# COVID-19 Clinical Pathway

**PURPOSE:** To provide Providers with a clinical management pathway for care of patients with COVID-19 in the inpatient setting from admission to discharge.

### Clinical Manifestations

- Fever
- Cough
- Anosmia/ageusia
- Myalgias
- Shortness of breath
- URI symptoms
- GI symptoms
- Headache
- Malaise

*Source: CDC Website*

### High Risk Populations

- Older age
- Cancer
- CKD
- Chronic lung disease
- Dementia
- Diabetes
- Down Syndrome
- CVD
- HIV
- Immunocompromised
- Liver disease
- Obesity
- Pregnancy
- Sickle cell disease/thalassemia
- Smoking
- Stroke or cerebrovascular disease
- Substance use disorders

*Source: NIH Guidelines*

### Clinical Course

Overview found here: NIH Guidelines

**Always document date of symptom onset at admission as this will have implications for discharge and isolation recommendations**

### Testing Guidelines

*All hospitalized patients should receive COVID-19 Testing*

- Admission testing information found [here](#) (2/21/21)
- SHC interventional platform testing criteria and protocols [here](#) (7/1/21)

### Visitor Policy

- [SHC Visitation Protocol](#)

### Lab/Imaging Results

**Lab Results Commonly Seen in COVID-19**

- CBC with leukopenia/lymphopenia
- Elevated AST/ALT
- Elevated CRP
- Elevated d-dimer
- Elevated ferritin
- Elevated LDH

**Studies**

- CXR – bilateral multifocal opacities most common
- CT – bilateral peripheral ground glass opacities most common

### COVID-19 Testing

- All Patients
  - [SHC COVD Laboratory and Patient Testing Guidelines](#)
  - Order NP swab for COVID-19 test +/- Flu/RSV
  - See link above for workflow for patients who have tested positive 20-90 days prior to admission

### Initial Labs/Studies

- All Patients
  - CBC with diff
  - CMP
  - Procalcitonin

**Patients with oxygen requirement**

- Strongyloides Ab (if from endemic area)
- Portable CXR

### Follow-up Labs

- All Patients
  - BMP and CBC daily or QOD

**Patients receiving remdesivir**

- Daily CMP (for LFT monitoring)

### Repeat Testing and Discontinuing Precautions

- New symptoms during hospitalization
  - Repeat testing and institute precautions until result
  - Notify RN if initiating this pathway
- Discontinuing precautions
  - Inpatients will be on isolation for 20 days from first positive test
  - **Repeat testing is not required or recommended** to discontinue precautions
  - Strand-specific testing may be used on a case-by-case basis in discussion with infection control
  - [SHC Discontinuation of COVID Precautions](#)
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ADDITIONAL INPATIENT MANAGEMENT

Respiratory Management

- **COVID-19 Airway, Oxygen, NIPPV and Ventilator Guidelines**
- Switch to a **non-rebreather (NRB) mask** or **Salter nasal canula** and consult ICU if > 6 LPM of oxygen is required
- **High Flow Nasal Cannula** may be considered in ICU if patient on 10LPM via NRB/Salter and PO2 < 65 or SaO2 < 92%
- **NIPPV (CPAP or BIPAP)** may be used in select patients only; MICU consultation is required
- **Awake Proning**: Trial if escalating O2 requirement using **COVID-19 AAU Prone Positioning Guidelines**
- PUI/COVID-19+ patients receiving O2 via NC should wear a surgical mask when any provider is in the room

COVID-19 Therapeutics

- **Dexamethasone**: 6 mg PO or IV daily for up to 10 days. Check Strongyloides IgG for people who were born or have resided in a developing country or an endemic area of the US. In case of dexamethasone shortage can substitute prednisone 40 mg, methylprednisolone 32 mg or hydrocortisone 160 mg.
- **Remdesivir**: 200 mg IV x 1 dose f/b 100 mg IV q24h x 4 doses (for up to 5 days total). For patients on mechanical ventilation or therapy extension beyond 5 days, page ID team for approval (first dose may be given per primary team prior to approval to avoid delay).
- **Tocilizumab**: 8 mg/kg (max 800 mg) IV x 1 dose. **Elevated CRP > 7.5 is required** if used for HFNC or NIMV after first 24h of this level of O2 support. **Avoid in**: Pregnancy, Immunosuppression, AST/ALT > 5xULN, Platelets < 50, Active/Suspected concurrent bacterial/fungal infection. Use caution in age 70 or older. Baricitinib significantly less expensive than tocilizumab.
- **Baricitinib**: 4 mg PO daily for up to 14 days. **Elevated CRP, LDH, ferritin, or D-dimer > ULN required. Avoid in**: Mechanical ventilation, Pregnancy, Immunosuppression, History of VTE in past 3 months, AST/ALT > 5xULN, Platelets < 50, eGFR<30 ml/min, ANC<1000, Active/Suspected concurrent bacterial/fungal infection, LTBI treated for < 4 weeks.
- **Monoclonal antibodies**: Primary team to initiate request by placing Epic help order for casirivimab and imdevimab.

- **Ordering monoclonal Abs**: if an inpatient meets **SHC EUA high-risk criteria** and does NOT have a new/worsening O2 requirement primary team can place "COVID REGEN-COV (casirivimab+imdevimab) Help Order (Inpatient Only)" in EPIC
- For patients receiving monoclonal Abs primary team should counsel patient, provide **FDA EUA fact sheet**, and enter a progress note using ".MabTherapyIP"

Anticoagulation

- For hospitalized, non-ICU patients admitted with COVID-19 consider **therapeutic anticoagulation with LMWH** (or heparin if contraindication to LMWH) (**NEJM, 2021**)
- Hospitalized, non-ICU patients admitted with COVID-19 who are not placed on therapeutic anticoagulation should receive prophylactic dose anticoagulation unless contraindicated
- **NIH COVID Treatment Guidelines: Antithrombotic Therapy in Patients with COVID-19** (Note: this guideline has not yet incorporated the ACTIV-4a trial results linked above)

Symptom Management Medications

- **Antipyretics**: acetaminophen and/or ibuprofen if no other contraindication
- **Cough medications**: benzonatate and/or guaifenesin
- **Bronchodilators**: MDI preferred over nebulizers to minimize aerosolization

Inpatient Consultation

- **Infectious Disease** – Consult for extension of remdesivir beyond 5 days, tocilizumab or baricitinib approval (Page 15013), pregnant patients, renal failure (CrCl < 30 ml/min), severe immunocompromise, other ID issue in addition to COVID
- **ICU** – Consult for any patient requiring ≥ 6L NC oxygen
- **OB** – Consult for any pregnant patient with COVID-19

Julia Caton MD, Saloni Kumar MD, Neera Ahuja MD, Shanthi Kappagoda MD, Amy Chang MD, Charles Liao MD, Ron Li MD, Kevin Schulman MD, Ginger Yang MD, Lisa Sheh, MD, Stanford University Department of Medicine; Updated 9/3/21

Source: [https://med.stanford.edu/id/covid19.html](https://med.stanford.edu/id/covid19.html)
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Discharge Considerations

Preparing for Discharge

- **Home oxygen** – work with CM to place home O2 order once patient has a stable/improving O2 requirement of $\leq 4L$
- **Pulse oximeter** – place nursing communication to provide patient with pulse oximeter if discharging with home O2
- **Discharge medications**

<table>
<thead>
<tr>
<th>Respiratory Status</th>
<th>Dexamethasone</th>
<th>Remdesivir</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>No O2 requirement</td>
<td>If started inpatient, DO NOT CONTINUE on discharge</td>
<td>If started inpatient, DO NOT CONTINUE on discharge</td>
<td>If baricitinib started inpatient, DO NOT CONTINUE on discharge</td>
</tr>
<tr>
<td>O2 requirement related to COVID-19</td>
<td>If started inpatient, there is insufficient evidence to recommend for or against continuing on discharge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Send any discharge medications to Alto pharmacy for bedside delivery *before 10:30 AM on the day of discharge* (ideally send at least one day prior to discharge)
- **Follow-Up**
  - PCP – for SHC PCPs place Epic referral at discharge, for non-SHC PCP ask CM to help arrange follow-up visit
  - **County clearance** – discuss with Case Manager who will contact patient’s county of residence if required

Discharge Criteria for Patients Requiring Oxygen at Discharge

- Patient is at least 7 days from symptom onset
- Oxygen requirement is $\leq 3L$ NC with $\text{SpO2} > 92\%$ at rest and with ambulation
- Oxygen requirement has been *stable or improving for at least 48 hours*
- Patient is *able to ambulate* in hospital room and perform ADLs without excessive dyspnea

Discharge Instructions

**Isolation**
- Patients should isolate until 10 days from symptom onset (or 10 days from positive test if asymptomatic) AND fever free for at least 24 hours AND improving symptoms, unless instructed otherwise by their county of residence
  - Include Epic patient instruction “COVID-19 isolation” in patient discharge paperwork
  - [SCC Home Isolation and Quarantine Guidelines](#)

For Patients Discharging with Home Oxygen
- Include pulse oximeter instructions and oxygen safety information “oxygen therapy” in discharge instructions

Special Situations

Patients Unable to Isolate at Home
- If a patient is unable to isolate at home (e.g., shares a room with another person or shares a bathroom/kitchen that cannot be routinely disinfected) work with case management and patient’s county of residence on discharge options

Decedent Care
- For all confirmed COVID-19 and PUI deaths, follow [Decent Care Guidelines](#)

AMA Discharges
- [SCC guidance for patients leaving against medical advice](#)