don't have a tissue, use your elbow, then wash or disinfect that area when you can.
- Try to keep your distance from anyone else inside the elevator as much as possible.

**88. How safe are public restrooms?**

For those not fully vaccinated, try to avoid public restrooms if you can, said microbiologist Ali Nouri, president of the Federation of American Scientists. But he acknowledged that's not always possible: "Sometimes when you gotta go, you gotta go." Close contact with others is the most significant risk in a public restroom, Nouri said. So, if there's a single-person bathroom available that doesn't have multiple stalls, using that might be best.

If you do use a multi-stall public restroom, Nouri offers the following tips:

- Don't use your freshly washed hands to turn off the water with the germ-laden faucet handle. Instead, use a paper towel to turn off the water and open the bathroom door. Throw away the paper towel immediately afterward.
- Wear a face mask. "Masks are one of the most effective ways to stop human-to-human transmission," Nouri said. "If people in a public bathroom are not wearing masks, think twice before going in."

- If the restroom looks crowded, wait until it clears out, if you can. “You’re reducing the risk of inhaling aerosolized particles from other people,” Nouri said.

**89. Is hand sanitizer as effective as soap and water in killing coronavirus?**
Yes — as long as you use the right kind of sanitizer and use it correctly. Hand sanitizers “need to have at least 60% alcohol in them,” said Dr. William Schaffner, professor of preventative medicine and infectious disease at Vanderbilt University School of Medicine.

And don’t just put a little dollop in your hand and smear it around quickly. “You’ve got to use enough and get it all over the surfaces,” Schaffner said. “Rub it all over your hands, between your fingers and on the back of your hands.” But it’s always better to thoroughly wash your hands, if you’re able to.

“Alcohol is pretty effective at killing germs, but it doesn’t wash away stuff,” said Dr. John Williams, a virologist at the University of Pittsburgh Medical Center Children’s Hospital of Pittsburgh. “If somebody’s just sneezed into their hand, and their hand is covered with mucus, they would have to use a lot more alcohol to inactivate that bacteria or virus.”

**90. When are people with coronavirus most contagious?**
“People can be contagious without symptoms. And in fact – a little bit strangely in this case — ***people tend to be the most contagious before they develop symptoms, if they’re going to develop symptoms,”*** CNN Chief Medical Correspondent Dr. Sanjay Gupta said. “They call that the pre-symptomatic period. So, people tend to have more virus at that point seemingly in their nose, in their mouth. This is even before they get sick. And they can be shedding that virus into the environment.”

Some people infected with coronavirus never get symptoms. But it’s easy for these asymptomatic carriers to infect others, said Anne Rimoin, an epidemiology professor at UCLA’s School of Public Health. “When you speak, sometimes you’ll spit a little bit,” she said. “You’ll rub your nose. You’ll touch your mouth. You’ll rub your eyes.” Health officials suggests people wear face masks while in public and when it’s difficult to stay 6 feet away from others.

**91. Are some blood types able to fight coronavirus better than other blood types?**
A study published in The New England Journal of Medicine found that people with Type A blood have a higher risk of getting infected with coronavirus and developing severe symptoms, while people with Type O blood have a lower risk – but the study has caveats. The researchers cannot say if blood type is a direct cause of the differences in susceptibility. It could be that genetic changes that affect someone’s risk also just happen to be linked with blood type, they said.

The study’s findings, while plausible, may mean very little for the average person, said Dr. Roy Silverstein, a hematologist and chairman of the department of medicine at the Medical College of Wisconsin. “The absolute difference in risk is very small,” he said. “The risk reduction may be statistically significant, but it is a small change in actual risk. You never would tell somebody who was Type O that they were at smaller risk of infection.” The bottom line: “All of us are

susceptible to this virus," said Dr. Maria Van Kerkhove, technical lead for the World Health Organization's COVID-19 response.

**92. What's the risk of having a maid service come to clean your house if you're not home?**
"It's probably safe if you're not at home," emergency physician Dr. Leana Wen said. She suggested leaving the windows open to improve ventilation and asking the cleaners to use your own cleaning supplies so they don't bring items that have been in other people's houses.

**93. Can I disinfect my mask by putting it in the microwave?**
That's "not a great idea," said Dr. Joseph Vinetz, a professor of infectious diseases at Yale School of Medicine. "We have no evidence about that." "If there's a metal piece in an N95 or surgical mask and even staples, you can't microwave them," he said. "It'll blow up."

Vinetz said cloth masks can be washed and reused, and even disposable masks can be reused if you let them sit for several days. To disinfect masks that you can't wash, Vinetz recommends leaving them in a clean, safe place in your home for a few days. After that, it should no longer be infectious, as this coronavirus is known to survive on hard surfaces for only up to three days.

**94. Is it safe to perform CPR on a stranger?**
Doctors strongly recommend performing CPR when someone needs it.
You could be hundreds of times more likely to save that dying person's life than you are to die from COVID-19 if you contract it after performing CPR, according to a report published by a group of Seattle emergency room physicians in the journal Circulation. But it's important to act quickly for CPR to be effective.

"The chance of survival goes down by 10% for every minute without CPR," said Dr. Comilla Sasson, vice president for science and innovation in emergency cardiovascular care at the American Heart Association. "It's a 10-minute window to death in many cases."
If you're not certified in CPR, performing chest compressions could also buy more time until help arrives. Bystanders should "provide high-quality chest compressions by pushing hard and fast in the middle of the victim's chest, with minimal interruptions," the American Heart Association said. If you're not sure how "fast" to do to those chest compressions, singing any of these popular songs will help you get the right rhythm.

**95. Can I get coronavirus from swimming in open water, like in a lake or seawater? What about in a public pool or hot tub?**
It's not the water you need to worry about. It's how close you might get to other people.
"Properly maintained pool water will not be a source of spread of the virus. The chlorine that's in it will inactivate the virus fairly quickly," immunologist Erin Bromage said.

"The level of dilution that would happen in a pool or an ocean or a large freshwater body would not lead to enough virus to establish an infection. But when you do this, you need to just make sure that we're maintaining an appropriate physical distance while swimming or sitting in a hot tub."

That's because it's easy for infected people with no symptoms to spread the virus if they're within 6 feet from each other. If you have an indoor pool or hot tub, even 6 feet might not be enough distance.

**96. I saw other countries spraying down sidewalks and other public places with disinfectant. Why haven't we done that in the US?**

Randomly spraying open places is largely a waste of time, health experts say. It can actually do more harm than good. "Spraying disinfectants can result in risks to the eyes, respiratory or skin irritation," the World Health Organization said.

"Spraying or fumigation of outdoor spaces, such as streets or marketplaces, is also not recommended to kill the COVID-19 virus or other pathogens because disinfectant is inactivated by dirt and debris, and it is not feasible to manually clean and remove all organic matter from such spaces," the WHO said.

"Moreover, spraying porous surfaces, such as sidewalks and unpaved walkways, would be even less effective." Besides, the ground isn't typically a source of infection, the WHO said.
And once the disinfectant wears off, an infected person could easily contaminate the surface again.

**97. Can protests increase the spread of COVID-19?**

Any large gathering can increase the spread because this coronavirus is transmissible by talking or even just breathing. Carriers of the virus can be contagious even if they don't have symptoms. And when people are "shouting and cheering loudly, that does produce a lot of droplets and aerosolization that can spread the virus to people," said Dr. James Phillips, a physician and assistant professor at George Washington University Hospital. So doctors and officials say it's important to get vaccinated or wear a face mask and try to keep your distance from others as much as possible.

**98. Do vitamin D levels affect your risk for coronavirus? Is there a correlation between vitamin D and those who test positive for COVID-19?**

"To date, there is no evidence that very high vitamin D levels are protective against COVID-19 and consequently medical guidance is that people should not be supplementing their vitamin D levels beyond those which are currently recommended by published medical advice," wrote Robin May, director of the Institute of Microbiology and Infection at the University of Birmingham in the UK.

Vitamin D is important for healthy muscles, strong bones and a powerful immune system. The recommended daily dose of vitamin D for anyone over age 1 is 15 mcg/600 IU per day in the US. For anyone over 70 years of age in the US, the recommended daily intake goes up to 20 mcg/800 IU per day. But too much vitamin D can lead to a toxic buildup of calcium in your blood that can cause confusion, disorientation, heart rhythm problems, bone pain, kidney damage and painful kidney stones.

**99. Can you get coronavirus from touching money? What about from other objects, like plants?**

"Viruses can live on surfaces and objects — including on money — although your chance of actually getting COVID-19 from cash is probably very low," emergency medicine physician Dr. Leana Wen said. The new coronavirus can live for up to 72 hours on stainless steel and plastic, up to 24 hours after landing on cardboard, and up to four hours after landing on copper, according to a study funded by the US National Institutes of Health.

So how do you protect yourself? To avoid touching cash or coins, use contactless methods of payment whenever possible, Wen said. If you can't use a contactless form of payment, credit cards and debit cards are much easier to clean and disinfect than cash. But remember that anyone who touches your credit card can also leave germs on it.

If you must use cash, "wash your hands well with soap and water" afterward, Wen said. The same applies for anything else you touch that might have coronavirus on it. If you can't wash your hands immediately, use hand sanitizer or disinfectant. And since COVID-19 is a respiratory disease, make sure you avoid touching your face.

**100. Can UV light kill coronavirus?**
While some UV light devices are used for hospital disinfection, UV light only kills germs under very specific conditions — including certain irradiation dosages and exposure times, the World Health Organization said. But UV light can also damage the body.

Two factors are required for UV light to destroy a virus: intensity and time. If the light is intense enough to break apart a virus in a short time, it's going to be dangerous to people, said Donald Milton, a professor at the University of Maryland. UVA and UVB light both damage the skin. UVC light is safer for skin, but it will damage tender tissue such as the eyes.

**101. Do I need to wash fruits and vegetables with soap and water?**
No. The US Food and Drug Administration says you don't need to wash fresh produce with soap and water, but you should rinse it with plain water. But it's still important to wash your hands with soap and water frequently because we often touch our faces without realizing it. You don't have to worry about getting coronavirus by "eating" it, though. Even if coronavirus does get into your food, your stomach acid would kill it, said Dr. Angela Rasmussen, a virologist at Columbia University.

**102. Can coronavirus stay in my hair or in a beard? Should I wash my hair every day?**
Coronavirus can stick to hair, said Dr. David Aronoff, director of the Division of Infectious Diseases at Vanderbilt University Medical Center. Touching contaminated hair and then touching your mouth, eyes or nose could increase your risk of infection. "Like on the skin, this coronavirus is a transient hitchhiker that can be removed by washing," Aronoff said.

But that doesn't mean you have to wash the hair on your head multiple times a day, said dermatologist Dr. Hadley King. That's because "living hair attached to our scalps may be better protected by our natural oils that have some antimicrobial properties and may limit how well microbes can attach to the hair," she said.

"If you are going out into areas that could possibly be contaminated with viral particles, then it would be reasonable to wash the hair daily during the pandemic. But it's not the same as hand washing – the virus infects us through our mucosal surfaces. If your hair is not falling into your face or you're not running your fingers through it, then there is less of a risk."

If your hair does fall into your face, you may want to pull it back to minimize your risk, King said. As for facial hair, "washing at least daily if not more frequently is wise, depending on how often they touch their face," Aronoff said.

**103. Could I infect my pets with coronavirus, or vice versa? Can someone get infected by touching an animal's fur? Should I get my pet tested for coronavirus?**

There have been some reports of animals infected with coronavirus — including two pets in New York and eight big cats at the Bronx Zoo. Most of those infections came from contact with humans who had coronavirus, like a zoo employee who was an asymptomatic carrier.

But according to the CDC, there is no evidence animals play a significant role in spreading the virus to humans. Therefore, at this time, routine testing of animals for COVID-19 is not recommended. As always, it's best to wash your hands after touching an animal's fur and before touching your face. And if your pet appears to be sick, call your veterinarian.

**104. What is contact tracing?**

This "Contact tracing 101" article explains how contact tracing works, who can get hired, and how contact tracing has helped quash previous outbreaks. But the US hasn't been doing nearly enough contact tracing, experts say. Here's why.

**105. Should I wash my hands and laundry in very warm or hot water?**

Hot water is best for killing bacteria and viruses in your laundry. But you don't want to use that kind of scalding hot water on your skin. Warm water is perfectly fine for washing your hands — as long as you wash them thoroughly (like this) and for at least 20 seconds. (To time yourself, you can hum the "Happy Birthday" song twice.)

Cold water will also work, "but you have to make sure you work really vigorously to get a lather and get everything soapy and bubbly," said chemist Bill Wuest, an associate professor at Emory University. To do that, you might need to sing "Happy Birthday" three times instead of twice. "Warm water with soap gets a much better lather – more bubbles," Wuest said. "It's an indication that the soap is … trying to encapsulate the dirt and the bacteria and the viruses in them."

**106. How does soap kill coronavirus? If I don't have disinfecting wipes, can I use soap and water on surfaces?**

Yes, you can use soap and water on surfaces just like you would on your hands to kill coronavirus. But don't use water alone — that won't really help. The outer layer of the virus is made up of lipids, aka fat. Your goal is to break through that fatty barrier, forcing the virus' guts to spill out and rendering it dead.

In other words, imagine coronavirus is a butter dish that you're trying to clean. "You try to wash your butter dish with water alone, but that butter is not coming off the dish," said Dr. John Williams, chief of pediatric infectious diseases at UPMC Children's Hospital of Pittsburgh. "You need some soap to dissolve grease. So, soap or alcohol are very, very effective against dissolving that greasy liquid coating of the virus." By cutting through the greasy barrier, Williams said, "it physically inactivates the virus so it can't bind to and enter human cells anymore."

**107. Can coronavirus be transferred by people's shoes? How do I protect kids who crawl or play on the floor?**

Yes, coronavirus can live on the soles of shoes, but the risk of getting COVID-19 from shoes appears to be low. A report published by the CDC highlighted a study from a hospital in Wuhan, China, where this coronavirus outbreak began.

The soles of medical workers' shoes were swabbed and analyzed, and the study found that the virus was "widely distributed" on floors, computer mice, trash cans and doorknobs. But it's important to note the study was done in a hospital, where the virus was concentrated. It's still possible to pick up coronavirus on the bottoms of your shoes by running errands, but it's unlikely you'll get sick from it because people don't often touch the soles of their shoes and then their faces. Because COVID-19 is a respiratory disease, the CDC advises wearing a mask while in public and washing your hands frequently– the correct way. If you have small children who crawl or regularly touch the floor, it's a good idea to take your shoes off as soon you get home to prevent coronavirus or bacteria from spreading on the floors.

**108. Can I get coronavirus through food? Is it safe to eat takeout from restaurants?**

There's no evidence that coronavirus can be transmitted through food, the CDC says.
Even if coronavirus does get into your food, your stomach acid would kill it, said Dr. Angela Rasmussen, a virologist at Columbia University. "When you eat any kind of food, whether it be hot or cold, that food is going to go straight down into your stomach, where there's a high acidity, low-pH environment that will inactivate the virus," she said.

But it's a good idea to disinfect the takeout containers, CNN Chief Medical Correspondent Dr. Sanjay Gupta said. Coronavirus is a respiratory virus, and it's easy to touch your face without realizing it. If you don't have disinfecting wipes, use your own plates or bowls to serve the food. Just make sure to wash your hands after transferring food from the containers.

**109. Can coronavirus spread through water, like in a swimming pool or hot tub?**

"There is no evidence that COVID-19 can be spread to humans through the use of pools and hot tubs," the CDC says. "Proper operation, maintenance, and disinfection (e.g., with chlorine and bromine) of pools and hot tubs should remove or inactivate the virus that causes COVID-19."

But health officials still advise staying at least 6 feet away from others because COVID-19 is a respiratory disease. In other words, you probably won't get coronavirus from the water, but you could get coronavirus from someone close to you in the water. As for drinking water, doctors say you don't need to worry about coronavirus in the tap water because most municipal drinking water systems should remove or inactivate the virus.

**110. Can mosquitoes or houseflies transmit coronavirus?**
"To date there has been no information nor evidence to suggest that the new coronavirus could be transmitted by mosquitoes," the World Health Organization says. There's also no evidence so far suggesting flies can spread coronavirus.

**111. Can you safely reuse a non-cloth mask that you can't wash, like a disposable mask?**
Yes, you can, said Dr. Joseph Vinetz, an infectious diseases professor at Yale School of Medicine. To disinfect masks that you can't wash, Vinetz recommends leaving them in a clean, safe place in your home for a few days. After that, it should no longer be infectious, as this coronavirus is known to survive on hard surfaces for only up to three days. You can reuse cloth masks, too. Just launder them between each use on a high heat setting.

**112. Will ingesting or injecting disinfectants, like the ones that kill viruses on surfaces, protect me against coronavirus or kill coronavirus if I already have it?**
"That's a bad idea," said Dr. Colleen Kraft, an infectious diseases professor at Emory University School of Medicine. "It could definitely kill you." Former President Donald Trump wondered aloud during a press conference whether there's "a way we can do something like that, by injection inside or almost a cleaning." But the Reckitt Benckiser Group, which produces Lysol cleaning products, said "under no circumstance" should disinfectants be put into the human body.

**113. Can coronavirus stick to clothes? Do I need to wash my clothes right after encountering other people, like at the grocery store or while jogging?**
"I don't think you need to," CNN Chief Medical Correspondent Dr. Sanjay Gupta said. Coronavirus can stay alive for up to three days on stainless steel and plastic. But clothing "is probably more like cardboard — it's more absorbent, so the virus is unlikely to stay and last that long," Gupta said.

While coronavirus can stay alive on cardboard for up to 24 hours, viruses generally don't stick well on surfaces that are in motion. "If you look at how viruses move through air, they kind of want to move around objects," Gupta said. "They don't want to necessarily land on objects. So, if you're moving as human body through the air … (it's) unlikely to stick to your clothes."

**114. Will an antibody test show whether I'm immune and can go back to work or school?**
Not necessarily. Antibodies are a body's response to bacteria or viruses. But it's not clear whether having antibodies means you have long-term protection from getting reinfected. "The thing we don't know yet is what is the relationship between the level of antibody and the degree of your protection," Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, told Snapchat's "Good Luck America" show. "So, you may be positive for an antibody, but not enough to protect you." There's also a risk that some antibody tests might confuse the novel coronavirus with other coronaviruses, like the ones that cause the common cold.

**115. Can I use vodka as hand sanitizer?**
Please don't. The CDC advises using hand sanitizer that contains at least 60% alcohol.

Vodka typically contains between 35% and 46% percent alcohol. If the stores are out of hand sanitizer and you want to make your own, the Nebraska Medical Center offers this recipe:

**What you'll need:**

- 2/3 cup 91% isopropyl alcohol (rubbing alcohol)
- 1/3 cup aloe vera gel
- Mixing bowl
- Spoon or something for whisking
- Small container, such as a 3-oz. travel bottle
- Optional: essential oil to give your hand sanitizer a fragrance

**Directions:**

- In a mixing bowl, stir isopropyl alcohol and aloe vera gel together until well blended.
- Add 8-10 drops of scented essential oil (optional, but nice). Stir.
- Pour the homemade hand sanitizer into an empty container and seal. Write "hand sanitizer" on a piece of masking tape and attach to the bottle.

**116. Are smokers or vapers at higher risk? What if I only smoke weed?**

This is not a good time to be vaping or smoking anything, including weed.
"Vaping affects your lungs at every level. It affects the immune function in your nasal cavity by affecting cilia, which push foreign things out," said Prof. Stanton Glantz, director of the Center for Tobacco Research Control and Education at University of California San Francisco.

When you vape, "the ability of your upper airways to clear viruses is compromised," Glantz said. Tobacco smokers are at especially high risk. In a study from China, where the first COVID-19 outbreak occurred, smokers were 14 times more likely to develop severe complications than non-smokers.

Even occasionally smoking marijuana can put you at greater risk. "What happens to your airways when you smoke cannabis is that it causes some degree of inflammation, very similar to bronchitis, very similar to the type of inflammation that cigarette smoking can cause," said pulmonologist Dr. Albert Rizzo, chief medical officer for the American Lung Association. "Now you have some airway inflammation, and you get an infection on top of it. So yes, your chance of getting more complications is there."

**117. My teenagers aren't taking this seriously. Any advice?**

Coronavirus isn't just infecting young people. It's killing young, healthy people as well. We've reported many stories about young people getting severely sick with or dying from coronavirus.

Dimitri Mitchell, 18, admits he had a "false sense of security." But he was later hospitalized with coronavirus and now wants everyone to take it seriously. "I just want to make sure everybody knows that no matter what their age is, it can seriously affect them. And it can seriously mess them up, like it messed me up," the Iowa teen said.

"Four days in, the really bad symptoms started coming along. I started having really bad outbreaks, like sweating, and my eyes were really watery. I was getting warmer and warmer, and I was super fatigued. … I would start experiencing the worst headaches I've ever felt in my life. They were absolutely horrible." Eventually, the teen had to be hospitalized. His mother said she worried he might "fall asleep and never wake up."

Mitchell is now recovering but has suffered from long-term effects. "I just hope everybody's responsible, because it's nothing to joke about," he said. "It's a real problem, and I want everybody to make sure they're following social distancing guidelines and the group limits. And just listen to all the rules and precautions and stay up to date with the news and make sure they're informed."

**118. Does this pandemic have anything to do with the 5G network?**

No, that's just a hoax going around the internet. "The theory that 5G might compromise the immune system and thus enable people to get sick from corona is based on nothing," said Eric van Rongen, chairman of the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Learn more about how 5G really works and why this hoax makes no sense.

**119. My ex and I have joint custody of our kids. Is it safe for them to go between two homes?**

Ideally, you should limit your children's potential exposures to coronavirus and work out the safest plan possible with your ex. The problem: Some state and county family courts might be closed, or open only for emergencies involving abuse or endangerment. So, it might be difficult to formally modify pre-existing custody agreements. But some states may be offering some flexibility during the pandemic. And there may be creative solutions, such as spending more time with one parent now in exchange for extra time with the other parent after the pandemic ends.

**120. How long does coronavirus stay "alive" on surfaces?**

Up to three days, depending on the surface. According to a study funded by the US National Institutes of Health:

- The novel coronavirus is viable up to 72 hours after being placed on stainless steel and plastic.
- It was viable up to four hours after being placed on copper, and up to 24 hours after being put on cardboard.
- In aerosols, it was viable for three hours.

**121. Will a pneumonia or flu vaccine help protect against coronavirus?**

Some cases of coronavirus do lead to pneumonia. But the pneumonia vaccine won't help. "Vaccines against pneumonia, such as pneumococcal vaccine and Haemophilus influenza type B (Hib) vaccine, only help protect people from these specific bacterial infections," according to Harvard Medical School. "They do not protect against any coronavirus pneumonia."

**122. Why have medical workers gotten sick with or died from coronavirus if they're wearing protective gear? Does the viral load matter?**

In some cases, health care workers haven't had enough protective gear to handle the volume of COVID-19 patients. Some have resorted to using plastic report covers as masks. The CDC said medical providers might have to use expired masks or reuse them between multiple patients. But it's not just subpar protective gear that puts medical workers at risk. It's also the amount of virus they're exposed to.

"The viral load — the amount of virus – does determine the severity of your illness," emergency medicine physician Dr. Leana Wen said. "So that could happen in the case of health care workers who are exposed to a lot more COVID-19 as a result of their work — that they get more severely ill."

**123. How many people with coronavirus don't have symptoms? Are they still contagious?**

In one study, about 4 in 5 people with confirmed coronavirus in China were likely infected by people who didn't know they had it, according to research published in the journal "Science" last year. "These findings explain the rapid geographic spread of (coronavirus) and indicate containment of this virus will be particularly challenging," researchers wrote.

In March 2020, the CDC said almost half of the 712 people with coronavirus who were on the Diamond Princess cruise ship didn't have any symptoms when they tested positive.
Other studies have suggested 25% to 50% of coronavirus carriers don't have symptoms.

**124. How do I safely take care of someone who's sick?**

It may be difficult to know whether your loved one has coronavirus or another illness. So it's critical to play it safe and not infect yourself and, in turn, others. The CDC suggests:

- Giving the sick person their own room to stay in, if possible. Keep the door closed.
- Having only one person serve as the caretaker.
- Asking the sick person to wear a face mask, if it doesn't cause breathing problems. It's a good idea for the caretaker to also wear a secure face mask.

**125. What are the symptoms?**

Fatigue, fever, dry cough, difficulty breathing, and the loss of taste or smell are some of the symptoms of COVID-19. Symptoms can appear anywhere from 2 days to 2 weeks after exposure, the CDC says. But some people get no symptoms at all and can infect others without knowing it. The illness varies in its severity. And while many people can recover at home just fine, some — including young, previously healthy adults — are suffering long-term symptoms.

**126. What can I do if my loved one thinks he or she has coronavirus?**

Don't visit family members with suspected illness – connect with them virtually. If that person lives with you, limit contact with them and avoid using the same bathroom or bedroom if possible, the CDC advises.

If the person been diagnosed, he or she might be able to recover at home in isolation. Separate yourself as much as possible from your infected family member and keep animals away, too. Continue to use separate restrooms and regularly disinfect them.

Stock up on groceries and household supplies for them while they can't travel outside and minimize trips to stores. Wash your hands frequently and avoid sharing personal items with the infected person. If you think you're developing symptoms, stay home and call your physician.

**127. The stores are out of disinfectant sprays and hand sanitizer. Can I make my own?**
Yes, you can make both at home. "Unexpired household bleach will be effective against coronaviruses when properly diluted" if you're trying to kill coronavirus on a non-porous surface, the CDC said. The CDC's recipe calls for diluting 5 tablespoons (or ⅓ cup) of bleach per gallon of water, or 4 teaspoons of bleach per quart of water.

You can also make your own hand sanitizer. The Nebraska Medical Center – famous for its biocontainment unit and treatment of Ebola patients – offers this recipe:

**What you'll need:**
- 2/3 cup 91% isopropyl alcohol (rubbing alcohol)
- 1/3 cup aloe vera gel
- Mixing bowl
- Spoon or something for whisking
- Small container, such as a 3 oz. travel bottle
- Optional: essential oil to give your hand sanitizer a fragrance

**Directions:**
- In a mixing bowl, stir isopropyl alcohol and aloe vera gel together until well blended.
- Add 8-10 drops of scented essential oil (optional, but nice). Stir.
- Pour the homemade hand sanitizer into an empty container and seal.
- Write "hand sanitizer" on a piece of masking tape and attach to the bottle.

**128. Can I be fired if I stay home sick?**
Employees can be fired if they don't show up to work and don't have sick leave that would cover the absence, says Krista Slosburg, an employment attorney at Stokes Lawrence in Seattle.
But there are exceptions. Employers who make workers with COVID-19 come in may be violating Occupational Safety and Health Administration [OSHA] regulations, said Donna Ballman, who heads an employee advocacy law firm in Florida.

**129. What happens when workers don't get paid sick leave?**
If you work in a city or state that requires sick leave and you use it, you can't be terminated or disciplined. But there is no federal mandate that requires companies to offer paid sick leave, and almost a quarter of all US workers don't get it, according to 2019 government data. Some state and local governments have passed laws that require companies to offer paid sick leave. The Family and Medical Leave Act (FMLA) can sometimes protect a worker's job in the event they get sick, but it won't guarantee they get paid while they're out. Employee advocates urge businesses to consider the special circumstances of the COVID-19, and some already have.

**130. Can managers send a sick worker home?**
Yes, managers can. The Society for Human Resource Management recommends companies "actively encourage sick employees to stay home, send symptomatic employees home until they

are able to return to work safely, and require employees returning from high-risk areas to telework during the incubation period (of 14 days)." If a manager feels an employee's illness poses a direct threat to colleagues' safety, the manager may be able to insist the employee be evaluated by a doctor, said Alka Ramchandani-Raj, an attorney specializing in workplace safety.

**131. If traveling on a plane, how do I stay safe?**
Since COVID-19 is a respiratory disease, many airlines require passengers to wear face masks during the flight, except for while eating or drinking. Health experts suggest eating, drinking and using the restroom *before* getting on the plane, to eliminate the need to take off your mask or go into a cramped lavatory on board. And always be mindful of where your hands have been, travel medicine specialist Dr. Richard Dawood said.

Airport handrails, door handles, and airplane lavatory levers are notoriously dirty. "It is OK to touch these things as long as you then wash or sanitize your hands before contaminating your face, touching or handling food," Dawood said. "Hand sanitizers are great. So are antiseptic hand wipes, which you can also use to wipe down armrests, remote controls at your seat and your tray table."

**132. Should I spray myself or my kids with disinfectant?**
No, those products work on surfaces but can be dangerous to your body. There are some chemical disinfectants, including bleach, 75% ethanol, peracetic acid and chloroform, that may kill the virus on surfaces. But if the virus is already in your body, putting those substances on your skin or under your nose won't kill it, the World Health Organization says. And those chemicals can harm you.

**133. I've heard that home remedies can cure or prevent the virus. Is that true?**
There's no evidence from the outbreak that eating garlic, sipping water every 15 minutes or taking vitamin C will protect people from the new coronavirus. Same goes for using essential oils or colloidal silver.

**134. Why was the US been so far behind other countries with testing?**
Experts said cuts in federal funding for public health and problems with early testing forced the US to play catch-up.

- **Problems with public health infrastructure:** Two years ago, the CDC stopped funding epidemic prevention activities in 39 countries, including China. This happened because the Trump administration refused to allocate money to a program that started during the 2014 Ebola outbreak. Former CDC director Dr. Tom Frieden warned that move "would significantly increase the chance an epidemic will spread without our knowledge and endanger lives in our country and around the world."

- **Problems with the testing:** Malfunctions, shortages and delays in availability have all contributed to the slowdown. In the first few weeks of the outbreak in the US, the CDC was the only facility in the country that could confirm test results — even though a World Health Organization test became available around the same time. Some test kits that were sent around the country were flawed — a move that put the US behind about "four to five

weeks," says Dr. Rob Davidson, executive director of the Committee to Protect Medicare.

**135. If a coronavirus patient gets pneumonia, what antibiotics have proven to be effective?**

No antibiotics are effective against COVID-19 because the disease is caused by a viral infection, not a bacterial infection. "However, if you are hospitalized for the [coronavirus], you may receive antibiotics because bacterial co-infection is possible," the World Health Organization says. There is no known cure for the novel coronavirus.

**136. Did Dean Koontz predict this outbreak in the book "The Eyes of Darkness" almost 40 years ago?**

No. There are some interesting coincidences in the 1981 fiction novel, which says "a severe pneumonia-like illness will spread around the globe" around the year 2020. Modern editions of the book call the biological strain "Wuhan-400," and the current coronavirus outbreak started in Wuhan, China.

But there are important differences between the book and reality. The original version of the book called the strain the "Gorki-400," in reference to a Russian locality, before it was later changed to the "Wuhan-400." In the book, the virus was man-made, while scientists believe the novel coronavirus started in animals and jumped to humans. And in the book, the virus had a 100% mortality rate. Early estimates of the mortality rate for this coronavirus outbreak range from 2-4%.

**137. Can I get coronavirus from a package sent from China?**

No, "The new coronavirus cannot be transmitted through goods manufactured in China or any country reporting COVID-19 cases," the World Health Organization says. "Even though the new coronavirus can stay on surfaces for a few hours or up to several days (depending on the type of surface), it is very unlikely that the virus will persist on a surface after being moved, travelled, and exposed to different conditions and temperatures," WHO said.

**138. Can the heat from a hand dryer kill coronavirus?**

Hand dryers can't kill the virus, the World Health Organization said. WHO also said UV lamps shouldn't be used to sterilize hands or other areas of the body because the radiation can irritate skin.

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