

Appendix

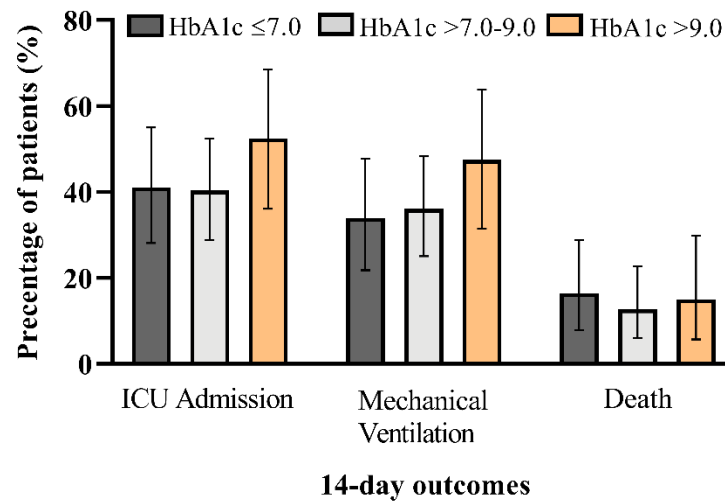
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Appendix 1. Composition of sample of people with diabetes mellitus according to diagnostic criteria

Diagnostic criteria	Number of cases included
HbA1c only	11
Chart review only	57
HbA1c and chart review	110
Random blood glucose $\geq 200\text{mg/dL}$	2*
Total	180[†]

*Four individuals had a presenting random glucose $\geq 200\text{mg/dL}$ with no recent HbA1c or chart review diagnosis of diabetes. Two endocrinologists adjudicated these cases and determined that two of the four did in fact have diabetes. [†]Two individuals in the sample had type 1 diabetes.

Appendix 2. Fourteen day outcomes among 168 hospitalized patients with diabetes mellitus and COVID-19, according to baseline glycemic control.



	HbA1c ≤7.0%		HbA1c >7.0-9.0%		HbA1c >9.0%	
	n (%)	95% CI	n (%)	95% CI	n (%)	95% CI
ICU Admission	23 (41.1)	28.1-55.0	29 (40.3)	28.9-52.5	21 (52.5)	36.1-68.5
Mechanical Ventilation	19 (33.9)	21.8-47.8	26 (36.1)	25.1-48.3	19 (47.5)	31.5-63.9
Death	9 (16.4)	7.8-28.8	9 (12.7)	6.0-22.7	6 (15.0)	5.7-29.8

Fourteen day outcomes among 168 hospitalized patients with diabetes mellitus and COVID-19, according to baseline glycemic control. Three outcomes are shown on the X axis, the percentage of patients in each outcome group on the Y axis, with patients with baseline HbA1c ≤7% in dark grey, HbA1c >7.0-9.0% in light grey, and >9.0% in orange. Within each outcome, all pairwise chi-square tests were not statistically significant.

Appendix 3. Multivariable logistic regression analysis of 14-day outcomes among 168 hospitalized people with COVID-19, with inclusion of baseline glycemic control.

	14-day outcomes		
	ICU Admission	Mechanical Ventilation	Death
<i>N</i>	168	166	158
Characteristic	OR (95% CI)	OR (95% CI)	OR (95% CI)
HbA1c >7.0-9.0	1.03 (0.48-2.25)	1.11 (0.49-2.49)	0.64 (0.22-1.84)
HbA1c >9.0	1.33 (0.54-3.30)	1.34 (0.53-3.42)	1.33 (0.39-4.58)
BMI Category			
Overweight	1.26 (0.46-3.46)	1.41 (0.49-4.06)	0.88 (0.22-3.55)
Obese	1.43 (0.55-3.73)	1.51 (0.55-4.10)	1.61 (0.45-5.69)
Age			
50-59	0.73 (0.23-2.33)	0.51 (0.16-1.70)	2.06 (0.21-20.70)
60-69	0.76 (0.23-2.48)	0.57 (0.17-1.90)	2.69 (0.26-27.54)
≥70	0.60 (0.19-1.96)	0.54 (0.16-1.80)	6.04 (0.64-57.22)
Male	1.67 (0.83-3.35)	2.14 (1.02-4.48)	0.76 (0.29-1.94)
Race/ethnicity			
Hispanic	2.09 (0.92-4.77)	2.64 (1.13-6.17)	0.60 (0.17-2.10)
African American	1.43 (0.49-4.17)	1.59 (0.52-4.85)	0.71 (0.14-3.71)
Other	3.04 (0.50-18.4)	2.35 (0.34-15.98)	—
Unknown/missing	3.95 (1.34-11.67)	4.57 (1.54-13.59)	0.49 (0.10-2.48)

Reference groups: HbA1c ≤7.0, normal weight for BMI category, age <50 years, female sex, Non-Hispanic White.

Appendix 4. Univariate logistic regression analysis of 14-day outcomes among 450 hospitalized people with COVID-19.

Characteristic	14-day outcomes		
	ICU Admission	Mechanical Ventilation	Death
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Diabetes	1.70 (1.14-2.52)	1.94 (1.28-2.93)	2.20 (1.20-4.01)
BMI Group			
Overweight	1.60 (0.91-2.82)	1.67 (0.91-3.08)	0.40 (0.18-0.90)
Obese	2.42 (1.41-4.26)	2.39 (1.34-4.27)	0.64 (0.32-1.28)
Age			
50-59	1.37 (0.75-2.49)	1.11 (0.59-2.09)	7.05 (0.81-61.7)
60-69	1.05 (0.57-1.93)	0.99 (0.53-1.87)	8.35 (0.98-70.8)
≥70	0.87 (0.52-1.45)	0.85 (0.50-1.45)	27.03 (3.65-200.2)
Male	1.32 (0.89-1.96)	1.54 (1.01-2.35)	1.40 (0.75-2.60)
Race/ethnicity			
Hispanic	1.64 (1.03-2.61)	1.77 (1.09-2.88)	0.21 (0.08-0.55)
African American	1.41 (0.67-2.94)	1.46 (0.68-3.17)	0.28 (0.07-1.23)
Other	2.27 (0.79-6.53)	1.73 (0.57-5.30)	—
Unknown/missing	2.94 (1.56-5.53)	2.60 (1.36-4.96)	0.43 (0.15-1.26)
CAD or MI	0.70 (0.42-1.16)	0.59 (0.34-1.03)	2.05 (1.07-3.92)
CHF	1.09 (0.60-1.99)	0.72 (0.36-1.41)	3.36 (1.64-6.89)
Hypertension	0.98 (0.67-1.46)	0.90 (0.60-1.36)	3.49 (1.69-7.18)
COPD/Asthma	0.54 (0.33-0.88)	0.45 (0.27-0.77)	1.10 (0.56-2.16)
Cancer (active)	0.46 (0.15-1.40)	0.42 (0.12-1.46)	1.94 (0.63-6.02)
Liver disease	1.13 (0.60-2.13)	1.09 (0.56-2.12)	0.79 (0.27-2.32)
Renal disease	0.89 (0.54-1.47)	0.93 (0.55-1.57)	2.56 (1.34-4.88)

Reference groups: “No disease” for diabetes and all comorbidities, normal weight for BMI category, age <50, female sex, Non-Hispanic White.

Appendix 5. Sensitivity analyses of 14-day outcomes among 450 people hospitalized with COVID-19.

	Model 1 Mechanical Ventilation	Model 2 Death or Mechanical Ventilation	Model 3 Mechanical Ventilation
<i>N</i>	436	436	407
Characteristic	OR (95% CI)	OR (95% CI)	OR (95% CI)
Diabetes	1.86 (1.17-2.98)	2.15 (1.38-3.34)	2.01 (1.24-3.25)
BMI Category			
Overweight	1.43 (0.75-2.73)	0.96 (0.54-1.70)	1.30 (0.68-2.51)
Obese	2.11 (1.12-3.95)	1.52 (0.87-2.67)	2.01 (1.05-3.82)
Age			
50-59	0.96 (0.47-1.93)	0.95 (0.48-1.90)	0.94 (0.47-1.90)
60-69	1.11 (0.54-2.28)	1.01 (0.50-2.04)	1.10 (0.53-2.28)
≥70	1.52 (0.77-3.03)	2.00 (1.03-3.89)	1.73 (0.86-3.48)
Male	1.61 (1.01-2.58)	1.61 (1.04-2.50)	1.57 (0.97-2.52)
Race/ethnicity			
Hispanic	1.93 (1.08-3.41)	1.40 (0.81-2.42)	1.77 (0.99-3.17)
African American	1.42 (0.62-3.26)	0.98 (0.44-2.17)	1.25 (0.54-2.89)
Other	1.67 (0.52-5.41)	1.07 (0.33-3.46)	1.44 (0.44-4.71)
Unknown/missing	2.34 (1.15-4.74)	1.53 (0.77-3.06)	2.04 (1.00-4.16)
CAD or MI	0.53 (0.26-1.05)	0.61 (0.33-1.12)	0.49 (0.24-1.00)
CHF	0.97 (0.41-2.25)	1.40 (0.67-2.92)	1.15 (0.49-2.71)
COPD/Asthma	0.55 (0.31-0.98)	0.58 (0.35-0.97)	0.52 (0.29-0.94)
Cancer (active)	0.54 (0.15-1.99)	0.84 (0.30-2.36)	0.57 (0.15-2.21)
Liver disease	1.10 (0.54-2.25)	0.91 (0.45-1.82)	1.04 (0.50-2.13)
Renal disease	1.05 (0.56-1.98)	1.09 (0.61-1.93)	1.05 (0.56-1.99)

Model 1: primary analysis; Model 2: composite outcome including mechanical ventilation or death; Model 3: analysis excluding people who died and were not mechanically ventilated. Reference groups: “No disease” for diabetes and all comorbidities, normal weight for BMI category, age <50, female sex, Non-Hispanic White.

Appendix 6. Additional BMI sub-categorization for 450 hospitalized people with COVID-19, according to diabetes status.

Characteristic	No Diabetes	Diabetes
<i>N</i>	272	178
BMI Category, <i>n</i> (%)		
<18.5–24.9 kg/m ²	67 (24.6)	37 (20.8)
≥25.0–29.9 kg/m ²	105 (38.6)	50 (28.1)
≥30.0–34.9 kg/m ²	49 (18.0)	48 (27.0)
≥35.0 kg/m ²	51 (18.8)	43 (24.2)

Appendix 7. Multivariable logistic regression analysis of 14-day outcomes among 450 hospitalized people with COVID-19 (additional BMI category).

<i>N</i>	14-day outcomes		
	ICU Admission	Mechanical Ventilation	Death
	436	436	417
Characteristic	OR (95% CI)	OR (95% CI)	OR (95% CI)
Diabetes	1.59 (1.00-2.51)	1.96 (1.20-3.18)	2.02 (1.01-4.04)
BMI Category			
≥25.0–29.9 kg/m ²	1.42 (0.78-2.58)	1.43 (0.75-2.72)	0.61 (0.26-1.47)
≥30.0–34.9 kg/m ²	2.20 (1.14-4.27)	2.32 (1.15-4.68)	1.11 (0.43-2.86)
≥35.0 kg/m ²	2.11 (1.09-4.09)	1.95 (0.96-3.98)	1.10 (0.42-2.86)
Age			
50-59	1.13 (0.57-2.24)	1.02 (0.50-2.08)	3.74 (0.40-34.5)
60-69	1.22 (0.60-2.49)	1.20 (0.57-2.53)	4.57 (0.50-41.9)
≥70	1.41 (0.69-2.85)	1.72 (0.82-3.61)	12.6 (1.50-106.5)
Male	1.36 (0.88-2.12)	1.60 (1.00-2.57)	1.35 (0.66-2.75)
Race/ethnicity			
Hispanic	1.60 (0.93-2.76)	1.94 (1.09-3.44)	0.44 (0.15-1.25)
African American	1.36 (0.62-2.97)	1.48 (0.64-3.42)	0.35 (0.07-1.62)
Other	2.30 (0.76-6.98)	1.72 (0.53-5.59)	—
Unknown/missing	2.75 (1.38-5.47)	2.35 (1.15-4.77)	0.68 (0.21-2.18)
CAD or MI	0.62 (0.33-1.19)	0.55 (0.27-1.10)	0.71 (0.31-1.61)
CHF	1.66 (0.78-3.54)	1.00 (0.43-2.33)	1.91 (0.76-4.82)
Hypertension	0.96 (0.57-1.60)	0.78 (0.45-1.35)	1.33 (0.57-3.11)
COPD/Asthma	0.66 (0.39-1.11)	0.55 (0.31-0.97)	0.75 (0.35-1.60)
Cancer (active)	0.60 (0.18-1.94)	0.56 (0.15-2.06)	1.57 (0.46-5.36)
Liver disease	1.13 (0.57-2.23)	1.10 (0.54-2.25)	0.91 (0.27-3.03)
Renal disease	0.89 (0.49-1.64)	1.11 (0.58-2.10)	1.22 (0.55-2.73)

Reference groups: “No disease” for diabetes and all comorbidities, underweight/normal weight for BMI category, age <50, female sex, Non-Hispanic White. Events per outcome: 156 people were admitted to the ICU, 129 people were mechanically ventilated, 49 people died within 14 days of presentation to care.

Appendix 8. Table of missing variables.

Variable	Missing number
Age	1
Sex	0
Race/ethnicity	49
Diabetes status	0
BMI	0
ICU outcome	2
Mechanical Ventilation outcome	2
Death outcome	9
CAD or MI	0
Hypertension	0
COPD/Asthma	0
CHF	0
Liver disease	7
Renal disease	4
Cancer (active)	6