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Stay Informed
CALTCM.org

Webinar Series
COVID-19: CALTCM Weekly Rounds

August 23, 2021

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2021 Webinar Schedule

September 13 & 27
October 18
November 8
December 6

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47th Annual Meeting
CALTCM Summit for Excellence
Promoting quality patient care through medical leadership and education
OCTOBER 7-9
Virtual Event
www.caltcm-summit-for-excellence.org

13.75 hours of CME / CEU

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Raymond Chinn, MD, FIDSA, FSHEA
Epidemiology & Immunization Services Branch
County of San Diego Health & Human Services Agency
San Diego, CA

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Webinar Faculty

Jay Luxenberg, MD
Chief Medical Officer, On Lok
CALTCM, Wave Editor-in-Chief
San Francisco, CA

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Webinar Faculty

James A. McKinnell, MD
Associate Professor of Medicine
David Geffen School of Medicine, UCLA
Infectious Disease Clinical Outcome Research Unit (ID-CORE)
Los Angeles Biomedical Research Institute at Harbor-UCLA
Los Angeles, CA

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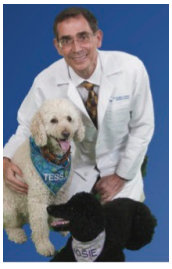

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President, AMDA: The Society for Post-Acute and Long-Term Care Medicine
CALTCM BOD Member & Past-President
Chief Medical Officer, Mariner Health Care
Chief Medical Officer, Beecan Health
Oceanside, CA

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Webinar Faculty

Michael Wasserman, MD, CMD
Geriatrician
Medical Director, Eisenberg Village, Los Angeles Jewish Home
CALTCM, Immediate Past-President and Chair, Public Policy Committee
Newbury Park, CA

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Monoclonal, Mandates, & More (Boosters, Variants, etc.)

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Vaccine Mandates – Aug. 2021

State of California—Health and Human Services Agency
California Department of Public Health

State Public Health Officer Order of August 5, 2021

Requiring COVID-19 Vaccinations for Long-Term Care Workers Who Serve Medicare and Medicaid Enrollees. Today, President Biden is announcing that HHS will develop new regulations requiring nursing homes to require that all of their workers be fully vaccinated against COVID-19 as a condition of participating in the Medicare and Medicaid programs. Some states have already taken similar steps to protect nursing home residents, and this action will ensure consistent and equitable standards across the country. These new regulations would apply to nearly 15,000 nursing home facilities, which employ approximately 1.6 million workers and serve approximately 1.3 million nursing home residents.

Since the spread of the Delta variant, there has been a rise in the number of COVID-19 cases, especially in those states that have low rates of vaccinated workers. Both CDC and Centers for Medicare & Medicaid Services (CMS) data confirm a strong relationship between the increase of COVID-19 cases among nursing home residents and the rate of vaccination among nursing home workers.

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Reflections From The Frontlines: And Now a Twist…

James McKinnell, MD
Infectious Disease Specialist
Expert Stewardship

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US Causes of Death

	2017	Deaths
1	Heart Disease	648,000
2	Cancer	599,000
3	Accidents	170,000
4	Stroke	146,000
5	Alzheimer's Disease	121,000

http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm Accessed 9/24/2020, rounded to the nearest thousand deaths.

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Seasonal Influenza 2019-2020	**COVID-19 (Feb 2020 – May 2021)**
• 38 Million Infections	• **37 Million Infections**
• 400,000 Hospitalizations	• **2,200,000 Hospitalizations**
• 21,000 Deaths	• **583,596 Deaths**

https://covid.cdc.gov/covid-data-tracker/#cases_casesinlast7days Accessed on 5/18/2021
https://covidtracking.com/data/national Accessed on 9/24/2020.
https://www.cdc.gov/flu/about/burden/index.html accessed 3/10/2020

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https://covid.cdc.gov/covid-data-tracker/#cases_casesinlast7days Accessed on 5/18/2021
Accessed 9/24/2020.

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A GUIDE TO COVID-19 VACCINES

Updated 3/24/2021

	Pfizer/BioNTech	Moderna	Johnson & Johnson	AstraZeneca
Vaccine Type	mRNA	mRNA	Adenovirus vector	Adenovirus vector
Number of Doses	2 doses about 3 weeks apart	2 doses about 4 weeks apart	1 dose	2 doses about 4 weeks apart
Age Requirement	16+	18+	18+	18+
FDA Emergency Use Authorization	Dec. 11, 2020	Dec. 18, 2020	Feb. 27, 2021	Not yet authorized
Disease Prevention in Clinical Trials	95%	95%	66%	70%
Hospitalization and Death Prevention	100%	100%	100%	100%
Storage Requirements	Standard freezer up to 2 weeks	Standard freezer	Standard refrigeration	Standard refrigeration

https://www.beaumont.org/health-wellness/blogs/a-guide-to-the-covid-19-vaccines, accessed May 18, 2021

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JOHNS HOPKINS UNIVERSITY

Home Profiles Research Units **Research output**

Vaccine Efficacy Needed for a COVID-19 Coronavirus Vaccine to Prevent or Stop an Epidemic as the Sole Intervention

Sarah M. Bartsch, Kelly J. O'Shea, Marie C. Ferguson, Maria Elena Bottazzi, Patrick T. Wedlock, Ulrich Strych, James A. McKinnell, Sheryl S. Siegmund, Sarah N. Cox, Peter J. Hotez, Bruce Y. Lee

Bloomberg School of Public Health

- 100% Vaccination: Vaccine Efficacy Threshold is 60%
- 60% Vaccination: Vaccine Efficacy Threshold is 80%

Public Health Article of the Year!!!!

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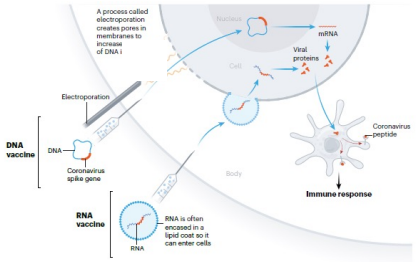
Nucleic Acid Vaccines



Callaway. Nature, 2020; 580(7805):576-577

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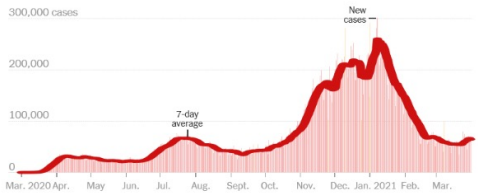
Coronavirus in the U.S.:



New York Times April 1, 2021

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Vaccination is Key!

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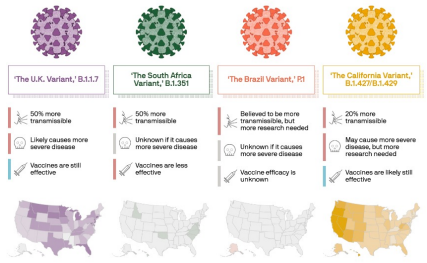
Covid Variants



https://www.axios.com/coronavirus-variants-vaccines-c27dd1d5-6531-4c67-80c0-310705d6f45.html Accessed May 18, 2021

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What About Variants

Vaccine Breakthrough Infections with SARS-CoV-2 Variants

MMWR Morbidity and Mortality Weekly Report

MMWR Morb Mortal Wkly Rep. 2021 Apr 30; 70(17): 639–643. PMCID: PMC8084128
Published online 2021 Apr 30. doi: 10.15585/mmwr.mm7017e2 PMID: 33914720

COVID-19 Outbreak Associated with a SARS-CoV-2 R.1 Lineage Variant in a Skilled Nursing Facility After Vaccination Program — Kentucky, March 2021

Alyson M. Cavanaugh, DPT, PhD,[E1,2] Sarah Fortier, MPH,[2] Patricia Lewis,[2] Vaneet Arora, MD,[2] Matt Johnson,[2] Karim George,[2] Joshua Tobias, PhD,[2] Stephanie Lunn, MPH,[2] Taylor Miller, MPH,[2] Douglas Thoroughman, PhD,[2,3] and Kevin B. Spicer, MD, PhD[2,4]

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Vaccine Efficacy Against Variants

COVID-19 vaccine efficacy against variants

	ORIGINAL VIRUS	B.1.1.7	B.1.351	P.1
Pfizer-BioNTech	95%	Same efficacy	Reduced antibody levels	Same efficacy
Moderna	94%	Same efficacy	Reduced antibody levels	More data needed
J&J	72%*	Same efficacy	Reduced efficacy (in South Africa trials)	Reduced efficacy (in Latin America trials)
AstraZeneca	60-90%	Same efficacy	Reduced efficacy	Same efficacy
Sinovac	50%	Same efficacy	Reduced antibody levels	Reduced antibody levels

Note: *In US trials. Average of 66% efficacy with South Africa and Latin America trials included.

Source: UW Medicine; Reuters; Lancet; Lancet Preprint; Bionxiv; Moderna; Nature; New England Journal of Medicine; Imperial College London; CDC;CoV-lineages.org.

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COVID Variants

- Delta 88% in CA
- AY.1 – K417N
- AY.2 – K417N, A22V
- AY.3 – Orf Mutation

Currently designated Variants of Concern:

WHO label	Pango lineages	GISAID clade	Nextstrain clade	Additional amino acid changes monitored*	Earliest documented samples	Date of designation
Alpha	B.1.1.7	GRY	20I (V1)	+S:484K +S:452R	United Kingdom, Sep-2020	18-Dec-2020
Beta	B.1.351 B.1.351.2 B.1.351.3	GH/501Y.V2	20H (V2)	+S:L18F	South Africa, May-2020	18-Dec-2020
Gamma	P.1 P.1.1 P.1.2	GR/501Y.V3	20J (V3)	+S:681H	Brazil, Nov-2020	11-Jan-2021
Delta	B.1.617.2 AY.1 AY.2 AY.3	G/478K.V1	21A	+S:417N	India, Oct-2020	VOI: 4-Apr-2021 VOC: 11-May-2021

*Notable spike (S) amino acid changes under monitoring, which are currently reported in a minority of sequenced samples.

WHO Table, CDPH weekly call 8/10

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Where are we now?

- **The United States CDC, NIAID, HHS and other have recommended a 3rd booster shot for all Americans.**
- **Emergency Use Authorization Approval for 12 and older**
  - **EUA approval is a power grab from public health authorities**
- **"Full" Approval of Pfizer Vaccine**

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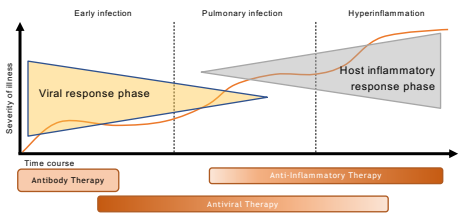
Spectrum of Disease and Therapy



Current therapies (darker gradient used to imply strength of evidence)

https://doi.org/10.1016/j.healun.2020.03.012

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Management of COVID In Skilled Nursing Facilities

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Science Determines Best Treatment

NIH Recommendations by Month

Gray = insufficient data;
Orange = not recommended except in a clinical trial;
Red = recommend AGAINST;
Blue = recommended for some patients

Drug	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan21	Feb	Mar
Remdesivir												
HCQ (+/- Azithro)												
Ivermectin												
Anti-SARS-CoV2 Antibody												
Convalescent Plasma												
Corticosteroids												
Colchicine												
Fluvoxamine												
Tocilizumab												
(room to add...)												

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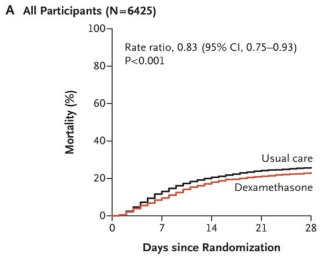
Recovery Trial of Steroids in Covid

(All participants)



https://www.nejm.org/doi/10.1056/NEJMoa2021436

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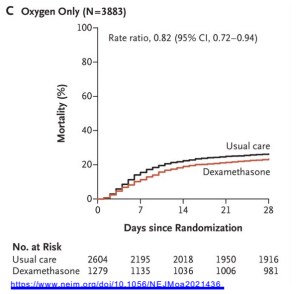
Recovery Trial of Steroids in Covid

(Oxygen Only)



https://www.nejm.org/doi/10.1056/NEJMoa2021436

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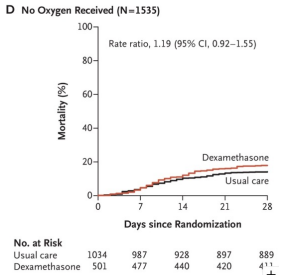
Recovery Trial of Steroids in Covid

(No Oxygen Received)



https://www.nejm.org/doi/10.1056/NEJMoa2021436

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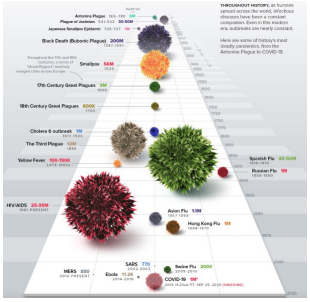
Not IF, but WHEN

History of Pandemics

The New Plague:
What have we learned?



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Monoclonal Antibodies

- REGEN COV (Casirivimab/Imdevimab)
  - 600mg/600mg vs Placebo:
    1% hospitalization versus 3% (7 patients versus 24)
  - Post Exposure prophylaxis, 600mg/600mg vs Placebo:
    1% covid + versus 8% (11 patients versus 59)
- Sotrovimab
  - 500 mg vs Placebo:
    1% hospitalization versus 7% (3 patients versus 21)
- Cases of Clinical Worsening after Monoclonal AB Infusion

COV-2067 (NCT04425629), COMET-ICE Studies – FDA fact sheets accessed 8/19
https://www.fda.gov/media/149534/download

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Thank You for Listening!!!

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MONOCLONAL ANTIBODIES FOR TREATMENT AND POST-EXPOSURE PROPHYLAXIS OF COVID-19

Raymond Chinn, MD, FIDSA, FSHEA
Healthcare-Associated Infections (HAI) Program
Epidemiology and Immunizations Services Branch
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Monoclonal Antibiotics: Use in Skilled Nursing facilities

- **What, Why, Where**
- What are they and how do they work?
- What are the uses of monoclonal antibodies?
- What are the side-effects?
- What is the process to obtain monoclonal antibodies and for drug administration?

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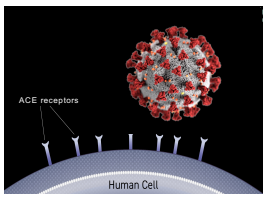
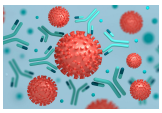
Monoclonal Antibiotics

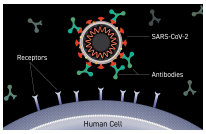
WHAT ARE THEY?

HOW DO THEY WORK?

Monoclonal antibodies are **immune system proteins** that are created in the lab – REGEN-COV ® (casirivimab and imdevimab); sotrovimab







Monoclonal antibodies work best during high viral replication; therefore, they are most efficacious when administered within **72 hours** after symptom onset

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Use of Monoclonal Antibodies for Treatment of COVID-19

- High risk for severe illness (**regardless of vaccine status**):
  - Chronic medical conditions, e.g., heart/lung disease, diabetes, obesity (see list)
  - Certain ethnicity and race
- Mild to moderate symptoms of COVID-19: fever, chills, myalgias, arthralgia, fatigue, malaise, lost of taste or smell, headache, **URI symptoms** (sore throat, cough, red/watery eyes, runny nose, sneezing), shortness of breath/difficulty breathing, cough/sputum/phlegm, pressure/tight chest/chest pain, loss of appetite, confusion, dizziness, nausea/vomiting/diarrhea, stomachache, rash
- Positive molecular or antigen test for COVID-19
- **Not authorized for use in patients (use is associated with worse outcome):**
  - Who are hospitalized
  - Who require O_2 for treatment of COVID-19
  - Who require an increase in baseline O_2 flow rate due to COVID-19

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High Risk Individuals Who Would Progress to Severe COVID-19

The following medical conditions or other factors may place adults and pediatric patients (age 12-17 years and weighing at least 40 kg)

- Older age (for example, age ≥65 years of age)
- Obesity or being overweight (for example, BMI >25 kg/m2 , or if age 12-17, have BMI ≥85th percentile for their age and gender based on CDC growth charts, https://www.cdc.gov/growthcharts/clinical_charts.htm)
- Pregnancy
- Chronic kidney disease
- Diabetes
- Immunosuppressive disease or immunosuppressive treatment
- Cardiovascular disease (including congenital heart disease) or hypertension
- Chronic lung diseases (for example, chronic obstructive pulmonary disease, asthma [moderate-to-severe], interstitial lung disease, cystic fibrosis and pulmonary hypertension)
- Sickle cell disease
- Neurodevelopmental disorders (for example, cerebral palsy) or other conditions that confer medical complexity (for example, genetic or metabolic syndromes and severe congenital anomalies)
- Having a medical-related technological dependence (for example, tracheostomy, gastrostomy, or positive pressure ventilation (not related to COVID 19))

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Efficacy Data for Treatment of COVID-19 with Regen-COV®

Table 11: Proportion of subjects with ≥1 COVID-19-related hospitalization or all-cause death through day 29 (COV-2067)

	600 mg of casirivimab and 600 mg of imdevimab (intravenous)	Placebo	1,200 mg of casirivimab and 1,200 mg of imdevimab (intravenous)	Placebo
	n=736	n=748	n=1,355	n=1,341
# of subjects with at least 1 event (COVID-19-related hospitalization or all-cause death)	7 (1.0%)	24 (3.2%)	18 (1.3%)	62 (4.6%)
Risk reduction	70% (p=0.0024)		71% (p<0.0001)	

Also, mAB:
- Use was associated with a significant decrease in the mean viral load from baseline to Day 7 compared to placebo
- Time to symptom resolution 10 vs. 14 days (p<0.0001)

https://www.fda.gov/media/145611/download

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Post-Exposure Prophylaxis (PEP)

- Emergency Use Authorization for REGEN-COV® in adult and pediatric individuals (12 years of age and older weighing at least 40 kg)
- Target group: individuals who are at high risk for progression to severe COVID-19, including hospitalization or death,
  - AND are **not fully vaccinated OR**
  - who are unable to mount an adequate immune response despite being fully vaccinated (e.g., individuals with immunocompromising conditions including those taking immunosuppressive medications) **AND**
  - have been exposed to an individual infected with SARS-CoV-2 consistent with **close contact** criteria per Center for Disease Control and Prevention (CDC) **OR**
  - who are at high risk of exposure to an individual infected with SARS-CoV2 because of occurrence of SARS-CoV-2 infection in other individuals in the same institutional setting (for example, **nursing homes**, prisons)

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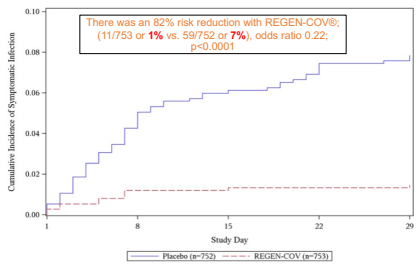
Post-Exposure Prophylaxis with Regen-COV®

Figure 2: Cumulative Incidence of Symptomatic COVID-19 (COV-2069 Cohort A)



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Allergic Reactions

- Allergic reactions can occur during and after infusion or injection of REGEN-COV. Serious reactions are rare; 10/4,206 (0.2%) had Grade 2 or higher adverse events; in SQ administration, all hypersensitivity reactions were Grade 1
- Signs and symptoms of allergic reactions: fever, chills, nausea, headache, shortness of breath, low or high blood pressure, rapid or slow heart rate, chest discomfort or pain, weakness, confusion, feeling tired, wheezing, swelling of lips, face, or throat, rash including hives, itching, muscle aches, feeling faint, dizziness and sweating.
- Infusion site pain, bleeding, bruising of the skin, soreness, swelling, and possible infection. Subcutaneous injection may include pain, bruising of the skin, soreness, swelling, and possible infection at the injection site.
- Worsening symptoms after treatment: may be new or worsening symptoms after infusion or injection, including fever, difficulty breathing, rapid or slow heart rate, tiredness, weakness or confusion.
- Infusion related reactions can be mitigated by slowing infusion; fluid overload occasionally

San Diego Experience:
- 45/678 (7%) had adverse reactions
- 7 (1%) unable to complete infusion due to adverse reactions
- 1 – 12y/o "anaphylaxis": diagnosis of anxiety attach

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Potential Uses of Monoclonal Antibodies

- Treatment of mild to moderate disease
- Post-exposure prophylaxis following exposure to COVID-19
- Other potential uses being studied showing efficacy BUT do not have EUA (not FDA authorized)
  - Pre-exposure prophylaxis
  - Treatment of inpatients who have not mounted antibody response to vaccination

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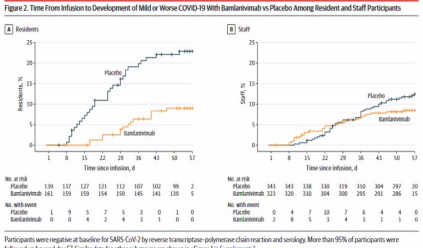
RCT OF BAMLANIVIMAB FOR PRE- AND POST-EXPOSURE PROPHYLAXIS, NURSING HOMES & ASSISTED LIVINIG

JAMA 2021; 326:46-55



Participants were negative at baseline for SARS-CoV-2 by reverse transcriptase-polymerase chain reaction and serology. More than 95% of participants were followed up beyond day 57. Similar data for other subgroups are shown in eFigure 1 in Supplement 2.

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Monoclonal Antibody Regional Center (MARC)

WAYS TO ACCESS MONOCLONAL ANTIBODIES AT A MARC

- If you think you qualify, call **(619) 685-2500** with questions or to make an appointment
- You can talk to your doctor or health provider to see if you would benefit
- Your doctor can call **(619) 685-2500** with questions
- For additional information visit: www.sandiegocounty.gov/COVIDHealthProfessionals
- Email us at: CovidTreatment@sdcounty.ca.gov

LOCATIONS

MARC at Vista Community Clinic	NEW! MARC at Escondido	Family Health Centers of San Diego
Vista	Escondido	Hillcrest & Chula Vista

- Healthcare workers (HCW): call to self-refer for treatment
- MARCs are not providing PEP to HCWs yet; possibly receive at facility
- Goal is NOT to transport infected residents to these centers

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Process to Administer mAB with Goal to Facilitate Facility Self-Administration

- **Involve:** Administrator, Director of Nursing, Infection Preventionist, Medical Director
- **Initiate action items:**
  1. Contact pharmacy, are they able to supply mAB AND supplies needed for infusion and/or SQ administration?
  2. Assess availability of infusion supplies: infusion pump, tubing, 0.2 micron filter, and other supplies
  3. Assess likely candidates: treatment vs. PEP
  4. Assess likelihood of obtaining consent among potential recipients
  5. Identify when RN and/or LVN to assist
- **Contact** County's mAB mobile team at mcsdnursingmabinfusion.hhsa@sdcounty.ca.gov; other contacts include raymond.chinn@sdcounty.ca.gov; grace.kang@sdcounty.ca.gov
  - Inform them of "action items" listed above
  - Mobile team will assist in administration and provide education on infusion and/or SQ injection and side effects
  - If facility unable to obtain mAB, County could supply; ideally, facility would have infusion/injection supplies
  - Mobile team will provide consent form and intake form that are to be completed before arrival of mobile team
  - County will recheck potential candidates for mAB to ensure they meet criteria as outline in mAB EUA

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Summary

- Monoclonal antibodies are effective in treatment and in post-exposure prophylaxis (PEP) in the management of COVID-19 in skilled nursing facilities (memory care, assisted living facilities)
- For treatment to be most effective, mAB should be administered within 72 hours of symptom onset
- For SNFs, prompt identification of infected cases (HCWs) and rapid response testing will ensure prompt institution of therapy and PEP
- Those persons receiving mAB, should delay COVID vaccination for 90 days; those persons who are infected without a history of vaccination should be vaccinated after completion of isolation
- Studies on preexposure prophylaxis and treatment of hospitalized patients who are unable to mount adequate antibody post vaccination are ongoing

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References

- https://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs/community_epidemiology/dc/2019-nCoV/CommunitySectors/Healthcare_Providers_Community_Clinics_Hospitals_and_Pharmacies/MARC.html
- Fact sheet patients: https://www.fda.gov/media/145612/download
- Fact sheet HCWs: https://www.fda.gov/media/145611/download
- Federal Drug Administration efficacy studies: https://files.covid19treatmentguidelines.nih.gov/guidelines/archive/statement-on-casirivimab-plus-06-17-2021.pdf
- From mAB Mobile team
  - Consent form
  - Intake form
  - Checklist of supplies needed if facility pharmacy unable to supplies needed for infusion/SQ injection

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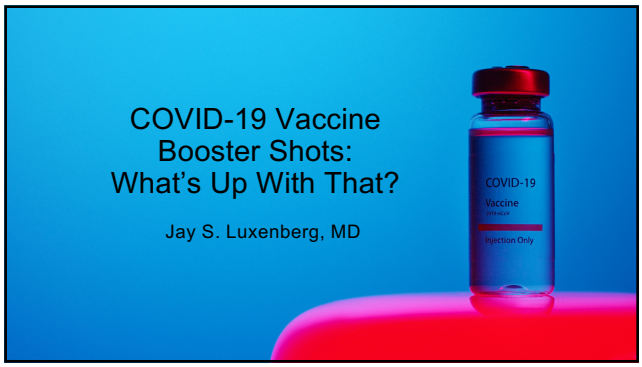

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3rd Shot Versus Booster

- The main difference between the two is who gets them and why.
- An additional mRNA dose following an initial vaccine series is given to people who may not have had a strong enough immune response after receiving the initial vaccine series.
- A booster dose is a supplemental dose given to groups whose immune response has weakened over time.

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Additional mRNA Vaccine Dose

- Effective August 13, 2021, CDC recommends that people who are moderately to severely immunocompromised receive an additional dose of an mRNA COVID-19 Vaccine (Pfizer-BioNTech or Moderna) at least 28 days after the completion of the initial mRNA COVID-19 vaccine series.
- Studies have shown that persons with an inadequate initial response to two doses of an mRNA vaccine can get an adequate response after a third dose

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

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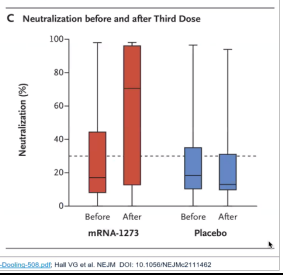
Additional mRNA Vaccine Dose

Rationale behind the 3rd dose

Immunocompromised hosts:
- More likely to get severely ill
- Prolonged shedding→viral evolution
- Lower neutralization titers
- More likely to transmit to household contacts



https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-08-13/02-COVID-Dooling-508.pdf; Hall VG et al. NEJM DOI: 10.1056/NEJMc2111462

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Additional mRNA Vaccine Dose

- CDC is recommending **Use the same vaccine product**, **when feasible**: People who need an additional dose and received either a Pfizer-BioNTech or Moderna vaccine series should receive a third dose of the same vaccine used.
- We don't know at this time whether people who are immunocompromised who received the Janssen vaccine (Johnson & Johnson) have an improved immune response following an additional dose of the same vaccine.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

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Additional mRNA Vaccine Dose

- So far, reactions reported after the third mRNA dose were like what people experienced after receiving the two-dose series.
- Fatigue and pain at injection site were the most commonly reported side effects, and overall, most symptoms were mild to moderate.

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

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Currently, CDC is recommending that moderately to severely immunocompromised people receive an additional dose.

This includes people who have:

- Active treatment for solid tumor and hematologic malignancies
- Receipt of solid-organ transplant and taking immunosuppressive therapy
- Receipt of CAR-T-cell or hematopoietic stem cell transplant (within 2 years of transplantation or taking immunosuppression therapy)
- Moderate or severe primary immunodeficiency (e.g., DiGeorge syndrome, Wiskott-Aldrich syndrome)
- Advanced or untreated HIV infection
- Active treatment with high-dose corticosteroids (i.e., ≥20mg prednisone or equivalent per day), alkylating agents, antimetabolites, transplant-related immunosuppressive drugs, cancer chemotherapeutic agents classified as severely immunosuppressive, tumor-necrosis (TNF) blockers, and other biologic agents that are immunosuppressive or immunomodulatory.

CALTCM https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html August 23, 2021

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Booster mRNA Vaccine Dose

- On August 18, 2021, officials from CDC, FDA, NIH, and others including most importantly Dr. Fauci announced the administration's plans for booster doses of the mRNA vaccines
- They are preparing to offer booster shots for all Americans beginning the week of September 20 and starting 8 months after an individual's second dose.

https://www.cdc.gov/media/releases/2021/s0818-covid-19-booster-shots.html

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Booster mRNA Vaccine Dose

- At that time, the individuals who were fully vaccinated earliest in the vaccination rollout, including many health care providers, nursing home residents, and other seniors, will likely be eligible for a booster.
- They will also begin efforts to deliver booster shots directly to residents of long-term care facilities at that time.

https://www.cdc.gov/media/releases/2021/s0818-covid-19-booster-shots.html

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Booster non-mRNA Vaccine Dose

- They anticipate booster shots will likely be needed for people who received the Johnson & Johnson (J&J) vaccine.
- Administration of the J&J vaccine did not begin in the U.S. until March 2021, and we expect more data on J&J in the next few weeks.
- With those data in hand, they will keep the public informed with a timely plan for J&J booster shots as well.

https://www.cdc.gov/media/releases/2021/s0818-covid-19-booster-shots.html

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Booster mRNA Vaccine Dose

- Booster vaccine availability will be contingent on an anticipated FDA EUA being granted.
- Full approval of the Pfizer vaccine 8/23/21
- Local officials are anticipating that the tiered structure for vaccines will come back with the boosters — prioritizing older people, health care workers and essential workers first. No formal announcements have been made.

https://www.cdc.gov/media/releases/2021/s0818-covid-19-booster-shots.html

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Booster mRNA Vaccine Dose – Q&A

- No recommendations yet announced for “mix and match” of different vaccines for boosters.
- World health organization is asking for deferring boosters until primary vaccination more available throughout the world. U.S. policy is differing from that.
- Boosters will be free (that is, government is paying for them).
- Lots of details remain to be announced.

https://www.cdc.gov/media/releases/2021/s0818-covid-19-booster-shots.html

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