Study finds higher viral load in young children, raising questions about how likely they are to transmit the coronavirus [1]

Author: Kane, Andrea
Source: CNN
Format: Article
Publication Date: 30 Jul 2020

AVAILABILITY
Access online [2]

EXCERPTS

Children younger than 5 have between 10 and 100 times more genetic material from the novel coronavirus in their noses compared to older children and to adults, according to a small study published Thursday in the journal JAMA Pediatrics.

While the study didn't measure transmissibility, it raises questions -- just as schools start to reopen -- about how easily the new coronavirus may be spread by the under-5 set.

"We had just noticed that some of the children that we were testing for SARS CoV-2 that were positive, the youngest children seemed to have a high amount of the viral nucleic acid -- a high viral load in their nose -- compared to some of our older children and adults," lead author Dr. Taylor Heald-Sargent, a pediatric infectious diseases specialist at Lurie Children's Hospital of Chicago, told CNN. "And so when we ... actually ran the numbers, controlled for a few things, we found that there was actually a statistically significant higher amount of the genes that are encoded by SARS, which usually correlates to more virus, in the nose of children less than five years old, compared to older children and adults."

Heald-Sargent and her team analyzed 145 swab samples collected from patients with mild to moderate Covid-19 within a week of symptom onset; 46 of them were from children under 5, 51 were from 5- to 17-year-olds, and 48 were from adults between 18 and 65. The samples were collected between the end of March and the end of April from various inpatient, outpatient, emergency department and drive-through testing sites at a pediatric tertiary medical center in Chicago.

They found that those under 5 had a statistically significant greater amount of virus particles in the nose correlating to "a 10-fold to 100-fold greater amount of the coronavirus in the upper respiratory tract ... " the researchers wrote in their paper.

Heald-Sargent says more studies need to look at transmissibility of SARS-CoV-2 in children. "So far this transmission doesn't seem to be primarily coming from children," said Heald-Sargent.

But her team noted in the paper that because of the stay-at-home measures implemented in mid-March, many young children had fewer opportunities to transmit.

"The question was still out there: Could it be possibly transmitted from kids?" she said, noting that absence of evidence is not evidence of absence.

If other respiratory viruses are any indication, she said, the answer may very well be yes.

"Any grade-school teacher or pediatrician will tell you, [young children] are pretty effective little vectors of virus transmission, because we get sick a lot in the winter from these kids," she said. "I think looking at other viruses that are similar ...it would seem more likely that kids will be transmitting."

Other experts say that while they're not surprised by the findings, it's good to have the study.

"The data in pediatrics has not been as robust as adults with Covid-19 so it's really nice to have additional virologic data in pediatric patients," said Dr. Alpana Waghmare of Seattle Children's.

"The authors did a nice job comparing a fairly robust sample size of subjects across different age ranges and using a pretty straightforward research design to look at the differences in viral load across these age groups," said Waghmare, who is an assistant professor of pediatrics in the division of pediatric infectious diseases at the University of Washington.

Waghmare said that the findings are consistent with other published studies looking at viral loads across a spectrum of respiratory viruses in pediatric populations. "It's not surprising to find higher viral loads in children. I think the question of what that exactly means for transmission is still not clear," she said.

Dr. Michael Smit, a pediatric infectious diseases physician at Children's Hospital Los Angeles agrees -- and then some.

"We've known for quite a while that for certain respiratory viruses, younger children are the breeding ground and they're the part of the population that spreads it to the rest of the community," said Smit, who is also the hospital's epidemiologist and the medical director for infection prevention and control.

Smit said it has been demonstrated before with respiratory syncytial virus (RSV) and his own group's research, published as a research letter in JAMA Network Open in mid-May, showed the same thing with the seasonal coronaviruses. "So, it's a known phenomenon in pediatrics that the younger children can be the main drivers of spread of disease and communities."

There are still questions about the new coronavirus, though. One recent study in South Korea found young people ages 10 to 19 transmitted Covid-19 within households just as much as adults, but children 9 and younger transmitted the virus at rates far lower.

The issue remains, what can you do about it?

"Once you figure out kind of the dynamics of how much virus is there and what age groups it tends to be greater in and lesser in, then that can help us form strategies for surveillance, for testing, for isolation," he said.

Heald-Sargent said the "behavioral habits" of very young children -- for example, the lack of awareness of personal space and personal hygiene, all the fidgeting, hands-on play, and wiping of eyes and noses -- make it hard to control any potential spread, but it's important to try.

"It's a struggle to get them to wear their masks and to wash their hands and to not put everything in their mouth and their nose," she said.

"Having adults model good behavior, having them encourage their children to wash their hands and to wear their mask as much as possible, cleaning high touch areas, being careful with diapers" are all good practices, she said, adding that small children usually want to please their parents.

At a societal level, she said it will also be important to implement infection control practices such as contact tracing, and take steps at school, such as keeping children within the same small groups, to limit the spread.

Related link:
EXCERPTS Children younger than 5 have between 10 and 100 times more genetic material from the novel coronavirus in their noses [3]
Region: United States [4]
Tags: health and safety [5]
