Long-term Complications Associated with COVID-19 Infection

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Introduction

- In Michigan, 117,910 (95%) of the 124,490 COVID-19 patients have recovered.
- However, there is concern that COVID-19 infection may lead to long-term sequelae, including pulmonary defects, cardiac complications, blood clots, and neurocognitive impairment.
- This study describes the 30-day outcomes of patients who had recovered.

Methods

- From 3/16/2020 to 5/19/2020, a follow-up was attempted for patients who were discharged alive from Henry Ford Hospital in Detroit and had recovered.
- Recovery was defined as being alive 30 days post symptom-onset.
- A telephone survey was conducted 30 days post-index admission and recorded in electronic medical records.
- Oxygen (O2) requirements, symptoms, readmissions and the need for antibiotics for secondary bacterial infections were evaluated.

Results

- 585 patients met inclusion criteria and were contacted by phone; 303 answered their phone.
- 266 (45%) completed a full telephone encounter and were included in the final analysis (Table 1).
- The majority were female (53%), black (80%), and discharged home (84%).
- The clinical characteristics of those who completed the survey were as follows: 11% presented with O2 saturation < 90%, 16% had underlying lung pathology, and 57% had a BMI above 30.
- Patients' average age was 61 ± 14.3 years.

The long-term burden of COVID-19 infection is not well-defined; a better understanding of the long-term pulmonary sequelae following COVID-19 infection is needed to design interventions to reduce post-infectious morbidity.

Table 1. Comparison of Symptomatic Versus Asymptomatic Patients at 30 Days from Index Admission

	All Patients (N = 266)	Asymptomatic (N = 135)	Symptomatic (N = 131)	P value
Demographics				
Age (Mean, SD[a]):	61, 14.3	59.8, 14.6	62.4, 13.9	0.141
Gender (N,%):				
Females	124 (47%)	64 (47%)	60 (46%)	0.793
Males	142 (53%)	71 (53%)	71 (54%)	
Race (N,%):				
White	15 (5.6%)	8 (6%)	7 (5%)	
Black	214 (80%)	108 (80%)	106 (81%)	0.642[b]
Other	16 (6%)	10 (7%)	6 (5%)	
Declined	8 (3%)	4 (3%)	4 (3%)	
Unknown	13 (5%)	5 (4%)	8 (6%)	
Comorbidities[c] (N,%)				
HTN	208 (78%)	104 (77%)	104 (79%)	0.642
DM	128 (48%)	63 (47%)	65 (50%)	0.630
CKD	69 (26%)	29 (21%)	40 (31%)	0.092
BMI>30	151 (57%)	78 (58%)	73 (56%)	0.735
HIV	4 (1.5%)	2 (1%)	2 (1.5%)	1.000
Autoimmune	0	0	0	
Transplant	12 (5%)	7 (5%)	5 (4%)	0.591
Cancer	23 (9%)	12 (9%)	11 (8%)	0.887
COPD/ILD	42 (16%)	22 (16%)	20 (15%)	0.818
CAD	43 (16%)	20 (15%)	23 (18%)	0.544
CHF	47 (18%)	21 (16%)	26 (20%)	0.359
ESRD	23 (9%)	12 (9%)	11 (8%)	0.887
Admission (N,%)				
O2 saturation at presentation:				
≥95	155 (58%)	75 (56%)	80 (61%)	0.122
90-94	81 (30%)	39 (29%)	42 (32%)	
86-89	17 (6%)	11 (8%)	6 (5%)	
≤ 85	13 (5%)	10 (7%)	3 (2%)	

[a] Standard deviation
[b] Patients who declined to specify their race or for whom the race was unknown were excluded from analysis of the association of race with symptom status
[c] HTN, hypertension; DM, Diabetes mellitus; CKD, Chronic kidney disease; BMI, Body mass index; HIV, Human immunodeficiency virus; COPD/ILD, Chronic obstructive pulmonary disease/interstitial lung disease; CAD, coronary artery disease; CHF, Congestive heart failure; ESRD, end stage renal disease

Results

- At 30 days post-index admission, 49% were still symptomatic.
- Of the symptomatic patients, 86% had dyspnea on exertion and 15% required O2 supplementation.
- 18% of patients were readmitted within 30 days, and 9% developed a secondary infection prior to the phone encounter.
- No statistically significant differences in demographics or comorbidities were found between symptomatic and asymptomatic groups (Tables 1).

Conclusion

- In our study, almost half of the patients discharged from Henry Ford Hospital remained symptomatic 30 days from their index admission with a substantial proportion experiencing pulmonary symptoms.
- The long-term burden of COVID-19 infection is not well-defined; a better understanding of the long-term pulmonary sequelae following COVID-19 infection is needed to design interventions to reduce post-infectious morbidity.

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References

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