Pediatric Inpatient Management for COVID-19 Positive Patients

There is no FDA approved treatment for COVID-19. Recommendations are based on in vitro and limited clinical data. ID consult required on all COVID-19 positive patients.

### Mild Disease
- SpO₂ > 94% on room air
- COVID-19 PCR positive

**Supportive care**

### Moderate Disease
- SpO₂ ≤ 94% on room air OR requirement of supplemental O₂
- COVID-19 PCR positive

**Supportive care**

### Severe Disease
- Hypoxemia requiring mechanical ventilation or ECMO
- COVID-19 PCR positive

**Supportive care**

#### Screen for Eligibility to Receive Remdesivir via Expanded Use Access (EUA)

- Discuss with ID consult team, requires ID approval
- Contraindications and IU Exclusions:
  - Child weighing < 3.5 kg
  - Known hypersensitivity to remdesivir
  - CrCl <30 mL/min, requiring renal replacement therapy or Neonate ≥7 days and ≤28 days with SCr ≥1
  - ALT or AST elevated > 5xULN – ALT > 260 U/L
- Remdesivir should be discontinued if:
  - ALT increases to above 5xULN (260 U/L) while on treatment. May restart once ALT has decreased to below 5xULN.
  - ALT elevation accompanied by signs or symptoms of liver inflammation or increasing conjugated bilirubin, alkaline phosphatase, or INR
- Discuss use of remdesivir with your patient.
  - Per the emergency use authorization, **YOU MUST DOCUMENT IN THE PATIENT’S MEDICAL RECORD THAT THE PATIENT/CAREGIVER HAS BEEN**:
    - Informed of alternatives to receiving remdesivir
    - Informed that remdesivir is an unapproved drug that is authorized for use under EUA
    - Given the Fact Sheet for Patients and Parents/Caregivers (English and Spanish versions available at [https://www.gilead.com/remdesivir](https://www.gilead.com/remdesivir))
    - Provider has calculated and documented the eGFR (obtain SCr) before administration
    - Provider has obtained hepatic lab testing (AST/ALT) before administration
    - For Women of childbearing potential – Negative pregnancy test prior to administration
- **Moderate Disease** (NOT requiring mechanical ventilation or ECMO) Treat for total of 5 days, with option to continue to 10 days. see dosing section, page 2.
- **Severe Disease** (requiring mechanical ventilation or ECMO) Treat for total of 10 days, see dosing section on page 2.

#### Adverse Effects:
- Most common: Increased ALT/AST – Onset 5-25 days, resolution 3-47 days
  - Others reported: Infusion reactions, Phlebitis, Constipation, Dyspepsia, Extremity pain, Headache, Nausea
- **Drug Interactions:** No specific drug interactions have been described at this time.
  - In vitro, remdesivir is a substrate of CYP3A4, CYP2C8, and CYP2D6 and OAPT1B1 and P-gp
  - In vitro, remdesivir is an inhibitor of CYP3A4, OATP1B1, OATP1B3, BSEP, MRP4, NTCP.
- **Formulation Issues:** Excipient sulfobutylether-β-cyclodextrin sodium salt (SBEC) is renally cleared. Remdesivir lyophilized powder contains 3 g of SBEC; Remdesivir injection, 5 mg/mL contains 6 g SBEC. Pediatric patients <40 kg must receive lyophilized powder only.
- **Consider Tocilizumab** on case-by-case basis. Consider in patients with:
  - Hypoxia requiring >40% FiO2 (≥5 L O₂) and/or hypotension requiring pressors
  - Lab evidence of cytokine storm (2 or more of the following):
    - Thrombocytopenia
    - Elevated and increasing ferritin
    - Elevated and increasing LDH
    - Elevated and increasing D-dimer
- **Screen for Eligibility to receive Convalescent plasma via Expanded Access if:**
  - Age ≥18 years
  - Severe ARDS (Oxygenation Index > 16)
  - Use of prophylactic anticoagulation (at a minimum) has been started
  - PICU & ID are both in agreement to administer convalescent plasma

- **Supportive care**

**Updated 5/27/2020
Endorsed by IUH AMC Pediatric Infectious Diseases Physicians and Pediatric ID Pharmacy**
### Remdesivir Dosing – Please order via Pediatric PowerPlan

**Remdesivir lyophilized powder formulation**

- Moderate disease NOT requiring mechanical ventilation or ECMO:
  - ≥ 40 kg: 200 mg IV x1 then 100 mg IV q24h x4 doses
  - 3.5 - 40 kg: 5 mg/kg IV x1 then 2.5 mg/kg IV q24h x4 doses

- Severe disease requiring mechanical ventilation or ECMO:
  - ≥ 40 kg: 200 mg IV x1 then 100 mg IV q24h x9 doses
  - 3.5 - 40 kg: 5 mg/kg IV x1 then 2.5 mg/kg IV q24h x9 doses

**Remdesivir liquid formulation:** No longer stocked at Riley

### Tocilizumab Dosing

**Tocilizumab Dosing:**

- < 30 kg: IV: 12 mg/kg/dose [max 800 mg] IV x1
- ≥ 30 kg: IV: 8 mg/kg/dose [max 800 mg] IV x1

### Labs Recommended

<table>
<thead>
<tr>
<th>All patients with suspected or confirmed COVID-19:</th>
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<tbody>
<tr>
<td><strong>Baseline</strong></td>
</tr>
<tr>
<td>CBC w/diff, CMP, CRP, Ferritin, D-dimer, LDH, Mg</td>
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<tr>
<td><strong>Daily for subsequent 48 hours (for severe disease or if clinically indicated):</strong></td>
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<tr>
<td>CBC w/diff, CMP, CRP, Ferritin, D-dimer, LDH, Mg</td>
</tr>
<tr>
<td>Lab frequency thereafter determined by clinical course</td>
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### Remdesivir Labs

- CMP, CBC w/diff, PT, and urinalysis daily for the duration of treatment
- COVID-19 PCR, should be performed at regular intervals to monitor response to remdesivir. Recommend to recheck on day 4 of treatment.

### Tocilizumab Labs

- IL-6 at baseline and prior to 2nd dose (if indicated)

### Notes

- **Hydroxychloroquine:** Hydroxychloroquine use is not recommended unless given in a clinical trial.
- **Steroids:** Steroids should not be used for treatment of COVID-19. They can be given if needed for non-COVID-19 conditions for which they are required.
- **Neonates:** There are no data to support treatment of neonates with COVID-19 with anything more than supportive care.