

Case study describes unexpected diagnosis of one of the first cases of MIS-C in U.S.

Finding of multisystem inflammatory syndrome in children associated with COVID-19 helped create new clinical pathway guidelines to quickly identify and treat cases

WILMINGTON, De. (September 9, 2020) – 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

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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.

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About Nemours Children's Health System

Nemours is an internationally recognized children's health system that owns and operates the Nemours/Alfred I. duPont Hospital for Children in Wilmington, Del., and Nemours Children's Hospital in Orlando, Fla., along with outpatient facilities in five states, delivering pediatric primary, specialty and urgent care. Nemours also powers the world's most-visited website for information on the health of children and teens, KidsHealth.org and offers on-demand, online video patient visits through Nemours CareConnect.

Established as The Nemours Foundation through the legacy and philanthropy of Alfred I. duPont, Nemours provides pediatric clinical care, research, education, advocacy, and prevention programs to families in the communities it serves.

For further information: Karen Bengston, (302) 293-4928, Karen.Bengston@nemours.org; Stephanie Wight, (202) 868-4016, swight@thereisgroup.com

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