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Category	Recommendations
Outpatient, asymptomatic	Supportive care
	Recommend against steroids
Outpatient, symptomatic	Supportive care for most, consider clinical trials if eligible
	High-risk for progression: Recommend outpatient therapy. See <u>UCSF Adult Outpatient COVID-19</u>
	Treatment Guidance
	Recommend against steroids
Inpatient, asymptomatic or mild symptoms	Supportive care, including prophylactic anticoagulation
and hospitalized for non-COVID-19 reason	Treat with one of the outpatient therapies if meets outpatient <u>criteria</u>
	Recommend against steroids, therapeutic anticoagulation, or other anti-inflammatories
Inpatient,	High-risk for progression or radiographic evidence of LRTI: Remdesivir x 5 days
hospitalized for COVID-19 but does not	Consider CCP if severe immunocompromise/not expected to mount an antibody response
require supplemental oxygen	Recommend against steroids or other anti-inflammatories
	Prophylactic anticoagulation
Inpatient,	Remdesivir x 5 days
Supplemental oxygen via nasal cannula	Consider CCP if severe immunocompromise/not expected to mount an antibody response
	• Steroids if: Persistent hypoxia requiring ≥ 3-4L O ₂ <u>OR</u> trajectory suggests increasing severity of disease
	Consider therapeutic heparin-based anticoagulation if no contraindications
Inpatient,	Remdesivir x 5 days
Requires supplemental oxygen via high-flow nasal cannula or non-invasive ventilation	Steroids recommended
nasai cannula or non-invasive ventilation	Consider adding baricitinib to steroids if rapid clinical worsening
	 Heparin-based therapeutic anticoagulation if < 20L HFNC and stable trajectory; otherwise, prophylactic anticoagulation
	Consider CCP if severe immunocompromise/not expected to mount an antibody response
Inpatient,	Remdesivir x 5 days
Requires mechanical ventilation or ECMO	Steroids recommended
	If baricitinib initiated before intubation, continue the course of medication
	Alternative: Use tocilizumab if hospitalized < 3 days AND in ICU < 24 h AND rapidly progressing to
	mechanical ventilation or requiring mechanical ventilation.
	Do not administer baricitinib and tocilizumab together
	Consider CCP if severe immunocompromise/not expected to mount an antibody response
	Recommend against therapeutic anticoagulation; prophylactic anticoagulation as indicated

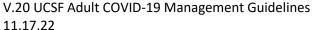




Table 1. Diagnostic testing for patients with confirmed or suspected COVID

Testing for COVID-19.

Initial testing for symptomatic patients:

COVID-19 PCR via

Nasopharyngeal (NP) +/- Oropharyngeal (OP), Mid-Turbinate (MNT) +/- OP, or Anterior Nares (AN) +/- OP (note that flu/RSV and RVP cannot be performed on AN samples)

Repeat PCR testing:

If negative initial PCR and very high suspicion:

- Tracheal aspirate COVID-19 PCR in mechanically ventilated patients
- Repeat NP or MNT + OP testing if not mechanically ventilated

Certain COVID-19 confirmed patients may require additional testing for disposition; consult ID to discuss next steps

Retesting of previously negatively tested patients should be done if:

- New compatible symptoms
- Exposure investigation
- Planned or continuous aerosol-generating procedure (every 7 days)
- Shared room (Monday and Thursday)

Serologic testing, clinical indications:

- o Confirmation of infection if high clinical suspicion, negative PCR testing, and symptoms > 7 days
- o Documentation of serological response prior to convalescent plasma donation
- Utility for determining immunity uncertain

Laboratory testing

On admission

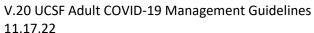
All patients¹:

- o CBC with differential, BMP, LFTs, coagulation studies
- Consider SARS-CoV-2-Ab IgG Nucleocapsid Protein if planning CCP

Routine monitoring:

If receiving medications to treat COVID-19, obtain daily CBC with differential, BMP, Mg

Trend LFTs Q48h-72h if abnormal at baseline (> 2 x ULN) or receiving remdesivir therapy



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 Send RVP if during <u>flu</u> season (declared by HEIP and 	If clinical deterioration:
executive leadership based on Bay Area flu incidence)	 Repeat sputum and blood cultures (tracheal aspirate
<u>If clinically indicated:</u>	culture if intubated)
o Procalcitonin, troponin, BNP, lactate, ABG	
 If concern for bacterial infection (prior to starting empirical 	
antibiotics): blood cultures (2 sets), sputum bacterial culture	
 Hepatitis B and C serologies if elevated liver biochemistries 	
o Consider to estimate risk for severe disease: fibrin d-dimer,	
CRP, LDH and CPK.	

Do not obtain unless clinical suspicion for a specific diagnosis (e.g. HLH)

o Ferritin, soluble IL-2-receptor-alpha, NK cell activity

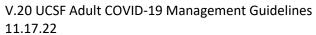
Do not obtain:

o IL-6 levels

Imaging			
Chest radiograph:		Chest CT:	
o Baseline	AP CXR on admission	0	Limited role in diagnosis of COVID-19 (PCR test of choice)
 Monitoring for complications (pneumothorax, atelectasis) at 		0	Primary role is evaluation of superimposed processes such
interval deemed appropriate by clinical team			as pulmonary embolism or aortic dissection.

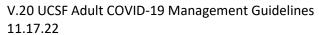
Table 2. Therapeutics

Therapies			
 Multiple clinical trials cont 	 Multiple clinical trials continue to enroll inpatients and outpatients 		
 Clinical trial teams will screen inpatients for eligibility and offer enrollment 			
Experimental therapeutics should only be offered in the context of a clinical trial			
Antibiotics	o Bacterial co-infection on initial presentation to the hospital for COVID-19 is uncommon. Use		
	antibacterials sparingly in this population, and if started, deescalate rapidly for negative		
	cultures.		



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	 For patients admitted with severe and critical COVID-19, hospital-acquired infections may occur with both bacterial and fungal pathogens. Decisions to initiate therapy should be based on clinical data. 	
Baricitinib or tocilizumab	Recent studies of JAK inhbitors, including baricitinib, have demonstrated reduced disease progression and decreased mortality in patients requiring significant oxygen support. Other studies of IL-6 inhibitors, including tocilizumab, show improved clinical outcomes and decreased mortality, especially in recently admitted patients in the ICU requiring intubation. Updated NIH guidance recommends "using either baricitinib (BIIa) or tocilizumab (BIIa) (listed alphabetically) in combination with dexamethasone alone or dexamethasone plus remdesivir for the treatment of COVID-19 in hospitalized patients on high-flow oxygen or noninvasive ventilation who have evidence of clinical progression or increased markers of inflammation." The NIH Panel could not reach consensus on a recommendation for use of either medication for patients with signs of systemic inflammation and rapidly increasing oxygen needs while on steroids but not requiring non-invasive ventilation or high flow oxygen. The NIH panel did not comment on their prior recommendation to use tocilizumab in recently admitted patients requiring ICU care < 24h and mechanical ventilation.	
	In consideration of these NIH recommendations, and new baricitinib clinical trial data, our updated guidance :	
	 Consider baricitinib if the following criteria are met: Use with steroids (preferred, meets all below): Severe or critical disease and meets criteria for steroids Escalating oxygen via nasal cannula, high flow oxygen, or non-invasive ventilation Use in place of steroids:	



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	 Adjust dosing for renal failure as follows:
	• CrCl 30-59 mL/min: 2 mg PO once daily
	• CrCl 15-29 mL/min: 1 mg PO once daily
	o Contraindications:
	CrCl < 15 mL/min
	 Use with caution in immunocompromised patients
	 Discontinue if absolute lymphocyte count < 200 cells/ml or ANC < 500
	cells/ml. Can restart once above these thresholds.
	 Interrupt treatment if drug-induced liver injury is suspected or if ALT and/or
	AST rises to > 10x upper limit of normal
	 Use <u>tocilizumab</u> as an alternative to baricitinib if hospitalized < 3 days AND in ICU < 24 hours AND rapid disease progression with imminent requirement for mechanical
	ventilation or already requiring mechanical ventilation.
	Administer with steroids.
	Tocilizumab dosing: 8 mg/kg IV x 1 dose (maximum dose: 800 mg)
	 Contraindications:
	Serious concomitant infection
	 Use with caution in immunocompromised patients, especially if recent
	immunomodulating drugs
	 Lab abnormalities: ANC < 500, platelets < 50, ALT > 5x ULN
	Edb abhormanties. And 1 300, platelets 1 30, AET 2 3X OEN
	Do not administer baricitinib and tocilizumab together
C	D ID consultation recommended for use of both baricitinib and tocilizumab.
C	Avoid use of these agents in pregnancy given lack of safety data. Both agents may be used
	during lactation. If baricitinib is administered, breastmilk should be discarded until 3 days after
	last dose. Consult with OB and pharmacy prior to administration.
C	Both agents require ID approval for this indication
Convalescent plasma	High-titer units available via EUA.

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	 Outside of clinical trial, may consider for use if: Severe immunocompromise not expected to mount an antibody response (e.g. recent solid organ transplant or stem cell transplant) Use caution if concern for volume overload (e.g. severe liver disease, heart failure, renal failure not yet on renal replacement) Process: Requires ID approval Give <u>EUA Fact Sheet</u> to patient or surrogate and inform them that CCP is investigational and discuss potential risks (transfusion reaction) / benefits (unclear) Get / ensure up to date Type and Screen Obtain standard blood product consent form
	 Once patient agrees, places order (under "IP Adult Standard Transfusion Orders," selection "COVID convalescent plasma")
Monclonal antibodies	Currently on hold as of 11/17/2022 due to predicted resistance of circulating strains to currently available antibodies
Remdesivir	Initial data suggest some benefit in time to recovery and possibly in mortality. FDA approved Treatment should be administered to hospitalized patients with evidence of lower respiratory tract infection (e.g. hypoxia, abnormal chest radiograph) Dosing: Outpatient or admitted for other diagnosis: 200mg IV x 1, then 100mg IV q24h for 2 additional days Admitted for COVID-19: 200mg IV x 1, then 100mg IV q24h for 4 additional days Vehicle contains cyclodextrin, which can accumulate in renal failure. Not well studied in renal replacement therapy (including intermittent hemodialysis), though likely to be safe given short duration of therapy. Dose adjustment is not required. Contraindications: ALT/AST > 10 times the upper limit of normal Allergy Requires ID approval (initial overnight dose is unrestricted)
Steroids	Initial data suggests mortality benefit in those with severe or critical disease. No benefit (and trend towards harm) seen in those who do not require supplemental oxygen. Off-label use.

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	o Dosing: Dexamethasone 6 mg IV or PO qday (or equivalent) up to 10 days while in the hospital.
	Administer PO if able to take oral medication.
	o <u>Populations</u> :
	 Patients undergoing mechanical ventilation, non-invasive ventilation, or high-flow
	nasal cannula: Most patients should be treated with steroids
	 Patients on nasal cannula: Consider steroids in those with persistently low oxygen
	saturation and requiring substantial supplemental oxygen (e.g. ≥ 3-4L O2) or whose
	trajectory suggests increasing severity of disease
	o <u>Contraindications:</u>
	 Patients who do not require supplemental oxygen should not get steroids for the
	indication of COVID-19
	Factors to consider in determination of whether to withhold (or stop) steroids:
	Uncontrolled invasive fungal infections
	Uncontrolled hyperglycemia
	Existing delirium
	Other immunosuppressive medications
	 Pregnancy (dexamethasone crosses the placenta and should be discussed with OB/Maternal- Fetal Medicine before administration)
	Consult ID for patients with any of the above factors to discuss relative risk/benefit of steroid
	administration
Tocilizumab	See "baricitinib and tocilizumab" section
Medications to avoid	
Other antiviral and	Do not give other pharmaceutical treatments specifically for COVID-19 unless part of a clinical trial
immunolomodulatory	
agents (e.g.	
hydroxychloroquine,	
ivermectin, fluvoxamine)	
Anticoagulation	



Data support a hypercoaguable state in COVID-19 infection. Results from several large studies comparing prophylactic with therapeutic anticoagulation suggest benefit in patients with moderate but not severe infection. Patients hospitalized for COVID-19 and requiring supplemental oxygen but not high-flow nasal cannula or ventilatatory support experience higher odds of surviving to discharge without requiring organ support with therapeutic compared to prophylactic heparin. Overall survival to discharge was not different between groups. Severely ill patients do not benefit from therapeutic anticoagulation and may be harmed by bleeding risks.

- **Prophylactic heparin-based anticoagulation** (e.g. sub-cutaneous heparin or enoxaparin):
 - Dosing: Standard venous thromboembolism (VTE) prophylaxis dosing should be used
 - o <u>Population</u>:
 - No supplemental oxygen need or hospitalization for reasons other than COVID-19
 - Requires supplemental oxygen but patient or provider preference for prophylactic rather than therapeutic dosing
 - Requires NIPPV or oxygen therapy >20L
 - Requiring ICU level care
 - <u>Contraindications</u>: Any contraindication to heparin or prophylactic anticoagulation, such as active CNS bleed, severe thrombocytopenia with platelet count < 25,000, history of heparin-induced thrombocytopenia

• Therapeutic heparin-based anticoagulation:

- <u>Dosing</u>: Standard VTE treatment dosing of heparin-based anticoagulation. Continue for no more than 14 days and should be discontinued on discharge. Enoxaparin is preferable to unfractionated heparin unless CrCl < 15 or other contraindication.
 - Decreasing to prophylactic dose may be considered with resolving clinical course (e.g. discontinuation of oxygen) or if clinical severity increases to ICU level support or oxygen >20L at the discretion of the clinical team given lack of clear data in this area
 - For patients already on chronic full dose anticoagulation (e.g. DOAC, warfarin), this may be continued instead of heparin-based anticoagulation

o Population:

• Consider in non-critically ill patients requiring supplemental oxygen or stable/improving HFNC < 20L. This approach may decrease need for ICU level care and organ support for COVID-19.



- In weighing decision to initiate therapeutic versus prophylactic anticoagulation, must weigh potential benefits with risks and patient preference.
 - Potential benefits: decreased need for organ support but no difference in survival
 - Potential risks: bleeding complications
- Contraindications: Any contraindication to heparin or therapeutic anticoagulation, such as dual antiplatelet therapy, major bleeding with the last 30 days, known acquired or inherited bleeding disorder, history of heparin induced thrombocytopenia, recent ischemic stroke, platelet count < 50 x 10^9/L, Hemoglobin < 8 g/dL, or clinical discretion of the treating physician

Immunosuppression

- o In immunosuppressed patients without COVID-19, do not make anticipatory adjustment to current immunosuppressive drugs or dosages
- o In immunosuppressed patients with COVID-19, consider reducing levels of immunosuppression if possible

Other

- Renin-angiotensin system (RAS) blockers
 - Theoretical concerns have been raised as some RAS blockers may increase expression of ACE2, which may facilitate viral entry into cells. However, currently there is not clinical or epidemiological data to support this concern. Patients who routinely take ACE inhibitors or ARB medications should generally continue these medications.
- Nonsteroidal anti-inflammatory drugs
 - Concerns have been raised that NSAIDs may worsen COVID-19 disease. However, to date, there is no scientific evidence connecting the use of NSAIDS with worsening COVID-19 symptoms or outcomes.

Table 3: Critical Care

Respiratory and Ventilator Management

Only essential providers in the room during intubation or other aerosol generating procedures

Nebulizer therapy:

- Nebulizer therapy is an aerosol generating procedure and should be avoided except:
 - ICU-level care due to respiratory status
 - Requiring high-flow nasal oxygen or non-rebreather mask
 - Inability to follow commands (altered mental status, severe cognitive impairment)



Mechanically ventilated and can be delivered in-line with circuit.

Non-invasive respiratory support:

- High flow nasal oxygen (HFNO) should be considered for use in hypoxemic patients but caution with higher flows (e.g. >25
 LPM) in order to avoid emergent intubation. Close monitoring of respiratory status is essential.
- Non-invasive ventilation (NIV, e.g CPAP or BiPAP) should only be used in selected patients with respiratory failure or known obstructive sleep apnea
- o Both HFNO and NIV are aerosol generating procedures and require airborne precautions
- Patients receiving either HFNO or NIV should be cared for in a monitored setting by personnel capable of performing endotracheal intubation

Intubation:

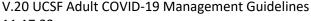
- Emergent intubations are to be avoided given the prolonged time to apply PPE and increased risk of infection to the person performing the intubation
- o Only experienced providers should perform intubation
- Consider video laryngoscopy as preferential airway equipment
- Once intubated, minimize circuit disconnects and use in-line suction

Mechanical Ventilation and Advanced Respiratory Care:

- Lung protective ventilation is the mainstay of care: preferred mode is volume controlled ventilation with low tidal volume (6 mL/kg predicted bodyweight) with a plateau airway pressure of less than 30 cm H2O.
- o For severe hypoxemia (P/F ratio < 150) consider:
 - Moderate-high PEEP
 - Recruitment maneuvers (monitor hemodynamics and discontinue if patient develops hypotension or no improvement in driving pressure or oxygenation)
 - Deep sedation +/- neuromuscular blockade, especially with ventilator asynchrony
 - Early use of manual proning

Extracorporeal Membrane Oxygenation (ECMO) Considerations

ECMO (VA or VV, as appropriate) will be considered per criteria established by Critical Care Medicine and Cardiac Surgery Continuous Renal Replacement Therapy (CRRT)



11.17.22

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- For patients with acute kidney injury (AKI), consider delaying CRRT until significant metabolic complications arise (K > 5.5 mmol/L) or until significant positive fluid balance despite high-dose diuretics or unable to achieve lung protective ventilation due to severe metabolic acidosis
- o For ESRD patients, CRRT should be used to avoid markedly positive fluid balance, which may exacerbate hypoxemia

Table 4: Palliative Care

Palliative Care (PC) best practices

For primary teams:

- o Perform a Goals of Care discussion within 48hrs of admission and offer age- and comorbidity-specific prognostic information
- Use the comfort care order set for actively dying patients (consult PCS only if there are questions or additional support is needed)

Indications for Palliative Care Consultation unique to patients with COVID-19

- Consider for patients requiring ICU-level care
- o Emotional, spiritual and symptomatic support at the end of life for patient/family
- o Ethical decision making

Caring for the Caregiver

- The Caring for the Caregiver Program is dedicated to providing support to faculty, staff and trainees experiencing emotional distress related to the clinical care of patients
- Please contact caringforthecaregiver@ucsf.edu anytime to request support for yourself or a peer (can also coordinate group debriefings)

Table 5: Discontinuation of isolation and discharge considerations

Discontinuation of Isolation at UCSF Health

See COVID-19 Guidelines for Discontinuing of Isolation

Discharge considerations

 Discharge coordination for hospitalized patients with COVID-19 requires advanced planning and close coordination between multiple disciplines in the hospital including clinicians, infection control, and case management, particularly for discharge to congregate settings

11.17.22

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- Case Management notifies local DPH via CMR Form Submission for new COVID + admissions
- Case Management cooridnates with local DPH for discharge clearance for some SNF or other facility placements
- o Case Management/Social work will coordinate COVID isolation transport when necessary
- Explicit guidance and return precautions for evaluation of concerning symptoms after discharge must be provided (utilize prepared communications tools with anticipatory guidance)
- Inpatient discharge dot-phrases:
 - o .COVIDPOSINPTDCED
 - .COVIDPOSINPTDCEDES (Spanish)
- Outpatient discharge dot-phrase:
 - .COVIDDISCHARGEADULT

Self-discharge:

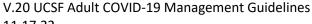
- All Patients
 - Provider to call SF DPH AMA line at 415-608-1515
 - CM to provide local DPH isolation guidleines
- Homeless patients
 - Email DPH AMA recovery at <u>covid19AMArecovery@sfdph.org</u> (24/7, 7 days a week) and/or call 415-608-1515 (M-F 8am-8PM)
 - Include information:
 - name
 - date of birth
 - time they departed
 - whether they are a PUI or Covid Positive
 - Information about where they may have gone/phone number
 - DPH contact: Sarah Strieff RN 415-238-1485 or <u>sarah.strieff@sfdph.org</u>

Discharge to Skilled Nursing Facilities

- Case Management will coordinate with local DPH and/or admission staff to determine their ability to accept COVID patients needing isolation.
- o Some SNFs are given blanket clearance from DPH to admit COVID patient

Many SNFs requires COVID isolation period of 10 vs 20 days to be completed as well as afebrile x 24 hours prior to admission

Discharge to Group Settings







If the patient has the ability to isolate after discharge, they are able to return to RCFE/Group setting.

Reviewed by representatives from:

- -Care Delivery Committee
- -Hospital Medicine
- -Critical Care Medicine
- -Infectious Diseases
- -Pharmacy
- -Nephrology
- -Case Management

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