

**Individuals with sickle cell disease and sickle cell trait demonstrate no increase in mortality or critical illness from COVID-19 - a fifteen hospital observational study in the Bronx, New York**

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## Supplementary Data

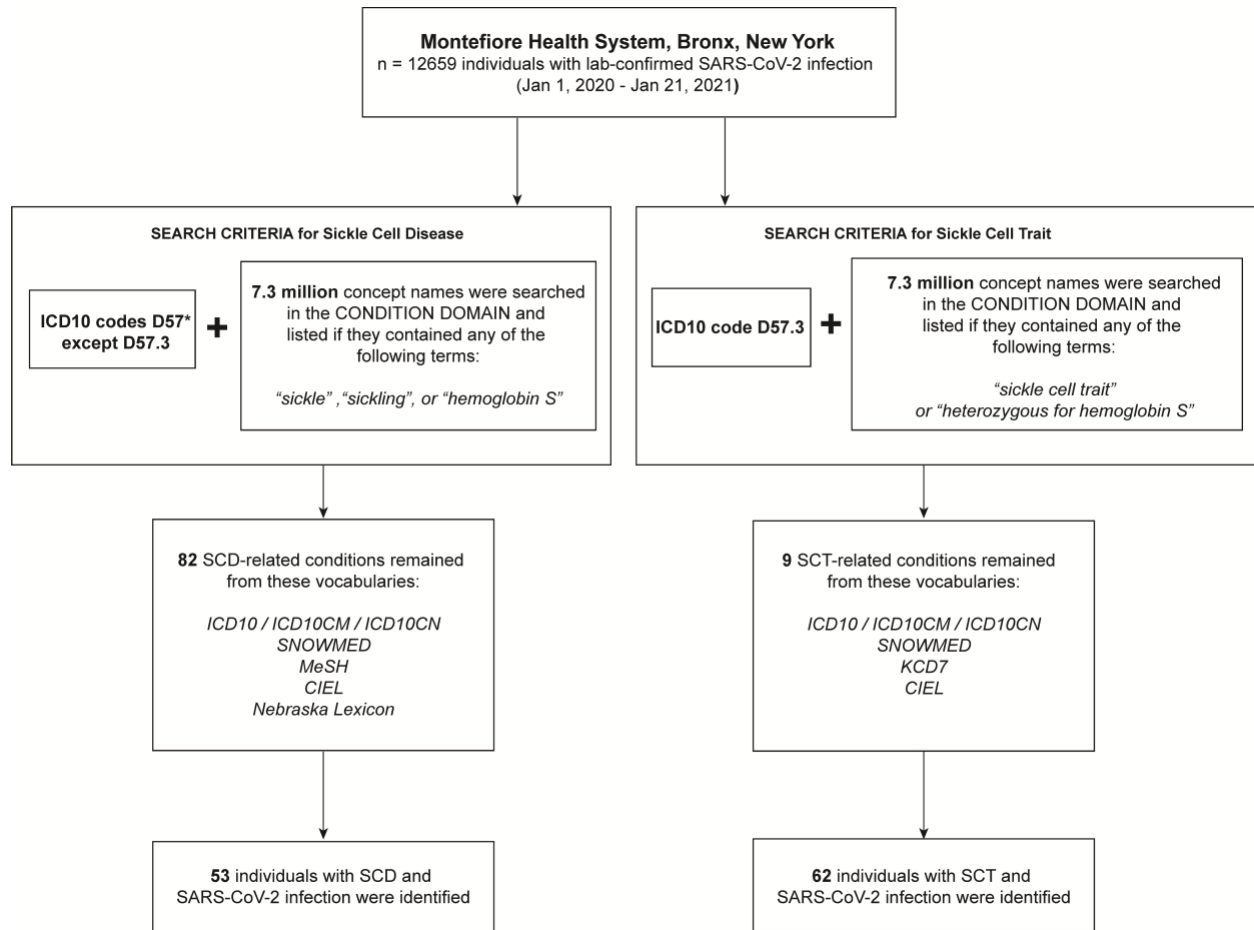
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**Supplementary Figure S1.** Flowchart of OMOP CDM database search for the identification of individuals with sickle cell disease or sickle cell trait among 12,659 patients with detected SARS-CoV-2 infection.

**Supplementary Table S1.** Additional sample characteristics of COVID-19 patients with sickle cell disease (SCD), sickle cell trait (SCT), and the general population in this study.

**Supplementary Table S2.** Risk for escalated care, in hospital acquired disease and death among COVID-19 patients with SCD or SCT relative to the general population adjusted for age, gender, race, ethnicity and comorbidity burden as covariates.



**Supplementary Figure S1.** Flowchart of OMOP CDM database search for the identification of individuals with sickle cell disease or sickle cell trait among 12,659 patients with detected SARS-CoV-2 infection.

**Supplementary Table S1.** Additional sample characteristics of COVID-19 patients with sickle cell disease (SCD), sickle cell trait (SCT), and the general population in this study.

	(a) <b>SCD</b> n = 53	(b) <b>SCT</b> n = 62	(c) <b>General Population</b> n = 12,544	a vs c	b vs c
<b>Comorbidities, n (%)</b>					
Chronic kidney disease	3 (6%)	11 (18%)	741 (6%)	>0.99	0.001
COPD and asthma	11 (21%)	12 (19%)	1,033 (8%)	0.004	0.004
Coronary artery disease	2 (4%)	7 (11%)	689 (5%)	>0.99	0.08
Essential hypertension	11 (21%)	25 (40%)	2,889 (23%)	0.87	0.002
Heart failure	8 (15%)	10 (16%)	705 (6%)	0.009	0.002
Liver disease	0	1 (2%)	158 (1%)	>0.99	0.55
Pulmonary hypertension	9 (17%)	3 (5%)	112 (1%)	<0.0001	0.02
Stroke	7 (13%)	2 (3%)	229 (2%)	<0.0001	0.32
Type 2 diabetes	2 (4%)	19 (31%)	2,060 (16%)	0.008	0.005
<b>Presenting vitals, median (IQR)</b>					
Body Mass Index (kg/m <sup>2</sup> )	22.5 (19.2-26.5)	28.0 (24.0-33.7)	28.5 (24.5-33.2)	<0.0001	0.93
Oral Temperature (F)	98.8 (98.3-99.5)	98.4 (97.9-99.1)	98.6 (98.1-99.2)	0.07	0.47
Oxygen saturation (%)	98 (97-100)	98 (97-100)	97 (95-99)	0.05	0.02
<b>Presenting laboratory values, median (IQR)</b>					
Alanine aminotransferase (U/L)	25 (17-51)	19 (10-26)	26 (17-44)	0.85	0.01
Aspartate aminotransferase (U/L)	48 (34-77)	28 (20-62)	34 (22-56)	0.0002	0.38
Bilirubin (total) (mg/dL)	1.7 (1.2-4.3)	0.4 (0.3-0.7)	0.5 (0.3-0.7)	<0.0001	0.56
C-reactive protein (mg/dL)	3.7 (1.0-6.5)	4.7 (1.9-15.3)	7.8 (2.7-16.2)	0.003	0.39
D-dimer (ug/mL)	2.4 (1.6-7.9)	2.4 (1.1-3.5)	1.4 (0.7-3.2)	0.0004	0.15
Hematocrit (vol %)	23.3 (19.9-29.0)	33.1 (30.2-38.4)	38.9 (34.6-42.8)	<0.0001	<0.0001
Hemoglobin (mmol/L)	7.9 (6.6-10.4)	11.1 (9.9-12.8)	12.5 (10.9-13.8)	<0.0001	0.002
Lactate dehydrogenase (U/L)	485 (398-732)	276 (218-419)	324 (226-465)	<0.0001	0.35
Leukocytes (x10 <sup>9</sup> /L)	10.8 (7.8-13.9)	8.1 (4.7-11.7)	7.0 (5.1-9.9)	<0.0001	0.79
Lymphocytes (x10 <sup>9</sup> /L)	2.1 (1.4-3.7)	1.2 (1.0-1.7)	1.1 (0.7-1.5)	<0.0001	0.14
Monocytes (x10 <sup>9</sup> /L)	1.3 (0.8-1.7)	0.6 (0.4-0.7)	0.5 (0.3-0.7)	<0.0001	0.50
Reticulocytes (x10 <sup>9</sup> /L)	200 (121-287)	-	53 (30-87)	<0.0001	-
<i>Note:</i> Between-group comparison of continuous variables, reported in medians and interquartile ranges (IQR), were performed using Wilcoxon rank-sum tests (Mann-Whitney U). Categorical variables were analyzed with Fisher's exact test. We considered a more stringent two-sided $\alpha$ of <0.001 to determine statistical significance for differences in sample characteristics.					

<b>Supplementary Table S2.</b> Risk for escalated care, in hospital acquired disease and death among COVID-19 patients with SCD or SCT relative to the non-sickle, general population adjusted for age, gender, race, ethnicity and comorbidity burden as covariates.			
	<b>Logistic Regression</b>		
	<b>Odds Ratio</b>	<b>95% CI</b>	<b>p-value</b>
<b>ED visit</b>			
General population	(ref)	-	-
SCD	3.54	1.62 to 7.73	0.001
SCT	0.62	0.47 to 0.82	0.001
<b>Hospitalization</b>			
General population	(ref)	-	-
SCD	7.26	3.75 to 14.08	<0.001
SCT	1.07	0.80 to 1.43	0.66
<b>ICU admission</b>			
General population	(ref)	-	-
SCD	1.07	0.38 to 3.00	0.90
SCT	1.11	0.72 to 1.71	0.64
<b>LOS &gt; 6 days</b>			
General population	(ref)	-	-
SCD	1.44	0.72 to 2.86	0.30
SCT	0.85	0.57 to 1.25	0.40
<b>Invasive mechanical ventilation</b>			
General population	(ref)	-	-
SCD	1.28	0.39 to 4.19	0.67
SCT	1.00	0.59 to 1.69	0.99
<b>Acute kidney injury</b>			
General population	(ref)	-	-
SCD	1.83	0.91 to 3.66	0.09
SCT	1.03	0.73 to 1.46	0.85
<b>Acute liver injury</b>			
General population	(ref)	-	-
SCD	1.48	0.73 to 2.99	0.28
SCT	0.92	0.54 to 1.57	0.76
<b>Overall mortality</b>			
General population	(ref)	-	-
SCD	1.48	0.42 to 5.15	0.54
SCT	1.17	0.75 to 1.83	0.48
<i>Abbreviations:</i> SCD, sickle cell disease; SCT, sickle cell trait; ED, emergency department; ICU, intensive care unit; LOS, length of stay.			