

# COVID-19 eConsultation for Mission Hospitals

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Many Strengths.  
One Mission.

# Symptoms Questions

- » Are there some new symptoms of COVID that we should look for?
- » Is there some neurological symptoms of COVID positive patients?
- » Who gets more severe symptoms of COVID-19 if infected?
- » Are the early warning symptoms different according to the variant?

# Variants currently in the United States

- » These variants seem to spread more easily and quickly than other variants, which may lead to more cases of COVID-19. An increase in the number of cases will put more strain on healthcare resources, lead to more hospitalizations, and potentially more deaths.
- ~ **B.1.1.7 (Alpha):** This variant was first detected in the United States in December 2020. It was initially detected in the United Kingdom.
- ~ **B.1.351 (Beta):** This variant was first detected in the United States at the end of January 2021. It was initially detected in South Africa in December 2020.
- ~ **P.1 (Gamma):** This variant was first detected in the United States in January 2021. P.1 was initially identified in travelers from Brazil, who were tested during routine screening at an airport in Japan, in early January.
- ~ **B.1.617.2 (Delta):** This variant was first detected in the United States in March 2021. It was initially identified in India in December 2020.

# Symptoms of COVID-19

- » Symptoms may appear 2 to 14 days after exposure to the virus.
- » Symptoms can vary with no clear warning symptom(s) that are specific for each variant.

Signs and Symptoms	COVID19 Non-D Variant	COVID19 D-Variant
<b>Fever or chills</b>	X	X
<b>Cough</b>	X	X
<b>Shortness of breath</b>	X	X
<b>Fatigue</b>	X	X
<b>Muscle or body aches</b>	X	MCR
<b>Headache</b>	X	MCR
<b>New loss of taste or smell</b>	X	X
<b>Sore throat</b>	X	MCR
<b>Congestion or runny nose</b>	X	MCR
<b>Nausea or vomiting</b>	X	MCR
<b>Diarrhea.</b>	X	X

Most Commonly Reported (MCR)

# Who gets more severe symptoms of COVID-19 if infected?

- » Older adults are more likely to get severely ill from COVID-19. More than 80% of COVID-19 deaths occur in people over age 65, and more than 95% of COVID-19 deaths occur in people older than 45.
- » Long-standing systemic health and social inequities have put various groups of people at increased risk of getting sick and dying from COVID-19, including many racial and ethnic minority groups and people with disabilities.

# Who gets more severe symptoms of COVID-19 if infected?

## Medical Conditions

Cancer	Treatments for many types of cancer weaken the body's ability to fight off the disease. At this time, based on available studies, having a history of cancer may increase your risk.
Chronic kidney disease	Having chronic kidney disease of any stage can make you more likely to get severely ill from COVID-19.
Chronic lung diseases	COPD (chronic obstructive pulmonary disease), asthma (moderate-to-severe), interstitial lung disease, cystic fibrosis, and pulmonary hypertension.
Dementia or other neurological conditions	Having neurological conditions, such as dementia, can make you more likely to get severely ill from COVID-19.
Diabetes (type 1 or type 2)	Having either type 1 or type 2 diabetes can make you more likely to get severely ill from COVID-19.
Down syndrome	Having Down syndrome can make you more likely to get severely ill from COVID-19.
Heart conditions	Heart failure, coronary artery disease, cardiomyopathies or hypertension
HIV infection	Having HIV (Human Immunodeficiency Virus) can result in becoming severely ill from COVID-19.
Immunocompromised state	Primary immunodeficiency is caused by genetic defects, prolonged use of corticosteroids or other immune weakening medicines can lead to secondary or acquired immunodeficiency.
Liver disease	Chronic liver disease, such as alcohol-related liver disease, nonalcoholic fatty liver disease, and especially cirrhosis.
Overweight and obesity	Overweight (defined as a body mass index (BMI) > 25 kg/m <sup>2</sup> but < 30 kg/m <sup>2</sup> ), obesity (BMI ≥30 kg/m <sup>2</sup> but < 40 kg/m <sup>2</sup> ), or severe obesity (BMI of ≥40 kg/m <sup>2</sup> ). The risk of severe COVID-19 illness increases sharply with elevated BMI.
Pregnancy	Pregnant and recently pregnant people (for at least 42 days following end of pregnancy) are more likely to get severely ill from COVID-19 compared with non-pregnant people.
Sickle cell disease or thalassemia	Having hemoglobin blood disorders like sickle cell disease (SCD) or thalassemia can make you more likely to get severely ill from COVID-19.
Smoking, current or former	Being a current or former cigarette smoker still increases the risk of becoming severely ill from COVID-19.
Solid organ or blood stem cell transplant	Having had a solid organ or blood stem cell transplant, which includes bone marrow transplants, increases risk of becoming severely ill from COVID-19.
Stroke or cerebrovascular disease	Having cerebrovascular disease, such as having a stroke increases risk of becoming severely ill from COVID-19.
Substance use disorders	Substance use disorder (such as alcohol, opioid, or cocaine use disorder) increases risk of becoming severely ill from COVID-19.

<https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>

# Reported neurological symptoms of COVID-19 patients

» Specific neurological symptoms seen in people with COVID-19 include:

- Loss of smell
- Inability to taste
- Muscle weakness
- Tingling or numbness in the hands and feet
- Dizziness
- Confusion
- Delirium
- Seizures
- Stroke

# Treatment Questions:

- » What is the new advice on any promising new medications to treat COVID19 patients?
- » How effective is the use of monoclonal antibodies and for those of us without access to those medicines is there any alternative.
- » What is LLU's protocol for managing the COVID patients.
- » Can you please go into some details for the MILD, MODERATE, SEVERE COVID19 patients and the markers and protocols for each type of patients?
- » Is there a protocol for sharing oxygen?
- » We have some returning patients with peculiar symptoms. What are the symptoms for the long COVID patients and how to treat them. We don't have a special clinic or doctor for this.
- » We are running out of beds in the hospital. There are some that could stay at home and save beds for more critical patients. What is the protocol for care at home.
- » How do you educate the families to care for the patients and to prevent the infection of the COVID to the family members who are the caregiver?



# COVID-19 Patient Severity

- » **Asymptomatic or Presymptomatic Infection:** Individuals who test positive for SARS-CoV-2 using a virologic test but who have no symptoms that are consistent with COVID-19.
- » **Mild Illness:** Individuals who have any of the various signs and symptoms of COVID-19 but who do not have shortness of breath, dyspnea, or abnormal chest imaging.
- » **Moderate Illness:** Individuals who show evidence of lower respiratory disease during clinical assessment or imaging and who have an oxygen saturation (SpO<sub>2</sub>) ≥94% on room air at sea level.

<https://www.covid19treatmentguidelines.nih.gov/overview/clinical-spectrum/>

# COVID-19 Patient Severity

- » **Severe Illness:** Individuals who have SpO<sub>2</sub> <94% on room air at sea level, a ratio of arterial partial pressure of oxygen to fraction of inspired oxygen (PaO<sub>2</sub>/FiO<sub>2</sub>) <300 mm Hg, respiratory frequency >30 breaths/min, or lung infiltrates >50%.
- » **Critical Illness:** Individuals who have respiratory failure, septic shock, and/or multiple organ dysfunction.

<https://www.covid19treatmentguidelines.nih.gov/overview/clinical-spectrum/>

# Loma Linda COVID-19 Treatment Guidance



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## COVID-19 Guidance on Treatment Interventions for Adults

Clinical studies to support recommendations for any particular drug in the treatment of COVID19 are currently lacking or of poor quality. This document is not an endorsement for any of the listed medications as adequate or curative therapy. The guidance presented below is for the clinician's consideration, knowing that use of any drug is experimental in this disease. It is the clinician's responsibility to inform patients and families of the lack of data, the experimental nature of these treatments and potential adverse effects.

Symptomatic patients with + SARS-CoV-2 PCR			
Outpatient/ED		Inpatient	
SpO2 >94% on room air		SpO2 ≤94% on room air Or on supplemental O2 via Nasal Cannula	On Non-Invasive Ventilatory Support <sup>§</sup> or Mechanical Ventilation
No Risk Factors	Risk Factor*	With/without Risk Factors*	With/without Risk Factors*
Supportive Care		Supportive Care/ Continuous O2 Sat monitoring	
<ul style="list-style-type: none"> <li>Symptomatic treatment</li> </ul>	<ul style="list-style-type: none"> <li>Antibiotics as needed for bacterial pneumonia. <u>Most patients will NOT require antibiotics empirically.</u></li> <li>Monoclonal Ab if meets criteria and within 10 days of symptom onset.                             <ul style="list-style-type: none"> <li>Not for hospitalized patients, those requiring oxygen support, or those who require an increase in baseline oxygen flow rate</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Remdesivir</li> <li>Dexamethasone</li> <li>Antibiotics as needed for bacterial pneumonia, adjust for blood and sputum cultures. <u>Most patients will NOT require antibiotics empirically.</u></li> <li>Obtain tests for HIV 1/2 Ag/Ab, Coccidioides Ab, Quantiferon Gold, Hepatitis B Ab</li> </ul>	<ul style="list-style-type: none"> <li>Dexamethasone</li> <li>Antibiotics as needed for bacterial pneumonia, adjust for blood and sputum cultures. <u>Most patients will NOT require antibiotics empirically.</u></li> <li>Obtain tests for HIV 1/2 Ag/Ab, Coccidioides Ab, Quantiferon Gold, Hepatitis B Ab</li> <li>Consider ID consult if the patient has underlying immunocompromise or if worsening despite treatment</li> <li>For consideration of tocilizumab see recommendations below</li> </ul>

\*Risk factors - Age ≥ 65 yrs, Diabetes, BMI ≥35kg/m<sup>2</sup>, CKD, Immunosuppressive diseases, receiving Immunosuppressive treatment OR are Age ≥ 55 yrs AND have Cardiovascular disease OR HTN OR COPD/Chronic respiratory disease

§Non-Invasive Ventilatory Support- High Flow Nasal cannula, BIPAP

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# Loma Linda COVID-19 Treatment Guidance



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<p><b>Remdesivir</b> 200 mg IV x 1 then 100 mg IV q 24h x 4 additional doses.</p> <p>Exclusion criteria:</p> <ul style="list-style-type: none"> <li>ALT <math>\geq</math> 10 times the upper limit of normal at baseline GFR &lt; 30mL/min, not yet on hemodialysis</li> </ul>	<ul style="list-style-type: none"> <li>Symptom onset <math>\leq</math> 10 days</li> <li>Can be used in patients who are on hemodialysis without dose adjustment</li> <li>ID approval required. Dosing beyond 5 days requires re-approval.</li> </ul>
<p><b>Dexamethasone</b> 6 mg IV or PO for 10 days (or until discharge). Equivalent glucocorticoid dose may be substituted if dexamethasone unavailable.</p>	<ul style="list-style-type: none"> <li>Equivalent total daily doses of alternative glucocorticoids to dexamethasone 6 mg daily are methylprednisolone 32 mg and prednisone 40 mg.</li> </ul>
<p><b>Bamlanivimab</b> 700 mg via IV infusion over at least 60 minutes</p> <ul style="list-style-type: none"> <li>Currently NOT recommended for use in the State of California due to increased resistance in the California variant</li> </ul>	<ul style="list-style-type: none"> <li>Monitor patients during infusion and for 1 hour after infusion is complete.</li> <li>Infusion-related reactions have been observed such as fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticaria, pruritus, myalgia, dizziness.</li> <li>If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care.</li> <li>Requires the prescriber to read Fact Sheet for Prescribers.</li> <li>Requires the patient or family be given a patient Fact Sheet. <a href="https://www.covid19.lilly.com/bamlanivimab?utm_source=bamlanivimab.com&amp;utm_medium=redirect&amp;utm_campaign=2020_covid19lilly_redirect#">https://www.covid19.lilly.com/bamlanivimab?utm_source=bamlanivimab.com&amp;utm_medium=redirect&amp;utm_campaign=2020_covid19lilly_redirect#</a></li> <li>Requires the Prescriber to fill out a form reporting adverse events. <a href="http://www.fda.gov/medwatch/report.htm">www.fda.gov/medwatch/report.htm</a></li> </ul>
<p><b>Casirivimab and Imdevimab combination</b> 1200mg of casirivimab and 1200mg of imdevimab administered together as a single IV infusion over at least 60 minutes.</p>	<ul style="list-style-type: none"> <li>Monitor during infusion and for 1 hour after infusion complete</li> <li>Infusion related reactions have been observed such as fever, chills, nausea, headache, bronchospasm, hypotension, angioedema, throat irritation, rash including urticaria, pruritus, myalgias, dizziness.</li> <li>If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care.</li> <li>Requires the prescriber to read Fact Sheet for Providers.</li> <li>Requires the patient or family be given a patient Fact Sheet. <a href="https://www.regeneron.com/sites/default/files/treatment-covid19-eua-fact-sheet-for-hcp.pdf">https://www.regeneron.com/sites/default/files/treatment-covid19-eua-fact-sheet-for-hcp.pdf</a></li> <li>Requires the Prescriber to fill out a form reporting adverse events. <a href="http://www.fda.gov/medwatch/report.htm">www.fda.gov/medwatch/report.htm</a></li> </ul>

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# Loma Linda COVID-19 Treatment Guidance



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## Criteria for Inpatient Use of Tocilizumab in COVID-19

Tocilizumab Dosing: 8 mg/kg x 1 dose. Max dose 800 mg. Round to appropriate vial size (comes in 80, 200, and 400 mg)	
Inclusion Criteria (must meet all)	Exclusion Criteria (cannot meet any)
<ul style="list-style-type: none"><li>• Patient admitted with positive PCR for SARS-CoV2</li><li>• Symptom onset <math>\leq</math> 14 days <b>AND</b> currently in the ICU</li><li>• Currently on dexamethasone 6mg daily or equivalent (received at least 1 dose)</li><li>• <b>AND</b> CRP <math>&gt;</math>7.5 mg/dL</li><li>• <b>AND</b> within 48 hours of requiring one of the following in the ICU<ul style="list-style-type: none"><li>• HFNC <math>\geq</math>0.6 FiO<sub>2</sub>, 30L/min Oxygen flow</li><li>• BiPAP</li><li>• Mechanical Ventilation</li><li>• Pressor or Inotropic Support</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Active bacterial, fungal or viral infection other than COVID-19</li><li>• Positive for any of the following<sup>§</sup>:<ul style="list-style-type: none"><li>• TB Quantiferon Gold</li><li>• Coccidioides Antibody</li><li>• Hepatitis B core Antibody</li><li>• Hepatitis B surface Antigen</li><li>• Strongyloides Antibody</li></ul></li><li>• Immunocompromised or HIV<sup>§</sup> with CD4 <math>&lt;</math>200mm<sup>3</sup></li><li>• High risk for GI perforation</li><li>• Platelets <math>&lt;</math>50bil/L</li><li>• ANC <math>&lt;</math>500 bil/L</li><li>• AST/ALT <math>&gt;</math> 5x ULN*</li><li>• Treatment with any IL-6 agent during this hospitalization or on long term therapy</li><li>• Currently on steroids dosed greater than the recommended dexamethasone 6mg daily or equivalent</li></ul>

<sup>§</sup> Obtain Quantiferon Gold, Hepatitis B Serologies, Coccidioides Antibody, Strongyloides Antibody & HIV Antibody. Pending labs should not delay treatment with Tocilizumab.

\*Five times the upper limit of normal: **Females:** AST  $>$  150U/L or ALT  $>$  185 U/L. **Males:** AST  $>$  175 U/L or ALT  $>$  225 U/L

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# Oxygen Conservation Strategies

- » Use an Oxymizer® or similar reservoir device to conserve oxygen delivered via a nasal cannula. The Oxymizer has a higher luminal diameter, in combination with an incorporated oxygen reservoir, which delivers a higher FiO<sub>2</sub> to the patient while using between 25%-50% as much oxygen from the tank as would be used through a conventional nasal cannula. Thus, oxygen is conserved and the flow rate can go up to 15 liters/minute.
- » Large H cylinders can be fitted with manifolds to service multiple patients at the same time instead of just one.
- » If there are enough portable oxygen concentrators, two can be used on the same patient (with a simple mask plus a nasal cannula) to raise the amount of oxygen delivered without having to use the hospital's in-line supply or H, D, or E tanks.

# Oxygen Conservation Strategies

- » Oxygen delivery can be hampered by shortages of sterile water used for humidification. In these situations, distilled water may serve as a substitute; respiratory therapists can save an empty sterile water bottle and fill it with distilled water.
- » A Y-connector can be used to deliver oxygen from a concentrator to two patients at a time who are on the same flow of oxygen. The  $FiO_2$  will be the same between the two patients, but flow will be reduced and will vary based on downstream resistance.
- » Whenever possible, use evidence-based conservative oxygen saturation targets (eg,  $SpO_2$  92%-94%, rather than >98%).

# Oxygen Conservation Strategies

## OXYGEN CONSERVATION STRATEGIES

Surges of patients with COVID-19 have led to oxygen shortages in many hospitals.

How can we wisely conserve oxygen at the bedside while providing optimum patient care?

### Use an Oxymizer® Cannula

- Higher luminal diameter and reservoir can deliver up to 15 LPM while conserving oxygen



### Use Liquid Oxygen (LOX)

- The ratio of volume of LOX to gaseous oxygen is 860:1, so can store a lot of LOX in a small space



### Substitute Distilled Water for Sterile Water for Humidification

- If sterile water is in shortage, can substitute with distilled water or sterile flushes



### Look for Equipment Leakages

- Unplug anesthesia machines that can leak when not in use
- Check patient rooms for oxygen left on



### Use Conservative Oxygen Saturation Targets

- Accurate SpO<sub>2</sub> measurement is critical
- SpO<sub>2</sub> >98% not beneficial
- Target SpO<sub>2</sub> 92%-94%



### Use Mask Over High-Flow Nasal Cannulae to Act as a Reservoir

- Placing an O<sub>2</sub> face mask or surgical mask over HFNC can act as a reservoir, possibly allowing use of lower flow to achieve the same SpO<sub>2</sub>

### Use One Oxygen Supply for Multiple Patients

- A Y-connector or an emergency manifold can connect multiple patients to a common cylinder or portable concentrator



### Use NIV or HFNC, Not Both

- Conserve circuits by using either HFNC or noninvasive ventilation on a given patient who does not immediately require invasive ventilation



# Long COVID-19

» Long COVID is a range of symptoms that can last weeks or months after first being infected with the virus that causes COVID-19 or can appear weeks after infection. Long COVID can happen to anyone who has had COVID-19.

- Tiredness or fatigue
- Difficulty thinking or concentrating (sometimes referred to as “brain fog”)
- Headache
- Loss of smell or taste
- Dizziness on standing
- Fast-beating or pounding heart (also known as heart palpitations)
- Chest pain
- Difficulty breathing or shortness of breath
- Cough
- Joint or muscle pain
- Depression or anxiety
- Fever
- Symptoms that get worse after physical or mental activities

# Long COVID-19 Treatments

- » No single definitive treatment that will resolve all Long COVID-19 symptoms.
- » Multi-specialty disciplinary approach is currently being studied (which also includes mental health).
- » Symptom control (i.e., inhaled steroids and bronchodilators).
- » Exercise, healthy diet and healthy living.

# Care and Prevention Tips:

- » To help prevent the spread of COVID-19, we have encouraged patients and family members to:
  - Wash your hands often, or use an alcohol-based hand sanitizer.
  - Wear a mask that fully covers your mouth and nose.
  - Avoid visiting crowded public areas when possible.
  - Avoid touching your eyes, nose, or mouth.
  - Cover coughs and sneezes.
  - Avoid contact with people who are sick.
  - Clean surfaces often with disinfectant.

<https://lulh.org/conditions/coronavirus-2019-covid-19>

# Care and Prevention Tips:

6 Steps to a  
**CLEAN AND HEALTHY HOME**

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 We spend 90% of our time indoors.

 No matter your situation, there are simple ways to make your home a healthy place to live.

**1 Keep Germs Out of Your Home**

**BUFFER ZONE**  
Near Chris's front door

**LIVING ZONE**  
Where Chris lives and eats



Protect Yourself  
**KEEP YOUR HANDS CLEAN**

**CHEST**  
FOUNDATION

 Wash your hands often.

 Use hand sanitizer with at least 60% alcohol if you can't wash your hands.

Handwashing reduces respiratory illness by about 20% —Centers for Disease Control and Prevention

**20% 20 SECONDS**

You remove more germs if you wash your hands for at least 20 seconds.



All About  
**MASKS**

**CHEST**  
FOUNDATION

 Germs leave your mouth even when you talk. A mask prevents you from spreading many germs.

 If you go out, wear a cloth mask. Some localities require it. If you are sick, stay home.

**TOP 5 CLOTH MASK TIPS**

- 1 Wear a cloth mask any time you are out in public. It should have two layers of dense fabric.
- 2 Masks should fit snugly, cover your mouth and nose, and allow you to breathe comfortably.



<https://foundation.chestnet.org/lung-health-a-z/covid-19-resources/>

Thank you for your time and attention.

*“In my distress I called to the LORD; I called out to my God. From his temple he heard my voice; my cry came to his ears.” - 2 Samuel 22:7*