

# ***Monoclonal Antibody Therapy for COVID-19***

**Federal Bureau of Prisons**

**Clinical Guidance**

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## What's New

- On July 30, 2021, the FDA expanded the indications approved through the Emergency Use Authorization (EUA) for casirivimab and imdevimab (REGEN-COV) to include use as post-exposure prophylaxis of COVID-19 in individuals who are at high risk for progression to severe COVID-19, including hospitalization or death.
- On June, 25, 2021, the Department of Health and Human Services issued a pause on distribution of bamlanivimab/etesevimab due to concerns with activity against some COVID-19 variants. At this time, the FDA is recommending use of alternative monoclonal antibodies with an EUA. All references to bamlanivimab/etesevimab have been removed from this document. Additional information about the pause can be found on the below-listed link.
- There are several other monoclonal antibodies (mAb) approved through EUA for management of patients with COVID-19. Currently casirivimab and imdevimab (REGEN-COV) are stocked at the BOP Central Fill Location and will be reviewed in this guidance. Institutions considering other mAbs may obtain these products locally and refer to the following link for EUA information:  
<https://www.fda.gov/emergency-preparedness-and-response/mcm-legal-regulatory-and-policy-framework/emergency-use-authorization#coviddrugs>
  - Tocilizumab (Actemra) – hospitalized patients only
  - Sotrovimab – hospitalized patients only
  - Baracitinib

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## A. PURPOSE

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The purpose of this document is to provide guidance on the use of monoclonal antibody (mAb) for the outpatient treatment of mild to moderate COVID-19 in patients with certain risk factors for severe COVID-19 illness.

## B. INTRODUCTION

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Infection with SARS-CoV-2, the virus that causes COVID-19, can lead to severe symptoms, hospitalization, and death. Several monoclonal antibody products have received FDA Emergency Use Authorization (EUA) for treatment of COVID-19 patients with mild to moderate symptoms and risk factors for severe illness.

- Studies have shown a 10% or greater absolute risk reduction in the need for emergency department visits and hospitalization with mAb treatment.
  - Treatment has the potential to prevent progression to severe disease and decrease the number of inmates who need hospitalization in the local community, thereby reducing the overall strain on the healthcare system during times of peak SARS-CoV-2 transmission.
  - Treatment appears to work best when started early after the diagnosis is made in appropriately-selected patients. For that reason, it is recommended that each newly diagnosed inmate with COVID-19 be assessed for possible treatment with this medication.
  - To prepare for this as part of their COVID-19 pandemic response plan, each institution will need to assess their ability to administer an IV infusion in consultation with regional healthcare leadership.
- *In order to use these medications, institutions must be prepared to manage severe allergic reactions including anaphylaxis.*
- *Patients meeting criteria for treatment with monoclonal antibody will also meet criteria for exposure quarantine when used for post-exposure prophylaxis or medical isolation when used to treat mild to moderate COVID-19 illness. Staff who have direct or close contact with the patient will need to wear PPE and follow procedures as described in Modules 2 and 3 of the BOP COVID-19 Pandemic Plan.*

## C. PATIENT SELECTION - CONFIRMED SARS-CoV-2 INFECTION

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All of the following criteria must be met in order for a patient to be considered for treatment with COVID-19 monoclonal antibody therapy:

- Positive results of direct SARS-CoV-2 viral testing *and*
- A clinical presentation of mild to moderate COVID-19 symptoms *and*
- Symptom onset within the 10 days preceding mAb treatment *and*
- Risk factors for severe COVID-19 illness (see [Risk Factors for Severe COVID-19 Illness](#)) *and*
- Age ≥ 12 years old; weight ≥ 40 kg (88 lb)

Patients must have positive results of direct SARS-CoV-2 viral testing **no more than 10 days prior** to starting the mAb infusion.

- *Commercial lab PCR test, rapid PCR test (Abbott ID Now) or Rapid Ag test (BinaxNOW) are all acceptable means of confirming infection.*

## CLINICAL PRESENTATION

Patients with risk factors for severe COVID-19 illness and one or more of the following mild or moderate COVID-19 symptoms **may be considered for treatment** with mAbs for COVID-19:

- Fever
- Cough
- Sore throat
- Malaise
- Headache
- Muscle pain
- Gastrointestinal symptoms
- Shortness of breath with exertion.

➔ *Symptom onset must be within the 10 days preceding mAb treatment.*

## RISK FACTORS FOR SEVERE COVID-19 ILLNESS

**Treatment is indicated** for patients who are  $\geq 12$  years old weighing at least 40kg with *at least one* of the following risk factors for progression to severe disease:

- Body mass index (BMI)  $\geq 25$
- Chronic kidney disease (CKD)
- Type 1 or type 2 diabetes
- Immunosuppressive disease
- $\geq 65$  years of age
- Currently receiving immunosuppressive treatment
- Cardiovascular disease (CVD) or hypertension
- Chronic obstructive pulmonary disease (COPD) or other chronic respiratory disease
- Sickle cell disease
- Neurodevelopmental disorders or other conditions that confer medical complexity
- Medical-related technological dependence (i.e. tracheostomy, gastrostomy, positive pressure ventilation not related to COVID-19)

## EXCLUSIONS TO TREATMENT WITH CASIRIVIMAB AND IMDEVIMAB FOR COVID-19

**Treatment is not authorized by the FDA EUA** for use in patients with any of the following conditions:

- Hospitalized due to COVID-19
- Require oxygen therapy due to COVID-19, OR
- Require an increase in baseline oxygen flow rate due to COVID-19 in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity

**Patients with any of the following criteria should be excluded from further evaluation for treatment** based on clinical indicators of severe infection:

- Oxygen saturation (SpO<sub>2</sub>)  $\leq 93\%$  on room air
- Respiratory rate  $\geq 30$  per minute
- Heart rate  $\geq 125$  per minute

➔ *Inmates with clinical indicators of severe COVID-19 illness should be considered for transfer to an outside hospital, as clinically indicated.*

**Other criteria which may exclude a patient from treatment include:**

- Pregnancy and lactation: Safety and efficacy of mAb for prophylaxis and treatment COVID-19 disease are not known in these populations. Treatment may be considered on a case-by-case basis.
- MAbs for COVID-19 should not be administered to anyone with known allergies to any of the components used in the formulation of the interventions

**PATIENT PRIORITY LEVELS**

When quantities of casirivimab and imdevimab are limited, patients may need to be prioritized for treatment. The following are suggested priority criteria for use in these situations, which may be adapted as appropriate and as needed dependent upon circumstances at each institution.

- ➔ *Contact the Regional Medical Director (RMD) to discuss any proposed deviation from the below criteria.*
- ➔ *Submission and approval of a non-formulary request is required prior to initiation of any mAb for COVID-19.*

**PRIORITY 1 PATIENT CRITERIA:**

- Three or more risk factors for progression to severe disease **or**
- ≤ 3 days of symptoms **or**
- Any one of the following risk factors:
  - Body mass index (BMI) ≥35
  - Type 1 or type 2 diabetes
  - ≥ 65 years of age

**PRIORITY 2 PATIENT CRITERIA:**

- Two or more risk factors for progression to severe disease

**PRIORITY 3 PATIENT CRITERIA:**

- One risk factor for progression to severe disease

**D. PATIENT SELECTION – POST-EXPOSURE PROPHYLAXIS (PEP)**

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**Patients who receive casirivimab and imdevimab for PEP must still follow infection control measures and complete all requirements of the exposure quarantine to include 14-day test-in/test-out, symptom screen and temperature checks.**

All of the following criteria must be met in order for a patient to be considered for PEP with mAb for COVID-19:

- Age ≥ 12 years old; weight ≥ 40 kg (88 lb) *and*
- Risk factors for severe COVID-19 illness, including hospitalization and death, (see [Risk Factors for Severe COVID-19 Illness](#)) *and*
- Not fully vaccinated or who are not expected to mount an adequate immune response after series completion (i.e. persons who have immunocompromising conditions, or take immunosuppressive medications) *and*
  - Have been exposed to a person infected with SARS-CoV-2 consistent with close contact criteria (within 6 feet of someone for a cumulative total of 15 minutes or more over a 24-hour period) *or*
  - Are at high risk of exposure to a person infected with SARS-CoV-2 because of occurrence of SARS-CoV-2 infection in other persons in the same institutional setting.
- *“Fully vaccinated” means a person 2 weeks after either their second dose in a 2-dose series (Pfizer or Moderna) or after a single dose series (Janssen).*

- ➔ *MAB for post-exposure prophylaxis is not a substitution for vaccination and not fully vaccinated patients should continue to be offered vaccination regularly.*

**Criteria which may exclude a patient from PEP include:**

- Pregnancy and lactation: Safety and efficacy of COVID-19 mAbs are not known in these populations. Treatment may be considered on a case-by-case basis.
  - COVID-19 monoclonal antibodies should not be administered to anyone with known allergies to any of the components used in the formulation of the interventions
- ➔ *Contact the Regional Medical Director (RMD) to discuss any proposed deviation from the above criteria.*
  - ➔ *Submission and approval of a non-formulary request is required prior to initiation of mAb for PEP.*

## E. MEDICATIONS

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At this time, several monoclonal antibody therapies have received Emergency Use Authorization from the FDA for treatment of SARS-CoV-2 infection. Only casirivimab and imdevimab also have an indication for post-exposure prophylaxis. It is important for the patient to make an informed decision about treatment, taking into account both the potential benefit of the treatment and the limited safety and efficacy data upon which the EUA decision was based.

- **CASIRIVIMAB AND IMDEVIMAB** (administered together) are recombinant human (IgG1 $\kappa$  and IgG1 $\lambda$ , respectively) monoclonal antibodies to the spike protein of SARS-CoV-2. Casirivimab and imdevimab bind to non-overlapping epitopes of the spike protein receptor binding domain, blocking attachment to the human ACE2 receptor.
- ➔ *The FDA Fact Sheet for Health Care Providers Emergency Use Authorization of casirivimab and imdevimab can be found here: <https://www.fda.gov/media/145611/download>*

## E. PATIENT EDUCATION

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- Prior to administration of a mAb for COVID-19, the healthcare provider should communicate information consistent with the “Fact Sheet for Patients, Parents and Caregivers” (and provide a copy of the Fact Sheet) to include:
    - FDA has authorized the emergency use of casirivimab and imdevimab for the treatment of mild to moderate COVID-19 in adults (weighing at least 40 kg) with positive results of direct SARS-CoV-2 viral testing, and who are at high risk for progressing to severe COVID-19 and/or hospitalization.
    - FDA has authorized the emergency use of casirivimab and imdevimab for post-exposure prophylaxis of COVID-19 in individuals who are at high risk for progressing to severe COVID-19 and who are not-fully vaccinated or are not expected to mount an adequate immune response to vaccination.
    - The significant known and potential risks and benefits of mAbs for COVID-19, and the extent to which such potential risks and benefits are unknown.
    - Information on available alternative treatments and the risks and benefits of those alternatives.
  - Obtain informed consent from the patient prior to preparing IV solution.
- ➔ *The FDA Fact Sheet for Patients, Parents and Caregivers Emergency Use Authorization of casirivimab and imdevimab can be found here: <https://www.fda.gov/media/145612/download>*

## F. DOSING, ADMINISTRATION, AND STORAGE

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### ADULT DOSING

- **CASIRIVIMAB AND IMDEVIMAB – TREATMENT OF SARS-CoV-2 INFECTION**
  - Casirivimab 600 mg and imdevimab 600 mg as a single dose IV infusion (administered together)
  - Administered as soon as possible after a positive SARS-CoV-2 test and within 10 days of symptom onset.
- When administered for treatment of SARS-CoV-2 infection, intravenous infusion of casirivimab and imdevimab is strongly recommended. Subcutaneous injection is an alternative route for treatment when IV infusion is not feasible or would delay treatment.
- ➔ *There are no dosing adjustments recommended for renal or hepatic impairment.*
  
- **CASIRIVIMAB AND IMDEVIMAB – POST-EXPOSURE PROPHYLAXIS**
  - Casirivimab 600 mg and imdevimab 600 mg as a single dose IV infusion or subcutaneous injection (administered together)
  - Administered as soon as possible after SARS-CoV-2 exposure.
  - For individuals with ongoing exposure to SARS-CoV-2 for longer than 4 weeks and who are not expected to mount an adequate immune response to complete SARS-CoV-2 vaccination, administer a subsequent dose of casirivimab 300 mg and imdevimab 300 mg by subcutaneous injection or intravenous infusion once every 4 weeks for the duration of ongoing exposure.
- For PEP, either subcutaneous injection or intravenous infusion can be used.

### PREPARATION

- There are two different formulations of casirivimab and imdevimab:
  - A co-formulated solution containing both antibodies in a 1:1 ratio in the same vial
  - Individual antibody solutions in separate vials.
- Solution for infusion or subcutaneous injection of either formulation should be prepared by a qualified healthcare professional using aseptic technique:
  - Remove the vials from refrigerated storage and allow to equilibrate to room temperature for approximately 20 minutes before preparation. Do not expose to direct heat. Do not shake the vial.
  - Inspect visually for particulate matter and discoloration. Casirivimab and imdevimab should be clear to slightly opalescent, colorless to pale yellow.

### PREPARATION FOR SUBCUTANEOUS INJECTION

1. Obtain 3 mL or 5 mL polypropylene Luer Lock syringes with luer connection and 21-gauge 1½ inch transfer needles.
2. Withdraw the appropriate amount of solution into each syringe (see Table 1). Prepare all syringes at the same time.
3. Replace the 21-gauge transfer needle with a 25-gauge or 27-gauge needle for subcutaneous injection.



- **This product is preservative-free and therefore, the prepared syringes should be administered immediately.**
  - If immediate administration is not possible and if the product is prepared in a *biological safety cabinet* or *laminar flow hood* under USP <797> standards, store the prepared casirivimab and imdevimab syringes in the refrigerator between 2°C to 8°C (36°F to 46°F) for no more than 36 hours or at room temperature up to 25°C (77°F) for no more than 4 total hours.
  - If refrigerated, allow the syringes to equilibrate to room temperature for approximately 20 minutes prior to administration.

## ADMINISTRATION OF SUBCUTANEOUS INJECTION

- For casirivimab 600 mg and imdevimab 600 mg injection, patient will require 4 separate injections.
- For casirivimab 300 mg and imdevimab 300 mg injection, patient will require 2 separate injections.
- Administer the subcutaneous injections consecutively, each at a different injection site, into the thigh, back of the upper arm, or abdomen, except for 2 inches (5 cm) around the navel. The waistline should be avoided.
- When administering the subcutaneous injections, it is recommended that providers use different quadrants of the abdomen or upper thighs or back of the upper arms to space apart each 2.5 mL subcutaneous injection of casirivimab and imdevimab. DO NOT inject into skin that is tender, damaged, bruised, or scarred.
- Clinically monitor patients after injections and observe patients for at least 1 hour.

**TABLE 2: DILUTION AND ADMINISTRATION INSTRUCTIONS FOR SUBCUTANEOUS INJECTION**

Drug (dose)	Volume to withdraw for co-formulated solution	Dose and volume to withdraw of individual vials	Total number of injections
Casirivimab (600mg)	2.5 mL per syringe in <b>FOUR</b> separate syringes	<ul style="list-style-type: none"> <li>• 2.5 mL of casirivimab per syringe in <b>TWO</b> separate syringes</li> <li><i>and</i></li> <li>• 2.5 mL of imdevimab per syringe in <b>TWO</b> separate syringes</li> </ul>	4
Imdevimab (600mg)			
Casirivimab (300mg)	2.5 mL per syringe in <b>TWO</b> separate syringes	<ul style="list-style-type: none"> <li>• 2.5 mL of casirivimab per syringe in <b>ONE</b> syringe</li> <li><i>and</i></li> <li>• 2.5 mL of imdevimab per syringe in <b>ONE</b> syringe</li> </ul>	2
Imdevimab (300mg)			

## DILUTION FOR INTRAVENOUS INFUSION

Dilute both casirivimab and imdevimab using one 250 mL prefilled 0.9% Sodium Chloride Injection bag for intravenous infusion according to the following instructions:

1. Withdraw the appropriate amount of casirivimab and imdevimab from each respective vial using two separate syringes and dilute together in the infusion bag containing 0.9% Sodium Chloride Injection (see Table 2).
  2. Discard any product remaining in the vials.
  3. Gently invert infusion bag by hand approximately 10 times to mix. **Do not shake.**
- **This product is preservative-free and therefore should NOT be prepared in advance.**
    - The diluted infusion solution should be administered **immediately** after it is prepared.
    - If the product is prepared in a *biological safety cabinet or laminar flow hood*, under USP <797> standards, store the diluted casirivimab and imdevimab infusion solution in the refrigerator between 2°C to 8°C (36°F to 46°F) for no more than 36 hours and at room temperature up to 25°C (77°F) for no more than 4 hours, including infusion time. If refrigerated, allow the infusion solution to equilibrate to room temperature for approximately 30 minutes prior to administration.
- ➔ *Casirivimab and imdevimab carton and vial labels may instead be labeled REGN10933 and REGN10987 respectively.*

## ADMINISTRATION OF INTRAVENOUS INFUSION

The infusion solution should be administered by a qualified healthcare professional using the following instructions:

1. Gather the recommended materials for infusion:
  - Polyvinylchloride (PVC) infusion set containing a 0.20/0.22 micron in-line polyethersulfone (PES) filter
2. Attach the infusion set to the IV bag
3. Prime the infusion set
4. Administer the entire infusion solution in the bag via **IV infusion pump or gravity** over at least 60 minutes
  - If no pump is utilized, calculate the drip rate to ensure that the medication is delivered within required timeframe
  - The drip factor is included on the tubing package and is provided in gtts/ml
  - The formula for calculating drip rate is  $\text{drip factor} * \text{infusion amount} / 60 = \text{number of drops per minute}$ .
    - Examples:
      - Drip factor of 10 gtts/ml ( $200 * 10 / 60 = 33.3$  gtts/min)
      - Drip factor of 15 gtts/ml ( $200 * 15 / 60 = 50$  gtts/min)
  - The prepared infusion solution should not be administered simultaneously with any other medication.
5. Once infusion is complete, flush the infusion line to ensure delivery of the required dose
6. Discard unused product
7. Clinically monitor patients during administration and observe patients for at least 1 hour after infusion is complete

**TABLE 2: DILUTION AND ADMINISTRATION INSTRUCTIONS FOR INTRAVENOUS INFUSION**

Drug (dose)	Volume to withdraw for co-formulated solution	Dose and volume to withdraw of individual vials <sup>3</sup>	Volume of 0.9% Sodium Chloride required for dilution	Total Volume for Infusion	Maximum Infusion Rate	Minimum Infusion Time
Casirivimab <sup>1</sup> (600mg)	• 10 mL	<ul style="list-style-type: none"> <li>• 5 mL of casirivimab (may use 2 vials of 2.5 mL OR 1 vial of 11.1 mL) and</li> <li>• 5 mL of imdevimab (may use 2 vials of 2.5 mL OR 1 vial of 11.1 mL)</li> </ul>	250 mL	260 mL	310 mL/hr	50 minutes
Imdevimab <sup>1</sup> (600mg)						
Casirivimab <sup>2</sup> (300mg)	• 5 mL	<ul style="list-style-type: none"> <li>• 2.5 mL of casirivimab (may use 1 vial of 2.5 mL OR 1 vial of 11.1 mL) and</li> <li>• 5 mL of imdevimab (may use 1 vials of 2.5 mL OR 1 vial of 11.1 mL)</li> </ul>	250 mL	255 mL	310 mL/hr	49 minutes
Imdevimab <sup>2</sup> (300mg)						

NOTE: casirivimab = REGN10933; imdevimab = REGN10987

<sup>1</sup>600mg of casirivimab and 600 mg of imdevimab are to be administered together as a single intravenous infusion for a combined 1200 mg dose.

<sup>2</sup>300mg of casirivimab and 300 mg of imdevimab are to be administered together as a single intravenous infusion for a combined 600 mg dose.

<sup>3</sup>One 11.1 mL vial of one antibody may be prepared with 2.5 mL vials of the other antibody to create one treatment course.

## ADVERSE EVENTS

There are limited clinical data available for casirivimab or imdevimab. Serious and unexpected adverse events may occur that have not been previously reported with use.

- There is a potential for serious hypersensitivity reaction, including anaphylaxis, with administration of these medications. If signs and symptoms of a clinically significant hypersensitivity reaction or anaphylaxis occur, immediately discontinue administration and initiate appropriate medications and/or supportive therapy.

- Infusion-related reactions have been observed with administration of these medications. Signs and symptoms of infusion-related reactions may include:
  - Fever, chills, nausea, headache, weakness, altered mental status, bronchospasm, hypotension or hypertension, arrhythmias, chest pain or discomfort, angioedema, throat irritation, rash including urticaria, pruritus, myalgia, dizziness.
- If an infusion-related reaction occurs, consider slowing or stopping the infusion and administer appropriate medications and/or supportive care.
- The prescribing health care provider and/or the provider's designee are/is responsible for **mandatory reporting of all medication errors and serious adverse events** potentially related to mAb treatment within **7 calendar days** from the onset of the event.
  - Submit adverse event reports to FDA MedWatch:  
<https://www.accessdata.fda.gov/scripts/medwatch/index.cfm>
    - The reports should include unique identifiers and the words “[name of mAb] treatment under Emergency Use Authorization (EUA)” in the description section of the report.
    - A copy of the FDA MedWatch form should also be submitted to the manufacturer. The address for each is listed in the mAb EUA.
  - Adverse events should also be reported on the [BOP Adverse Events Dashboard](#)

## STORAGE

- Store under refrigeration in unopened vials at 2°C to 8°C (36°F to 46°F) in the original carton to protect from light. Do not freeze, shake, or expose to direct light.

## NURSING PROTOCOL FOR ADMINISTERING MONOCLONAL ANTIBODY INFUSION

The high transmissibility of SARS-CoV-2 may lead to widespread transmission, which often places increased demands on health care staff. The [Nursing Protocol for Administering Monoclonal Antibody Treatment to Patients who are COVID-19 Positive \(Appendix 1\)](#) and the [Nursing Protocol for Administering Monoclonal Antibody Treatment to Patients who have been Exposed to COVID-19 \(Appendix 2\)](#) have been developed to extend the capacity of health care staff to offer this treatment to more patients. Use of these protocols requires approval by the institution clinical director and documentation of training for each staff member who will utilize them.

[Appendix 3. Protocol for Allergic Reactions to Monoclonal Antibody Infusions](#) has been modified from the standard nursing protocol for allergic reactions to be specific for reactions to this medication.

## **APPENDIX 1. NURSING PROTOCOL FOR ADMINISTERING MONOCLONAL ANTIBODY TREATMENT TO PATIENTS WHO ARE COVID-19 POSITIVE**

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All of the following criteria must be met in order for a patient to be considered for treatment with COVID-19 monoclonal antibody therapy. See below for a more detailed description.

- Positive results of direct SARS-CoV-2 viral testing *and*
- A clinical presentation of mild to moderate COVID-19 symptoms *and*
- Symptom onset within the 10 days preceding mAb treatment *and*
- Certain risk factors for severe COVID-19 illness *and*
- Age ≥ 18 years old; weight ≥ 40 kg (88 lb). (Patients between the ages of 12 and 18 years are not covered in this protocol.)

Patients who are COVID-19 positive and meet criteria for treatment with monoclonal antibody will also meet criteria for medical isolation. Staff who have direct or close contact with the patient will need to wear PPE and follow procedures as described in Modules 2 and 3 of the BOP COVID-19 Pandemic Plan.

### **PRESENTING PROBLEM:** Patient is COVID-19 Positive

1. Confirm positive results of direct SARS-CoV-2 viral testing **no more than 10 days prior** to starting the mAb treatment.
2. Commercial lab PCR test, rapid PCR test (Abbott ID Now) or Rapid Ag test (BinaxNOW) are all acceptable means of confirming infection.

### **Subjective:**

1. Onset and duration of COVID-19 symptoms
2. Nature of symptoms
  - a. Loss of sense of taste or smell
  - b. Reported fever
  - c. Cough
  - d. Sore Throat
  - e. Malaise
  - f. Headache
  - g. Muscle Pain
  - h. GI Symptoms: N/V/D
  - i. Shortness of Breath w/ Exertion
3. Known history of allergies
  - a. Food
  - b. Medication
  - c. Insects
4. Current medications, including over the counter medications

**Objective:**

1. Vital Signs always including pulse oximetry
2. Positive COVID-19 Test Results; specimen must have been obtained within ten days prior to starting monoclonal antibody. Rapid molecular or antigen testing is acceptable.
3. Weight and BMI
4. Respiratory status
  - a. Airway status
  - b. Respiratory effort
  - c. Lung sounds

Inclusion Criteria	Exclusion Criteria
<p>Signs/Symptoms of mild to moderate COVID-19 illness (<i>refer to MAb Therapy for COVID-19 Clinical Guidance for a list of common signs/symptoms</i>)</p> <p>AND</p> <p>At least one of the following risk factors for severe COVID-19 illness (<i>refer to MAb Therapy for COVID-19 Clinical Guidance for a list of risk factors</i>)</p>	<ul style="list-style-type: none"> <li>• Currently hospitalized due to COVID-19</li> <li>• Require oxygen therapy due to COVID-19</li> <li>• Require an increase in baseline oxygen flow rate due to COVID-19 in those on chronic oxygen therapy due to underlying non-COVID-19 related comorbidity</li> <li>• Oxygen saturation (SpO<sub>2</sub>) ≤ 93% on room air</li> <li>• Respiratory rate ≥ 30 per minute</li> <li>• Heart rate ≥ 125 per minute</li> <li>• Known allergies to any of the components used in the formulation of the interventions</li> <li>• Weight less than 40 kg (88 lbs)</li> <li>• Pregnancy and lactation (Safety and efficacy of COVID-19 mAbs are not known in these populations. Treatment may be considered on a case-by-case basis.)</li> </ul>

**Assessment:**

1. Potential for ineffective airway clearance related to COVID-19
2. Potential for impaired oxygenation secondary to COVID-19

**Plan:**

1. If patient meets inclusion criteria for administering medication obtain informed consent for mAb  
 → *All mAbs require a non-formulary request to be submitted and approved.*
2. For instructions on dose, preparation and infusion of mAbs, refer to the BOP Clinical Guidance on Monoclonal Antibody Therapy for COVID-19.
3. Clinically monitor the patient throughout the infusion and for at least one hour post administration
4. Allergic reaction: If patient develops an allergic reaction to the medication, proceed to the attached Allergic Reaction Protocol (Differs slightly from National Nursing Allergic Reaction Protocol)

5. If patient does not meet inclusion criteria for administration of mAb for COVID-19, continue to monitor as clinically indicated or transfer to local hospital for further monitoring and treatment.
6. Contact the ordering provider for any questions or concerns identified while evaluating the patient, administering the mAb, and during the one hour post-infusion monitoring period.

**Patient Education:**

1. Discuss with patient that an adverse reaction may occur, and that they will be monitored throughout and at least one hour post infusion. If any reaction is suspected, the patient should report to staff immediately.
2. Patient will not be able to receive the COVID-19 vaccine for at least 90 days post-treatment

**Disposition:**

1. Maintain in medical isolation until patient meets current criteria for release.

## APPENDIX 2. NURSING PROTOCOL FOR ADMINISTERING MONOCLONAL ANTIBODY TREATMENT TO PATIENTS WHO HAVE BEEN EXPOSED TO COVID-19

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Patients who have been exposed to a patient who is COVID-19 positive, and meet the criteria for treatment with monoclonal antibody will also meet criteria for exposure quarantine. Staff who have direct or close contact with the patient will need to wear PPE and follow procedures as described in Modules 2 and 3 of the BOP COVID-19 Pandemic Plan.

**PRESENTING PROBLEM:** Patient has been exposed to a patient that is COVID-19 Positive

1. Patient has risk factors for severe COVID-19 illness, including hospitalization and death (*refer to MAb Therapy for COVID-19 Clinical Guidance for a list of risk factors*), AND
2. Patient is not fully vaccinated or not expected to mount an adequate immune response after series completion (i.e. persons who have immunocompromising condition or taking immunosuppressive medications) *and*
  - a. Have been exposed to a person infected with SARS-CoV-2 consistent with close contact criteria (within 6 feet of someone for a cumulative total of 15 minutes or more over a 24-hour period) or
  - b. Are at high risk of exposure to a person infected with SARS-CoV-2 because of occurrence of SARS-CoV-2 infection in other persons in the same institution.

➔ *“Fully vaccinated” means a person 2 weeks after either their second dose in a 2-dose series (Pfizer or Moderna) or after a single dose series (Janssen).*

➔ *MAb for post-exposure prophylaxis is not a substitution for vaccination and not fully vaccinated patients should continue to be offered vaccination regularly.*

### Subjective:

1. Duration of exposure
2. Symptom screen:
  - a. Loss of sense of taste or smell
  - b. Reported fever
  - c. Cough
  - d. Sore Throat
  - e. Malaise
  - f. Headache
  - g. Muscle Pain
  - h. GI Symptoms: N/V/D
  - i. Shortness of Breath w/ Exertion
3. Known history of allergies
  - a. Food
  - b. Medication
  - c. Insects
4. Current medications, including over the counter medications



**Objective:**

1. Vital Signs always including pulse oximetry
2. COVID-19 Test Results collected as part of the contact investigation for patient's exposed to a COVID-19 positive patient. If test results are positive, utilize the nursing protocol for administering monoclonal antibody treatment to patients who are COVID-19 positive. Rapid molecular or antigen testing is acceptable.
3. Weight and BMI
4. Respiratory status
  - a. Airway status
  - b. Respiratory effort
  - c. Lung sounds

Exclusion Criteria
<ul style="list-style-type: none"><li>• Pregnancy and lactation: Safety and efficacy of COVID-19 mAbs are not known in these populations. Treatment may be considered on a case-by-case basis.</li><li>• COVID-19 monoclonal antibodies should not be administered to anyone with known allergies to any of the components used in the formulation of the interventions</li><li>• Age &lt; 12</li><li>• Weight &lt;40 kg (88 lbs)</li></ul>



- ➔ *Contact the Regional Medical Director (RMD) to discuss any proposed deviation from the above criteria.*
- ➔ *Submission and approval of a non-formulary request is required prior to initiation of any mAb for PEP.*

**Assessment:**

1. Potential for infection related to exposure to COVID-19.

**Plan:**

1. For instructions on dose, preparation and infusion of mAbs, refer to the BOP Clinical Guidance on Monoclonal Antibody Therapy for COVID-19.
2. Clinically monitor the patient throughout the infusion and for at least one hour post administration
3. Allergic reaction: If patient develops an allergic reaction to the medication, proceed to the attached Allergic Reaction Protocol (Differs slightly from National Nursing Allergic Reaction Protocol)
4. If patient does not meet inclusion criteria for administration of mAb for COVID-19 post-exposure prophylaxis, continue to monitor in quarantine as clinically indicated.
5. Contact the ordering provider for any questions or concerns identified while evaluating the patient, administering the mAb, and during the one hour post-treatment monitoring period.

**Patient Education:**

1. Discuss with patient that an adverse reaction may occur, and that they will be monitored throughout and at least one hour post infusion. If any reaction is suspected, the patient should report to staff immediately.
2. Patient will not be able to receive the COVID-19 vaccine for at least 90 days post-treatment

**Disposition:**

1. Maintain in medical quarantine until patient meets current criteria for release.

## APPENDIX 3. NURSING PROTOCOL FOR ALLERGIC REACTIONS TO MONOCLONAL ANTIBODY INFUSIONS

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**PRESENTING PROBLEM:** Allergic Reaction to the monoclonal antibody treatment

**Subjective:**

1. Onset and duration of symptoms
2. Nature of symptoms
  - a. Difficulty breathing, swelling of throat, cough
  - b. Rash, itch, hives
  - c. Sneezing, watering eyes
3. Known history of allergies
  - a. Food
  - b. Medication
  - c. Insects
4. Signs and symptoms specific for allergic reaction to mAbs:
  - a. Fever
  - b. Arrhythmias
    - i. Atrial Fibrillation
    - ii. Tachycardia
    - iii. Bradycardia
  - c. Chest pain or discomfort
  - d. Weakness
  - e. Altered Mental Status
  - f. Chills
  - g. Nausea
  - h. Headache
  - i. Bronchospasm
  - j. Hypotension or hypertension
  - k. Dizziness
  - l. Angioedema
  - m. Throat Irritation
  - n. Rash Including urticarial, pruritus, myalgia
5. Current medications including over the counter medications

**Objective:**

1. Vital Signs always including pulse oximetry
2. Respiratory status
  - a. Airway status
  - b. Respiratory effort
  - c. Lung sounds
3. Location of any erythema, urticaria, edema, insect stinger
4. EKG

**Assessment:**

1. Ineffective airway clearance related to pharyngeal swelling
2. Risk for decreased cardiac output related to allergic response
3. Risk for alteration in skin integrity related to allergic response
4. Alteration in comfort related to allergic response/sneezing
5. Potential for Impaired spontaneous ventilation

**Plan:**

1. Clinically monitor the patient throughout the infusion and for at least one hour post administration
2. Minor allergic reaction, if a reaction is suspected, and is minor,
  - a. Slow the infusion down to see if this helps.
  - b. Consider administering the medications contained with the moderate allergic reaction section below.
3. Moderate allergic reaction, as defined as generalized rash, scratchy throat, or difficulty breathing with O2 saturations <95% :
  - a. Stop infusion
  - b. Administer Oxygen to maintain saturations >95%
  - c. Administer **diphenhydramine (Benadryl) 50 mg IV Push**
  - d. Administer albuterol 0.083% metered dose inhaler (MDI) with spacer if wheezing is present; may repeat every 20 minutes for a total of three treatments. If patient cannot use MDI, albuterol 0.083% solution, 2.5 mg via nebulizer may be used. Follow BOP Pandemic Plan Module 7 for Aerosol Generating Procedures.
  - e. Loosen tight clothing and provide calm environment
  - f. If based on the nurse's assessment, taking into consideration hours of operations of the department and physician availability, the nurse can determine that the patient is safe to release back to the housing unit, or transfer to the local ER.
4. Severe reaction (true anaphylaxis) characterized by hypotension, inability to speak, severe dyspnea, etc.:
  - a. Stop infusion
  - b. Notify operations LT to initiate transport to local ER without delay.
  - c. Administer **Epinephrine Auto-Injector (Epi-Pen)** subcutaneously into mid-outer thigh. May repeat every 5-15 minutes, not to exceed a total of three doses
  - d. Place patient in supine position, unless respiratory status requires elevation of the head. Place pregnant patients on their left side.
  - e. Monitor vitals every 5 minutes and continuous SpO2
  - f. Oxygen 15 liters via NRB, monitor O2 Sat.
  - g. Establish IV access with 1 liter of normal saline solution at KVO.
  - h. If hypotensive (SBP<100 mmHg), administer fluid bolus in 500 ml increments checking vital signs after each bolus to a total dose of 2000 ml.
  - i. If a patient is taking a beta-blocker (most end in -lol; e.g. metoprolol, propranolol, timolol), and is not responding to epi injections, then consider administering glucagon 1-5 mg, IV, over 5 minutes (Glucagon emergency kits only contain 1 mg solution)
  - j. Time permitting; consider administering items identified in the Moderate Allergic Reaction section if not already done.

**Patient Education:**

1. Discuss with patient what caused the allergic reaction and possible methods to avoid exposure in the future.
2. If allergen is unknown, discuss possible suspects with patient. Encourage patient to start journal if appropriate documenting meals, medications, activities, etc.
3. Ensure that patient is fully aware of any changes to his medication regimen ordered by on call provider.
4. Ensure that patient is aware of any newly diagnosed allergens and what groups or classes of foods and medications to avoid.
5. If allergic reaction becomes more severe, report this change to medical.

**Disposition:**

1. See EMR Disposition field. Mark appropriate response.
2. If the patient was evaluated for a *moderate* reaction, then they will need to follow up the next AM for reevaluation.
3. If the patient was evaluated for a *SEVERE* reaction, then the patient will need to follow-up upon return from the hospital, and if they return after-hours, they will need to ensure they come to medical first thing in the AM for reevaluation.

**Adverse Reaction Reporting:**

Mandatory reporting of any adverse reaction is required **within 7 calendar days** from the onset of the event. Please report the adverse reaction through the BOP's and FDA's Reporting Systems and to the mAb manufacturer. Links are provided below.

- BOP's [Medication Event Reporting Form](#)
- Submit adverse event reports to FDA MedWatch.  
<https://www.accessdata.fda.gov/scripts/medwatch/index.cfm>
- A copy of the FDA MedWatch form should also be submitted to the manufacturer address listed in the mAb EUA.