GCH Algorithm for Evaluation of Multi-System Inflammatory Syndrome in Children (MIS-C)

References:

1. https://emergency.cdc.gov/han/2020/han00432.asp
2. New York State Department of Health, Health Advisory: Pediatric Multi-System Inflammatory Syndrome Temporally Associated with COVID-19 Interim Case Definition in NYS (access pdf here)

Patient <21yrs of age presents with fever ≥100.4°F/38°C

Does the patient have EITHER:

- **One or more** of the following:
  - Hypotension or shock (cardiogenic or vasogenic)
  - Features of severe cardiac illness/signs of cardiac dysfunction
  - Other severe end-organ involvement including but not limited to neurological or renal disease (excluding severe respiratory distress alone)

OR

- **Two or more** of the following:
  - Maculopapular rash
  - Bilateral non-purulent conjunctivitis
  - Mucocutaneous inflammatory signs (mouth, hands, or feet)
  - Acute GI symptoms (diarrhea, vomiting, or abdominal pain)

NO → **Low suspicion for MIS-C;** continue work up and management, as appropriate

YES

Proceed with the following work up:

- COVID PCR **AND** serology (SARS-CoV-2 IgG Ab)
- CBC w/ diff, CMP, CRP, ESR, fibrinogen, D-dimer, ferritin, HS Troponin T, NT-pro BNP
- EKG
- UA, urine culture, blood culture
- Imaging (e.g., CXR, abdominal imaging)/add'l testing as clinically indicated

Is the patient well appearing without evidence of hemodynamic instability?

YES

Does the patient meet criteria for admission?

NO → **Discharge home with anticipatory guidance and close PCP follow up**

YES

Do the labs demonstrate **ANY** of the following:

- **Two or more** markers of inflammation*
- Detection of SARS-CoV-2 via PCR or serology** **OR** known history of SARS-CoV-2 infection

AND

No alternative explanation (e.g., bacterial UTI, SSTI)

NO → **Consider alternative diagnoses**

YES

NO → **Consider alternative diagnoses**

NO

Do the labs demonstrate **ANY** of the following:

- **Two or more** markers of inflammation*
- Detection of SARS-CoV-2 via PCR or serology** **OR** known history of SARS-CoV-2 infection

YES

Strong suspicion for MIS-C

- Consider hold SST tube after discussion with ID
- Proceed to page 2

**Neutrophilia, lymphopenia, thrombocytopenia, hypoalbuminemia, elevated CRP, ESR, D-dimer, ferritin, fibrinogen*

***Do not wait to proceed down algorithm if strong suspicion for MIS-C while awaiting virology results*

Note: Guidance is rapidly evolving with COVID-19 and this algorithm is subject to change.

GCH Guidance for Patient Placement with Suspicion of Multi-System Inflammatory Syndrome in Children (MIS-C)

Strong Suspicion for MIS-C and Need for Hospitalization

Does the patient have ANY of the following:

- Hypotension and/or tachycardia unresponsive to fluids
- Concern for/evidence of cardiac dysfunction* (including lab elevation in HS Troponin T or NT-pro BNP)
- Concern for/evidence of end organ damage*
- Concern for/evidence of coagulation abnormalities*

YES

Consult Pediatric Intensive Care Unit (PICU) for Possible Admission

- Echocardiogram **NOT** required prior to transfer
  - Admit to PICU for ongoing evaluation and management with transfer to Pediatric Cardiac Care Center (PCCC) if significant myocardial involvement identified

NO

Admit to Pediatric Hospital Medicine (PHM) service and 8S (if bed available)

Isolation Requirements: In absence of need for COVID Quarantine based on COVID screening questions, for **ALL** patients with suspected MIS-C: Order droplet/eye/contact isolation (COVID precautions) until patient has negative COVID PCR x2 (24hrs apart)

*Definition of *concern for/evidence of* is ill defined as presentations vary and can evolve over time – PICU consultation and discussion with PHM attending is encouraged to help determine disposition for patients for whom placement is unclear

GCH Guidance for Management of Multi-System Inflammatory Syndrome in Children (MIS-C)

Consultation	Treatment Options

• Pediatric Cardiology consult and echocardiogram for all patients, subsequent cardiac studies per cardiology team
• Pediatric Infectious Disease consult for all patients
• Consider Hematology/Oncology consult if evidence of significant coagulation abnormalities
• Consider Rheumatology consult if concern for macrophage activation syndrome (MAS) or atypical or severe presentation
• Consider PICU consult for patients with deterioration/worsening status
  • Drs. Cholette and Atallah to be contacted by PICU to assist with determining whether the patient will be admitted to the PICU or PCCC
	• Consider empiric abx coverage, if appropriate
	• Consider IVIG, especially if patient meets criteria for Kawasaki/incomplete Kawasaki.
	  • IVIG dose 2 g/kg (max 100 g)
	• Consider ASA, especially if patient meets criteria for Kawasaki/incomplete Kawasaki
	• Consideration of early steroids if refractory symptoms or concern for MAS
	• Consideration of anti-coagulants or biologics on case by case basis with consultant

Note: Guidance is rapidly evolving with COVID-19 and this algorithm is subject to change.

Recommended Follow up for Patients with Multi-System Inflammatory Syndrome in Children (MIS-C)

SPECIALTY FOLLOW UP

- PCP: follow up within 2-3 days after discharge (in person or via video)
- Cardiology: follow up 1-2 weeks (for Kawasaki-like presentation) or 1 month after discharge unless cardiac findings that require follow up sooner
- Consider follow up with other specialties on case by case basis

LABORATORY FOLLOW UP*

- Consider repeat labs within 1-2 weeks after discharge pending clinical picture (e.g., Kawasaki-like presentation)
- Order the following labs to coincide with first cardiology visit:
    - CBC with diff, ESR, CRP
    - Consider repeat ferritin if concern for MAS
    - Consider repeat NT-pro BNP
    - Consider COVID serology (SARS-CoV-2 IgG Ab) if previously negative or not done (needs to be interpreted with caution in context of receipt of IVIG)

* Order labs at time of discharge, if possible, and cc PCP and Cardiology and Infectious Disease physicians involved during hospitalization/at time of discharge on order

RESTRICTIONS

- Restrict physical activity until cleared by cardiology

MEDICATIONS

- Continue ASA for at least 4-6 weeks
- Consider other medications on case by case basis