Table 3. Plasma inflammatory protein levels.

Variables	Mean	Median	Upper Quartile	Lower Quartile	Std Dev	P-value
GM-CSF	0.08	0.08	0.1	0.06	0.03	0.974
IFN	3.38	3.25	4.35	2.19	1.7	0.3622
IL-10	0.23	0.15	0.2	0.1	0.32	0.0379
IL-1ß	0.11	0.1	0.17	0.05	0.07	0.9277
IL-5	2.53	0.33	0.8	0.19	7.6	0.8993
IL-6	5.9	1.62	2.66	0.9	18.58	0.4183
IL-8	5.93	3.9	5.66	2.89	6.49	0.4442
TNFa	0.62	0.54	0.64	0.43	0.35	0.6283
G-CSF	10.06	8.77	11.75	5.85	5.5	0.5738
IFN-a2a	0.7	0.68	0.94	0.39	0.44	0.814
IL-1RA	209.28	128.43	231.03	102.68	169.83	0.6171
IL-7	4.01	2.63	7.3	1.55	2.73	0.5483
IL-9	0.32	0.14	0.3	0.1	0.49	0.2338
IP-10	236.28	192.47	267.4	159.25	110.79	0.2222
MCP-1	141.33	93.23	147.51	80.02	163.67	0.9306
MIP-1a	13.5	12.91	15.12	10.28	6.25	0.7727
VEGF-A	24.01	21.16	31.45	10.69	16.7	0.643
IL8	5.52	5.47	5.76	5.24	0.42	0.7019
VEGFA	11.06	11.08	11.39	10.25	0.79	0.2842
CD8A	9.49	9.99	10.03	8.95	0.87	0.5618
MCP-3	2.56	2.68	3.16	1.63	0.83	0.2542
GDNF	2.42	2.39	2.73	2.29	0.45	0.7895
CDCP1	3.01	3.18	3.7	2.07	0.82	0.2463
CD244	7.74	7.11	8.38	6.83	1.35	0.5745
IL7	2.65	2.2	3.01	1.98	1.02	0.5083
OPG	10.01	10.14	10.62	9.31	0.7	0.3195
LAP TGF-beta-1	6.68	6.23	7.01	5.9	1.17	0.484
uPA	9.5	9.53	9.95	9.12	0.47	0.8069
IL6	3.06	3.12	4.33	1.68	1.22	0.2531
IL-17C	2.82	2.86	3.57	2.29	0.81	0.5938
MCP-12	11.08	11.16	11.27	10.58	0.5	0.941
IL-17A	2.03	2	2.16	1.54	0.57	0.8425
CXCL11	9.23	9.59	10.51	7.71	1.47	0.307
AXIN1	6.47	5.89	7.31	5.7	1.25	0.566
TRAIL	7.73	7.71	7.81	7.58	0.23	0.696
IL-20RA	1.45	1.42	1.98	0.97	0.51	0.9893
CXCL9	6.26	6.06	7.18	5.59	0.85	0.5752
CST5	6.31	6.27	6.83	5.71	0.64	0.129
IL-2RB	1.26	1.29	1.36	1.09	0.18	0.1623
IL-1 alpha	-0.38	-0.41	-0.17	-0.56	0.22	0.9527
OSM	4.1	4.13	5.38	2.66	1.5	0.3151
IL2	1.4	1.6	1.65	1.09	0.43	0.6494
CXCL1	10.82	10.53	10.84	10.14	1.12	0.5701
TSLP	1.6	1.6	1.71	1.56	0.16	0.8456
CCL4	5.48	5.33	6.14	5	0.67	0.2239
CD6	5.87	5.57	5.99	5.12	1.16	0.6369
SCF	9.05	8.97	9.47	8.84	0.37	0.5889
IL18	8.56	8.52	8.95	8.25	0.46	0.6481
SLAMF1	2.1	2.15	2.32	1.93	0.38	0.6889
TGF-alpha	2.28	2.39	2.73	1.87	0.67	0.5637
MCP-4	14.46	13.97	14.96	13.93	0.98	0.4464
CCL11	7.45	7.6	7.88	6.84	0.52	0.426
TNFSF14	4.96	4.52	5.58	4.2	1.25	0.5634
FGF-23	2.74	2.19	3.45	2.09	1.33	0.7107
IL-10RA	1.3	1.09	1.88	0.81	0.64	0.9469
FGF-5	0.95	0.98	1.13	0.76	0.26	0.5194
MMP-1	14.22	14.31	15.14	12.83	1.34	0.3021
LIF-R	3.5	3.41	3.9	3.16	0.38	0.3917
FGF-21	5.43	5.89	6.51	4.78	1.41	0.4628
CCL19	9.44	9.73	10.21	8.53	0.97	0.1236
IL-15RA	1.12	1.08	1.27	1.03	0.37	0.7038
IL-10RB	5.23	5.2	5.58	4.93	0.39	0.9675
IL-22 RA1	1.97	1.92	2.17	1.83	0.39	0.7964
IL-18R1	8.13	8.12	8.98	7.24	0.84	0.2926
PD-L1	7.37	7.17	8	6.51	1.12	0.2833
Beta-NGF	0.06	0.06	0.11	-0.03	0.09	0.358
CXCL5	12.44	12.17	12.82	12.03	0.76	0.3167
TRANCE	4.3	4.2	4.6	4.08	0.33	0.2192
HGF	8.37	8.35	8.99	7.77	0.77	0.4553
IL-12B	5.58	5.53	6.47	5.02	1.07	0.6191
IL-24	1.23	1.25	1.75	0.81	0.55	0.4593
IL13	1.3	1.29	1.49	1.18	0.18	0.5084
ARTN	1.63	1.38	1.61	1.22	0.81	0.6334
MMP-10	8.58	8.59	9.01	8.14	0.5	0.8144
IL10	1.72	1.71	1.85	1.51	0.28	0.4737
TNF	2.33	2.44	2.71	1.75	0.54	0.2815
CCL23	9.72	9.77	9.98	9.04	0.72	0.9641
CD5	6.27	5.78	6.36	5.39	1.47	0.5764
CCL3	6.08	6.03	7.53	4.42	1.57	0.2924
Flt3L	8.02	7.89	8.21	7.71	0.42	0.7278
CXCL6	9.23	9.07	9.66	8.58	0.96	0.2568
CXCL10	9.45	9.4	10.64	7.87	1.72	0.3737
4E-BP1	8.15	8.02	9.56	6.71	1.73	0.2906
IL-20	0.63	0.66	0.87	0.59	0.3	0.9965
SIRT2	5.81	5.12	7.26	4.36	1.8	0.4367
CCL28	2.78	2.55	2.74	2.42	0.64	0.9569
DNER	8.28	8.31	8.52	7.99	0.44	0.6116
EN-RAGE	4.17	4.15	5.55	2.73	1.52	0.353
CD40	13.68	13.55	14.03	13.51	0.4	0.2
IL33	1.1	1.26	1.34	0.71	0.42	0.7321
IFN-gamma	7.03	6.94	8.83	5.78	1.69	0.4806
FGF-19	8.12	7.98	8.67	7.61	0.95	0.0783
IL4	0.25	0.24	0.44	0.02	0.27	0.579
LIF	0.57	0.63	0.71	0.19	0.49	0.0685
NRTN	0.82	0.82	0.98	0.69	0.24	0.9964
MCP-2	9.28	8.99	10.28	8.52	1.12	0.5541
CASP-8	5.5	5.27	5.51	5.07	0.9	0.8294
CCL25	5.34	5.21	6	4.97	0.73	0.9661
CX3CL1	3.32	3.52	3.77	2.55	0.68	0.6254
TNFRSF9	6.11	6.21	6.58	5.63	0.5	0.7228
NT-3	2.19	2.21	2.42	1.97	0.28	0.4088
TWEAK	8.3	8.26	8.68	7.95	0.43	0.3873
CCL20	7.99	8.13	8.59	7.61	0.74	0.6326
ST1A1	6.5	6.49	6.81	6.33	0.48	0.067
STAMBP	6.84	6.36	7.96	5.63	1.53	0.4506
IL5	1.6	1.69	1.89	1.27	0.43	0.6713
ADA	5.52	5.42	5.94	4.81	0.75	0.3548
TNFB	4.45	4.34	4.91	4.15	0.4	0.9042
CSF-1	9.61	9.6	9.87	9.38	0.48	0.6572

Plasma inflammatory protein levels were measured using multiplex ELISA (MSD) and Proximity Extension Assay technology (Olink) recorded during follow-up visit for PCS vs Non-PCS subjects, revealing IL-10 (P=0.0379) was associated with development of PCS.

Conclusion. This study identifies initial clinical and biomarker predictors of PCS in a cohort that is 55% African American.

Figure 2. Antibody ReSARS N IgG

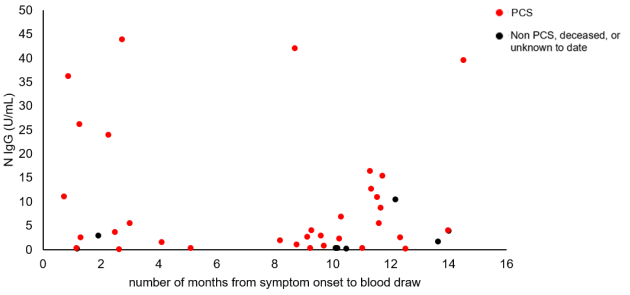
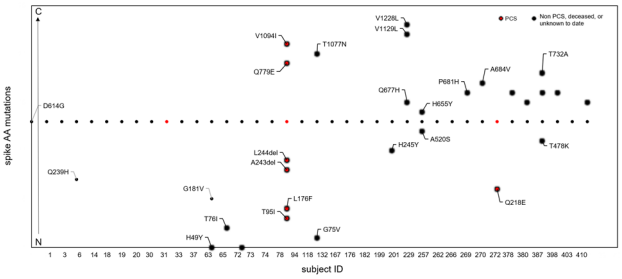


Figure 2. ReSARS N IgG measured in post-covid patients is significantly associated with post-COVID syndrome(P=0.0159). X axis: number of months from symptom onset to blood draw. Y axis: N IgG U/mL.

ReSARS N IgG measured in post-covid patients is significantly associated with post-COVID syndrome(P=0.0159). X axis: number of months from symptom onset to blood draw. Y axis: N IgG U/mL.

Figure 3. Spike amino acid mutations



Spike amino acid mutations detected in SARS-CoV-2 from acute-phase respiratory isolates. Nasal swab/saliva samples were collected from subjects with acute COVID-19 at time of enrollment into ClinSeqSer, stored at -80°C followed by RNA isolation and SARS-CoV-2 qRT-PCR. Samples with Ct value of ≤30 were then sequenced using NextSeq (Illumina). All sequences are deposited on GISAID and under BioProject (ID PRJNA681020). X axis: subject ID, with ID number increasing chronologically. Y axis: amino acid position of each mutation moving from N- to C-terminus.

Disclosures. **Robert Garry, PhD**, **Zalgen Labs** (Shareholder)

290. Persistence of Long COVID in SARS-CoV-2 Confirmed Cases One-Year Post Infection

Harrison L. Howe, BS[1]; Danielle A. Rankin, MPH, CIC[2]; Sean M. Bloos, MPH[1]; Kailee N. Fernandez, BS[2]; Seifein Salib, MD[1]; Rana Talj, MD[1]; Danya Waqfi, MD[1]; Jessica Villarreal, BS[1]; Ahmad Yanis, MD[1]; James Chappell, MD, PhD[1]; Leigh Howard, MD, MPH[1]; Natasha B. Halasa, MD, MPH[1]; Natasha B. Halasa, MD, MPH[1]; [1]Vanderbilt University Medical Center, Goodlettsville, Tennessee; [2]Vanderbilt University Medical Center; Division of Pediatric Infectious Diseases, Nashville, TN

Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Regardless of severity of acute SARS-CoV-2 illness, adults infected with SARS-CoV-2 are at risk for post-acute sequelae of COVID-19. Long COVID is typically classified as symptoms lasting greater than four weeks post-infection. We aimed to evaluate the frequency of resolved and unresolved long COVID symptoms in adults residing in greater Nashville, TN.

Methods. We conducted a longitudinal cohort study of SARS-CoV-2-positive and exposed individuals from March 20 to May 15, 2020. Participants for this analysis were included if: 1) ≥18 years; 2) SARS-CoV-2 positive by molecular or antibody testing; and 3) completed a one-year visit. Demographic and illness information were collected at enrollment, and long COVID symptoms were systematically collected at the one-year survey. Long COVID symptoms are defined as an adult experiencing at least one of the following symptoms four weeks post-infection: fatigue, confusion, loss of smell or taste, shortness of breath, chest pain, cough, muscle aches, inability to exercise, or heart palpitations. Unresolved symptoms are defined as an individual with long COVID still experiencing symptoms at the one-year visit.

Results. A total of 115 adults enrolled and completed the one-year survey, of which 63 (54.8%) were SARS-CoV-2-positive, with one asymptomatic individual. Of SARS-CoV-2-positive symptomatic adults, 32 (51%) were female, 5 (88%) were of Hispanic ethnicity, and 58 (92%) were white. At the one-year visit, 33 (52%)

reported having long COVID, of which 17 (52%) reported having unresolved symptoms. Fatigue (89%), headache (89%), muscle aches (79%), and cough (77%) were the most common symptoms reported at illness onset (Figure 1). Among 33 adults with long COVID, fatigue (42%), loss of smell (39%), and loss of taste (33%) were most common (Figure 2A). In the 17 individuals with unresolved symptoms, loss of smell (29%) and loss of taste (24%) were commonly reported (Figure 2B).

Figure 1. COVID-19 symptoms reported at enrollment (n=62)

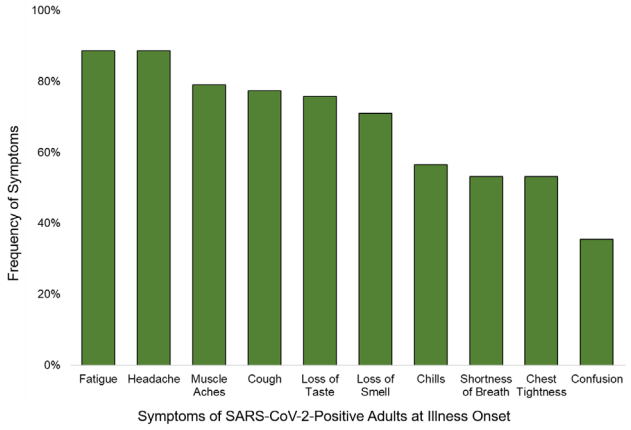
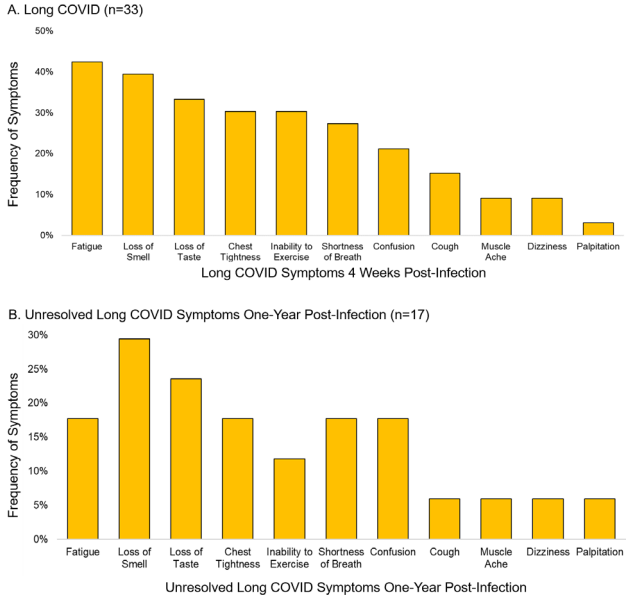


Figure 2. Long COVID (symptoms lasting ≥ 4 weeks) (n=33) (A) and unresolved long COVID symptoms one-year post-infection (n=17) (B) reported on the one-year survey



Conclusion. Half of the adults in our cohort reported long COVID symptoms, with more than quarter of symptoms persisting one-year post-illness. Our findings support that prolonged symptoms up to year after SARS-CoV-2 exposure occur, and future studies should investigate the residual impacts of long COVID symptoms and conditions.

Disclosures. **Natasha B. Halasa, MD, MPH**, **Genentech** (Other Financial or Material Support, I receive an honorarium for lectures - it's a education grant, supported by genetech)**Quidel** (Grant/Research Support, Other Financial or Material Support, Donation of supplies/kits)**Sanofi** (Grant/Research Support, Other Financial or Material Support, HAI/NAI testing) **Natasha B. Halasa, MD, MPH**, Genentech (Individual(s) Involved: Self): I receive an honorarium for lectures - it's a education grant, supported by genetech, Other Financial or Material Support, Other Financial or Material Support; Sanofi (Individual(s) Involved: Self): Grant/Research Support, Research Grant or Support

291. Epidemiology of Candidemia Rates during COVID-19 and Comparison of Outcomes in Candidemia Between COVID-19 and Non-COVID-19 Patients

Angela Beatriz Cruz, MD[1]; Jennifer LeRose, MPH, MS-[22]; Kenisha J. Evans, MD[3]; Monica Meyer, MS, MPH[4]; Teena Chopra, MD, MPH[5]; Teena Chopra, MD, MPH[5]; [1]Detroit Medical Center - Wayne State University, Detroit, Michigan; [2]Michigan State University College of Osteopathic Medicine, Beverly Hills, Michigan; [3]DETROIT MEDICAL CENTER, DETROIT, Michigan; [4]Wayne State University School of Medicine, Detroit, Michigan; [5]Detroit Medical Center, Wayne State University, Detroit, MI

Session: P-14. COVID-19 Complications, Co-infections, and Clinical Outcomes

Background. Fungemia is associated with high rates of morbidity, mortality and increase in length of hospital stay. Several studies have recognized increased rates of candidemia since the COVID-19 pandemic.

Methods. A retrospective cohort study was conducted at a tertiary healthcare system in Detroit, Michigan to evaluate the impact of the COVID-19 pandemic on incidence of candidemia. The "pre COVID-19" timeframe was defined as January – May 2019 while the "during COVID-19" timeframe was January – May 2020. To compare incidence and patient characteristics between cohorts, t-tests and chi-square analysis was used. Additional sub-analysis was performed in candidemia patients during COVID-19 timeframe comparing outcomes of patients based on COVID-19 status. A Fisher Exact and Satterthwaite Test were used for analysis of categorical and continuous variables, respectively.

Results. Overall, 46 cases of candidemia were identified in both the pre COVID-19 and during COVID-19 periods. Pre COVID-19, the average number of cases was 3.0 ± 1.2 per month. The incidence more than doubled during COVID-19 to 6.2 ± 4.2 cases per month (p = 0.14) (Figure 1). No significant differences in patient demographics were detected between cohorts, however, patients in the COVID-19 cohort had higher rates of corticosteroid use, mechanical ventilation and vasopressors (Table 1). In the 2020 period, 31 patients developed candidemia and 12 (38.7%) patients tested SARS-CoV-2 positive. On average, COVID-19 patients developed candidemia 12.1 days from admission, compared to 17.8 days in the COVID-19 negative cohort (p = 0.340). Additionally, COVID-19 patients with candidemia coinfection were significantly more likely to expire; 83.3% (n=10) COVID-19 patients expired compared to 36.8 (n=7) in the COVID-19 negative cohort (p = 0.025) (Table 2).

Figure 1. Incidence of Candidemia in the Pre-COVID-19 (January 2019 – May 2019) and During COVID-19 (January 2020-May 2020) periods

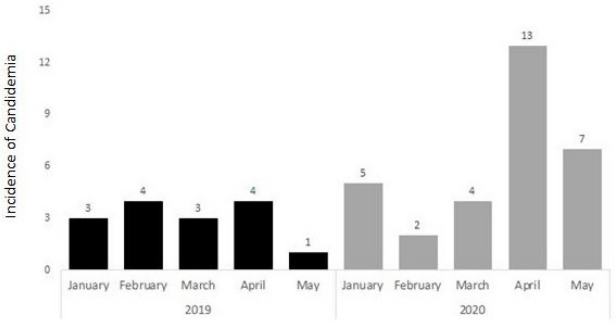


Table 1. Characteristics of Candidemia patients in the pre-COVID (January 2019-May 2019) and during-COVID periods (January 2020-May 2020)

	Pre COVID-19 (N = 15)	During COVID-19 (N = 31)	P – value
Female, n (%)	4 (26.7)	15 (48.4)	0.21
Age, mean ± SD	62.8 ± 14.2	62.5 ± 15.7	0.90
Race, n (%)			0.97
Black	10 (66.7)	20 (64.5)	
White	2 (13.3)	5 (16.1)	
Other/Unknown	3 (20.0)	6 (19.4)	
Expired, n (%)	4 (26.7)	17 (54.8)	0.08
Nursing Home Resident, n (%)	5 (33.3)	11 (35.5)	0.89
Length of Stay, mean ± SD	15.5 ± 9.1	30.0 ± 27.1	0.06
Days from Admit to Candidemia, mean ± SD	3.9 ± 5.1	15.6 ± 17.9	< **0.01**
Charlson Comorbidity Index, n (%)			0.35
0 – 2	2 (13.3)	8 (25.8)	
3 – 4	3 (20.0)	10 (32.3)	
≥ 5	10 (66.7)	13 (41.9)	
Comorbidities, n (%)			
Cancer	4 (26.7)	7 (22.6)	0.76
Diabetes	9 (60.0)	14 (45.2)	0.35
Hypertension	10 (66.7)	17 (54.8)	0.45
Hospital Management, n (%)			
Central Venous Catheter	13 (86.7)	25 (80.7)	0.61
Corticosteroids	1 (6.7)	16 (51.6)	< **0.01**
Intensive Care Unit	12 (80.0)	28 (90.3)	0.33
Mechanical Ventilation	5 (33.3)	22 (71.0)	**0.02**
Vasopressors	5 (33.3)	22 (71.0)	**0.02**

Bolded p-values indicate statistical significance at p-value < 0.05.