Variable*	Result N = 30
Demographic variables	
Gender	
Women	8 (27)
mens	22 (73)
Age, years; median (IQR)	58.5 (46.5 – 68.0)
Previous comorbidities	
Systemic hypertension	13 (43)
Obesity	9 (30)
Diabetes mellitus type 2	8 (27)
Smoking	2 (7)
Dyslipidemia	2 (7)
Chronic kidney disease	1 (3)
Cancer	1 (3)
Asthma	1 (3)
Rheumatoid arthritis	1 (3)
Allergic rhinitis	1 (3)
Benign prostatic hyperplasia	1 (3)
Sequelae of pulmonary tuberculosis	1 (3)
Laboratory variables, median (IQR)	
Leukocytes, cell/mm3	9,500.0 (6,950.0 – 11,925,0)
Lymphocytes, cell/mm3	1,310.0 (987.7 – 1,964.2)
Neutrophils, cel/mm3	6,905.0 (5,046.7 – 9,388.5)
Platelets, cel/mm3	223,000.0 (180,000.0 – 312,500.0)
D-dimer, ng/mL	982.0 (734.8 – 2,342.0)
Serum ferritin, ng/mL	1,375.0 (1,019.5 – 2,000.0)
C-Reactive Protein, mg/dL	10.0 (7.7 – 12.0)

Respiratory Variables

Variable*	Result N = 30
Respiratory function prior to initiation of baricitinib	
O2 Sat,%; median (IQR)	80.5 (73.0 – 84.0)
SAFI (SaO2/FiO2), median (IQR)	134.0 (121.0 – 140.0)
SIRA type	
Mild	0 (0)
Moderate	27 (90)
Severe	3 (10)
Variables associated with the use of baricitinib	
Baricitinib Onset Day, Median (IQR)	10.0 (7.7 – 12.0)
Days of treatment, median (IQR)	14.0 (13.0 – 14.0)
Concomitant drugs to baricitinib	
Dexamethasone	3 (10.0)
Enoxaparin	5 (17.0)
Rivaroxaban	22 (73.0)
Apixaban	3 (10.0)
Respiratory function after initiation of baricitinib, median (IQR)	
O2 saturation at 7 days,%	93.0 (90.0 – 93.0)
SAFI at 7 days	310.0 (300.0 – 310.0)
O2 saturation at 14 days,%	95.0 (94.0 – 97.0)
SAFI at 14 days	452.0 (448.0 – 461.0)
Outcome	
Improvement	27 (90)
Death	3 (10)

Results on SAFI and SaO$_2$

Difference of ranges of SaO2 and SAFI, at baseline (starting day baricitinib), 7 and 14 days (p = 0.001 for both cases; estimated with Wilcoxon range test)
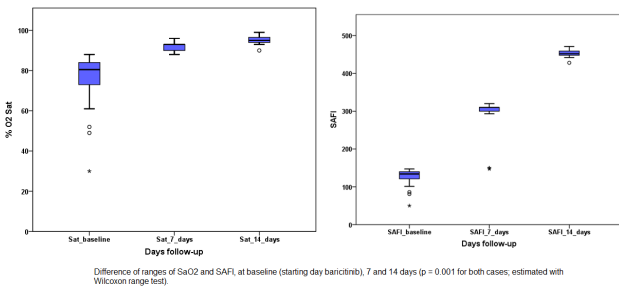
Conclusion. Baricitinib therapy in these patients with severe COVID-19 pneumonia who present with severe hypoxemia and cytokine storm presented good results by improving clinical status and pulmonary failure, with patients being cared for at home and avoiding mechanical ventilation.

Disclosures. All Authors: No reported disclosures

499. Rapid and Sustained Decline in CXCL-10 (IP-10) Annotates Clinical Outcomes Following TNF-α Antagonist Therapy in Hospitalized Patients with Severe and Critical COVID-19 Respiratory Failure

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Session: P-24. COVID-19 Treatment

Background. TNFα and IFN-γ may synergize to induce cytokine-driven lethal hyperinflammation and immune exhaustion in COVID-19 illness.

Methods. To assess TNFα-antagonist therapy, 18 hospitalized adults with hypoxic respiratory failure and COVID-19 pneumonia received single-dose infliximab-abda therapy 5mg/kg intravenously between April and December 2020. The primary endpoint was time to increase in oxygen saturation to fraction of inspired oxygen ratio (SpO2/FiO2) by ≥ 50 compared to baseline and sustained for 48 hours. Secondary endpoints included 28-day mortality, dynamic cytokine profiles (Human Cytokine 48-Plex Discovery Assay), secondary infections, duration of supplemental oxygen support and hospitalization.

Consort diagram
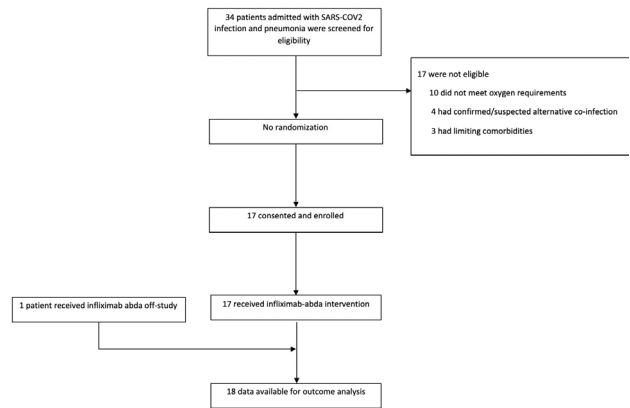
Hospitalized patients with SARS-COV2 infection and pneumonia that were referred to the infliximab-abda study team for evaluation.

Results. Patients were predominantly in critical respiratory failure (15/18, 83%), male (14/18, 78%), above 60 years (median 63 yrs, range 31-80), race-ethnic minorities (13/18, 72%), lymphopenic (13/18, 72%), steroid-treated (17/18, 94%), with a median ferritin of 1953ng/ml. Sixteen patients (89%) met the primary endpoint within a median of 4 days, 15/18 (83%) recovered from respiratory failure, and 14/18 (78%) were discharged in a median of 8 days and were alive at 28-day follow-up. Deaths among three patients ≥ 65 years age with pre-existing lung disease or multiple comorbidities were attributed to secondary lung infections. Mean plasma IP-10 levels declined sharply from 9183 pg/ml to 483 pg/ml at Day 3 and 146 pg/ml at Day 14/discharge. Significant declines in IFN-γ, TNFα, IL-27, IL-6 (baseline above 10pg/ml), CRP and ferritin were specifically observed at Day 3 whereas other cytokines were unaffected. Among 13 lymphopenic patients, six (46%) had resolution of lymphopenia by day 3, and 11 by day 14. CXCR3-ligand (IP-10 and CXCL-9) declines were strongly correlated among patients with lymphopenia reversal (Day 3, Pearson r: 0.98, p-value: 0.0006).

Demographics and clinical characteristics

	TMC-OFF	TMC-001	TMC-002	TMC-003	TMC-004	TMC-005	TMC-006	TMC-007	TMC-008	TMC-009	TMC-010	TMC-011	TMC-012	TMC-013	TMC-014	TMC-015	TMC-016	TMC-017
Age (range, years)	>60	>60	21-40	>60	41-60	>60	41-60	>60	41-60	>60	>60	41-60	>60	>60	41-60	41-60	>60	41-60
Sex	Female	Male	Male	Male	Male	Male	Female	Male	Male	Male	Male	Female	Male	Male	Female	Male	Male	Male
Race or ethnic group minority (Yes/No)	Yes	Yes	No	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Charlson Comorbidity Index	6	6	0	4	1	3	0	3	1	2	3	1	9	4	2	2	5	2
Baseline Laboratory Values																		
Lymphocyte Count (K/uL)	0.8	0.8	1.4	0.7	1.3	0.2	0.4	0.4	0.5	0.9	0.7	0.8	1	1.2	0.4	0.5	0.7	1
LDH (IU/L)	503	372	544	403	375	313	431	493	415	321	613	490	585	835	313	361	599	339
Ferritin (ng/mL)	4773	1407	2244	1598	1273	2013	352	2128	343	8279	2063	2008	2782	1898	221	2389	1122	626
D-dimer (ng/mL)	1989	710	264	420	183	353	343	267	491	<150	485	998	2199	531	176	194	843	<150
CRP (mg/L)	33.6	243.2	64.1	200.1	54.4	106.6	233.6	104.3	58.4	57.9	164.4	54.3	140.3	29.7	214.3	26.9	50.7	7.67
Vasopressor support	No	No	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
Baseline SpO2/FiO2	230	188	332	111	214	145	261	209	196	182	134	271	110	63	336	220	243	139
Oxygenation Support																		
Time of enrollment	MV	HFNC	NC	MV	NC	MV	HFNC	HFNC	MV	HFNC	MV	HFNC	MV	HFNC	ECMO	MV	HFNC	HFNC
Maximum support	MV	HFNC	NC	MV	MV	MV	HFNC	HFNC	MV	HFNC	MV	HFNC	MV	HFNC	ECMO	MV	NC	HFNC
Discharge or death	NC	RA	RA	RA	RA	RA†	RA	NC	RA	NC	MV	NC	RA†	MV	RA	RA†	MV	RA
Symptom Onset to infliximab-abda (days)	29	15	12	13	5	27	5	9	10	10	7	8	10	12	11	8	20	12
Admission to infliximab-abda (days)	6	3	5	1	3	7	2	2	2	0	1	2	3	1	2	1	5	
Hospital duration following infliximab-abda (days)	21	8	1	14	5	47	7	12	12	7	22	4	52	10	4	37	34	9
Primary Endpoint Met (Day met)	No (12)	Yes (3)	Yes (1)	Yes (3)	Yes (3)	Yes (6)	Yes	Yes (6)	Yes (3)	Yes (5)	Yes (4)	Yes (4)	Yes	Yes (1)	No	Yes (12)	No (4)	Yes
Secondary infections	Yes	No	No	Yes	No	Yes	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
Survival to discharge	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes‡	Yes

*Within 24 hours of trial enrollment; †Via tracheostomy; ‡Ventilated at day 28
RA- Room air; NC- Nasal Canula; HFNC- High Flow Nasal Canula; MV- mechanical ventilator; ECMO- Extracorporeal membrane oxygenation

Demographics, comorbidities, clinical features, inflammatory markers, and outcomes of 18 patients with COVID-19 respiratory failure treated with infliximab-abda between April and December 2020.

Changes in oxygen support status following infliximab-abda treatment
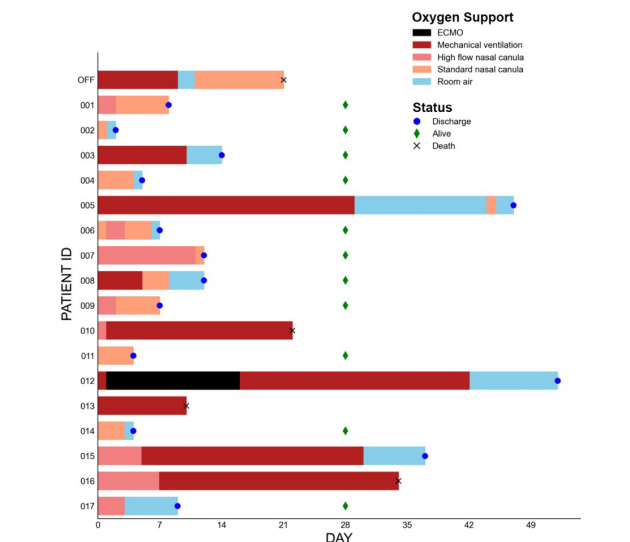
Colored bars indicate the maximal level of oxygen support for each individual following treatment with infliximab-abda. The status of the patient at last follow-up (discharged, alive or dead) is indicated. ECMO: extracorporeal membrane oxygenation

Control of inflammatory markers and cytokines following infliximab therapy
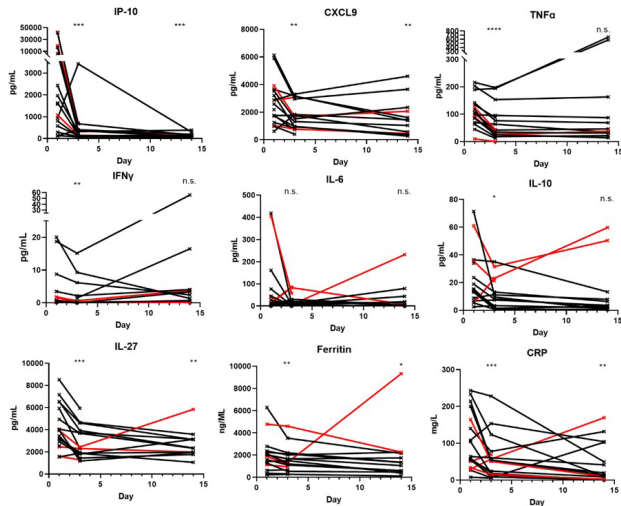
Values from individuals are connected with solid lines, with deceased individuals indicated in red. Statistics: n=18, paired ratio t-test compared to baseline; *: P<0.05, **: P<0.01, ***: P<0.001, ****: P<0.0001, n.s.: not significant.

Conclusion. Consistent with a central role of TNFα, the clinical and cytokine data indicate that infliximab-abda may rapidly abrogate pathological inflammatory signaling to facilitate clinical recovery in severe and critical COVID-19. Randomized studies are formally evaluating infliximab therapy in this context. Funding: National Center for Advancing Translational Sciences

Disclosures. **All Authors**: No reported disclosures

### 500. A Real-World Cohort Study of Bamlanivimab Versus Bamlanivimab-Etesevimab for Non-severe COVID-19

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Session: P-24. COVID-19 Treatment

Background. Anti-spike monoclonal antibodies (mAb) including Bamlanivimab (BAM) and Bamlanivimab-Etesevimab (BAM/E) have shown reduced hospitalization rates for non-severe coronavirus disease 2019 (COVID-19) in clinical trials. Recent studies provided real-world hospitalization rates for BAM. But, similar data on those who received BAM/E are lacking. In spring 2021, Michigan experienced a surge of COVID-19 with more cases per capita than any other state. We sought to quantify the impact of BAM monotherapy versus BAM/E combination on hospitalization and mortality among a real-world high-risk cohort of outpatients with COVID-19.

Methods. This retrospective cohort study evaluated outpatients ≥18 years with laboratory-confirmed mild/moderate COVID-19 who received mAb in a Detroit health system based on emergency use authorization criteria. Inclusion began on December 3rd 2020 with BAM monotherapy, changed to BAM/E combination on March 27, 2021, and included patients until April 19th 2021 (Figure 1). Demographics, comorbidities, and clinical characteristics were compared between patients who received BAM verses BAM/E using Chi-square and Mann-Whitney U test. Primary outcome was 30-day COVID-19 related hospitalization. Secondary outcomes were 30-day mortality and length of stay (LOS).

Figure 1: Doses of Monoclonal Antibody Administered per Day: 12/3/20 to 4/19/21 (140 days)
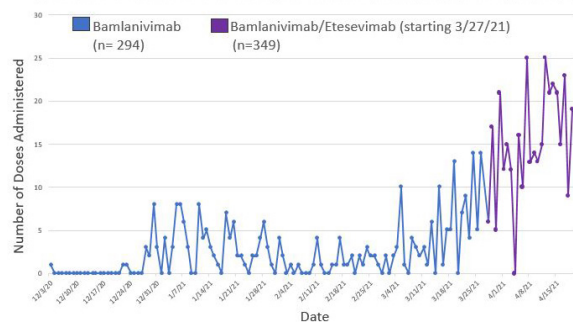
Inclusion began on December 3rd 2020 with BAM monotherapy, changed to BAM/E combination on March 27, 2021, and included patients until April 19th 2021. In spring 2021, Michigan experienced a surge of COVID-19 with more cases per capita than any other state resulting in a large sample of real-world patients for analysis.

Results. 643 patients received mAb (294 in BAM group and 349 in BAM/E group). Patients in the BAM/E cohort were younger and more obese with lower rates of diabetes, myocardial infarction, and cancer. Other characteristics were similar (Table 1). BAM/E patients had longer time from symptom onset to infusion (6 vs 4 days, p< 0.001). COVID-19 related 30-day hospitalization rates did not differ between groups (7.8 vs 7.2%, p=0.751). LOS and 30-day mortality (1% vs 0.3%, p=0.238) were also similar (Table 2).

Table 1: Baseline Characteristics in Outpatients Receiving Monoclonal Antibody

Characteristics	Total (n=643)	Bamlanivimab (n=294)	Bamlanivimab /Etesevimab (n=349)	p-value
Age				
Median (IQR)	58 (47-66)	61 (50-69)	55 (45-65)	<0.001
≥ 65 years (%)	206 (32.0)	112 (38.1)	94 (26.9)	0.003
Male n, (%)	275 (42.8)	137 (46.9)	138 (39.5)	0.086
Race/Ethnicity n, (%)				
White	411 (63.8)	185 (62.9)	226 (64.8)	0.630
Black	153 (23.8)	68 (23.1)	85 (24.4)	0.716
Middle Eastern	30 (4.7)	17 (5.8)	13 (3.7)	0.218
Hispanic/Latinx	24 (3.7)	14 (4.8)	10 (2.9)	0.206
Asian	12 (1.9)	5 (1.7)	7 (2.0)	0.776
Native American	3 (0.5)	0 (n/a)	3 (0.9)	0.111
Declined	10 (1.6)	5 (1.7)	5 (1.4)	0.784
BMI,* median (IQR)	32.9 (27.6–39)	32.2 (27.2-37.2)	33.6 (28.3-40.1)	0.007
BMI ≥35 n, (%)	261 (41.2)	99 (34.6)	162 (46.7)	0.002
BMI ≥40 n, (%)	141 (22.3)	49 (17.1)	92 (26.5)	0.005
Comorbidities (%)				
MI	47 (7.3)	28 (9.5)	19 (5.4)	0.048
CAD	106 (16.5)	48 (16.3)	58 (16.6)	0.921
CHF	54 (8.4)	30 (10.2)	24 (6.9)	0.120
Hyperlipidemia	319 (49.6)	145 (49.3)	174 (49.9)	0.363
Hypertension	418 (65.0)	193 (65.6)	225 (64.5)	0.755
COPD	53 (8.2)	28 (9.5)	25 (7.2)	0.278
Asthma	99 (15.4)	43 (14.6)	56 (16)	0.619
OSA	58 (9.0)	31 (10.5)	27 (7.7)	0.216
Autoimmune disease	60 (9.3)	32 (10.9)	28 (8.0)	0.214
Immunosuppressed	136 (21.2)	72 (24.5)	64 (18.3)	0.059
Transplant	18 (2.8)	8 (2.7)	10 (2.9)	0.912
Diabetes	215 (33.4)	110 (37.4)	105 (30.1)	0.050
Chronic kidney disease	65 (10.1)	30 (10.2)	35 (10.0)	0.941
Leukemia	8 (1.2)	5 (1.7)	3 (0.9)	0.338
Lymphoma	4 (0.6)	3 (1.0)	1 (0.3)	0.238
Solid Organ Cancer	53 (8.2)	31 (10.5)	22 (6.3)	0.051
Cardiovascular disease [a]	468 (72.8)	213 (72.4)	255 (73.1)	0.861
Pulmonary disease [b]	189 (29.4)	94 (32.0)	95 (27.2)	0.188

Abbreviations: Interquartile Range (IQR), Body Mass Index (BMI) defined as weight in kilograms divided by height in meters squared, myocardial infarction (MI), Coronary Artery Disease (CAD), Congestive Heart Failure (CHF), Chronic Obstructive Pulmonary Disease (COPD), Obstructive Sleep Apnea (OSA)
*BMI Data not available for 10 of 643 patients
a. Defined as any cardiovascular comorbidity including CAD, MI, CHF, hyperlipidemia, or hypertension b. Defined as any pulmonary comorbidity including OSA, COPD, or asthma

Patients in the BAM/E cohort were younger and more obese with lower rates of diabetes, myocardial infarction, and cancer. Other characteristics were similar

Table 2: Clinical Characteristics and Outcomes Outpatients Receiving Monoclonal Antibody

	Total (n=643)	Bamlanivimab (n=294)	Bamlanivimab /Etesevimab (n=349)	P value
Disease Severity* (%)				
Mild	505 (78.5)	221 (75.2)	284 (81.4)	0.067
Moderate	138 (21.5)	73 (24.8)	65 (18.6)	0.056
Time, median days (IQR)				
Symptom onset to infusion	5 (4 – 7)	4 (3 – 7)	6 (5 – 8)	<0.001
Symptom onset to referral	4 (3 – 6)	3 (2 – 5)	5 (3 – 6)	<0.001
Referral to infusion	1 (0 – 2)	1 (0 – 2)	1 (0 – 2)	0.782
Test positivity to infusion	3 (2 – 4)	2 (1 – 4)	3 (2 – 5)	<0.001
Primary Outcome				
COVID-Related 30-day Admission, n (%)	48 (7.5)	23 (7.8)	25 (7.2)	0.751
Other Outcomes				
Length of stay, median (IQR) days	4 (2 – 6.5)	4 (2 – 7.5)	4 (2 – 6)	0.794
All-Cause 30 day Death, n (%)	4 (0.6)	3 (1.0)	1 (0.3)	0.238

*Defined as per World Health Organization criteria, mild disease as any symptoms excluding shortness of breath and hypoxia, and moderate disease as including shortness of breath without hypoxia
Abbreviations: Interquartile Range (IQR), Coronavirus-19 Disease (COVID)

BAM/E patients had longer time from symptom onset to infusion (6 vs 4 days, p<0.001). COVID-19 related 30-day hospitalization rates did not differ between groups. Length of stay and 30-day mortality were also similar.

Conclusion. Rates of hospitalization in our study were higher than in clinical trials of mAB and may reflect differences in study populations (Table 3). Compared to other real-world studies, our cohort of young, obese, and Black patients, had similar hospitalization rates of 7.5%. The lack of difference in outcomes noted among the mAB formulations in our study may be related to longer time from symptom onset to infusion in the BAM/E combination group.