

# Monoclonal Antibody Therapeutics in US Veterans against Delta and Omicron SARS-CoV-2 Variants

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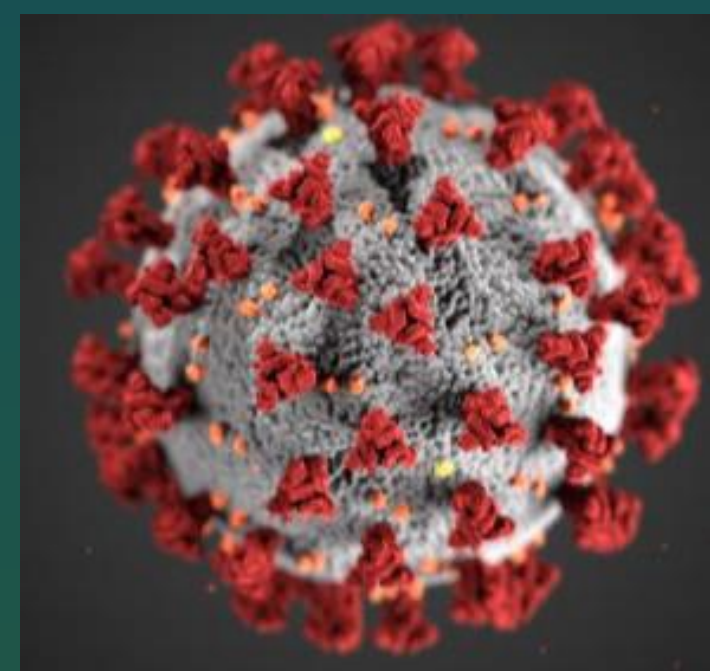


## Background

- ❖ Anti-SARS-CoV-2 Monoclonal Antibodies have been used with mild to moderate COVID-19 infection who are at high risk of progressing to severe disease.
- ❖ The FDA had given emergency use authorization to mAB products: bamlanivimab+etesevinab (BAM), casirivimab+imdevimab (CAS), sotrovimab (SOT).
- ❖ Bebtelovimab has activity against a broad range of SARS-CoV-2 variants, including the Omicron variant and its subvariants.
- ❖ We reviewed the utilization of mABS in our institution during the pandemic as delta variant was replaced by omicron.

## Results

- ❖ 20 vaccine recipients had anti-SARS-CoV-2 RBD titers at presentation, median 2.60 (0.06-48.08).
- ❖ 10 USV with omicron who received CAS (5) and BAM (5) survived.
- ❖ Total 11 patients with Sars-CoV-2 who received mAB were hospitalized, among 11 patients 4 were admitted COVID-19 Pneumonia requiring remdesivir and steroids.
- ❖ 2 USV died but not related COVID-19 complications.



## Conclusion

- ❖ As the pandemic transitioned from Delta to Omicron variants, mAB treatments in USV remained successful even in those USV who received therapies not active for omicron.
- ❖ Delta and omicron infections were seen in vaccinated and boosted

## References

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## Methods and Materials

- ❖ Retrospective chart review of US Veterans with confirmed SARS-CoV-2 infection who received mABs from 9/1/2021 to 2/28/22.
- ❖ Demographic data, comorbidities, choice of mAB, history of COVID-19 vaccination, SARS-CoV-2 sequencing, and IgG levels to the receptor-binding domain (RBD) of the spike protein in vaccinated USV were reviewed
- ❖ Total of 66 patients received mABs, 30 got CAS, 29 Bam, 7 SOT.
- ❖ 22 Veterans were unvaccinated, among vaccinated group 16 received booster dose.
- ❖ The median days of COVID diagnosis from last dose of vaccine: Janssen 211 days, Moderna 291 days and Pfizer 222 days

## Laboratory Data

UNITED STATES VETERANS with COVID-19 who received Monoclonal Antibody Therapy	
64 Men	2 Women
Median Age 72.5 (range 32-97 years)	
56 Caucasian, 8 Black, 2 Hispanic	
22 Veterans were not vaccinated	
3 got JANSSEN, MODERNA 2 shots (MOD -2): 6; MOD-3 (booster) :6 ; Pfizer 2 shots (PFZ-2): 22; PFZ-3 10	
Median Days of COVID diagnosis from last dose of vaccine:	
JANSSEN 211 (104 to 257 days)	
MOD-2 291 (205- 322 days)	
MOD-3 56 (16- 61 days)	
PFZ-2 222 (96-302 days)	
PFZ-3 78 (8-112 days)	
Symptoms at presentation:	
Cough 62%, Dyspnea 24%, Malaise 50%, Diarrhea 11%, Anosmia 11%, Sore Throat 17%, Nasal congestion 41%, Fever 32%	
BMI median 30.88 (16.61 to 47.35)	
anti-SARS-CoV-2 receptor binding domain antibody titers at presentation, median 2.60 (0.06-4808).	
Viral Coinfection: Rhinovirus 2, Respiratory Syncytial Virus 1	
COMORBIDITIES:	
Diabetes: 24 Veterans (36%)	
Hypertension 44 (67%)	
COPD 15 (23%)	
Asthma 7 (11%)	
CAD 21 (32%)	
Hyperlipidemia 44 (67%)	
HIV 1, SLE 1, RA 2, Lung CA 1, Stomach CA 1, Renal Transplant 1, Liver transplant 1, Crohn's 1	

Patient	Age	Date of COVID+	Reason for hospitalization	Vaccine	SARS Co2 IgG	mAB	Remdesivir/steroids	sequence	Outcome
1	86	Sept-21	Weakness, cystitis	PFZ-2	Not done	CAS/IMD	NO	Not done	Recovered
2	32	Dec 23	Dyspnea, hypoxia, fever	Janssen	0.17	CAS/IMD	YES	Delta	Recovered
3	77		hypotension	PFZ-2	Not done	CAS/IMD	NO	Omicron	Died a month later in Rehab Center
4	85	Dec 30	hypotension	PFZ-3	12.8	CAS/IMD	NO	Omicron	Recovered
5	97	Oct 5	Altered sensorium	PFZ-2	Not done	BAM/ETE	NO	Not done	Died, found to have pancreatic mas
6	69	Oct 19	COPD exacerbation	PFZ-2	0.23	BAM/ETE	NO	Not done	Recovered
7	90	Dec 28	hypoxia	PFZ-3	19.48	BAM/ETE	YES	Omicron	Recovered
8	45	Dec 29	Pulmonary embolism	No vac	Not done	BAM/ETE	NO	Delta	Recovered
9*	91	Dec 29	weakness	Mod-2	23.3	BAM/ETE	NO	Not done	Recovered
10**	62	Dec 29	Weakness, opacities on CXR	Janssen	32	SOT	YES	Not done	Recovered
11***	73	Jan 6	Weakness, dyspnea	PFZ-2	Not done	SOT	YES	Delta	Recovered

\*patient had covid in Feb'21 had received monoclonal therapy (BAM alone). Virus in Dec 2021 could not be sequenced.

\*\* liver transplant recipient. Virus could not be sequenced.

\*\*\* Lung cancer on radiation therapy