

# Case study describes unexpected diagnosis of one of the first cases of MIS-C in US

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At the height of the COVID-19 pandemic in April, a 14-year-old boy was admitted to the emergency department at Nemours Children's Health System in Delaware with mysterious symptoms in what would later be identified as one of the first cases of multisystem inflammatory syndrome in children (MIS-C) in the U.S. His care and retrospective

diagnosis have been published in *Progress in Pediatric Cardiology* as a timely case study linking COVID-19 to the highly dangerous syndrome which is rare in children and causes inflammation of the heart, lungs and other vital organs.

"There are lessons to be learned from this case, the most critical being to maintain your suspicion if there are several plausible diagnoses," said Deepika Thacker, MD, senior author of the paper and pediatric cardiologist with Nemours Children's Health System. "This allowed us to remain vigilant and adapt treatment as we went, based on the signals and symptoms we were seeing."

Prior to reports from Europe about similar cases in children, the patient presented to the [emergency department](#) with a four-day history of fever, fatigue, and abdominal pain. He initially tested negative for COVID-19 and was admitted to the general pediatric ward. But his condition quickly deteriorated, with severe diarrhea, increasingly [high fever](#), and a quickly spreading rash that further escalated to chest pain, fluid in the lungs, and decreasing heart function.

The seemingly unconnected presentation of symptoms made several diagnoses appear possible. While being treated in the cardiac intensive care unit, the patient had to be intubated and placed on mechanical ventilation. During his 12-day hospital stay, he was treated with penicillin, ceftriaxone, epinephrine, phenylephrine, milrinone, intravenous immune globulins, and high-dose aspirin to cover the wide variety of possible conditions. Only after discharge, an antibody test showed he had had COVID-19.

Based on the team's experience with this patient and others, as well as data from other centers, Nemours' physicians developed a clinical pathway for early recognition and treatment of MIS-C to speed the diagnosis and care of children with this new presentation of COVID-19.

"In the three months since this patient was in [critical care](#), we have learned so much about diagnosing and treating this novel presentation of COVID-19 in [children](#)," said Thacker. "This information-sharing has undoubtedly saved lives."

This first patient recovered, as have all 15 patients treated with MIS-C at Nemours Children's Health System in Delaware. Moving forward, the cardiology team will continue to follow up with patients who have experienced MIS-C for at least one year to understand the long-term impact of this acute condition.

**More information:** Daniel Vari et al, Severe cardiac dysfunction in a patient with multisystem inflammatory syndrome in children associated with COVID-19: Retrospective diagnosis of a puzzling presentation. A case report, *Progress in Pediatric Cardiology* (2020). [DOI: 10.1016/j.ppedcard.2020.101270](#)

Provided by Nemours Children's Health System

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