

Why does COVID-19 kill some adults but barely affect children? Study aims to find out

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"Our hypothesis is that since even very young children seem to be protected from COVID-19's effects, older adults may have abnormal antibody responses to this virus." —Mark Hicar, MD, Ph.D., Assistant professor, Department of Pediatrics. Credit: Jacobs School of Medicine and Biomedical Sciences

A new clinical study on COVID-19 launched late last month by a University at Buffalo researcher is investigating why the novel coronavirus is so potentially devastating for adults but barely causes a reaction in most children.

The study began enrolling patients last week.

The research being done by Mark Hicar, MD, Ph.D., assistant professor of pediatrics in the Jacobs School of Medicine and Biomedical Sciences at UB, is exploring the possibility that the difference in the way COVID-19 affects children and adults lies in the kinds of [antibodies](#) produced to fight the infection.

Hicar is also a physician with UBMD Pediatrics and a pediatric infectious disease physician at the John R. Oishei Children's Hospital in Buffalo. He has

spent his career studying how B cells, the cells that produce antibodies, respond to inflammation in HIV and in Kawasaki disease, which affects very young children and causes severe cardiac damage if untreated.

The current study involves collecting and characterizing B cells from patients of all ages with COVID-19.

"Our hypothesis is that since even very young children seem to be protected from COVID-19's effects, older adults may have abnormal antibody responses to this virus," Hicar said.

"To study this question, we will look at the overall stimulation of B cell responses during infection with COVID-19," he said.

The research will explore how those B cell responses target the virus' spike protein, which sticks out around the virus' surface like the top of a crown, hence the name coronavirus. This protein is known to attach tightly to human lung cells and, with the associated [structural proteins](#), forms a complex with a membrane that surrounds and protects the virus' genetic instructions.

"We know from the immune responses to other coronaviruses, such as MERS and SARS-CoV-1, that neutralizing antibodies predominantly target the receptor binding domain of the spike protein," said Hicar.

"By studying the COVID-19 antibody responses of individuals of all ages, we hope to elucidate what the antibodies target during natural infection. That information should allow us to characterize what might work in a potential treatment, as well as lay a foundation for formulating a potential vaccine against SARS-CoV-2."

Provided by University at Buffalo

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