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

INITIAL CONSIDERATIONS & WORKUP

Clinical Manifestations

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

High Risk Populations

Source: CDC Website

- 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

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

Source: NIH Guidelines

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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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 Shieh, MD, Stanford University Department of Medicine; Updated 9/3/21

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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

Respiratory Status	Dexamethasone[1]	Remdesivir[2]	Tocilizumab[3] or Baricitinib[4] (ID approval required)	Monoclonal Antibodies[5]
No O2 requirement	Not indicated	Not indicated	Not indicated	**CONSIDER if high risk AND** admission and O2 req **UNRELATED** to COVID-19
2L NC, stable resp status		START		
2L NC and worsening (↑O2 req, ↑RR, resp distress) to 4L+ NC	START			If severely immunocompromised, **CONSIDER IN CONSULTATION WITH ID** via expanded access
HFNC or NIMV[6] (within first 24h of this level of O2 support)		CONSIDER	START	
HFNC or NIMV[6] (after first 24h of this level of O2 support)			CONSIDER (up to 72 hours from admission)	
MV (within 24 hours)		CONSIDER (ID approval only)	START (Tocilizumab Only)	
MV (after 24 hours)			Not indicated	
ECMO				

1. **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.
2. **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).
3. **Tocilizumab:** 8 mg/kg (max 800 mg) IV x 1 dose. ***Elevated CRP > 7.5 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.
4. **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.***
5. **Monoclonal antibodies:** Primary team to initiate request by placing Epic help order for casirivimab and imdevimab.
6. Assumes patients on HFNC or NIMV are admitted to ICU level of care

- **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"

Source: https://med.stanford.edu/id/covid19.html

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

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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 ≤ 4L
- **Pulse oximeter** – place nursing communication to provide patient with pulse oximeter if discharging with home O2
- **Discharge medications**

Respiratory Status	Dexamethasone	Remdesivir	Other
No O2 requirement	If started inpatient, **DO NOT CONTINUE** on discharge		If **baricitinib** started inpatient, **DO NOT CONTINUE** on discharge
O2 requirement related to COVID-19	If started inpatient, there is insufficient evidence to recommend for or against continuing on discharge	If started inpatient, **DO NOT CONTINUE** on discharge	

  - 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 ≤ 3L NC with 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

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