

Multisystem inflammatory syndrome in children: Long-term effects on mental and neurologic health

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Children and adolescents who have had multisystem inflammatory syndrome in children (MIS-C) after exposure to COVID-19 are

recommended to have follow-up heart function testing. A new study from Boston Children's Hospital suggests they should also be monitored for long-term neurologic and psychosocial complications.

"If parents are noticing changes in their child's behavior or functioning, it could be related to MIS-C, and they should seek support," says study leader Caitlin Rollins, MD, in the Department of Neurology and Cardiac Neurodevelopmental Program. Cardiologists and pediatricians who care for [children](#) after MIS-C should also ask about the child's mental and neurologic health and refer them for evaluation and support if there are any concerns, she says.

Memory, motor, and mental health problems

The study, published in *JAMA Network Open*, enrolled 64 children and adolescents who had been hospitalized with MIS-C at Boston Children's from November 2020 through November 2021. Six to 12 months after discharge, the children underwent neurological examinations and detailed neuropsychological assessments. For comparison, Dr. Rollins and her colleagues also assessed 44 siblings and nearby friends or relatives who had not had MIS-C.

Significantly more children with previous MIS-C had abnormal neurological findings than did children in the comparison group (25 versus 7%). Neuropsychological findings included impaired working memory; motor, coordination, and gait abnormalities; and higher rates of diagnosed ADHD, anxiety, or depression. Children with prior MIS-C were also more likely to have [psychosomatic symptoms](#) like headaches, [chest pain](#), back pain, nausea, and fatigue and tended to report a lower quality of life.

Dr. Rollins notes that many of these symptoms could be chalked up to stress, including the stress of the COVID-19 pandemic and the way it

uspended children's school and routines. Because the study included a comparison group that did not have MIS-C—but faced many of the same stressors—she believes the symptoms are likely MIS-C-related.

"When families learn the child's symptoms could be related to MIS-C, they are reassured that others are experiencing it," she says. "We hope this study will increase awareness."

Related to adult 'brain fog'?

Rollins is currently following the children with MIS-C for a second year and hopes to add MRI studies of the brain to see if MIS-C caused any structural changes.

In future studies, she hopes to explore how MIS-C predisposes children to neurobehavioral complications and what these children might have in common with adults who report brain fog after COVID-19. As a committee member on the large [RECOVER study](#), she has reviewed data from children who have had COVID-19 or MIS-C as well as adults with long COVID.

"These conditions are very intertwined," says Rollins. "The acute illness is very different—children with MIS-C are very sick and often need ICU care, while adults may have mild acute cases of COVID-19 but have lingering brain fog. Both could be part of the same spectrum and the same mechanisms could be underneath."

More information: Caitlin K. Rollins et al, Neurological and Psychological Sequelae Associated With Multisystem Inflammatory Syndrome in Children, *JAMA Network Open* (2023). [DOI: 10.1001/jamanetworkopen.2023.24369](https://doi.org/10.1001/jamanetworkopen.2023.24369)

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