Supplementary Table 1: Ordinal regression models examining characteristics associated with more severe COVID-19 outcomes in individuals with SLE.

	Model 1		Model 2 (Adding comorbidity count)		Model 3 (Adding specific comorbidities)	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Age (continuous)	1.04 (1.03, 1.05)	1.2×10^{-15}	1.02 (1.01, 1.03)	1.9×10^{-5}**	1.03 (1.02, 1.04)	1.1×10^{-6}**
Sex						
Female	Ref					
Male	1.55 (1.06, 2.27)	2.3×10^{-2}*	1.59 (1.08, 2.35)	1.9×10^{-2}*	1.50 (1.02, 2.21)	3.9×10^{-2}*
Region						
Europe	Ref					
U.S & Canada	1.22 (0.34, 4.43)	0.76	0.96 (0.26, 3.61)	0.95	0.92 (0.25, 3.44)	0.90
Latin America	2.23 (0.99, 5.02	5.4×10^{-2}	1.97 (0.86, 4.52)	0.11	1.93 (0.84, 4.43)	0.12
Other	5.30 (2.47, 11.36)	1.8×10^{-5}**	4.71 (2.16, 10.27)	9.8×10^{-5}**	4.97 (2.29, 10.80)	5.0×10^{-5}**
Time period						
<=June 15, 2020	Ref					
June 16-Sept 30, 2020	0.50 (0.36, 0.71)	1.1×10^{-4}**	0.49 (0.34, 0.71)	1.2×10^{-4}**	0.50 (0.35, 0.71)	1.4×10^{-4}**
Oct 1, 2020- April 12, 2021	0.38 (0.28, 0.53)	9.2×10^{-9}**	0.39 (0.28, 0.55)	5.8×10^{-8}**	0.39 (0.28, 0.55)	4.8×10^{-8}**
GC Dose						

0 mg/day	Ref					
1-5 mg/day	2.06 (1.45, 2.92)	4.8×10^{-5}**	1.93 (1.35, 2.77)	3.0×10^{-4}**	1.86 (1.39, 2.66)	6.4×10^{-4}**
6-9 mg/day	2.86 (1.50, 5.46)	1.4×10^{-3}**	2.66 (1.37, 5.17)	3.9×10^{-3}**	2.82 (1.45, 5.47)	2.2×10^{-3}**
=>10 mg/day	3.25 (2.21, 4.76)	1.9×10^{-9}**	2.78 (1.87, 4.12)	4.2×10^{-7}**	2.58 (1.74, 3.82)	2.6×10^{-6}**
Medication Category						
Antimalarial only	Ref					
No SLE therapy	2.11 (1.40, 3.18)	3.3×10^{-4}**	2.02 (1.33, 3.07)	1.1×10^{-3}**	1.95 (1.28, 2.96)	1.8×10^{-3}**
Monotherapy with methotrexate, leflunomide, or sulfasalazine only#	0.68 (0.41, 1.12)	0.13	0.73 (0.44, 1.22)	0.23	0.72 (0.43, 1.21)	0.21
Monotherapy with mycophenolate/mycophenolic acid, tacrolimus, cyclophosphamide, cyclosporine, or azathioprine#	1.29 (0.93, 1.79)	0.13	1.12 (0.80, 1.58)	0.50	1.05 (0.75, 1.47)	0.79
Biologic/targeted synthetic drug monotherapy	1.46 (0.66, 3.25)	0.36	1.43 (0.62, 3.30)	0.40	1.43 (0.62, 3,30)	0.40
Biologic/targeted synthetic drug and immunosuppressive drug combination therapy#	1.28 (0.80, 2.05)	0.30	1.18 (0.73, 1.92)	0.50	1.19 (0.73, 1.92)	0.49
Number of Comorbidities (continuous)	_	_	1.94 (1.65, 2.27)	4.7×10^{-16}**	_	_
Number of Comorbidities (excluding Renal and	_	_	_	_	1.60 (1.23, 2.06)	2.5×10^{-4}**

Cardiovascular disease/Hypertension)						
Chronic renal insufficiency or end stage renal disease	_	_	_	_	3.72 (2.57, 5.36)	2.4x10^{-12}**
Cardiovascular/Hypertension	_	_	_	_	1.65 (1.23, 2.23)	9.6x10^{r}**

GC: Glucocorticoids IS: immunosuppressive; OR: Odd ratio; CI: confidence interval

#These patients could be also on antimalarials

Each model is adjusted for all variables listed; random effects applied for country and time.

* p<0.05

**p<0.01

Supplemental material

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Supplementary Table 2. Ordinal COVID-19 severity outcome with mechanical ventilation or death combined as highest category

	Total (N=1606)
Not hospitalized	1118 (69.6%)
Hospitalized with no oxygenation	169 (10.5%)
Hospitalized with any ventilation/ oxygenation	179 (11.2%)
Mechanical ventilation or Death	140 (8.7%)

Supplementary Table 3. Ordinal regression model examining characteristics associated with more severe COVID-19 outcomes in individuals with SLE with mechanical ventilation or death combined as highest category

	OR (95% CI)	p-value
Age (continuous)	1.03 (1.02, 1.04)	<0.001**
Sex		
Male	1.48 (1.00, 2.20)	0.05.1
Region		
Europe	Ref.	
U.S. & Canada	0.86 (0.22, 3.28)	0.82
Latin America	2.01 (0.87, 4.66)	0.10
Other	4.96 (2.26, 10.92)	<0.001**
Time period		
$\leq$ June 15, 2020	Ref.	
June 16-Sept 30, 2020	0.50 (0.35, 0.72)	<0.001**
Oct 1, 2020- April 12, 2021	0.41 (0.29, 0.57)	<0.001**
GC Dose		
0 mg/day	Ref.	
1-5 mg/day	1.90 (1.33, 2.72)	<0.001**
6-9 mg/day	2.41 (1.23, 4.72)	0.01**
=>10 mg/day	1.92 (1.26, 2.94)	0.003**
Medication Category		
Antimalarial only	Ref.	
No SLE therapy	1.80 (1.17, 2.74)	0.007**
Monotherapy with methotrexate, leflunomide, or sulfasalazine only[#]	0.73 (0.43, 1.24)	0.24
Monotherapy with mycophenolate/mycophenolic acid, tacrolimus, cyclophosphamide, cyclosporine, or azathioprine[#]	1.04 (0.73, 1.47)	0.83

Biologic/targeted synthetic drug monotherapy	1.31 (0.55, 3.11)	0.54
Biologic/targeted synthetic drug and immunosuppressive drug combination therapy#	1.22 (0.75, 1.98)	0.43
Number of Comorbidities (excluding Renal and Cardiovascular disease/Hypertension)	1.56 (1.21, 2.02)	<0.001**
Chronic renal insufficiency or end stage renal disease	3.34 (2.31, 4.85)	<0.001**
Cardiovascular/Hypertension	1.71 (1.27, 2.31)	<0.001**
Disease Activity		
Remission	Ref.	
Minimal or low	0.86 (0.61, 1.21)	0.39
Moderate	1.54 (0.98, 2.43)	0.063
Severe or high	3.67 (1.96, 6.86)	<0.001**

Each model adjusted for all variables listed, and random effects for country and time.

GC: Glucocorticoids IS: immunosuppressive; OR: Odd ratio; CI: confidence interval
#These patients could be also on antimalarials
* p<0.05
**p<0.01