The coronavirus' effect on kids remains an unsolved mystery. Here are the clues so far. [1]

Author: Bendix, Aria
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Children represent less than 2% of confirmed coronavirus infections in China, Spain, Korea, Italy, and the US. But it's not clear yet whether they're less likely to contract the virus in the first place, or whether many of their cases are simply being missed because they are often mild or asymptomatic.

The largest study of children with the coronavirus to date, from the US Centers for Disease Control and Prevention, found that 18% of those studied tested positive but didn't report symptoms. The report, however, only included kids with confirmed cases, so the breakdown is likely skewed.

Determining the effects of the virus on kids — and role of children as carriers — has important policy implications for reopening schools. It could also provide clues about the biological mechanisms that make a person vulnerable to the virus.

Here's the conflicting research about kids and the coronavirus so far.

Kids don't often transmit the virus

A report from the Dutch government concluded that "children play a small role in the spread of the novel coronavirus." The conclusion was based on government data collected from 54 Dutch households.

Researchers in Brisbane, Australia, also determined that children have not been the primary source of household coronavirus infections. Their study (which is still awaiting peer review) found that children were the first to develop symptoms in only three out of 31 households in China, Singapore, the US, Vietnam, and South Korea.

That stands in stark contrast to the H1N1 flu: Children were the primary transmitters of that virus in 54% of household clusters.

Kids easily transmit the virus

The CDC study concluded that children "are likely playing a role in transmission and spread of COVID-19" in the US.

"Children almost certainly DO transmit COVID-19," Alasdair Munro, a clinical research fellow in pediatric infectious diseases at University Hospital Southampton, wrote on April 30.

Scientists in Germany recently determined that children with the virus may be as infectious as adults. Their research found no difference in the viral loads (the amount of viral particles released into the environment) of adult coronavirus patients versus kids with the virus in Berlin. Though many children are likely to be asymptomatic, the researchers determined that kids can still excrete viral particles without showing symptoms.

Kids don't have severe reactions

Out of more than 2,500 pediatric cases in the CDC study, only three patients died. Nearly three-quarters of the children in the study developed fever, cough, or shortness of breath, compared to 93% of adults.

The study concluded that "most COVID-19 cases in children are not severe."

One reason for this could be that children have less mature ACE2 receptors — the enzymes that serve as ports of entry for the coronavirus — which could make it more difficult for the virus to infect a child's cells.

The immune system also becomes more dysregulated as a person ages. So the pediatric immune system may simply be better at battling the coronavirus than the adult immune system.

Kids experience very severe reactions

More than 20 US states have recorded cases of multisystem inflammatory syndrome, a seemingly rare immune response linked to COVID-

19, the Washington Post reported. Most of those cases were identified among children.

That syndrome aside, CDC data suggests that infants acquire more severe infections than older kids.

More than 60% of infants with the coronavirus in the CDC study were hospitalized — the highest percentage among the various pediatric age groups. A Chinese study of pediatric patients also found that more than 10% of infants had severe infections compared to 7% of kids from ages 1 to 5, 4% of kids ages 6 to 10, 4% of teenagers between 11 and 15, and 3% of older teenagers.

Some scientists suspect that's because infants have a greater inflammatory response than kids of other ages, so they're more likely to experience tissue damage as their bodies try to fight off the virus. Others suspect it's because infants have a less developed immune response than older children do.

Kids are less likely to catch the virus than adults

A review from University College London and the London School of Hygiene and Tropical Medicine found that children were 56% less likely to catch the virus after exposure to an infected person compared to adults. But the researchers weren't able to explain why.

Similarly, a study of 80% of the population in the Italian village of Vó found that no children ages 10 and younger contracted the virus there — even though at least 13 kids lived with infected family members.

The researchers concluded that "children may have specific immune-regulatory mechanisms that contribute to milder disease." They also suggested that "vaccinations or infection with other coronaviruses commonly transmitting in the youngest age groups" may help protect children in some way.

Kids are just as likely to catch the virus as adults

A recent study in The Lancet found that children in Shenzhen, China, were just as likely to be infected with the coronavirus as adults: Children under 10 had a 7.4% infection rate compared to 6.6% for the general population.

German scientists also found that "the attack rate in children seems to correspond to that in adults." They noted that current data about infection rates among children could be skewed, though.

"Because they are mostly asymptomatic, children may not be presented at testing centers even if they belong to households with a confirmed index case," the researchers wrote.

In an April press conference, Maria van Kerkhove, a technical lead at the World Health Organization, said "there's no reason to think that children are less susceptible to infection if they're exposed."

"We're really not seeing this in the epidemiology," she added.

School closures don't prevent enough transmission to be worth the cost

An investigation from New South Wales, Australia, looked at coronavirus transmission across 10 high schools and five primary schools there from early March to late April. The report determined that only two students got sick out of more than 860 who had been in close contact with an infected person. The investigation also found no evidence of students infecting teachers.

The report concluded that "children are not the primary drivers of the transmission of SARS-CoV-2 in schools or in the community."

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