V.7
3.24.21
Owner: Care Delivery Committee

UCSF Adult COVID-19 Management Guidelines

Category[1]	Symptoms (constitutional, respiratory, GI or other)	Lower respiratory infection (clinical OR imaging evidence)	Hypoxia	Recommendations
Outpatient, asymptomatic	No	No	No	• Supportive care • Recommend against steroids
Outpatient, symptomatic	Yes	Yes or No	Yes or No	• Supportive care for most • Prioritize clinical trials if eligible • High-risk for progression: Consider EUA monoclonal antibodies (mAbs) • Recommend against steroids
Inpatient, asymptomatic or mild symptoms and hospitalized for non-COVID-19 reason	No	No	No	• Supportive care • Can consider mAbs if admitted for alternative diagnosis and otherwise qualifies • Recommend against steroids
Inpatient, mild disease, hospitalized for COVID-19	Yes	No	No	• High-risk for progression: Consider remdesivir x 5 days • <72h from symptom onset and high-risk for progression (see below): Consider CCP • Recommend against steroids
Inpatient, moderate disease	Yes	Yes	No	• Remdesivir x 5 days • <72h from symptom onset and high-risk for progression (see below): Consider CCP • Recommend against steroids
Inpatient, severe disease	Yes	Yes	Yes	• Remdesivir x 5 days • Steroids if: Persistently hypoxia requiring ≥ 3-4L O_2 **OR** trajectory suggests increasing severity of disease • Consider addition of tocilizumab if meets criteria below
Inpatient, critical disease	Yes	Yes	Yes	• Remdesivir x 5 days; can consider extension to 10 days if ongoing severe illness at day 5 • Steroids recommended • Consider addition of tocilizumab if hospitalized ≤ 3d & in ICU ≤ 24h

[1]Disease severity definitions: from https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-hospitalized-patients.html#definitions

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

Testing for COVID 19.	
Initial testing: **COVID-19 PCR (collection method based on swab availability)** 1. Flocked swab Nasopharyngeal (NP) plus Oropharyngeal (OP) 2. Flocked swab Mid-Turbinate (MNT) plus OP 3. Synthetic swab MNT plus OP *Anterior nares swab acceptable if contraindication to deeper sample or patient refusal*	**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: ○ Confirmation of infection if high clinical suspicion, negative PCR testing, and symptoms > 7 days ○ Documentation of serological response prior to convalescent plasma donation ○ Utility for determining immunity uncertain	
Laboratory testing	
On admission *All patients*[1]*:* ○ CBC with differential, BMP, LFTs, coagulation studies ○ Send RVP if during flu season (declared by HEIP and executive leadership based on Bay Area flu incidence)	*Routine monitoring*: CBC with differential, BMP, Mg Trend LFTs Q48h-72h if abnormal at baseline (> 2 x ULN) or receiving remdesivir therapy

<u>If clinically indicated:</u> ○ 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 ○ *Consider* to estimate risk for severe disease: fibrin d-dimer, CRP, LDH and CPK.	These may not be required on a daily basis, consider decrease in frequency depending on clinical condition *<u>If clinical deterioration</u>*: ○ Repeat sputum and blood cultures (tracheal aspirate culture if intubated) ○ If on TCU and considering tocilizumab, check CRP
Do not obtain unless clinical suspicion for a specific diagnosis (e.g. HLH) ○ Ferritin, soluble IL-2-receptor-alpha, NK cell activity **Do not obtain:** ○ IL-6 levels	
Imaging	
Chest radiograph: ○ Baseline AP CXR on admission ○ Monitoring for complications (pneumothorax, atelectasis) at interval deemed appropriate by clinical team	**Chest CT:** ○ Limited role in diagnosis of COVID-19 (PCR test of choice) ○ Primary role is evaluation of superimposed processes such as pulmonary embolism or aortic dissection.

<u>Table 2. Therapeutics</u>

Therapies	
○ Experimental therapeutics should only be offered in the context of a clinical trial	
Antibiotics	○ 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. ○ 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.
Convalescent plasma	○ Available via EUA**.** Blood bank will prioritize high-titer units. ○ 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) ○ Or meets the following criteria: ▪ <72 hours from symptom onset ▪ Non-severe/non-critical disease ▪ High-risk for progression • Age ≥ 75 or • Age ≥ 65 AND one of the folloing: ○ Body mass index (BMI) ≥ 35 ○ DM with poor control or requiring medical treatment ○ Hypertension with poor control or requiring medical treatment ○ COPD on medical therapy ○ Coronary heart disease ○ Hemorrhagic or ischemic stroke ○ Heart failure with ejection fraction < 40% ○ ≥ stage 3b chronic kidney disease (eGFR < 45 mL/min per 1.73 m^2) ▪ Exclusion: Patients who have received monoclonal antibodies for treatment of COVID-19 in prior 90 days ○ Use caution if concern for volume overload (e.g. severe liver disease, heart failure, renal failure not yet on renal replacement) ○ Requires ID approval
Bamlanivimab + etesevimab	The FDA has now issued an EUA for the use of several neutralizing monoclonal antibodies (mAbs) that bind the receptor-binding domain of the SARS-CoV-2 spike protein for the treatment of outpatients with mild to moderate COVID-19. Published and unpublished data suggest that antibodies may help to augment decline in viral load and prevent a proportion of ED visits and hospitalizations. Current EUAs allows for the treatment of COVID-19 in ambulatory adults and children ≥ 12 year-old with mild to moderate disease. This is the preferred mAb at UCSF. ○ Consider use in high-risk outpatients

	○ Dosing: Bamlanivimab 700 mg and etesevimab 1.4 g as a single IV infusion ○ Contraindications: ○ Hospitalized for COVID-19 ○ New O2 requirement ○ Worsening O2 requirement in those on home supplemental O2 ○ Inpatient use requires ID approval
Baricitinib	Initial data suggests baricitinib in combination with remdesivir reduces time to recovery and decreases progression of illness in patients with moderate to severe COVID-19. Available via EUA. ○ Unclear where this medication will fit in with dexamethasone; further clinical trials will be needed ○ Most use of this agent should be through ongoing clinical trials ○ EUA use may be considered in patients with severe COVID-19 who have contraindications to steroids ○ Dosing: 4 mg PO once daily ○ 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 ○ Contraindications: ○ CrCl < 15 mL/min ○ 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 ○ Requires ID approval for this indication
Casirivimab and Imdevimab	The FDA has now issued an EUA for the use of several neutralizing monoclonal antibodies (mAbs) that bind the receptor-binding domain of the SARS-CoV-2 spike protein for the treatment of outpatients with mild to moderate COVID-19. Published and unpublished data suggest that antibodies may help to augment decline in viral load and prevent a proportion of ED visits and hospitalizations. Current EUAs allows for the treatment of COVID-19 in ambulatory adults and

	children ≥ 12 year-old with mild to moderate disease. Available as an alternative to bamlanivimab/etesevimab. ○ Consider use in high-risk outpatients ○ Dosing: Casirivimab 1.2 g and imdevimab 1.2 g as a single IV infusion ○ Contraindications: ○ Hospitalized for COVID-19 ○ New O2 requirement ○ Worsening O2 requirement in those on home supplemental O2 ○ Inpatient use requires ID approval
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: 200mg IV x 1, then 100mg IV q24h for 4 additional days; may consider 10 days on a case-by-case basis if not responding to initial course ○ 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. 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. Populations: ○ 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 Contraindications: ○ 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	Multiple randomized controlled trials have reported mixed results. Long-term outcome data are needed. Off-label use.
	Dosing: 8 mg/kg IV x 1 dose (maximum dose: 800 mg)
	Populations. *Consider* administration of tocilizumab if:
	• ICU population. Meets all of the following:
	  • Hospitalized within 3 days
	  • ICU within 24 hours
	  • Requiring MV or HFNC
	• TCU population. Meets all of the following:
	  • Hospitalized within 3 days
	  • Rapidly escalating O2 needs to requirement of HFNC
	  • CRP ≥ 75
	In both of the above cases, tocilizumab should be administered along with dexamethasone and remdesivir
	Relative contraindications:

	• Serious concomitant infection • Immunocompromised state, especially if recent immunomodulating drugs • Lab abnormalities: ANC < 500, platelets < 50, ALT > 5x ULN ○ Restricted to use for this indication to Critical Care Medicine and Infectious Diseases approval
Other antiviral and immunomodulatory agents	○ Administer only in the context of a clinical trial
Anticoagulation	
○ Prophylactic enoxaparin (standard dosing, 40 mg SQ QD; 40 mg sq BID if > 120 kg or BMI > 40) is recommended for all patients with COVID-19 except those receiving full dose anticoagulation or with contraindications (e.g. active CNS bleed, severe thrombocytopenia with platelet count < 25,000). ○ Therapeutic anticoagulation can be considered in a subgroup of patients as outlined here. ○ If CrCl 15-30 mL/min, use enoxaparin 30 mg SQ Qdaily. If CrCl < 15 mL/min, use UFH 5000 units SQ q8 hours ○ Enoxaparin: If baseline elevated aPTT, obese, underweight, or CrCl<30, check peak anti-Xa level 4-6 hours after 3rd- 4th dose to ensure appropriate dose (goal 0.2-0.5) ○ If persistent clotting of lines and/or worsening clinical course, therapeutic anticoagulation may be considered via multidisciplinary discussion.	
Immunosuppression	
○ In immunosuppressed patients without COVID-19, do not make anticipatory adjustment to current immunosuppressive drugs or dosages ○ 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 ○ 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 ○ 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. ○ 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)
○ 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 ○ 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: ○ 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
○ All patients with COVID-19 in the ICU ○ Emotional, spiritual and symptomatic support at the end of life for patient/family ○ 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
○ Coordination with local departments of public health is mandatory for all patients. DPH COVID Discharge Hotline: 415-554-2830
○ 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:
  ○ .COVIDPOSINPTDCED
  ○ .COVIDPOSINPTDCEDES (Spanish)
○ Outpatient discharge dot-phrase:
  ○ .COVIDDISCHARGEADULT

Self-discharge:
○ All Patients
  ○ Notify attending and DPH COVID-19 Containment Call Center 628-652-2810 if patient:
  ▪ SEEMS to want to leave the hospital against medical advice
  ▪ HAS left against medical advice; or
  ▪ Declines Isolation and Quarantine
  ○ Complete SFDPH COVID Case Report Form CMR 043020 on ALL COVID+/PUI patients; fax to number on form
○ Homeless patients
  ○ Email DPH AMA recovery at covid19AMArecovery@sfdph.org (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 sarah.strieff@sfdph.org
Discharge to Skilled Nursing Facilities Patients can be discharged to SNF and LTAC at this time while still on precautions if the accepting SNF has adequate PPE supply/training and: ▪ Improvement in respiratory symptoms; AND ▪ At least 24 hours fever-free without use of anti-pyretic
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

References:

1. Beigel JH, Tomashek KM, Dodd LE, et al. Remdesivir for the treatment of COVID-19—final report. N Engl J Med. 2020. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32445440.
2. Bhimraj A, Morgan RL, Shumaker AH, Lavergne V, Baden L, Cheng VC, Edwards KM, Gandhi R, Gallagher J, Muller WJ, O'Horo JC, Shoham S, Murad MH, Mustafa RA, Sultan S, Falck-Ytter Y. Infectious Diseases Society of America Guidelines on the Treatment and Management of Patients with COVID-19. Infectious Diseases Society of America 2021; Version 4.1.0. Available at https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/. Accessed 3.16.2021.
3. Cavalcanti AB, Zampieri FG, Rosa RG, et al. Hydroxychloroquine with or without azithromycin in mild-to-moderate COVID-19. N Engl J Med. 2020; Published online ahead of print. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32706953.
4. COVID-19 Treatment Guidelines Panel. Coronavirus Disease 2019 (COVID-19) Treatment Guidelines. National Institutes of Health. Available at https://www.covid19treatmentguidelines.nih.gov/. Accessed 3.16.2021.

5. Food and Drug Administration. Fact Sheet for Health Care Providers Emergency Use Authorization of Bamlanivimab: https://www.fda.gov/media/143603/download. Accessed 2.13.2021
6. Food and Drug Administration. Fact Sheet for Health Care Providers Emergency Use Authorization of Bamlanivimab+Etesevimab: https://www.fda.gov/media/145802/download. Accessed 2.13.2021
7. Food and Drug Administration. Fact Sheet for Health Care Providers Emergency Use Authorization of Casirivimab and Imdevimab: https://www.fda.gov/media/143892/download. Accessed 2.13.2021.
8. Food and Drug Administration. Fact Sheet for Health Care Providers Emergency Use Authorization of Baricitinib. https://www.fda.gov/media/143823/download. Accessed 3.16.2021.
9. Food and Drug Administration. Fact Sheet for Health Care Providers Emergency Use Authorization of COVID-19 Convalescent Plasma for Treatment of Hospitalized Patients with COVID-19. https://www.fda.gov/media/141478/download. Accessed 3.16.2021.
10. Goldman JD, Lye DCB, Hui DS, et al. Remdesivir for 5 or 10 days in patients with severe COVID-19. N Engl J Med. 2020. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32459919.
11. Gottlieb RL, Nirula A, Chen P, et al. Effect of Bamlanivimab as Monotherapy or in Combination With Etesevimab on Viral Load in Patients With Mild to Moderate COVID-19. JAMA 2021: doi:10.1001/jama.2021.0202.
12. Hermine O, Mariette X, Tharaux PL, et al. Effect of tocilizumab vs usual care in adults hospitalized with COVID-19 and moderate or severe pneumonia: a randomized clinical trial. JAMA Intern Med. 2021;181(1):32-40. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33080017.
13. Joyner MJ, Carter RE, Senefeld JW, et al. Convalescent Plasma Antibody Levels and the Risk of Death from Covid-19. N Engl J Med 2021.
14. Kalil AC, Patterson TF, Mehta AK, et al.; ACTT-2 Study Group Members. Baricitinib plus Remdesivir for Hospitalized Adults with Covid-19. N Engl J Med. 2021 Mar 4;384(9):795-807. doi: 10.1056/NEJMoa2031994. Epub 2020 Dec 11. PMID: 33306283; PMCID: PMC7745180.
15. Libster R, Pérez Marc G, Wappner D, et al. Early High-Titer Plasma Therapy to Prevent Severe Covid-19 in Older Adults. N Engl J Med 2021; 384:610.
16. RECOVERY Collaborative Group, Horby P, Lim WS, et al. Dexamethasone in hospitalized patients with COVID-19 - preliminary report. *N Engl J Med*. 2020. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32678530.

17. RECOVERY Collaborative Group, Horby PW, Pessoa-Amorim G, et al. Tocilizumab in patients admitted to hospital with COVID-19 (RECOVERY): preliminary results of a randomised, controlled, open-label, platform trial. medRxiv. 2021;preprint. Available at: https://www.medrxiv.org/content/10.1101/2021.02.11.21249258v1.
18. REMAP-CAP Investigators, Gordon AC, Mouncey PR, et al. Interleukin-6 receptor antagonists in critically ill patients with COVID-19. N Engl J Med. 2021. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33631065.
19. Salama C, Han J, Yau L, et al. Tocilizumab in patients hospitalized with COVID-19 pneumonia. N Engl J Med. 2021;384(1):20-30. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33332779.
20. Salvarani C, Dolci G, Massari M, et al. Effect of tocilizumab vs standard care on clinical worsening in patients hospitalized with COVID-19 pneumonia: a randomized clinical trial. JAMA Intern Med. 2021;181(1):24-31. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33080005.
21. Self WH, Semler MW, Leither LM, et al. Effect of Hydroxychloroquine on Clinical Status at 14 Days in Hospitalized Patients With COVID-19: A Randomized Clinical Trial. JAMA. 2020;324(21):2165–2176. doi:10.1001/jama.2020.22240
22. Spinner CD, Gottlieb RL, Criner GJ, et al. Effect of remdesivir vs standard care on clinical status at 11 days in patients with moderate COVID-19: a randomized clinical trial. JAMA. 2020;324(11):1048-1057. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32821939.
23. Stone JH, Frigault MJ, Serling-Boyd NJ, et al. Efficacy of tocilizumab in patients hospitalized with COVID-19. N Engl J Med. 2020;383(24):2333-2344. Available at: https://www.ncbi.nlm.nih.gov/pubmed/33085857.
24. Wang Y, Zhang D, Du G, et al. Remdesivir in adults with severe COVID-19: a randomised, double-blind, placebo-controlled, multicentre trial. Lancet. 2020;395(10236):1569-1578. Available at: https://www.ncbi.nlm.nih.gov/pubmed/32423584.
25. Weinrich DM, Sivapalasingam S, Norton, T, et al. REGN-COV2, a Neutralizing Antibody Cocktail, in Outpatients with Covid-19. NEJM 2021; 384:238-251. DOI: 10.1056/NEJMoa2035002