Management of Inpatients with Suspected SARS-CoV-2 (COVID-19)

All UMMC patients suspected of having COVID-19 should immediately be reported to Mississippi MED-COM at (601) 984-4655.

The backbone of the treatment strategy for COVID-19 is good quality supportive care as in any viral pneumonia. Certain therapies have shown benefit for COVID-19 and are included in the recommendations below. This document will be updated continually as new evidence emerges and based on the availability of treatment regimens.

ADULT GUIDANCE

Patient Admitted on Nasal Cannula		
Disposition: Consider admission to intensive care unit if older than 65 years of age with a new oxygen requirement, D-dimer > 1,000 ng/L, or RR > 22 breaths/min		
Fluids	Conservative fluid management strategy	
Medications	***Evaluate for enrollment in clinical trials*** *(link below)*	
	Antimicrobials	Consider empiric antibiotics for bacterial pneumonia while COVID-19 results are pending
	Corticosteroids	Initiate dexamethasone for patients requiring O_2; do not continue on discharge
	Bronchodilators	If needed, use metered dose inhalers and avoid nebulized therapies
Coagulopathy	See "Anticoagulation Dosing Recommendations for COVID-19 Patients" document.	
O_2 Supplement	Target SpO2 >90%. If oxygen requirement increases to 5 L call primary team and ICU for evaluation.	
	Consider high-flow nasal cannula at 15 – 30 LPM with surgical mask over patient's face.	
Patient Admitted to Intensive Care Unit		
Fluids	Conservative fluid management strategy such as daily net neutral fluid balance in patients without evidence of shock	
Medications	***Evaluate for enrollment in clinical trials*** *(link below)*	
	Antimicrobials	Consider empiric antibiotics for bacterial pneumonia while COVID-19 results are pending
	Corticosteroids	Initiate dexamethasone for patients requiring O_2 or mechanical ventilation
Coagulopathy	See "Anticoagulation Dosing Recommendations for COVID-19 Patients" document.	
O_2/Mechanical Ventilation	Target SpO2 >92%. Consider HFNC at 15-30LPM with surgical mask over patients face.	
	Once intubated, maintain plateau pressures < 30cm H_20. Low Vt and high PEEP strategies are controversial.	
	If PaO_2/FiO_2 < 150, consider early proning and use of paralytics	
	If PaO_2/FiO_2 remains < 150 after proning and paralysis, consider cautious use of inhaled vasodilators and ECMO consult	

Information about ongoing or potential clinical trials at UMMC can be found at:
https://intranet.umc.edu/Research/Research%20Offices/Clinical-Trials/COVID-19-Task-Force-Potential%20Studies.html

Additional Comments:

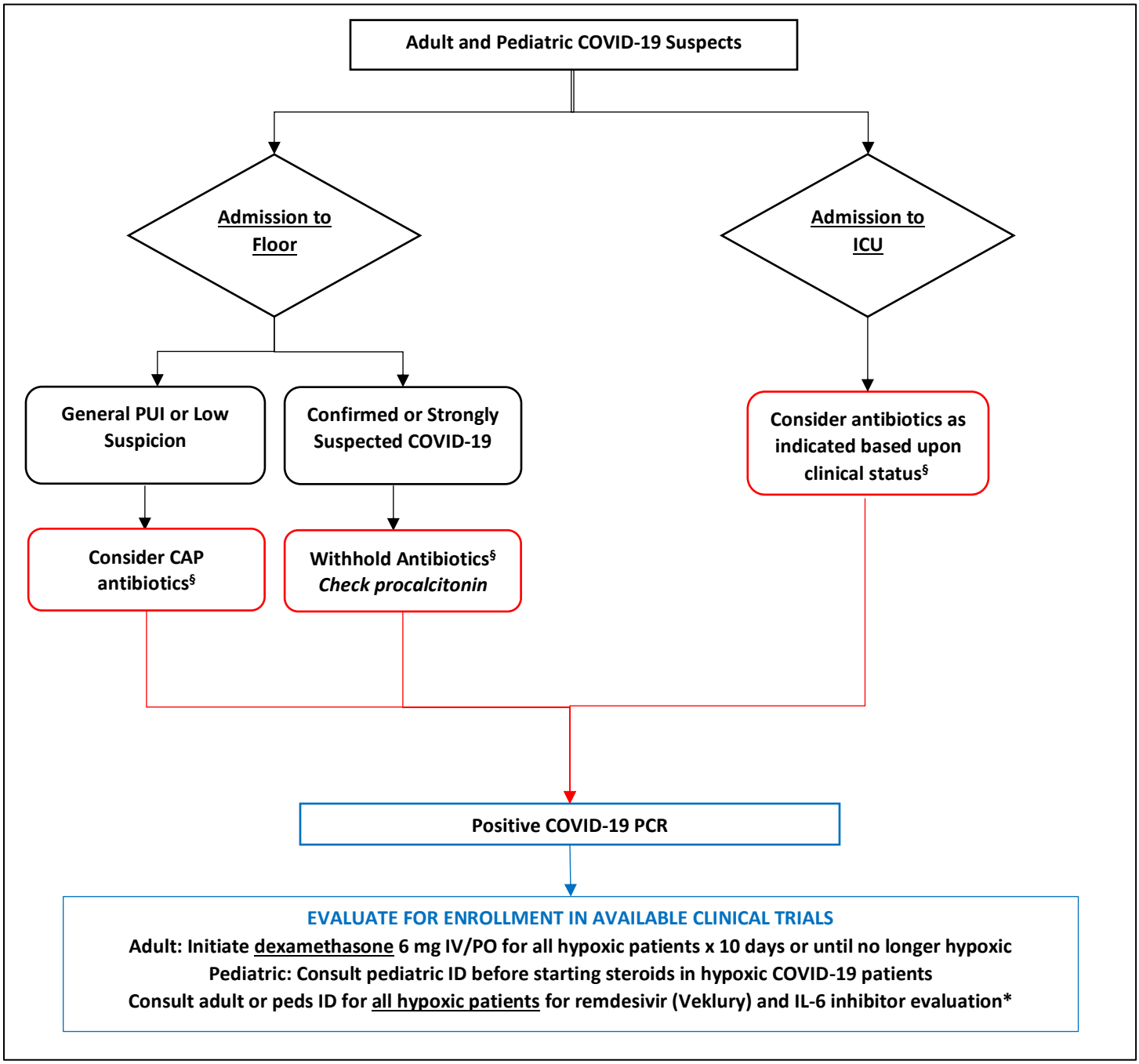
- Early intubation for hypoxemic respiratory failure is no longer required.

Agents not recommended for COVID-19 treatment

The agents listed below have no evidence supporting the use for treatment of COVID-19 but can be used for alternative diagnoses or in the context of clinical trials. * = drugs with low supply (recent shortage or currently on allocation) – contact pharmacy with questions.

- HIV protease inhibitors (more on lopinavir/ritonavir on page 4): darunavir, atazanavir
- H2-receptor blockers: famotidine*, cimetidine
- Supplements: zinc*, ascorbic acid*, vitamin D
- Miscellaneous: hydroxychloroquine, IVIG*, interferon, azithromycin, cetirizine, ivermectin

Algorithm for Management of Hospitalized Patients with Suspected COVID-19



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*ID consult is not required for patients who are asymptomatic or not requiring oxygen. For patients who are readmitted, please contact infection prevention for questions regarding isolation.

§Multiple studies have shown low rate of bacterial co-infection in patients with COVID-19; therefore, antibiotics can be withheld in most patients. Use of procalcitonin can aid in decision making. Procalcitonin can be falsely elevated due to trauma, shock, renal dysfunction (ESKD or AKI), some forms of vasculitis, acute graft vs. host disease, and paraneoplastic syndromes due to medullary thyroid and small cell lung cancer.

Inpatient Treatment Information

Drug	Dose and Duration	Comments
Approved Therapies		

Remdesivir (Veklury)
 	
• Direct acting antiviral
• Allocation decisions made on an individual basis
	Adult
	200 mg IV x 1 followed by 100 mg IV q24h
	
	Pediatric
	• <40 kg: 5 mg/kg IV load followed by 2.5 mg/kg IV q24h
	• ≥40kg: Refer to adult dosing
	
	Duration: 5 days or until no longer hypoxic
		FDA approved for patients >12 years old weighing ≥40 kg. Available through emergency use authorization for pediatric patients <12 years old and/or <40 kg. Clinical trials for remdesivir in children have not completed yet.
		
		Pediatric criteria:
		1. Peds ID must be consulted for the use of remdesivir.
		2. Remdesivir is recommended for children 12-15 years old with risk factors for severe disease and are requiring oxygen.
		3. Remdesivir is recommended for children ≥16 years old who are requiring oxygen regardless of risk factors.
		
		Adult criteria:
		• Adult ID must be consulted for the use of remdesivir.
		• Requires O2 sat ≤94% or oxygen supplementation
		  ○ Low-flow nasal cannula
		  ○ High-flow nasal cannula within 24 hours of being placed on oxygen
		  ○ No benefit seen in patients who are already mechanically ventilated
		
		Monitoring:
		• Requires baseline eGFR and ALT
		• Contraindicated with ALT > 10x UNL
		
		A/E: Increased ALT/AST.

Corticosteroids *Dexamethasone* • Initiate in patients requiring mechanical ventilation or oxygen • Do not start in patients not requiring oxygen	**Adult** Preferred: Dexamethasone 6 mg IV/PO* daily **Pediatric** Preferred: Dexamethasone 0.15 mg/kg/dose (max 6 mg daily) Duration: 10 days or until no longer hypoxic	Decreased mortality shown in the RECOVERY trial Not recommended for the treatment of non-hospitalized or non-hypoxic patients **Pediatric considerations:** Corticosteroids are recommended in pediatric patients who require mechanical ventilation, high flow oxygen, non-invasive ventilation, ECMO. They are not routinely recommended for patients only on low flow oxygen. **Adult considerations:** Corticosteroids are recommended for all patients requiring oxygen. **Additional assessment** • Monitor blood sugar • Elevations in WBC can occur with corticosteroid use

Investigational Therapies		
Tocilizumab (Actemra) • Adjunctive agent that targets IL-6 • Sarilumab can be used as a substitute for tocilizumab if out of stock. See information below.	**Adult** 8 mg/kg IV x1 dose • Use total body weight for dosing • Doses will be rounded to the nearest available full vial (80 mg, 200 mg, 400 mg vials) • Max dose = 800 mg **Pediatric** Insufficient evidence for tocilizumab in hospitalized children with COVID or MIS-C. *Dosing*: <30 kg = 12 mg/kg; ≥30 kg = 8 mg/kg (max 800 mg) Duration: 1 dose	Mortality benefit shown in certain adult patient populations REMAP-CAP and RECOVERY trials; the FDA EUA for tocilizumab applies to patients 2 years of age and older. ****Adults and peds ID MUST be consulted to use tocilizumab. Tocilizumab should only be used in combination with corticosteroids.**** **Inclusion Criteria:** 1. Symptoms <10 days 2. Hospitalized <48 hours 3. Patients who are rapidly progressing and are requiring >4L nasal cannula 4. CRP ≥7.5 **Exclusion Criteria:** 5. Current bacterial or fungal co-infection 6. Unlikely to survive >48 hours 7. Mechanical ventilation Risk/benefit discussion for pregnant women. **A/E:** Increased ALT/AST, infusion related reactions, hematologic dyscrasias, increased LDL, secondary infections
Sarilumab (Kevzara) • Adjunctive agent that targets IL-6 • Substitute for tocilizumab if out of stock.	**Adult** 400 mg x 1 dose **Pediatric** Insufficient evidence for tocilizumab in hospitalized children with COVID or MIS-C. Duration: 1 dose	Mortality benefit shown in certain adult patient populations REMAP-CAP trial. ****Adults and peds ID MUST be consulted to use sarilumab. Sarilumab should only be used in combination with corticosteroids.**** **Inclusion Criteria:** 1. Symptoms <10 days 2. Hospitalized <48 hours 3. Patients who are rapidly progressing and are requiring >4L nasal cannula 4. CRP ≥7.5 **Exclusion Criteria:** 1. Current bacterial or fungal co-infection 2. Unlikely to survive >48 hours 3. Mechanical ventilation Risk/benefit discussion for pregnant women. **A/E:** Increased ALT/AST, infusion related reactions, hematologic dyscrasias, increased LDL, secondary infections

Information on drug interactions and administration for patients who cannot swallows can be found at: http://www.covid19-druginteractions.org/