Multisystem Inflammatory Syndrome management in Children

MIS-C criteria:
-An individual <21 years presenting with fever (≥24 hours), laboratory evidence of inflammation, and evidence of severe illness requiring hospitalization with ≥ 2 organ system involvement AND
-No alternative plausible diagnosis AND
-Positive for current or recent SARS-CoV-2 infection or known exposure within 4 weeks of symptom onset

-Add MIS-C associated with COVID-19 to problem list
-Determine clinical phenotype

Please use the MIS-C orderset

Kawasaki-like/Normal cardiac function:
-Infection Precautions based on COVID infection status per HID or ID#
-Consult Immunosuppressed Infectious Disease, Heart failure Cardiology, and Hematology/Oncology
- IVIG 2g/kg IDEAL body weight$ if BMI >99% (max 70g)(obtain serology first, run per Immunoglobulin administration-MED 13h Kawasaki protocol)
-Recommend ASA 3-5mg/kg/day (81mg max) initially^
- Consult hematology-oncology for consideration of enoxaparin
-If hypotension or refractory (fever >36hours post IVIG) IV methylprednisolone 2mg/kg Q24 hours x 2-3 doses then oral prednisone 2mg/kg (max 60mg) for 5 days total
-Follow up labs (CBC, CRP, d-dimer, pro-BNP, troponin) and echo timing to be determined clinically, ECG Q 48 hours while hospitalized

Myocarditis/shock:
-Infection Precautions based on COVID infection status per HID or ID#
-Consult Immunosuppressed Infectious Disease, Heart failure Cardiology
-Consider IVIG 2g/kg IDEAL body weight$ if BMI >99% (max 70g) x 2 doses (obtain serology first, run per Immunoglobulin administration-MED 13h Kawasaki protocol)
-If requiring multiple vasopressors give methylprednisolone 30 mg/kg daily (max 1000mg/day) x 3 doses then taper to oral*
-Consider GI prophylaxis
-If 12-24 hours on IVIG/steroids with no response OR clinical deterioration that requires intubation and multiple vasopressors consider Anakinra in consultation with rheumatology**
-Consider stopping antibiotics if cultures negative
-Start enoxaparin in consultation with hematology, aspirin 3-5mg/kg/day (81mg max)^
-Follow up lab (CBC, CRP, d-dimer, pro-BNP, troponin) and echo timing to be determined clinically, ECG Q 48 hours while hospitalized

Discharge planning:
-PCP 2-3 days
-Will need follow-up with MIS-C clinic in 2 weeks and 6 weeks
-Aspirin should be prescribed for 6 weeks (MIS-C clinic to determine duration outpatient)
-H/O follow up only if they have a clot or prolonged markedly elevated inflammatory markers that enoxaparin will be continued on discharge
- Rheumatology (if biologic used)
-Lab and imaging orders to be ordered and coordinated by cardiology nursing
-Specify no MMR or Varicella vaccine ~11 months post-IVIG . Can have and are recommended covid vaccine 90 days after MIS-C diagnosis and when cleared by MIS-C clinic
-No sports participation until cleared by MIS-C clinic

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Infection precautions
-Patients with suspected MIS-C will be treated as if they had potential for prior infection.
-Precautions can be removed 20 days after initial infection onset following discussion with ID

$Ideal body weight calculation
Traub- $[(ht^2) \times 1.65] \div 1000$ (in lexicomp under calculators Ideal Body Weight: Pediatric- link in orderset)

^ Contraindications to aspirin
Platelet count < 80,000 µL, significant bleeding risk, or active bleeding.

*Steroid taper
-Once afebrile; decreasing CRP, troponin, and pro-bnp; and unchanged/improving echo
-Prednisone (on discharge send 10mg tabs, round to nearest 5mg) if liquid prednisolone:
2mg/kg/dose daily (max 60mg/day) x 5 days* 1mg/kg/dose daily (max 30mg/day) x 5 days, 0.5mg/kg/dose daily (max 15mg/day) x 5 days (if last dose would be 15mg/day, give 7.5 mg/day x 5 days and stop)
*If on Anakinra hold taper at 2mg/kg/dose daily oral until off Anakinra
*consider AM cortisol morning after discontinue to evaluate for adrenal insufficiency, if >8 no further intervention, if <8 discuss for concern of adrenal insufficiency with endocrinology
-MIS-C clinic physician will manage steroids outpatient

**Anakinra dosing:
- Start 2 mg/kg (ideal body wt, max 100mg/dose) IVq6h as IV infusion
-If after 24 hours the patient has improved, the dose will decrease to 2mg/kg IV q8h and every 24 hours the frequency can be further decreased: 2mg/kg IV q12hr then q24hr then off.

-As the anakinra is being weaned, the steroids can be weaned from high dose (30mg/kg/d) to the 2mg/kg/d dosing but no further wean to steroids until off anakinra.

Markers of improvement: decrease in vasoactive medication needs and CRP and improvement in the ventricular function (if decreased).

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