

COVID-19 discovery in children may inform development of vaccines, treatments

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New discoveries about the immune response made against a particular part of the COVID-19 virus in children who have the rare but dangerous multisystem inflammatory syndrome in children, or MIS-C, may have

important implications for the development of vaccines and immune therapies for COVID-19, according to a new commentary from Dr. Steven Zeichner of UVA Children's and Dr. Andrea Cruz of Baylor College of Medicine in Houston, published in the scientific journal *Pediatrics*. Both Zeichner and Cruz are associate editors of *Pediatrics*.

Zeichner and Cruz's commentary accompanies an article written by Christina A. Rostad and colleagues, from Emory University and the University of Texas Medical Branch, Galveston, outlining new insights into MIS-C, a serious complication of COVID-19 that occurs in a small, but still significant number of children. Why a particular child develops MIS-C is not known, nor is it known what may place a child at increased risk for MIS-C.

Rostad and colleagues found that children with MIS-C had substantially higher levels of [antibodies](#) against a particular part of the COVID-virus known as the receptor binding domain, or RBD, part of the virus' spike protein that lets the virus invade cells. While not definitive proof, the findings suggest that a stronger [immune response](#) against RBD may be associated with MIS-C, either as simply an indicator or potentially in some sort of causal relationship.

The discovery that high levels of antibodies against RBD are associated with MIS-C could prove helpful in diagnosing MIS-C, Zeichner and Cruz note. But there may also be other implications. If antibodies against RBD—or some subset of antibodies against RBD—contribute to causing MIS-C, there may be some subtype or amount of antibodies against RBD that are unhelpful, or even dangerous. For example, doctors may need to consider this when treating COVID-19 patients with convalescent plasma from other patients recovering from COVID-19.

Ensuring Safe COVID-19 Vaccines

RBD is a component of many of the COVID-19 vaccines in development, Zeichner and Cruz write, so the new findings may prove important there as well. If some antibodies against RBD are associated with MIS-C or increased inflammation, it would be essential to carefully evaluate subjects enrolled in the [vaccine](#) clinical trials for evidence of increased inflammatory responses, particularly if and when those research subjects are exposed to and infected with the COVID-19 virus.

The possibility is an important reminder, they write, that the urgent desire for a vaccine must not eclipse the need for thoughtful, thorough testing.

More information: Steven L. Zeichner et al. Multisystem Inflammatory Syndrome in Children and SARS-CoV-2 Serology, *Pediatrics* (2020). [DOI: 10.1542/peds.2020-032888](https://doi.org/10.1542/peds.2020-032888)

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