

## **Covid in Children and the future of children vaccination**

### **Immune system in children**

The immune system in children have been trained to deal with similar-looking pathogens. Innate immunity might be the key to why children have fared better with the virus. The novelty of SARS-CoV-2 levelled the playing field, and showed that children are naturally better at controlling viral infections. But the Delta variant poses fresh unknowns.

The phenomenon was not entirely surprising to immunologists, however. With other viruses, adults have the advantage of experience. According to immunologists and geneticists at the Icahn School of Medicine at Mount Sinai, in New York City, this is not because their immune systems are ineffective it's they're just inexperienced.

Research is beginning to reveal that the reason children have fared well against COVID-19 could lie in the innate immune response, the body's crude but swift reaction to pathogens.

The emergence of the Delta variant has made finding answers more urgent. Reports suggest that in the United States and elsewhere, children are starting to make up a larger proportion of reported infections and hospitalizations. These trends might be due to Delta's high transmission rate and the fact that many adults are now protected by vaccines.

*For now, there is no clear evidence that children are more vulnerable to or more affected by Delta compared with earlier variants.*

But SARS-CoV-2, like all viruses, is constantly mutating and becoming better at evading host defences, and that could make understanding childhood's protective benefits more important.

### **What is multisystem inflammatory syndrome in children (MIS-C)?**

Multisystem inflammatory syndrome in children (MIS-C) is a serious condition in which some parts of the body — such as the heart, lungs, blood vessels, kidneys, digestive system, brain, skin or eyes — become severely inflamed. Evidence indicates that many of these children were infected with the COVID-19 virus in the past, as shown by positive antibody

test results, suggesting that MIS-C is caused by an excessive immune response related to COVID-19.

Possible signs and symptoms of MIS-C include:

- Fever that lasts 24 hours or longer
- Vomiting
- Diarrhoea
- Pain in the stomach
- Skin rash
- Fast heartbeat
- Rapid breathing
- Red eyes
- Redness or swelling of the lips and tongue
- Feeling unusually tired
- Redness or swelling of the hands or feet
- Headache, dizziness or light-headedness
- Enlarged lymph nodes

**Emergency warning signs of MIS-C include:**

- Inability to wake up or stay awake
- Difficulty breathing
- New confusion
- Pale, gray or blue-coloured skin, lips or nail beds, depending on skin tone
- Severe stomach pain

If your child shows any emergency warning signs or is severely sick with other signs and symptoms, it should be hospitalised.

If the child isn't severely ill but shows other signs or symptoms of MIS-C, contact your child's doctor right away for advice.

*Importance of MIS-C is initial response to COVID in these kids may not be serious, but about a month later are admitted to hospital with a host of symptoms, from heart failure to abdominal pain and conjunctivitis, with minimal damage to the lungs.*

As the pandemic wears on, researchers worry that the virus could evolve in ways that thwart some part of kids' innate protection. Some researchers have found that the Alpha variant, which was dominant in some parts of the world for a time, developed tricks that allowed it to suppress the body's innate immune response. They worry that Delta could do the same. For now, increased hospitalizations of children in regions where Delta is circulating seem to be the result of its enhanced infectivity across all ages, coupled with the fact that many adults are vaccinated or have already been infected with SARS-CoV-2. However research on this is ongoing.

### **Children are now getting Covid**

Clearly, children are getting infected. So maybe the virus can't replicate in them as well as it does in adults. Some researchers proposed that children might have fewer ACE2 receptors, which the virus uses to enter and infect cells. There is conflicting evidence on age-related differences in ACE2 expression in the nose and lungs, but scientists who measured the 'viral load' — the concentration of viral particles — in people's upper airways have seen no clear difference between children and adults.

Another proposal is that children, who seem to be sniffing all year round, might be more exposed to other corona viruses that cause the common cold, and therefore have a squad of antibodies at the ready with some ability to latch on to the pandemic corona virus. But the weight of evidence suggests that adults also have this immunity. Strikingly, these 'cross-reactive' antibodies don't offer any special protection — if anything, they could lead to a misguided response.

### **Symptoms of suspicion of Covid in children**

While children and adults experience similar symptoms of COVID-19, children's symptoms tend to be mild and cold-like. Most children recover within one to two weeks. Possible symptoms can include:

- Fever
- Cough that becomes productive
- New loss of taste or smell
- Changes in the skin, such as discoloured areas on the feet and hands

- Sore throat
- Gastrointestinal symptoms, such as nausea, vomiting, belly pain or diarrhoea
- Chills
- Muscle aches and pain
- Extreme fatigue
- New severe headache
- New nasal congestion

### **Covid in children and adults –few hypothesis regarding differences**

Data collected by the US Centres for Disease Control and Prevention from hospitals across the country suggest that people under the age of 18 have accounted for less than 2% of hospitalizations due to COVID-19, a total of 3,649 children between March 2020 and late August 2021. Some children do get very sick, and more than 420 have died in the United States, but the majority of those with severe illness have been adults, a trend that has been borne out in many parts of the world.

This makes SARS-CoV-2 somewhat anomalous. For most other viruses, from influenza to respiratory syncytial virus, young children and older adults are typically the most vulnerable.

The risk of bad outcomes by age can be represented by a U-shaped curve. But with COVID-19, the younger end of that curve is largely chopped off. As quoted by researcher, Kawsar Talaat, an infectious-disease physician, at the Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland. “It’s absolutely remarkable; one of the few silver linings of this pandemic is that children are relatively spared.”

The phenomenon was not entirely surprising to immunologists, however. With other viruses, adults have the advantage of experience. Through prior infection or vaccination, their immune systems have been trained to deal with similar-looking pathogens.

The novelty of SARS-CoV-2 levelled the playing field, and showed that children are naturally better at controlling viral infections. It’s not because their immune systems are ineffective.

Researchers have found that children have significantly higher expression of genes encoding MDA5, a receptor known to recognize SARS-CoV-2, than do adults. After spotting the viral intruder, these cells immediately trigger the production of interferons.

*For adults, it takes two days to ramp up the viral defence system to a level that we see from day zero with children. It's the time lag which makes the difference between children and adults.*

Studies of rare, inherited, immune disorders also point to a predominant role for innate immunity in thwarting respiratory pathogens such as influenza.

But, an overactive innate response might be detrimental as well. *Children with Down's syndrome, for example, are more at risk of severe COVID-19, which could be because the extra chromosome they have contains several genes involved in the type 1 interferon response.*

Research is beginning to reveal that the reason children have fared well against COVID-19 could lie in the innate immune response — the body's crude but swift reaction to pathogens. Kids seem to have an innate response that's revved up and ready to go. But more studies are needed to fully support that hypothesis.

### **Cause of concern in children having Covid**

The emergence of the Delta variant has made finding answers more urgent. Reports suggest that in the United States and elsewhere, children are starting to make up a larger proportion of reported infections and hospitalizations. These trends might be due to Delta's high transmission rate and the fact that many adults are now protected by vaccines.

For now, there is no clear evidence that children are more vulnerable to or more affected by Delta compared with earlier variants. But SARS-CoV-2, like all viruses, is constantly mutating and becoming better at evading host defences, and that could make understanding childhood's protective benefits more important, because it hasn't had huge clinical implications previously, although COVID-19 in children highlights that we need to better understand these differences.

We know that the delta variant is much more transmissible than the other prior variants of COVID-19.

And that extends to children as much as to older teenagers and adults as well. What we're still working to understand is whether people get more sick with delta variant or not. These are somewhat surprisingly difficult things to tease out.

*When you have a large increase in the number of people getting infected, that proportionately results in more people in hospital and more people die.*

***But it doesn't necessarily mean that the virus itself is more deadly.***

### **Tickling bad memories**

Innate immunity is hardly the whole story, say researchers, especially given how interconnected it is with the adaptive response.

Some researchers propose that years of exposure to other human corona viruses could mean that adult immune systems approach SARS-CoV-2 the way they would those other viruses, resulting in a less effective response, a concept known as “*original antigenic sin*”. By contrast, kids could be producing a fresh, more finely tuned response to a brand-new virus.

Adults had more cross-reactive antibodies targeted at parts of SARS-CoV-2 that were similar to bits of other corona viruses, whereas children tended to produce a broader range of antibodies against all sections of the virus.

Researchers are also looking at other factors that are known to worsen with age, such as the ability to control inflammation and heal damaged tissue. Children are less prone to clots forming in blood vessels, and this could offer some protection.

### **Search results from few e-libraries and useful CDC recommendations**

#### **1] MAYO clinic research - COVID-19 (coronavirus) in babies and children**

Children of all ages can become ill with coronavirus disease 2019 (COVID-19). But most kids who are infected typically don't become as sick as adults and some might not show any symptoms at all.

Of course, not all children have asymptomatic or mild infection. Some, many of whom have underlying conditions such as chronic heart disease or cancer, get serious pneumonia. And estimates vary widely for the prevalence of 'long COVID', in which symptoms persist for months or more. A recent preprint suggested that up to 14% of young people who test positive for COVID-19 have multiple symptoms three months after the diagnosis.

## **2] Johns Hopkins**

### **Similar observation from Johns Hopkins suggest:**

As more becomes known about the corona virus, here is what parents and guardians need to know about it and COVID-19 in babies and children.

Aaron Milstone, M.D., M.H.S., a pediatrician at Johns Hopkins Children's Centre and an infectious disease expert at The Johns Hopkins Hospital, talks about COVID-19 symptoms in children, how to keep babies and kids safe, the risk infected children may pose to others, and an overview of MIS-C, a rare condition that may be related to exposure to the virus.

The ideas of prevention are almost same.

### **3] CDC – Certain observations and guidelines:**

However, some children become severely ill with COVID-19. They might need to be hospitalized, treated in the intensive care unit or placed on a ventilator to help them breathe, according to the Centres for Disease Control and Prevention (CDC).

In addition, children with underlying conditions, such as obesity, diabetes and asthma, might be at higher risk of serious illness with COVID-19. Children who have congenital heart disease, genetic conditions or conditions affecting the nervous system or metabolism also might be at higher risk of serious illness with COVID-19.

*Research also suggests disproportionately higher rates of COVID-19 in Hispanic and non-Hispanic Black children than in non-Hispanic white children.*

*Some children continue to experience symptoms of COVID-19 after their initial recovery. Rarely, some children might also develop a serious condition that appears to be linked to COVID-19.*

## **CDC GUIDELINES IN THE FOLLOWING:**

1] Pregnancy and newborn:

It appears that women infected with the coronavirus can, in very rare cases, pass the disease to her baby. Infants can also become infected shortly after being born. According to the U.S. Centers for Disease Control and Prevention (CDC), most newborns that test positive for the coronavirus have mild symptoms or none at all, and recover, but serious cases have occurred. **Pregnant women should take extra precautions, including talking to your doctor about getting a COVID-19 vaccine, to avoid the coronavirus, although vaccination during pregnancy is still a controversial area of research.**

### **Age**

Generally, COVID-19 symptoms in kids and babies are milder than those in adults, and some infected children may not have any signs of being sick at all.

**NEWBORNS** - can become infected with the virus that causes COVID-19 during childbirth or by exposure to sick caregivers after delivery. If an adult has COVID-19 or are waiting for test results due to symptoms, it's recommended during hospitalization after childbirth to wear a cloth face mask and have clean hands when caring for your newborn. Babies under age 1 might be at higher risk of severe illness with COVID-19 than older children. This is likely due to their immature immune systems and smaller airways, which make them more likely to develop breathing issues with respiratory virus infections.

Keeping newborn's crib by the bed in the hospital is OK, but it's also recommended that to maintain a reasonable distance from the baby when possible. When these steps are taken, the risk of a newborn becoming infected with the COVID-19 virus is low.

**INFANTS** - who have COVID-19 or who can't be tested and have no symptoms might be discharged from the hospital, depending on the circumstances. It's recommended that the baby's caregivers wear face masks and wash their hands to protect themselves.

Recommendation is to keep the child use a separate bedroom and bathroom from family members.



**CHILDREN** - having COVID-19 and can be treated at home, focus on relieving his or her symptoms. This might include rest, fluid intake and pain relievers.

COVID-19 symptoms for children and adults include:

- Cough
- Fever or chills
- Shortness of breath or difficulty breathing
- Muscle or body aches
- Sore throat
- New loss of taste or smell
- Diarrhoea
- Headache
- New fatigue
- Nausea or vomiting
- Congestion or runny nose

Fever and cough are common COVID-19 symptoms in both adults and children; shortness of breath is more likely to be seen in adults. Children can have pneumonia, with or without obvious symptoms. They can also experience sore throat, excessive fatigue or diarrhoea.

However, serious illness in children with COVID-19 is possible, and parents should stay alert if their child is diagnosed with, or shows signs of, the disease.

Factors used to decide whether to test your child for COVID-19 may differ depending on where you live. In the U.S., the doctor will determine whether to conduct diagnostic tests for COVID-19 based on the child's signs and symptoms, as well as whether your child has had close contact with someone diagnosed with COVID-19. The doctor may also consider testing if the child is at higher risk of serious illness.

To test for COVID-19, a health care provider uses a long swab to take a sample from the back of the nose (nasopharyngeal swab). The sample is then sent to a lab for testing. If your child is coughing up phlegm (sputum), that may be sent for testing.

*But children also might have COVID-19 and not show symptoms. This is why it's crucial to follow recommendations for preventing the spread of COVID-19.*

## **Children who get COVID-19 experience can have long-term effects**

Anyone who has had COVID-19 can develop a post-COVID-19 condition. Research suggests that children with both mild and severe COVID-19 have experienced long-term symptoms.

The most common symptoms in children include:

- Tiredness or fatigue
- Headache
- Trouble sleeping
- Trouble concentrating
- Muscle and joint pain
- Cough

Data from the CDC study indicate that some children may be at a higher risk for a serious case of COVID-19, needing medical care in a hospital:

“Indoor activities are riskier than outdoor activities, but risk can be reduced by masking, distancing, hand washing, and improved ventilation”.

Parents or guardians should immediately seek urgent or emergency medical care if they notice these warning signs in a child:

- Difficulty breathing or catching his or her breath
- Inability to keep down any liquids
- New confusion or inability to awaken
- Bluish lips

### **Risk Factors for Serious COVID-19 in Children**

- Those occur in under age 2
- Black and Latino children, who can be affected by health disparities, leaving them disproportionately vulnerable to severe COVID-19 complications
- Children who were born prematurely
- Those living with obesity or chronic lung disease

If you think your child is sick with COVID-19, trust your instinct, especially if the child has a cough or fever. Contact your paediatrician, family care practitioner or urgent care clinic if you don't have a doctor, and follow their instructions carefully regarding isolation and testing.

### Multisystem Inflammatory Syndrome in Children (MIS-C)

Doctors at children's hospitals in the U.S. and the U.K. have noted that children between ages 2 and 15 may experience a condition called multisystem inflammatory syndrome in children, or MIS-C after an infection with the corona virus.

Call your family doctor or paediatrician right away if your child experiences a fever of 100.4 degrees Fahrenheit or more that lasts more than 24 hours and at least one of these symptoms:

- Unusual weakness or fatigue
- A red rash
- Abdominal (belly) pain
- Vomiting and diarrhoea
- Red, cracked lips
- Red eyes
- Swollen hands or feet

### **Prevention of Covid in children**

*There is no difference set guidelines for children. However one issue is that children who are yet not in vaccination criteria should have all above 18 years in family vaccinated.*

If you or your child hasn't gotten a COVID-19 vaccine, there are many steps you can take to prevent yourselves from getting the COVID-19 virus and spreading it to others.

The CDC and WHO recommend that you and your family:

- **Keep your hands clean.** Wash your hands often with soap and water for at least 20 seconds, or use an alcohol-based hand sanitizer that contains at least 60% alcohol. Cover your mouth and nose with your elbow or a tissue when you cough or sneeze. Throw away the used tissue and wash your hands. Avoid touching your eyes, nose and mouth. Have your kids wash their hands immediately after returning home, as well as after going to the bathroom and before eating or preparing food. Show young children how to get the soap

between fingers and all the way to the ends of their fingers, including their thumbs and the backs of their hands. Encourage your kids to sing the entire "Happy Birthday" song twice (about 20 seconds) so they spend the time they need to get their hands clean.

- **Practice social distancing.** Make sure your child and everyone in your household avoids close contact (within about 6 feet, or 2 meters) with anyone who doesn't live in your household. Since people without symptoms may spread the virus, avoiding in-person playmates poses the lowest risk. Having infrequent in-person playmates with the same family or friend who is practicing preventive measures poses a medium risk. If you allow these kinds of playmates, hold them outside and make sure children maintain a distance of 6 feet away from each other. You can describe this distance to your child as about the length of a door or an adult's bicycle. To lower your child's risk of COVID-19, you may consider limiting involvement in activities that require shared equipment, such as a basketball, or that can't accommodate physical distancing. Encourage your child to keep in touch with friends and loved ones through phone calls or video chats. Consider organizing virtual family meals, game nights or playmates to keep your child engaged.
- **Clean and disinfect your home.** Clean surfaces every day in common areas that are frequently touched, such as tables, doorknobs, hard-backed chairs, light switches, remotes, electronics, handles, desks, toilets and sinks. Also, clean areas that easily get dirty, such as a baby's changing table, and surfaces that your child often touches, such as his or her bed frame, craft table, toy chest and toys. Use soap and water to clean toys that your child puts in his or her mouth. Be sure to rinse off the soap and dry the toys. Wash your child's bedding and washable plush toys, as needed, in the warmest possible setting. Dry items completely. Wash your hands after handling your child's belongings. If you're caring for a baby with COVID-19, wash your hands after diaper changes or handling the baby's bedding, toys or bottles.
- **Wear cloth face masks.** The CDC recommends wearing a face mask in indoor public spaces and outdoors where there is a high risk of COVID-19 transmission, such as at a crowded event. Further mask guidance differs depending on whether you are fully vaccinated or unvaccinated. If your child is age 2 or older, have him or her wear a cloth face mask when around people who don't live in your household to prevent the spread of COVID-19 to others. Don't place a face mask on a child younger than age 2, a child who has any breathing problems, or a child who has a condition that would prevent him or her from being able to remove the mask without help.

In addition, keep up with your child's well visits and vaccines. This is especially important for infants and young children under age 2. Many doctors are using strategies to separate well visits from sick visits by seeing sick children in separate areas of their offices or at different locations. If your child is due for a well visit, talk to your child's doctor about safety steps being taken.

## VACCINATION IN CHILDREN

### **The common enigma**

*If children don't frequently experience severe illness with COVID-19, why do they need a COVID-19 vaccine?*

World scenario

*A COVID-19 vaccine can prevent your child from getting and spreading the COVID-19 virus. Also if the child gets COVID-19, a COVID-19 vaccine could prevent him or her from becoming severely ill.*

Getting a COVID-19 vaccine may also allow your child to start doing things that he or she might not have been able to do because of the pandemic.

Don't let fear of getting the virus that causes COVID-19 prevent your child from getting his or her vaccines to prevent other serious illnesses. *A COVID-19 vaccine can be given to eligible children on the same day as other vaccines.*

Following guidelines to prevent the spread of the COVID-19 virus can be particularly difficult for kids. Stay patient. Be a good role model and your child will be more likely to follow your lead.

Anyone over 12 years of age should be getting their vaccine, both to protect themselves, but also to protect people who are not yet eligible, such as children under 12 years of age.

We know the vaccines are highly effective in preventing serious illness, hospitalizations and deaths in people who get the vaccine. We also know that they will significantly reduce your risk of spreading the infection to someone else.

## **Why should 12- to 18-year-olds get their COVID-19 vaccine before returning to school?**

We do want kids to return to school, we know all the benefits of going to school. But right now, with what's going on in our country and in our communities with delta variant spread, you're really making a choice between getting vaccinated or getting COVID-19. This delta variant is just that contagious.

### **Indian scenario**

#### **Covid vaccine for children in India by September,2022, says ICMR-National Institute of Virology director**

There are two vaccine candidates that have been tested among children in India: Bharat Biotech's Covaxin and Zydus Cadila's ZyCov-D.

The Covaxin trial includes 525 volunteers while ZyCov-D's trials – as part of the phase II/III clinical studies – includes 1,000 volunteers in the 12-18 age group.

The **Covaxin trial** includes 525 volunteers while ZyCov-D's trials – as part of the phase II/III clinical studies – includes 1,000 volunteers in the 12-18 age group. **The trial phase of the clinical studies in volunteers in the 2-18 age group has been completed.** This is the only vaccine in the world that can be given to children between 2 and 18 years

*“So, by September or just after it, we may have Covid-19 vaccines for children,”* said Priya Abraham, Director of National Institute of Virology, Pune, in an interview to India Science, a web channel of the government's Department of Science and Technology.

“Zydus Cadila's vaccine trial is also going on. This can also be applied for children and will be made available,” added Abraham.

### **World scenario**

#### **Pfizer vaccine**

- The Pfizer vaccine is currently the only vaccine authorized for kids ages 12 to 17.
- Both Pfizer and Moderna shots are authorized for anyone age 18 and older.

- Pfizer has asked the FDA to review data and consider authorizing the COVID-19 vaccine in children ages 5-11 years.
- All the approved and authorized corona virus vaccines are highly effective at preventing serious illness or death due to COVID-19.

The others are similar to The Indian Scenario as discussed.

*NB: For children too young to be vaccinated (and adults who have not received corona virus vaccines) it is important to follow proven COVID-19 precautions such as mask wearing when in public, indoor places to reduce the chance of becoming infected with the corona virus.*

### **Special circumstances –Immuno-compromised kids**

Lexie DeLone, a child life specialist at Johns Hopkins Children’s Centre, says, “Your child’s care team is your go-to resource. It’s OK to ask your child’s doctor about what specific steps they are taking to provide treatment for your child while preventing COVID-19 and if getting your child vaccinated is appropriate,” she says.

Some office visits and follow-ups may be able to shift to telemedicine, but other treatments require your child’s physical presence. “Parents can remind children that their treatment is important to keep them healthy, DeLone says. “Older children and teens might be aware of the fact that their bodies could have a harder time fighting the virus if they encounter it.

Parents can reassure them that hospitals are aware of patients’ vulnerabilities, and are prepared and using precautions.”

**Asthma:** Children with asthma may have more severe symptoms from COVID-19 or any other respiratory disease, including the flu. There are no indications that most children with asthma experience severe symptoms due to the coronavirus, but observe them carefully and, if symptoms develop, call the child’s doctor to discuss next steps and to arrange appropriate evaluation as needed. Keep your child’s medications refilled and take extra care to avoid things that set off asthma attacks in your child.

**Diabetes:** Control of blood sugar is key. Children with well-managed diabetes are not expected to be more susceptible to COVID-19. But poorly controlled diabetes can weaken the

immune system, so parents and doctors should watch these children carefully for signs and symptoms that may require evaluation.

### **Protecting Kids 11 and Younger from COVID-19**

For children too young to be vaccinated for COVID-19, Millstone says that the best way to keep them safer is to avoid exposing them to people who are (or who might be) sick with the coronavirus, including family members. Here are three of the best ways to protect your kids from infection.

Maintain physical distancing. The more people your kids come in contact with, and the longer the duration of that contact, the higher the risk of infection with the corona virus.

- Children should stay at least 6 feet from others outside of their household.
- Check your kids' day care and schools (if they are open) to ensure physical distancing measures are in place.
- Limit in-person play with other children, and be sure the children wear masks properly.
- Ensure that children limit close contact with children and adults who are vulnerable, such as those with health conditions.

**Wear a mask.** The very contagious delta variant is circulating. Mask wearing prevents virus spread and outbreaks. This is one reason why the Centres for Disease Control and Prevention (CDC) and the American Academy of Paediatrics recommend masking for children in grades K-12, even for those who are fully vaccinated. Data continue to support the value of masking in schools to prevent infections. Millstone suggests that parents help younger children practice wearing masks before returning to school so kids are comfortable wearing them in class.

**Hand hygiene.** Kids should wash their hands after using the bathroom, sneezing, coughing or blowing their nose, before eating (even snacks) and immediately after coming inside from playing outdoors.

Millstone advises parents to teach kids to wash their hands regularly, with soap and warm water, for at least 20 seconds. "They can help keep track of time by singing the ABCs, which



takes about 20 seconds to finish,” he says. If soap and water are not available, Millstone says the next best option is hand sanitizer containing at least 60% alcohol.

### **Kids who balk.**

Millstone says, “If your child is refusing to wash their hands or becoming very upset when asked to do so, it might help to give them a small reward, such as a sticker, to celebrate each time they wash their hands. Compliment them for doing a really good job while washing their hands.” It also helps when parents set an example by washing their own hands frequently.

Kids and families can reduce corona virus risk together.

Though in most cases COVID-19 seems to have less serious health consequences for children than for adults, it is important to avoid infection among children. Here’s how parents and guardians can help:

**Get all your shots.** Ensure that all family members receive COVID-19 vaccinations as soon as they are eligible, and the same goes for flu shots and other vaccinations.

**Know the signs and symptoms of COVID-19** and be on the lookout for serious disease in kids.

**Cough and sneeze with care.** “Encourage everyone in the family to cough and sneeze into their elbow, instead of their hands, and to wash their hands after each time this occurs,” Millstone says. “Throw away tissues after they are used,” he adds.

**Keep hands off faces.** Parents should remind children to avoid touching their face as much as possible. Millstone says it can help if kids carry a toy that will keep their hands busy, but he notes that parents should wash those toys regularly.

**Keep things clean.** Wipe down toys and surfaces your child touches regularly, especially when travelling or when near a person who is sick. Clean surfaces at home and store cleaners in cabinets that are either too high for your child to reach or are secured with childproof cabinet locks.

**Covid 19 symptoms in children - NHS**

Children can get corona-virus (COVID-19), but they seem to get it less often than adults and it's usually less serious.

The main symptoms of COVID-19 are:

- a high temperature
- a new, continuous cough – this means coughing a lot, for more than an hour, or 3 or more coughing episodes in 24 hours
- a loss or change to sense of smell or taste – this means they cannot smell or taste anything, or things smell or taste different to normal

## **Summary**

COVID-19 was initially milder in young children than in adults but the delta variant has led to an increase in the number and severity of paediatric cases. Parents and caregivers should understand that children infected with the coronavirus can develop complications requiring hospitalization, and can transmit the virus to others.

Children and toddlers can get COVID-19. Cases have been increasing among children, indicated by recent data from the American Academy of Paediatrics.

This may be partly because no COVID-19 vaccine has been authorized yet for people under age 12. The widespread circulation in the U.S. of the highly contagious delta variant of the corona virus is another factor.

In rare cases, children infected with the coronavirus can develop a serious lung infection and become very sick with COVID-19, and deaths have occurred. That's why it is important to use precautions and prevent infection in children as well as adults.

Corona virus variants, including the very contagious delta variant, continue to spread, particularly in areas with low rates of community COVID-19 vaccination.

*So even after sending the child to school parents must be very vigilant.*

**Children and babies will still get illnesses that can make them very unwell quickly. It's important to get medical help if you need it.**

These are:

- is under 3 months old and has a temperature of 38C or higher, or you think they have a fever
- is 3 to 6 months old and has a temperature of 39C or higher, or you think they have a fever
- has other signs of illness, such as a rash, as well as a high temperature (fever)
- has a high temperature that's lasted for 5 days or more
- does not want to eat, or is not their usual self and you're worried
- has a high temperature that does not come down with paracetamol
- Features of Meningeal irritation, like neck rigidity, photophobia, elevated fontaneli, rashes, drowsiness or agitation, excessive unusual cry, seizures.
- Skin changes like dry pale, blotchy, grey or blue skin, cold skin, Dry cold extremities.
- Difficulty in breathing or poor feeding.
- The child is dehydrated – for example, nappies are not very wet, sunken eyes, and no tears when they're crying

**Be aware of these situations and if these are found then, even if they're mild:**

- 1. Get a PCR test (test that is sent to a lab) to check if they have COVID-19 as soon as possible.**
- 2. Your child should stay at home and not have visitors (self-isolate) until you get the test result – they can only leave home to have the test. Check if you and anyone else your child lives with need to self-isolate.*

**The positive hope:**

- Researchers have seen that children were simply not getting infected as often.
- Children better than adults at controlling SARS-CoV-2.
- The data as of date show that they are — at least nearly (children under age ten might be slightly less susceptible).
- The American Academy of Paediatrics found that, up until late last month, some 15% of all COVID-19 cases in the United States had been in individuals aged under 21 — that's more than 4.8 million young people .

- Finally survey in India that tested people for antibodies against SARS-CoV-2, which are produced after infection or vaccination, found that more than half of children aged 6–17 and two-thirds of the population overall — had detectable antibodies.
- Hence the last word is that vaccine trials in children are justified.
- Pfizer, Cadila have done trials in children below age 18 (2-18) years and now in India as well trials of Covaxin are underway.
- Hence it's expected that ICMR may soon declare vaccination in children.
- At least this may ensure safety in starting offline schools for children with parents having less mental stress.
- Although even before vaccination starts in children, if adults are (18 years onwards) vaccinated and children maintain proper universal protections against Covid, starting school will not be unsafe.

This may take away tension of parents and maintain the smiling playful life of children and bring back their normal psychological behaviour which have long been lost over now almost two years and also the boredom and less skills of online classes.



All hopes of seeing this lovely scenario again. **Address anxiety and stress.** Talking things over as a family can help identify specific fears and clarify the facts. It also helps for families to discuss a plan in case someone gets sick or something else happens that interrupts the normal routine. “Children will look to you when deciding how to feel about COVID-19. If you feel calm and prepared, they are likely to feel similarly.”