# EAACI statement on the pathogenesis, immunology, and immune-targeted management of the Multisystem Inflammatory Syndrome in Children (MIS-C) or Pediatric Inflammatory Multisystem Syndrome (PIMS).

Wojciech Feleszko[1], Magdalena Okarska-Napierała[1], Emilie Pauline Buddingh[2], Marketa Bloomfield[3], Anna Sediva[3], Carles Bautista-Rodriguez[4], Helen Brough[5], Philippe Eigenmann[6], Thomas Eiwegger[7], Andrzej Eljaszewicz[8], Stefanie Eyerich[9], Cristina Gomez-Casado[10], Alain Fraisse[4], Jozef Janda[3], Rodrigo Jiménez-Saiz[11], Tilmann Kallinich[12], Inge Kortekaas Krohn[13], Charlotte Mørtz[14], CARMEN RIGGIONI[15], Joaquin Sastre[16], Milena Sokolowska[17], Ziemowit Strzelczyk[1], Eva Untersmayr[18], and Gerdien Tramper[19]

[1]Warszawski Uniwersytet Medyczny
[2]Leids Universitair Medisch Centrum
[3]Univerzita Karlova
[4]Royal Brompton Hospital
[5]King's College London School of Life Course Sciences
[6]Hopitaux Universitaires Geneve
[7]Karl Landsteiner Privatuniversitat fur Gesundheitswissenschaften GmbH
[8]Uniwersytet Medyczny w Bialymstoku
[9]Zentrum Allergie und Umwelt
[10]Heinrich-Heine-Universitat Dusseldorf Medizinische Fakultat
[11]Instituto de Investigacion del Hospital de La Princesa
[12]Charite Universitatsmedizin Berlin
[13]Vrije Universiteit Brussel - Brussels Health Campus
[14]Odense Universitetshospital
[15]National University of Singapore Yong Loo Lin School of Medicine
[16]Instituto de Salud Carlos III
[17]Universitat Zurich Schweizerisches Institut fur Allergie- und Asthmaforschung
[18]Medizinische Universitat Wien
[19]Franciscus Gasthuis & Vlietland Willemsplein

December 5, 2022

**Abstract**

Multisystem inflammatory syndrome in children (MIS-C) is a rare, but severe complication of coronavirus disease 2019 (COVID-19). It develops approximately four weeks after severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection and involves hyperinflammation with multisystem injury, commonly progressing to shock. The exact pathomechanism of MIS-C

is not known, but immunological dysregulation leading to cytokine storm plays a central role. In response to the emergence of MIS-C, the European Academy of Allergy and Clinical Immunology (EAACI) established a task force (TF) within the Immunology Section in May 2021. With the use of an online Delphi process, TF formulated clinical statements regarding immunological background of MIS-C, diagnosis, treatment, follow-up, and the role of COVID-19 vaccinations. MIS-C case definition is broad, and diagnosis is made based on clinical presentation. The immunological mechanism leading to MIS-C is unclear and depends on activating multiple pathways leading to hyperinflammation. Current management of MIS-C relies on supportive care in combination with immunosuppressive and/or immunomodulatory agents. The most frequently used agents are systemic steroids and intravenous immunoglobulin. Despite good overall short-term outcome, MIS-C patients should be followed-up at regular intervals after discharge, focusing on cardiac disease, organ damage, and inflammatory activity. COVID-19 vaccination is a safe and effective measure to prevent MIS-C. In anticipation of further research, we propose a convenient and clinically practical algorithm for managing MIS-C developed by the Immunology Section of the EAACI.

## Hosted file

MANUSCRIPT_PIMS_MIS-C by Feleszko Okarska et al PAI v20 CLEAN.docx available at https://authorea.com/users/355129/articles/610135-eaaci-statement-on-the-pathogenesis-immunology-and-immune-targeted-management-of-the-multisystem-inflammatory-syndrome-in-children-mis-c-or-pediatric-inflammatory-multisystem-syndrome-pims