Clinical Guidance for the Inpatient Care & Treatment of COVID-19 Pediatric Patients:

Initial Evaluation, Diagnosis, and Management

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Ambulatory Guidelines. Ambulatory Guidelines for patients *without* criteria for admission are detailed in a separate document.

NICU/Newborn Guidance. Guidance for Obstetric and Newborn Areas is detailed in a separate document.

Testing Guidelines. VUMC Guidelines for COVID-19 Testing are detailed in a separate document.

Patients Requiring Admission

1. Pediatric patients with confirmed COVID-19, or suspected COVID-19 awaiting test results, who have respiratory distress (e.g., tachypnea, shortness of breath - SOB), hemodynamic instability, PO refusal, inadequate oral intake, or who cannot be monitored safely at home should be hospitalized. These criteria are comparable to other respiratory viral infections of childhood.

2. Symptomatic patients with suspected COVID-19 awaiting test results
    a. Suspected COVID in children is defined as: 1 or more of the following +/- fever: 1) sudden onset of loss of taste or smell; 2) new URI symptoms (sore throat/congestion/cough); 3) new flu-like illnesses (myalgias/fatigue); and 4) new GI symptoms (nausea/vomiting, abdominal pain, diarrhea), regardless of presence of absence of a COVID-19+ close contact.
    b. Symptomatic children requiring admission should have orders for COVID-19 testing and RPP.
    c. If workup identifies a clear alternative source for suspected COVID symptoms, the patient should be reclassified as asymptomatic awaiting test results. Diabetic ketoacidosis (DKA) is considered an alternate source. For questions, please contact the Pediatric Infectious Diseases On-Call provider (615-835-7608).

3. Asymptomatic patients not suspected to have COVID-19 awaiting test results
    Indications for COVID-19 testing in asymptomatic patients are outlined separately. Please see *VUMC Guidelines for COVID-19 Testing* on the VUMC Coronavirus website.

4. Patient placement
    a. All patients with confirmed COVID-19 or suspected COVID-19 awaiting test results will be admitted to the appropriate inpatient unit. Patients with known COVID-19 or suspected COVID-19 awaiting test results will preferably not be admitted to 6A or 6B, and asymptomatic patients awaiting test results will preferably not be admitted to 6A.

b. Need for ICU support will be determined by ED and ICU staff.
c. Admissions to the Pediatric Hematology-Oncology Service
    i. Any patients with confirmed or suspected COVID-19 awaiting test results will preferably be admitted to 6C, or if not available 6B.
    ii. Asymptomatic patients, or patients with fever in the absence of other COVID symptoms, awaiting test results admitted from the Emergency Department will preferably be admitted to 6B.
    iii. Asymptomatic patients awaiting test results admitted from the clinic for scheduled chemotherapy will preferably be admitted to 6B, or if not available 6A.
    iv. Patients may be moved to 6A or 6B if needed once test results are negative.
    v. Please contact Infection Control and Prevention for situations in which the Hematology-Oncology Service determines that a patient or caregiver with COVID-19 must remain on 6A for clinical care.

d. If COVID-19 testing was positive less than 90 days prior to admission, please refer to *Admission Testing after Prior Positive COVID-19 Test* on the VUMC Coronavirus website to determine whether a patient meets criteria for clearance from isolation with or without additional testing. For additional questions, please consult the Infection Control and Prevention On-Call Provider (615-835-1205)
e. Indications to resume cohorting of patients with confirmed COVID-19 or suspected COVID-19 awaiting test results to a specific unit will be implemented by the Chief of Staff in coordination with recommendations by Infection Control and Prevention.

5. Precautions
    a. Please see *PPE Guidance for Suspected COVID-19 in Pediatric Patients* on the VUMC Coronavirus website for PPE guidance for confirmed and suspected COVID-19 in children. All patients will wear a surgical mask for transport.
    b. When caring for a patient in quarantine for exposure to a close contact with COVID-19, wear eye protection along with gown, gloves, and mask (N95) until the end of quarantine. For additional questions, please consult the Infection Control and Prevention On-Call Provider (615-835-1205).
    c. Keeping the door to the room closed is preferable unless there is a situation where the patient requires observation with the door open.
    d. Asymptomatic patients awaiting COVID-19 test results do not require isolation precautions.
    e. The use of a negative pressure room or HEPA filter is no longer required for the use of a patient with confirmed or suspected COVID-19. Please refer to *Air Exchange Chart* on the VUMC Coronavirus website for the amount of time the room is required to be closed to new patients after completing an aerosol-generating procedure on a patient with confirmed or suspected COVID-19.

ED/Floor/Intensive Care Management

1. Patients should be managed according to standard procedures and protocols based on their level of care (acute care or ICU).

2. Recommendations for COVID-19 evaluation in VCH inpatients who develop fever and respiratory symptoms after admission:
    a. Repeat COVID-19 testing is not routinely recommended but can be considered in hospitalized children with an initial negative test who develop symptoms concerning for COVID-19.

b. Inpatients who develop symptoms after admission for other diagnoses are not transferred to the COVID unit while COVID-19 testing is pending.

3. PPE usage, visitation rules, nursing care and limitations on providers will follow most current existing guidelines. *It is strongly recommended that the number of team members entering the room be minimized to preserve PPE and reduce exposures*. Please see *PPE Reminders MCJCHV/5C* on the VUMC Coronavirus website for additional details.

4. Consider continuous pulse oximetry and heart rate monitoring for all patients admitted for symptomatic COVID-19.

5. Routine testing at admission for confirmed COVID-19 will include CBC with differential, CMP, COVID-19 and RPP testing, and portable CXR. Repeat COVID-19 testing is not indicated in patients who are confirmed to have COVID-19 but have not yet met symptom-based clearance. For additional details, please see *Admission Testing After Prior Positive COVID-19 Test* and *Guidance for Clearance of Suspected and Confirmed COVID-19 Patients* on the VUMC Coronavirus website.

6. Chest tomography and bronchoscopy are not indicated for screening or initial diagnosis. These tests may be considered under specific clinical circumstances, such as unexplained clinical deterioration.

7. Avoid high-flow nasal cannula (HFNC, Vapotherm) in the Children's ED and during transport within the hospital to minimize aerosolized particles. Consider blood gas to assess for respiratory failure prior to starting HFNC. Place surgical mask on patient prior to initiation of HFNC and maintain throughout HFNC use.

8. Home regimen therapies for chronic patients: Suction as needed to maintain patent airway. If available, patient or family may administer home airway clearance therapy.

9. Consider Infectious Diseases Consult for patients who are immunocompromised or outside of criteria for standard treatment as outlined below.

Medications for treatment of COVID-19 in children

1. Remdesivir
    a. *Indications:* Requiring supplemental oxygen and ≤14 days since onset of symptoms. Also consider in any child at particularly high risk for clinical deterioration even if not requiring supplemental oxygen.
    b. *Contraindications*: Known hypersensitivity to remdesivir and ALT >10 times normal. *Note*; Use of remdesivir in patients with eGFR <30 ml/min (both AKI and advanced CKD) is at the discretion of the treating clinicians.
    c. Dosing
        i. Children 3.5 kg to 39 kg:
            - Must receive lyophilized remdesivir product
            - Loading dose 5 mg/kg x 1 then 2.5 mg/kg q24h x 4 days (for a total of 5 days of therapy or hospital discharge, whichever is first)
        ii. Children ≥ 40 kg:
            - May receive either liquid or lyophilized remdesivir product
            - Loading dose 200 mg x 1 then 100 mg q24h x 4 days (for a total of 5 days of therapy or hospital discharge, whichever is first)
    d. *Monitoring* while receiving remdesivir

i. Daily CBC, CMP
ii. INR at baseline and as needed

2. Corticosteroids

a. *Indications*: For hospitalized patients with COVID-19 who require supplemental respiratory support (including supplemental oxygen, non-invasive ventilation, invasive ventilation, or ECMO). Generally given concurrently with remdesivir unless contraindicated.

b. *Dosing*

i. Dexamethasone (oral/ng/iv) 0.15 mg/kg/dose once daily (maximum dose: 6mg) for 10 days unless contraindicated.

ii. Dexamethasone may be given IV if the patient is unable to tolerate PO medications. Other corticosteroids may be considered in hospitalized patients with COVID-19 who require supplemental respiratory support and cannot be treated with dexamethasone In accordance with NIH recommendations, if dexamethasone is not available, equivalent dosing of prednisone (max 40mg PO daily) OR methylprednisolone (max 32mg PO/IV daily) OR hydrocortisone (50mg IV Q8 hours) may be used as alternatives to dexamethasone.

iii. Inpatients who are ready for discharge in stable condition and do not require supplemental oxygen at discharge may not require completion of a course of dexamethasone.

3. Antibiotics

Consider obtaining procalcitonin in patients with concern for bacterial superinfection.

- If serum procalcitonin value is <0.25 µg/L, holding antibiotics is strongly encouraged.
- If serum procalcitonin value is 0.25-0.5 µg/L, holding antibiotics) is encouraged unless clear concern for or evidence of a secondary bacterial infection.
- If serum procalcitonin value is >0.5 µg/L, consider beginning or continuing antibiotics and/or pursuing additional work up for secondary bacterial infection.

Note: Procalcitonin may be elevated in severe COVID-19 infection without concomitant bacterial infection. Procalcitonin may also be falsely low with antibiotic pretreatment.

4. Anticoagulation

Patients 12 years of age or older with confirmed COVID-19 infection plus 1 other risk factor for thrombosis (personal history of thrombosis, inherited thrombophilia, family history of thrombosis/thrombophilia, obesity, immobility, bacteremia/sepsis, nephrotic syndrome, etc.) should receive anticoagulation prophylaxis with either Enoxaparin or unfractionated heparin. Dosing and monitoring should follow VCH Pediatric VTE Prophylaxis Clinical Guidelines (in eStar orderset). Please consult Hematology to discuss indications for anticoagulation prophylaxis and monitoring.

5. Respiratory medications
   a. Meter-dosed inhalers (MDI) with spacer (when applicable) are preferred to nebulizer to minimize aerosolized particles.
   b. If MDI is not available, medications can be administered using face mask.
   c. Hypertonic saline is <u>not</u> indicated.

6. SARS-CoV-2 Monoclonal antibody therapy

Patients with mild to moderate COVID-19 who are at high risk of progression to severe disease and admitted to the hospital for reasons other than COVID-19 may receive monoclonal antibodies if they meet Emergency Use Authorization criteria. For additional details, please see *VUMC Guidance for Use of Anti-SARS-CoV-2 Monoclonal Antibodies in Children 12-17 Years Old* on the VUMC Coronavirus website.

Discharge Management of Symptomatic Patients with Confirmed COVID-19

1. Patients with improving clinical status (hemodynamically stable without hypoxia or need for respiratory support and tolerating oral intake) may be discharged to home.

2. Specific instructions will be given to family for monitoring at home, including potential for deterioration after discharge. In addition, specific instructions will be given to families to reduce risk of transmission at home and to provide guidance for clearance from isolation. For additional details, please see *Guidance for Clearance of Suspected and Confirmed COVID Patients* on the VUMC Coronavirus website.

3. Tracing and contact of potential exposures are not the responsibility of the hospital-based teams.

4. We recommend that PCP follow up with patient by telephone within 1 week after discharge.

5. If patient requires hospital follow up prior to being cleared from isolation, a visit will be coordinated in the Pediatric Emergency Department. Both the ED and Infection Control and Prevention should be notified of pending arrival, along with the appropriate subspecialty medical or surgical service.