Multisystem Inflammatory Syndrome in Children

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What is Multisystem Inflammatory Syndrome in Children (MIS-C)?

• Multisystem inflammatory syndrome in children (MIS-C) is a new health condition associated with COVID-19 that is appearing in children the US and elsewhere. The syndrome was previously called pediatric multisystem inflammatory syndrome or PMIS.

• Features of Kawasaki Disease and Toxic Shock Syndrome

• Previously healthy children presenting with a severe inflammatory syndrome with Kawasaki disease-like features

• Most positive for current or recent infection by SARS-CoV-2, or had an epi link to a COVID-19 case
Situational Descriptions

May 5, 2020 case series in the UK

May 6, 2020 case series in the UK

May 13, 2020 one case series in Italy
Signs and Symptoms

- Prolonged fever (temperature of 100.4 degrees F or 38.0 degrees C or greater)
- Irritability or decreased activity
- Abdominal pain without another explanation (often very severe), diarrhea, vomiting
- Rash, Swollen hands and feet, which might also be red
- Conjunctivitis (red or pink eyes)
- Poor feeding
- Hypotension
- Multiorgan involvement (cardiac, gastrointestinal, renal, hematologic, dermatologic and neurologic)
- Respiratory symptoms NOT present in all cases
Centers for Disease Control and Prevention: HAN (5/14/2020)

- Situational summary
- Case definition
- Reporting requirements

https://emergency.cdc.gov/han/2020/han00432.asp
CDC Case Definition

Case Definition for Multisystem Inflammatory Syndrome in Children (MIS-C)

- An individual aged <21 years presenting with fever\textsuperscript{1}, laboratory evidence of inflammation\textsuperscript{3}, and evidence of clinically severe illness requiring hospitalization, with multisystem (≥2) organ involvement (cardiac, renal, respiratory, hematologic, gastrointestinal, dermatologic or neurological); AND
- No alternative plausible diagnoses; AND
- Positive for current or recent SARS-CoV-2 infection by RT-PCR, serology, or antigen test; or COVID-19 exposure within the 4 weeks prior to the onset of symptoms

\textsuperscript{1}Fever ≥38.0°C for ≥24 hours, or report of subjective fever lasting ≥24 hours
\textsuperscript{3}Including, but not limited to, one or more of the following: an elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), fibrinogen, procalcitonin, d-dimer, ferritin, lactic acid dehydrogenase (LDH), or interleukin 6 (IL-6), elevated neutrophils, reduced lymphocytes and low albumin

Additional comments

- Some individuals may fulfill full or partial criteria for Kawasaki disease but should be reported if they meet the case definition for MIS-C
- Consider MIS-C in any pediatric death with evidence of SARS-CoV-2 infection

https://emergency.cdc.gov/han/2020/han00432.asp
Reporting MIS-C in Maryland

- May 14: Clinician letter distributed
- Required reporting of MIS-C cases
- No case report form (at this time)
Reporting MIS-C in Maryland

• Information to Collect
  • Patient demographic information
  • Date of symptom onset
  • Maximum temperature
  • Laboratory value(s) fulfilling the above listed laboratory evidence of inflammation
  • Hospitalization status
  • Types of organ system involvement
  • SARS-CoV-2 testing results
  • Other relevant testing results (for example, those that have been used to exclude an alternative diagnosis)
Serum specimen

- Serum specimen
  - **Must be prior to administration of IVIG**
  - Tube types: Red top, tiger top, or gold top serum separator tube
  - Refrigerate to 2-8 degrees C
  - Serological Testing requisition
    [https://health.maryland.gov/laboratories/docs/MDH%204677%20Serological%20Testing%20Form%20and%20Instructions%202018.pdf](https://health.maryland.gov/laboratories/docs/MDH%204677%20Serological%20Testing%20Form%20and%20Instructions%202018.pdf)
MIS-C Resources

• CDC HAN
  https://emergency.cdc.gov/han/2020/han00432.asp

• MDH One-Pager
  https://phpa.health.maryland.gov/Documents/MIS-C_onepage_051920.pdf

• MDH Clinician Letter
  https://content.govdelivery.com/attachments/MDMBP/2020/05/15/file_attachments/1452516/COVID%20MIS-C%20Clinician%20Letter_5.15.2020%20FINAL.pdf