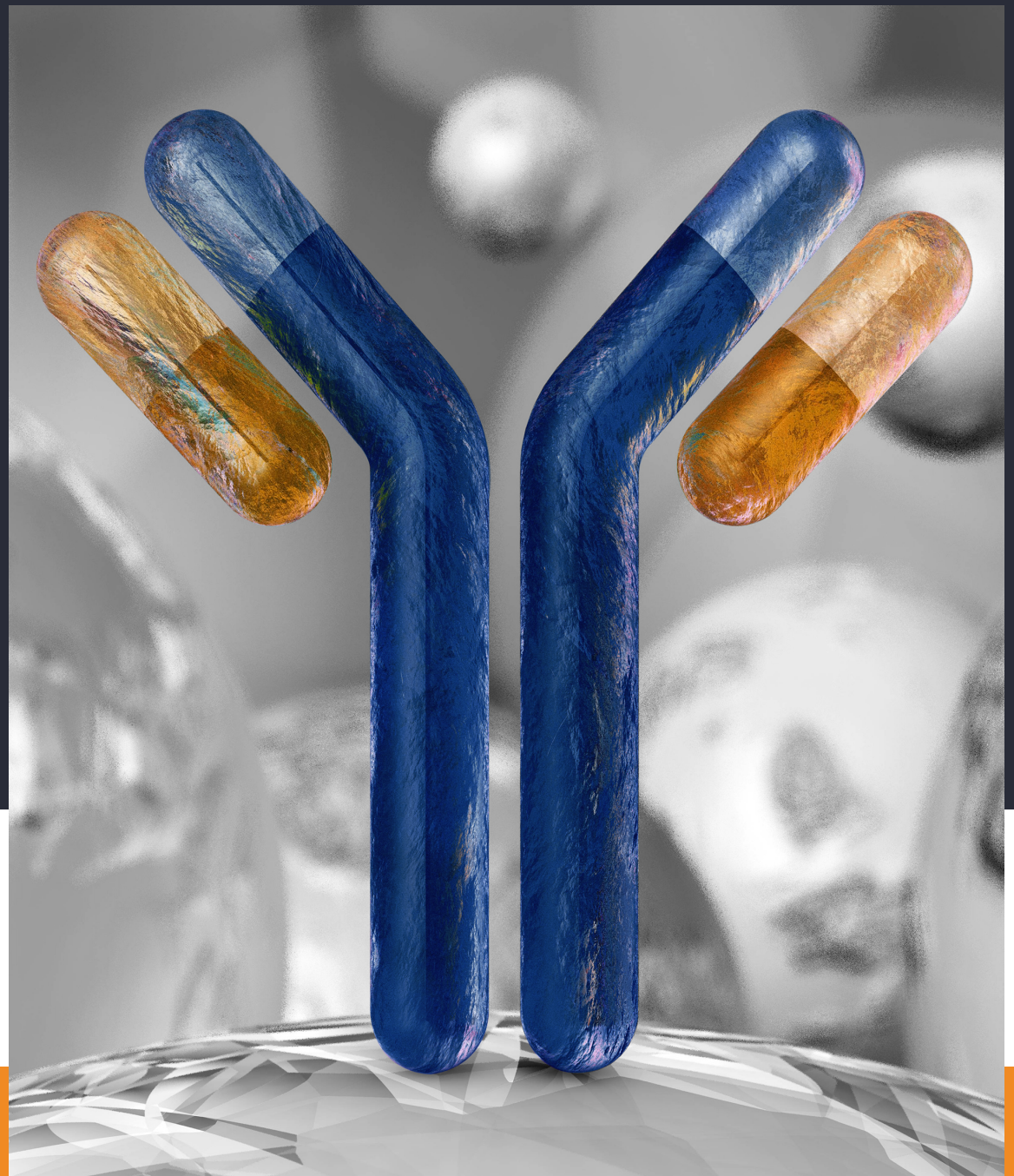


Monoclonal Antibodies & COVID-19

Erik McLaughlin MD, MPH
Cochise County Medical Director

Health Department

- Current Cases: **827,000***
- Current Deaths: **16,328***

- Spread via inhalation of respiratory droplets, secondary transfer of virus material

Current Treatments

- Steroids (+/-)
- Breathing Treatments
- Anticoagulation
- Remdesivir
- Supportive Oxygen

Background on COVID and Current Treatment

*Source: NY Times, March 8, 2021

Current Hospitals for mAb Treatment

- Benson Hospital
- Canyon Vista Hospital
- Copper Queen Community Hospital
- Northern Cochise Hospital

mAb treatment in Cochise County

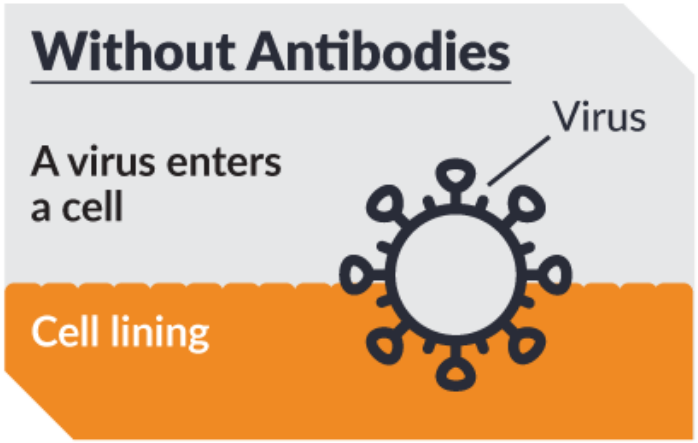
Monoclonal Antibodies

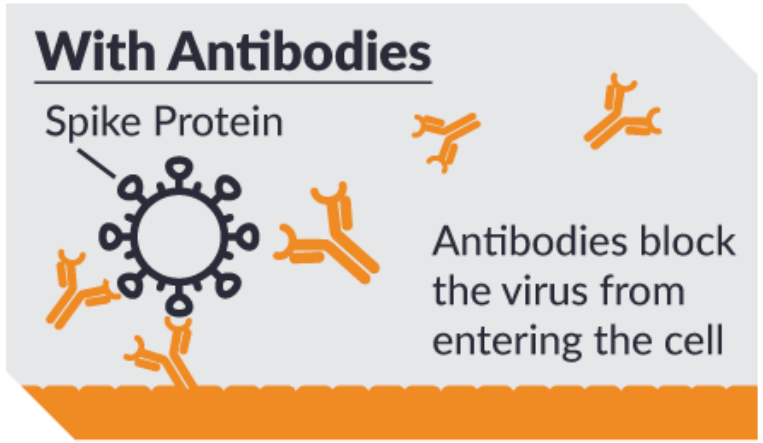
What are Antibodies?

Antibodies are naturally made in our bodies to fight infection.

What are Monoclonal Antibodies?

Monoclonal antibodies (mAbs) are **antibodies developed in a laboratory** to help our bodies fight infection.

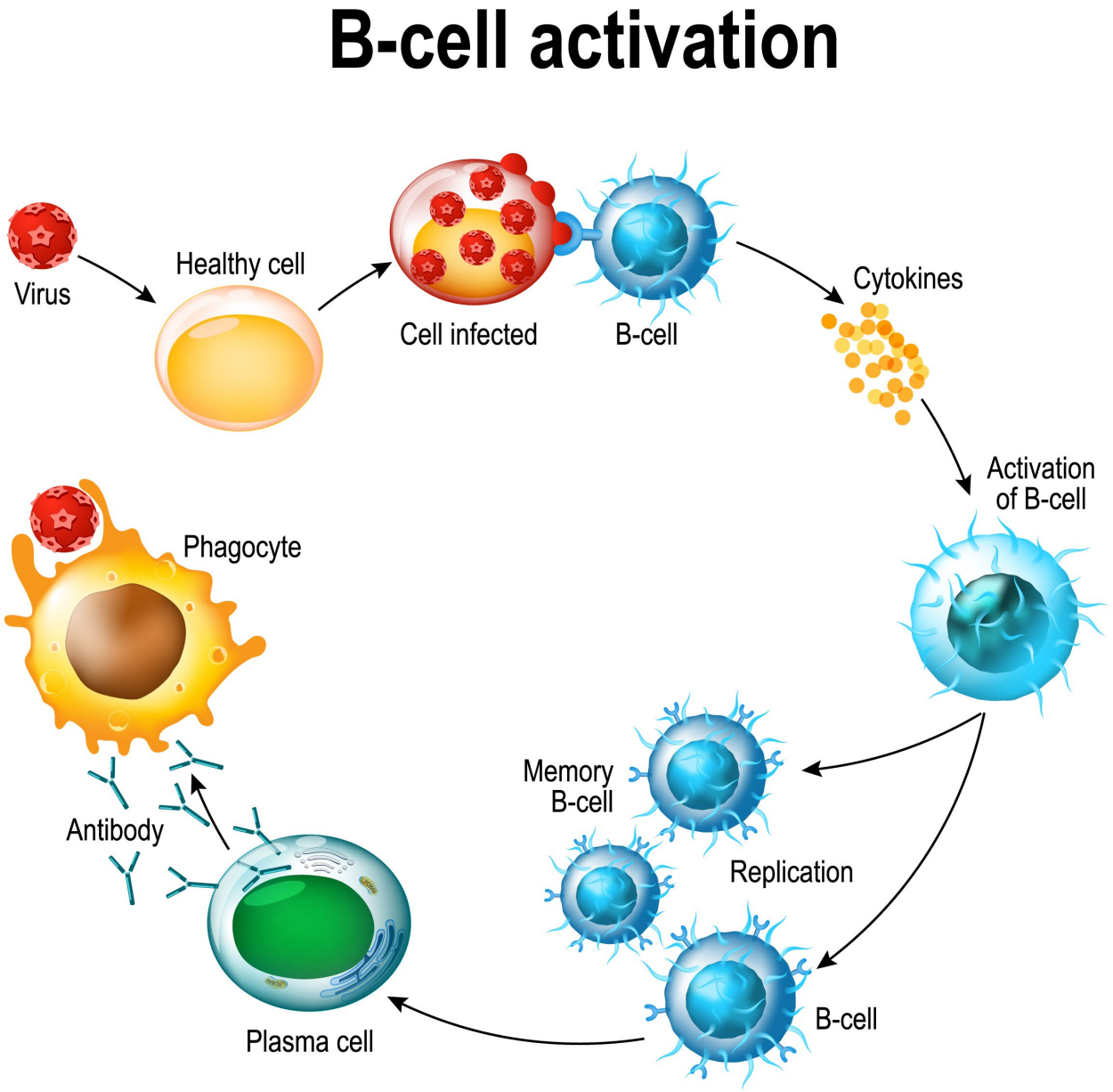




What are Monoclonal Antibodies

What are Monoclonal Antibodies

- Pathogen specific B-Cells from patients who have recovered from COVID
- Genetic material is extracted from these B cells
- This genetic material is then expressed to produce monoclonal antibodies



Current uses of Monoclonal Antibodies

- Treatment & Prophylaxis
- HIV
- Influenza
- RSV
- MERS CoV (corona virus family, similar to SARS CoV-2)
- Ebola
- Zika

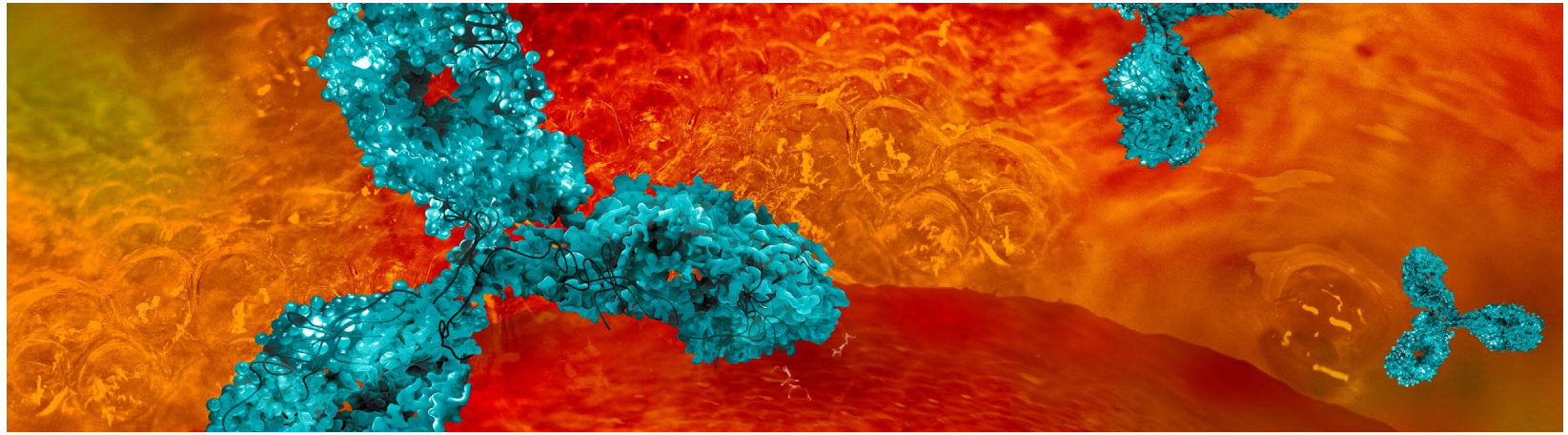
Key Types of MAB against COVID

- Eli Lilly produces bamlanivimab
- Also known as LY-CoV555

- Regeneron produces casirivimab (REGN10933) and imdevimab (REGN10987) and frequently given together

Mechanism of Action

- Targeting the spike protein of SARS CoV-2
- The spike protein is how the virus enters the host cells



- Some MAB (Eli Lilly-LY-CoV555 and Regeneron-REGN10987) use two antibodies targeting the spike protein

Do Monoclonal Antibodies Work?

- Granted EUA from FDA in November 2020 based on two studies
- February 2021 with additional EUAs issued
- BLAZE 1 Clinical trial (pending publication)
  - 1035 ambulatory patients with mild to moderate sickness and risk for progression to severe disease
  - 518 received MAB
  - 517 received placebo
  - 2% of MAB arm required hospitalization or died
  - 7% in placebo arm required hospitalization or died
  - 70% risk reduction of hospitalization or death

How Do You Take Monoclonal Antibodies

- Given Intravenously

How to make Monoclonal Antibodies

1 Blood taken from a patient previously infected with COVID-19

COVID-19 PATIENT
Status: recovered

2 Collection of B cells that produce specific antibodies against SARS CoV-2 Spike Protein using "bait" molecules

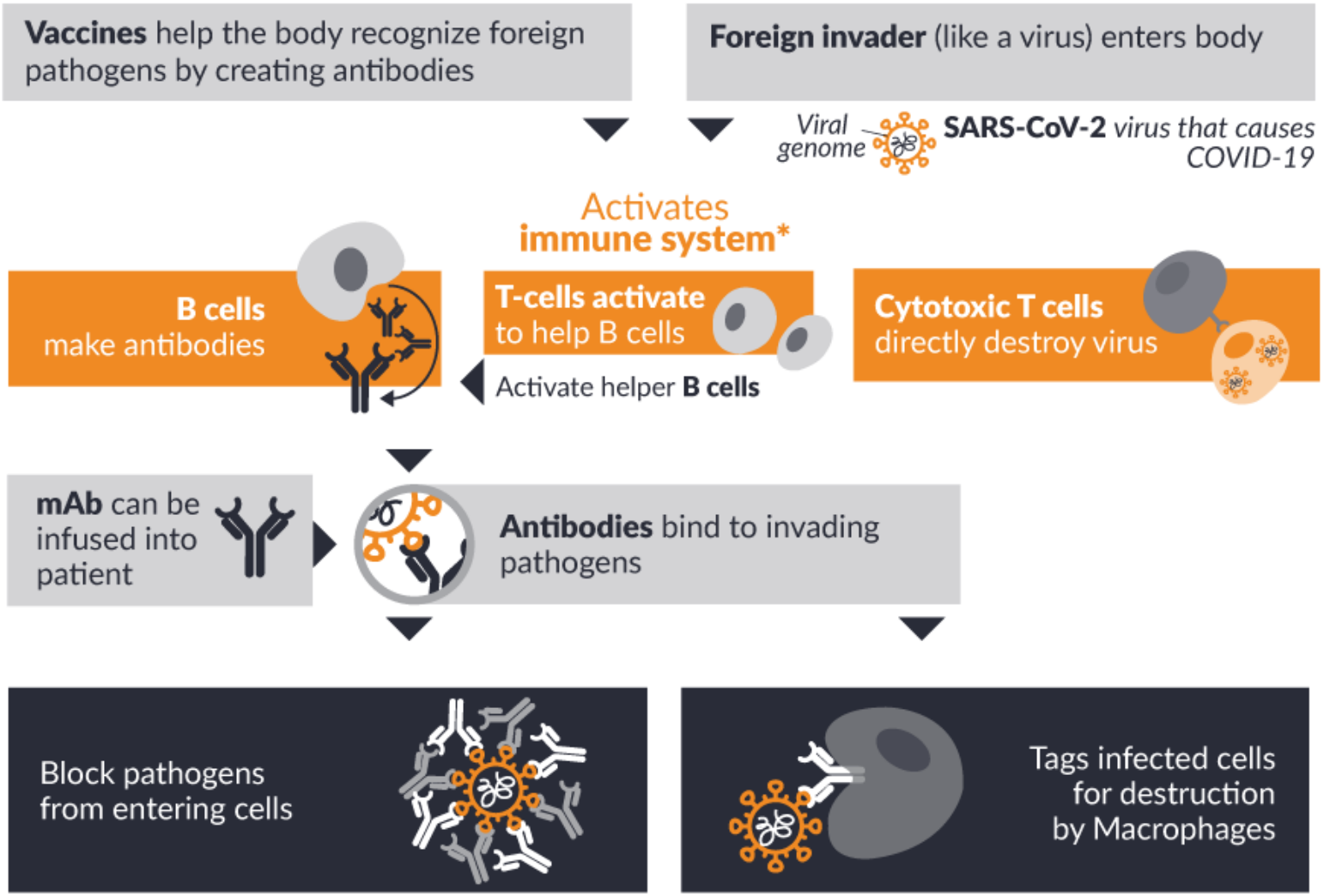
3 Decode DNA for these antibodies

4 Insert DNA into cells for mass-production of antibodies

Sources: Marion Pepper, University of Washington, COVID-19 Prevention Network

EMILY M. ENG / THE SEATTLE TIMES

How Vaccines & Monoclonal Antibodies work



How mAb antibodies work

FDA EUA defines high risk patients as:

- BMI at 35 or above
- Chronic Kidney Disease
- Diabetes
- Immunosuppressive disease
- Receiving immunosuppressive treatment
- Aged 65 years or older
- Aged 55 years or older with CVD, HTN or COPD
- Aged 12-17 and with BMI above 85th %, sickle cell disease, Heart disease or neurodevelopmental disorders, medical technology dependence , lung disease

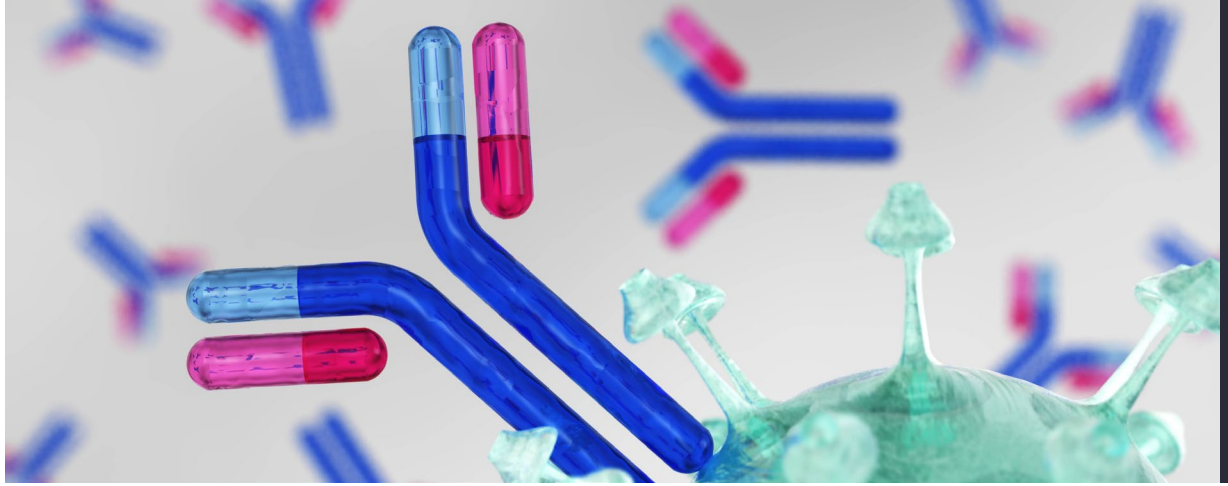
Patients Who Can Benefit

Timeline of Getting mAb Treatment:

- Start of Symptoms (runny nose, cough, sore throat, etc)
- Get SARS CoV-2 Test
- Receive COVID Test Results
- Book Appointment as Outpatient
- **mAb Treatment must be given within 10 days of symptoms**

mAb Treatment timeline

References



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02 https://www.nejm.org/doi/full/10.1056/NEJMe2034495

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