Table 3a. Anti-SARS-CoV-2 Monoclonal Antibodies: Selected Clinical Data

Last Updated: April 29, 2022

This table describes only the clinical trials that have evaluated anti-SARS-CoV-2 mAbs for the treatment of COVID-19. Please see Prevention of SARS-CoV-2 Infection for a discussion of the clinical trials that have evaluated anti-SARS-CoV-2 mAbs for PEP of SARS-CoV-2 infection.

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| **BLAZE-1**: Double-Blind RCT of Bamlanivimab 700 mg Plus Etesevimab 1,400 mg in Nonhospitalized Patients With Mild to Moderate COVID-19 in the United States and Puerto Rico¹ | **Participant Characteristics:**  
  • Median age 56 years; 30% aged ≥65 years; 53% women  
  • 87% White, 27% Hispanic/Latinx, 8% Black/African American  
  • Mean duration of symptoms was 4 days  
  • 76% with mild COVID-19, 24% with moderate COVID-19  
**Primary Outcomes:**  
  • COVID-19-related hospitalizations or all-cause deaths by Day 29: 4 (0.8%) in BAM plus ETE arm vs. 15 (5.8%) in placebo arm (change of -5.0%; 95% CI, -8.0% to -2.1%; P < 0.001)  
  • All-cause deaths by Day 29: 0 in BAM plus ETE arm vs. 4 (1.6%) in placebo arm  
**Key Limitation:**  
  • Conducted before widespread circulation of the Omicron VOC  
**Interpretation:**  
  • Compared to placebo, BAM plus ETE significantly reduced the number of COVID-19-related hospitalizations and all-cause deaths in high-risk patients. |
| **Key Inclusion Criteria:**  
  • Aged ≥12 years  
  • At high risk for severe COVID-19 or hospitalization  
**Interventions:**  
  • Within 3 days of a positive SARS-CoV-2 test result, single infusion of:  
    • BAM 700 mg plus ETE 1,400 mg (n = 511)  
    • Placebo (n = 258)  
**Primary Endpoint:**  
  • COVID-19-related hospitalization (defined as ≥24 hours of acute care) or death from any cause by Day 29 |
| **BLAZE-4, Treatment Arms 9–11**: Double-Blind RCT of Bamlanivimab Plus Etesevimab Plus Bebtelovimab Versus Bebtelovimab Alone Versus Placebo in Low-Risk, Nonhospitalized Patients With Mild to Moderate COVID-19² | **Participant Characteristics:**  
  • Median age 35 years; 56% women  
  • 36% Hispanic/Latinx, 19% Black/African American  
**Primary Outcomes:**  
  • Proportion with PHVL:  
    • 13% in BAM plus ETE plus BEB arm vs. 21% in placebo arm (P = 0.098), with a relative reduction of 38% (95% CI, -9% to 65%)  
    • 14% in BEB arm vs. 21% in placebo arm (P = 0.147), with a relative reduction of 34% (95% CI, -15% to 62%)  
**Key Limitations:**  
  • Only low-risk patients included  
  • Not powered to assess hospitalizations and deaths  
  • Conducted before widespread circulation of the Omicron VOC  
**Interpretations:**  
  • There were no differences in the proportion of patients with PHVL across the arms.  
  • Few COVID-19-related hospitalizations or deaths from any |
| **Key Inclusion Criteria:**  
  • Aged 18–64 years  
  • No risk factors for progression to severe COVID-19  
**Key Exclusion Criteria:**  
  • ≥1 of the following:  
    • SpO₂ ≤93% on room air  
    • Respiratory rate ≥30 breaths/min  
    • Heart rate ≥125 bpm  
**Interventions:**  
  • Within 3 days of a positive SARS-CoV-2 test result, single infusion of:  
  |  
|  
COVID-19 Treatment Guidelines

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### Methods

**BLAZE-4, Treatment Arms 9–11**: Double-Blind RCT of Bamlanivimab Plus Etesevimab Plus Bebtelovimab Versus Bebtelovimab Alone Versus Placebo in Low-Risk, Nonhospitalized Patients With Mild to Moderate COVID-19², continued

<table>
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<tr>
<th>Primary Endpoint:</th>
<th>• Proportion of patients with PHVL (defined as SARS-CoV-2 VL &gt;5.82 log₁₀ by Day 7)</th>
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</table>
| Key Secondary Endpoints: | • Mean change in VL from baseline to Days 3, 5, 7, and 11  
• COVID-19-related hospitalization or death from any cause by Day 29  
• Time to sustained symptom resolution |

| Interventions: | • Within 3 days of a positive SARS-CoV-2 test result, single infusion of:  
  • BAM 700 mg plus ETE 1,400 mg plus BEB 175 mg (n = 127)  
  • BEB 175 mg (n = 125)  
  • Placebo (n = 128) |

| Secondary Outcomes: | • Mean decline in VL greater in mAb arms vs. placebo arm at Day 5 but not at Days 3, 7, or 11  
• COVID-19-related hospitalizations or all-cause deaths by Day 29:  
  • 3 (2.4%) in BAM plus ETE plus BEB arm, including 1 death  
  • 2 (1.6%) in BEB arm  
  • 2 (1.6%) in placebo arm  
• Median time to sustained symptom resolution:  
  • 7 days in BAM plus ETE plus BEB arm vs. 8 days in placebo arm (P = 0.289)  
  • 6 days in BEB arm vs. 8 days in placebo arm (P = 0.003) |

| Participant Characteristics: | • Median age 50 years; 52% women  
• 18% Hispanic/Latinx, 18% Black/African American  
• Mean duration of symptoms prior to enrollment was 4.7 days  
• 21% had at least 1 dose of COVID-19 vaccine |

| Efficacy Outcomes: | • COVID-19-related hospitalization or death from any cause by Day 29:  
  • 2 (4%) in BAM plus ETE plus BEB arm vs. 3 (3%) in BEB arm  
• Mean decline in VL greater in BAM plus ETE plus BEB arm vs. BEB arm at Day 5 but not at Days 3, 7, or 11 |

### Results

**BLAZE-4, Treatment Arms 12 and 13**: Open-Label RCT of Bamlanivimab Plus Etesevimab Plus Bebtelovimab and Bebtelovimab Alone in High-Risk, Nonhospitalized Patients With Mild to Moderate COVID-19²

| Key Inclusion Criteria: | • Aged ≥12 years  
• Weight ≥40 kg  
• ≥1 risk factor for progression to severe COVID-19 |

| Key Exclusion Criteria: | • ≥1 of the following:  
  • SpO₂ ≤93% on room air  
  • Respiratory rate ≥30 breaths/min  
  • Heart rate ≥125 bpm |

| Interventions: | • Within 3 days of a positive SARS-CoV-2 test result, single infusion of:  
  • BAM 700 mg plus ETE 1,400 mg plus BEB 175 mg (n = 50)  
  • BEB 175 mg (n = 100) |

| Participant Characteristics: | • Median age 50 years; 52% women  
• 18% Hispanic/Latinx, 18% Black/African American  
• Mean duration of symptoms prior to enrollment was 4.7 days  
• 21% had at least 1 dose of COVID-19 vaccine |

| Efficacy Outcomes: | • COVID-19-related hospitalization or death from any cause by Day 29:  
  • 2 (4%) in BAM plus ETE plus BEB arm vs. 3 (3%) in BEB arm  
• Mean decline in VL greater in BAM plus ETE plus BEB arm vs. BEB arm at Day 5 but not at Days 3, 7, or 11 |

| Key Limitations: | • Open-label study  
• No placebo arm  
• Not powered to assess hospitalizations and deaths  
• Conducted before widespread circulation of the Omicron VOC |

<p>| Interpretation: | • There was no difference in the proportion of patients who were hospitalized or who died between the arms. |</p>
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| **BLAZE-4, Treatment Arms 12 and 13:** Open-Label RCT of Bamlanivimab Plus Etesevimab Plus Bebtelovimab and Bebtelovimab Alone in High-Risk, Nonhospitalized Patients With Mild to Moderate COVID-19, continued | Efficacy Endpoints:  
• COVID-19-related hospitalization or death from any cause by Day 29  
• Mean change in VL from baseline to Days 3, 5, 7, and 11 |  |
| Double-Blind RCT of Casirivimab Plus Imdevimab in Nonhospitalized Patients With Mild to Moderate COVID-19 | Key Inclusion Criteria:  
• Aged ≥18 years  
• Laboratory-confirmed SARS-CoV-2 infection  
• Symptom onset within 7 days of randomization  
• For patients included in the modified full analysis only:  
  • ≥1 risk factor for severe COVID-19  
  • Positive SARS-CoV-2 RT-PCR result at baseline | Participant Characteristics:  
• Median age 50 years  
• 35% Hispanic/Latinx, 5% Black/African American  
• Median duration of symptoms prior to enrollment was 3 days | Key Limitation:  
• Conducted before widespread circulation of the Omicron VOC | Primary Endpoints:  
• COVID-19-related hospitalizations or all-cause deaths through Day 29:  
  • 7 (1.0%) in CAS 600 mg plus IMD 600 mg arm vs. 24 (3.2%) in placebo arm (P = 0.002)  
  • 18 (1.3%) in CAS 1,200 mg plus IMD 1,200 mg arm vs. 62 (4.6%) in placebo arm (P < 0.001)  
• All-cause deaths:  
  • 1 (0.1%) in CAS 600 mg plus IMD 600 mg arm vs. 1 (0.1%) in placebo arm  
  • 1 (< 0.1%) in CAS 1,200 mg plus IMD 1,200 mg arm vs. 3 (0.2%) in placebo arm | Interpretation:  
• Compared to placebo, CAS 600 mg plus IMD 600 mg and CAS 1,200 mg plus IMD 1,200 mg reduced the risk of COVID-19-related hospitalizations or all-cause deaths in patients with mild to moderate COVID-19. |
**COMET-ICE: Double-Blind RCT of Sotrovimab in Nonhospitalized Patients With Mild to Moderate COVID-19 in Brazil, Canada, Peru, Spain, and the United States**

### Methods

**Key Inclusion Criteria:**
- Aged ≥18 years
- ≥1 comorbidity or aged ≥55 years
- Positive SARS-CoV-2 RT-PCR or antigen test result
- Symptom onset ≤5 days before enrollment

**Key Exclusion Criteria:**
- Hospitalized or required supplemental oxygen
- Severely immunocompromised

**Interventions:**
- SOT 500 mg IV (n = 528)
- Placebo (n = 529)

**Primary Endpoint:**
- Hospitalization or death from any cause by Day 29

### Results

**Participant Characteristics:**
- Median age 53 years; 20% aged ≥65 years; 54% women
- 65% Hispanic/Latinx, 8% Black/African American
- 63% with obesity; 22% with DM; 17% with moderate to severe asthma

**Primary Outcome:**
- Hospitalizations or all-cause deaths by Day 29: 6 (1%) in SOT arm vs. 30 (6%) in placebo arm, including 2 deaths (adjusted relative risk 0.21; 95% CI, 0.09–0.50; absolute difference -4.53%; 95% CI, -6.70% to -2.37%; P < 0.001)

### Limitations and Interpretation

**Key Limitation:**
- Conducted before widespread circulation of the Omicron VOC

**Interpretation:**
- Compared to placebo, SOT reduced the incidence of all-cause hospitalizations and deaths among patients with mild to moderate COVID-19.

**Key:** BAM = bamlanivimab; bpm = beats per minute; BEB = bebtelovimab; CAS = casirivimab; DM = diabetes mellitus; ETE = etesevimab; IMD = imdevimab; IV = intravenous; mAb = monoclonal antibody; PEP = post-exposure prophylaxis; PHVL = persistently high viral load; RCT = randomized controlled trial; RT-PCR = reverse transcription polymerase chain reaction; SOT = sotrovimab; SpO\textsubscript{2} = oxygen saturation; VL = viral load; VOC = variant of concern

### References