

**Supplementary Table 1.** KRT patients diagnosed with COVID-19 up to May 1<sup>st</sup> 2020, as percentage of prevalent KRT patients on 31 December 2017, by treatment modality and country

	Dialysis										Transplant		
	All	HD	PD	Austria	French-speaking part of Belgium *	France	Romania	Spain	Switzerland	the Netherlands	All	France	Spain
<b>Patients with COVID-19 as % of prevalent patients on 31/12/2017</b>	2.9	3.0	1.3	1.0	3.7	3.4	1.4	3.5	2.4	2.2	1.4	1.3	1.6
<b>Age at diagnosis</b>													
0-19, %	2.0	2.6	0.7	0.0	NA	1.4	1.0	6.0	0.0	0.0	0.7	0.6	1.0
20-44, %	2.4	2.5	1.1	0.6	4.0	3.4	1.2	2.2	2.4	1.3	0.9	1.0	0.9
45-64, %	2.6	2.7	1.2	0.7	4.2	3.2	1.6	2.8	2.2	2.0	1.5	1.4	1.5
65-74, %	2.9	3.0	1.4	1.2	3.2	3.4	1.5	3.4	1.6	2.2	1.5	1.3	1.9
75+, %	3.3	3.4	1.6	1.2	3.7	3.6	0.9	4.4	3.1	2.5	1.9	1.6	2.2
<b>Sex</b>													
Males, %	3.0	3.1	1.5	0.8	4.1	3.6	1.3	3.5	2.4	2.1	1.5	1.4	1.6
Females, %	2.7	2.9	1.1	1.3	3.0	3.1	1.4	3.5	2.2	2.3	1.3	1.2	1.5
<b>Primary renal disease</b>													
Glomerulonephritis, %	2.4	2.5	1.1	1.1	2.9	2.9	1.5	2.7	1.2	1.3	1.2	1.2	1.3
Diabetes, %	3.6	3.7	1.5	1.2	4.9	4.0	2.5	3.6	3.1	2.6	2.0	2.0	2.0
Hypertension / renal vascular disease, %	3.3	3.5	1.4	0.8	3.1	3.7	4.0	3.1	3.3	2.5	1.8	2.0	1.4
Other, %	2.6	2.8	1.3	0.9	3.6	3.1	0.9	4.1	2.0	2.1	1.4	1.1	1.7
<b>Treatment modality</b>													
HD, %	3.0	NA	NA	1.0	3.8	3.5	1.5	3.8	2.5	2.2	NA	NA	NA
PD, %	1.3	NA	NA	0.3	2.4	1.5	0.0	1.6	1.2	2.2	NA	NA	NA

Abbreviations used: HD: hemodialysis, PD: peritoneal dialysis, NA: not applicable

\* Data on patients younger than 20 years are not available

**Supplementary Table 2.** Prevalent KRT patients on 31 December 2017, by treatment modality and country

	Dialysis										Transplant		
	All dialysis	HD	PD	Austria	French-speaking part of Belgium*	France	Romania	Spain	Switzerland	the Netherlands	All transplant	France	Spain
<b>Number of patients</b>	113594	104202	9392	4548	3771	47897	19823	27629	3679	6247	71861	39680	32181
<b>Age at 31/12/2017, median (IQR)</b>	69.6 (58.6-79.1)	69.8 (59.0-79.3)	67.2 (55.0-77.2)	68.6 (57.8-77.0)	71.4 (61.1-80.3)	71.0 (60.2-80.6)	65.0 (54.2-73.8)	70.7 (59-79.8)	70.9 (59.5-79.3)	71.0 (59.6-79)	58.1 (47.5-67.6)	57.8 (46.6-67.2)	58.9 (48.7-68.5)
0-19, n (%)	447 (0.4)	312 (0.3)	135 (1.4)	16 (0.4)	0 (0)	217 (0.5)	104 (0.5)	83 (0.3)	13 (0.4)	14 (0.2)	1124 (1.6)	705 (1.8)	419 (1.3)
20-44, n (%)	9502 (8.4)	8552 (8.2)	950 (10.1)	358 (7.9)	276 (7.3)	3731 (7.8)	2254 (11.4)	2121 (7.7)	288 (7.8)	474 (7.6)	13606 (18.9)	8131 (20.5)	5475 (17.0)
45-64, n (%)	33158 (29.2)	30047 (28.8)	3111 (33.1)	1496 (32.9)	984 (26.1)	12529 (26.2)	7578 (38.2)	7832 (28.3)	1001 (27.2)	1738 (27.8)	34042 (47.4)	18602 (46.9)	15440 (48.0)
65-74, n (%)	30037 (26.4)	27592 (26.5)	2445 (26.0)	1236 (27.2)	1052 (27.9)	12541 (26.2)	5435 (27.4)	7108 (25.7)	1000 (27.2)	1665 (26.7)	16819 (23.4)	9056 (22.8)	7763 (24.1)
75+, n (%)	40449 (35.6)	37698 (36.2)	2751 (29.3)	1442 (31.7)	1459 (38.7)	18879 (39.4)	4452 (22.5)	10484 (37.9)	1377 (37.4)	2356 (37.7)	6270 (8.7)	3186 (8.0)	3084 (9.6)
<b>Sex</b>													
Males, n (%)	69515 (61.2)	63898 (61.3)	5617 (59.8)	2989 (65.7)	2347 (62.2)	29123 (60.8)	11109 (56.0)	17823 (64.5)	2341 (63.6)	3783 (60.6)	44854 (62.4)	24557 (61.9)	20297 (63.1)
Females, n (%)	44079 (38.8)	40304 (38.7)	3775 (40.2)	1559 (34.3)	1424 (37.8)	18774 (39.2)	8714 (44.0)	9806 (35.5)	1338 (36.4)	2464 (39.4)	27007 (37.6)	15123 (38.1)	11884 (36.9)
<b>Primary renal disease</b>													
Glomerulonephritis, n (%)	16180 (14.2)	14589 (14.0)	1591 (16.9)	634 (13.9)	410 (10.9)	6822 (14.2)	3148 (15.9)	3861 (14.0)	598 (16.3)	707 (11.3)	18695 (26.0)	11020 (27.8)	7675 (23.8)
Diabetes, n (%)	23622 (20.8)	21921 (21.0)	1701 (18.1)	1179 (25.9)	900 (23.9)	11100 (23.2)	2125 (10.7)	6225 (22.5)	750 (20.4)	1343 (21.5)	6386 (8.9)	3292 (8.3)	3094 (9.6)
Hypertension / renal vascular disease, n (%)	20969 (18.5)	19241 (18.5)	1728 (18.4)	1017 (22.4)	849 (22.5)	11680 (24.4)	1212 (6.1)	3700 (13.4)	807 (21.9)	1704 (27.3)	5962 (8.3)	3567 (9.0)	2395 (7.4)
Other, n (%)	51848 (45.6)	47544 (45.6)	4304 (45.8)	1718 (37.8)	1612 (42.7)	18295 (38.2)	13337 (67.3)	12885 (46.6)	1524 (41.4)	2477 (39.7)	39435 (54.9)	21801 (54.9)	17634 (54.8)
<b>Treatment modality</b>													
HD, n (%)	104202 (91.7)	NA	NA	4189 (92.1)	3483 (92.4)	44809 (93.6)	18490 (93.3)	24522 (88.8)	3339 (90.8)	5370 (86.0)	NA	NA	NA
PD, n (%)	9392 (8.3)	NA	NA	359 (7.9)	288 (7.6)	3088 (6.4)	1333 (6.7)	3107 (11.2)	340 (9.2)	877 (14.0)	NA	NA	NA
<b>Year of start KRT, median (IQR)</b>	2014 (2010-2016)	2014 (2010-2016)	2015 (2013-2017)	2015 (2012-2016)	2015 (2011-2016)	2014 (2011-2016)	2013 (2009-2016)	2014 (2010-2016)	2014 (2011-2016)	2015 (2012-2016)	2007 (2000-2012)	2007 (1999-2012)	2007 (2000-2012)

Abbreviations used: HD: hemodialysis, PD: peritoneal dialysis, IQR: interquartile range, KRT: kidney replacement therapy, NA: not applicable

\* Data on patients younger than 20 years are not available

**Supplementary Table 3.** Comparison of COVID-19 patients and propensity score matched controls without COVID-19

	Dialysis			Transplant		
	COVID	non-COVID	p-value	COVID	non-COVID	p-value
	n=3285	n=32850		n=1013	n=10130	
<b>Age</b>						
Mean (SD)	69.4 (14.8)	69.3 (14.6)	0.81	59.6 (13.4)	59.4 (13.7)	0.73
Median (IQR)	71.7 (60.6-80.5)	71.7 (60.8-80.6)	0.70	60.9 (51.1-69.4)	61.1 (50.7-69.6)	0.88
<b>Sex</b>						
Males, n (%)	2077 (63.2)	20680 (63.0)	0.76	662 (65.4)	6650 (65.7)	0.86
<b>Primary renal disease</b>			0.90			0.65
Diabetes, n (%)	839 (25.5)	8351 (25.4)		130 (12.8)	1410 (13.9)	
Hypertension / renal vascular disease, n (%)	695 (21.2)	6966 (21.2)		107 (10.6)	1134 (11.2)	
Glomerulonephritis, n (%)	381 (11.6)	3951 (12.0)		224 (22.1)	2239 (22.1)	
Other, n (%)	1370 (41.7)	13582 (41.4)		552 (54.5)	5347 (52.8)	
<b>KRT vintage in years, median (IQR)</b>	3 (2-6)	3 (1-6)	0.76	9 (4-15)	9 (4-15)	0.46
<b>Country</b>			<0.001			0.60
Austria, n (%)	44 (1.3)	422 (1.3)		NA	NA	
Belgium, n (%)	140 (4.3)	1913 (5.8)		NA	NA	
Switzerland, n (%)	87 (2.7)	392 (1.2)		NA	NA	
Spain, n (%)	976 (29.7)	9666 (29.4)		501 (49.5)	4919 (48.6)	
France, n (%)	1631 (49.7)	16438 (50.0)		512 (50.5)	5211 (51.4)	
the Netherlands, n (%)	137 (4.2)	1421 (4.3)		NA	NA	
Romania, n (%)	270 (8.2)	2598 (7.9)		NA	NA	

Abbreviations used: HD: hemodialysis, PD: peritoneal dialysis, SD: standard deviation, IQR: interquartile range, KRT: kidney replacement therapy, NA: not applicable

**Supplementary Table 4.** Comparison of transplant and propensity score matched dialysis COVID-19 patients

	<b>Dialysis</b>	<b>Transplant</b>	<b>p-value</b>
	n=787	n=787	
<b>Age at COVID-19 diagnosis</b>			
Mean (SD)	60.1 (16.1)	61.6 (13.1)	0.04
Median (IQR)	61.9 (49.9-72.4)	63.1 (54.1-71.3)	0.14
<b>Sex</b>			
Males, n (%)	499 (63.4)	502 (63.8)	0.92
<b>Primary renal disease</b>			0.94
Diabetes, n (%)	123 (15.6)	123 (15.6)	
Hypertension / renal vascular disease, n (%)	88 (11.2)	96 (12.2)	
Glomerulonephritis, n (%)	157 (20.0)	153 (19.4)	
Other, n (%)	419 (53.2)	415 (52.7)	
<b>KRT vintage in years, median (IQR)</b>	5 (2-11)	7 (3-13)	<0.001
<b>Country</b>			0.16
Spain, n (%)	406 (51.6)	377 (47.9)	
France, n (%)	381 (48.4)	410 (52.1)	

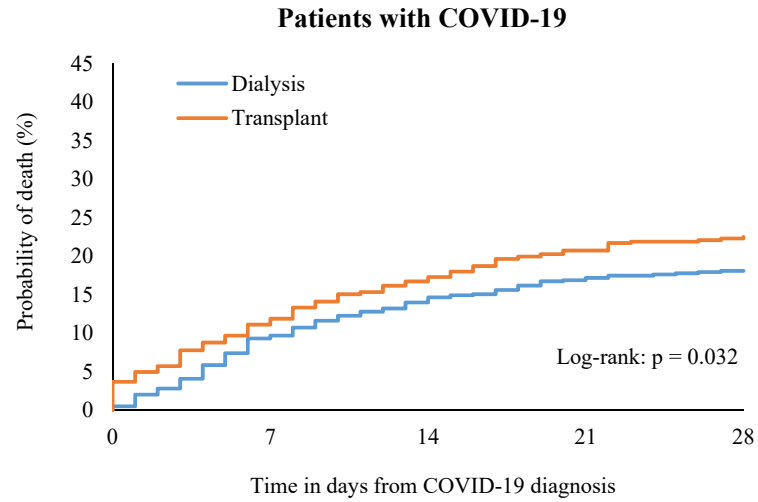
Abbreviations used: HD: hemodialysis, PD: peritoneal dialysis, SD: standard deviation, IQR: interquartile range, KRT: kidney replacement therapy

**Supplementary Table 5.** COVID-19 attributable mortality for dialysis and transplant patients with COVID-19

	COVID-19 attributable mortality(95% CI)	
	Dialysis	Transplant
<b>All</b>	20.0 (18.7-21.4)	19.9 (17.5-22.5)
<b>Age at COVID-19 diagnosis</b>		
0-64 years	8.3 (6.8-10.1)	11.8 (9.5-14.7)
65-74 years	19.5 (17.1-22.3)	28.7 (23.6-34.6)
75+ years	29.6 (27.3-32.0)	43.5 (35.3-52.5)
<b>Sex</b>		
Female	17.9 (15.9-20.1)	22.0 (17.9-26.7)
Male	21.3 (19.7-23.1)	18.8 (16.0-22.0)
<b>Primary renal disease</b>		
Diabetes	19.2 (16.8-22.0)	30.4 (22.9-39.4)
Glomerulonephritis	15.8 (12.5-19.8)	16.2 (11.9-21.8)
Hypertension / renal vascular disease	23.0 (20.1-26.2)	27.6 (20.0-37.1)
Other	20.1 (18.1-22.3)	17.6 (14.7-21.0)
<b>Treatment modality</b>		
HD	19.9 (18.5-21.2)	NA
PD	23.8 (17.5-31.9)	NA
<b>Country</b>		
Austria	23.0 (13.6-36.7)	NA
Belgium (French-speaking part)	20.0 (14.3-27.6)	NA
France	16.4 (14.8-18.3)	16.5 (13.5-20.1)
Romania	7.6 (4.6-12.2)	NA
Spain	26.7 (24.1-29.5)	23.0 (19.5-26.9)
Switzerland	27.3 (19.4-37.3)	NA
the Netherlands	28.1 (21.6-36.0)	NA

*Abbreviations used: HD: hemodialysis, PD: peritoneal dialysis, CI: confidence interval, NA: not applicable  
Propensity score matching was performed separately within the subgroups*

**Supplementary Figure 1.** Probability of death among age and sex matched dialysis and transplant patients with COVID-19



**Dialysis**

N patients / deaths / censored	787 / 0 / 0	706 / 76 / 5	641 / 114 / 32	580 / 132 / 75	502 / 138 / 147
Probability of death (95% CI)		9.7 (7.8-12.0)	14.7 (12.4-17.3)	17.2 (14.7-20.0)	18.1 (15.5-21.0)

**Transplant**

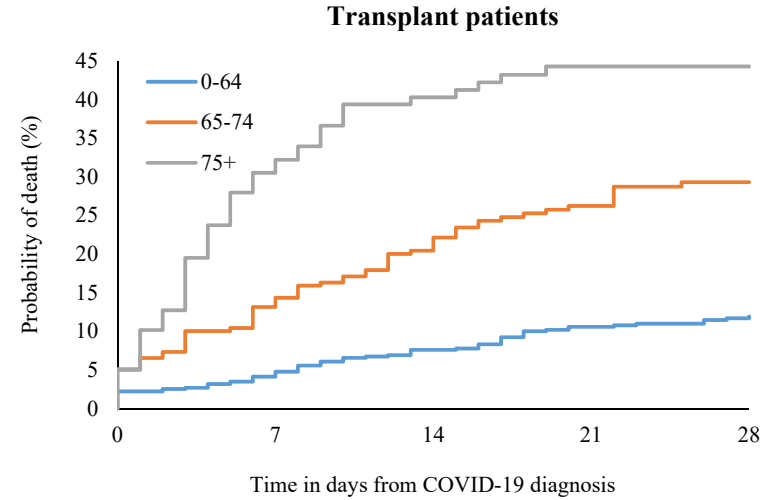
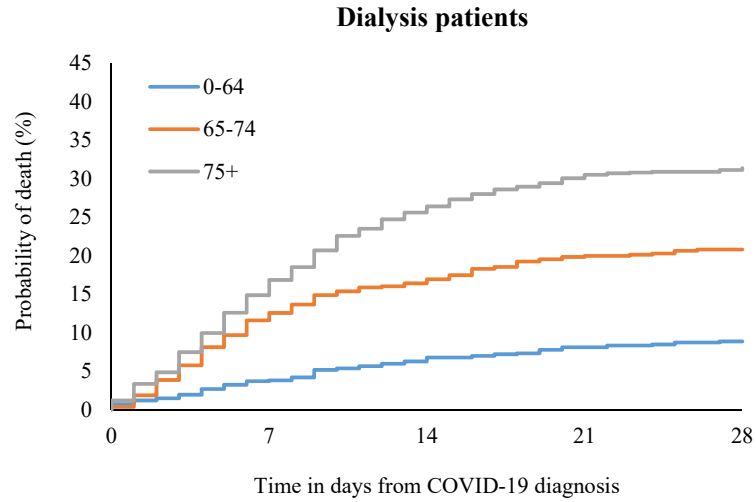
N patients / deaths / censored	787 / 0 / 0	684 / 93 / 10	584 / 133 / 70	500 / 156 / 131	377 / 166 / 244
Probability of death (95% CI)		11.9 (9.8-14.4)	17.3 (14.8-20.2)	20.7 (18.0-23.8)	22.5 (19.6-25.7)

**HR Transplant:**

First 28 days	1.28 (1.02-1.60)
First 14 days	1.21 (0.95-1.56)
Last 14 days	1.60 (0.94-2.70)

*Including data from France and Spain*

**Supplementary Figure 2.** Probability of death among dialysis patients (left panel) and transplant patients (right panel) with COVID-19, by age group



**0-64 years**

N patients / deaths / censored 1088 / 0 / 0 1023 / 41 / 24 913 / 71 / 104 807 / 83 / 198 676 / 89 / 325

Probability of death (95% CI) 3.8 (2.8-5.1) 6.8 (5.4-8.5) 8.1 (6.6-10.0) 8.9 (7.2-10.8)

**65-74 years**

N patients / deaths / censored 857 / 0 / 0 727 / 106 / 24 631 / 141 / 85 545 / 163 / 149 443 / 168 / 246

Probability of death (95% CI) 12.6 (10.5-15.0) 16.9 (14.5-19.7) 20.0 (17.4-22.9) 20.8 (18.1-23.8)

**75+ years**

N patients / deaths / censored 1340 / 0 / 0 1094 / 224 / 22 904 / 346 / 90 750 / 393 / 197 565 / 401 / 374

Probability of death (95% CI) 16.8 (14.9-19.0) 26.4 (24.1-28.9) 30.5 (28.0-33.1) 31.4 (28.9-34.0)

635 / 0 / 0 595 / 30 / 10 536 / 47 / 52 464 / 63 / 108 366 / 69 / 200

Probability of death (95% CI) 4.8 (3.4-6.7) 7.6 (5.8-10.0) 10.6 (8.4-13.3) 11.9 (9.5-14.9)

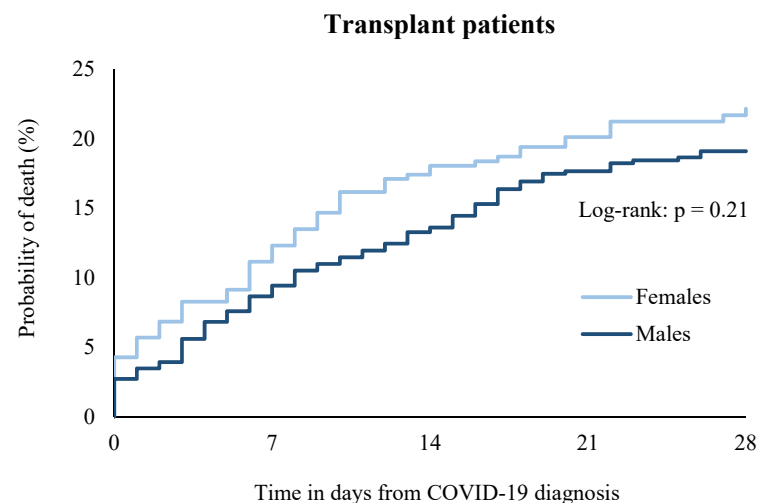
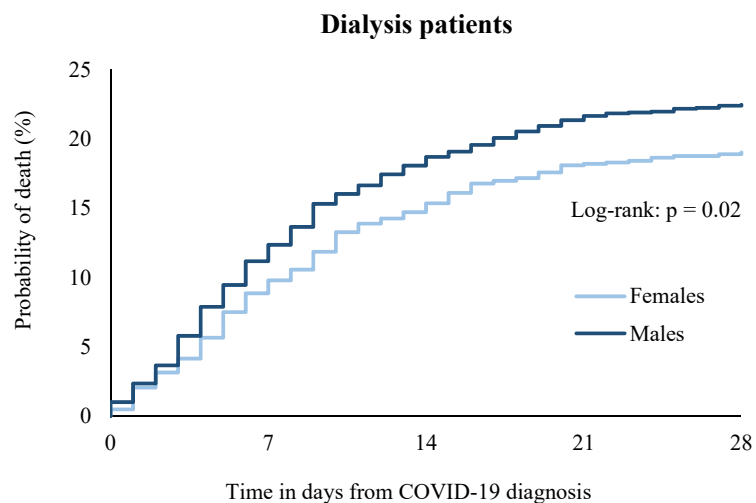
260 / 0 / 0 219 / 37 / 4 183 / 56 / 21 151 / 65 / 44 121 / 71 / 68

Probability of death (95% CI) 14.3 (10.6-19.2) 22.1 (17.5-27.8) 26.2 (21.2-32.2) 29.3 (23.9-35.6)

118 / 0 / 0 80 / 38 / 0 65 / 47 / 6 51 / 51 / 16 51 / 51 / 16

Probability of death (95% CI) 32.2 (24.6-41.4) 40.3 (32.0-49.8) 44.3 (35.7-53.9) 44.3 (35.7-53.9)

**Supplementary Figure 3.** Probability of death among dialysis patients (left panel) and transplant patients (right panel) with COVID-19, by sex



**Females**

N patients / deaths / censored	1208 / 0 / 0	1063 / 117 / 28	916 / 180 / 112	787 / 209 / 212	606 / 216 / 386
Probability of death (95% CI)		9.8 (8.2-11.6)	15.4 (13.4-17.6)	18.2 (16.1-20.6)	19.0 (16.8-21.5)

**Males**

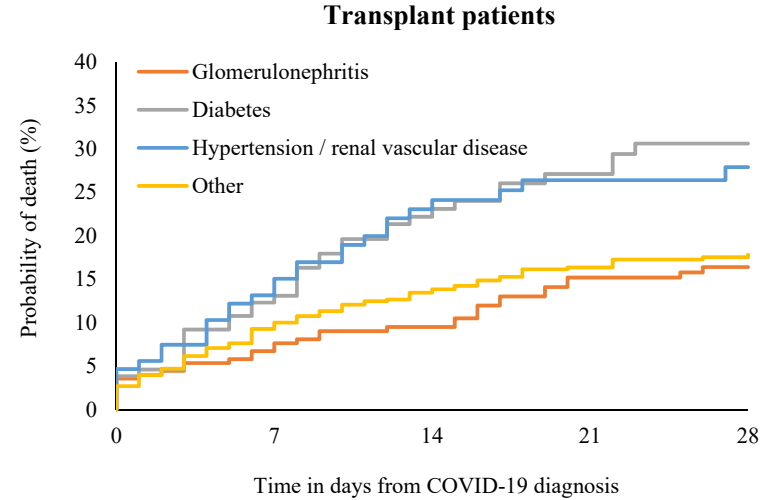
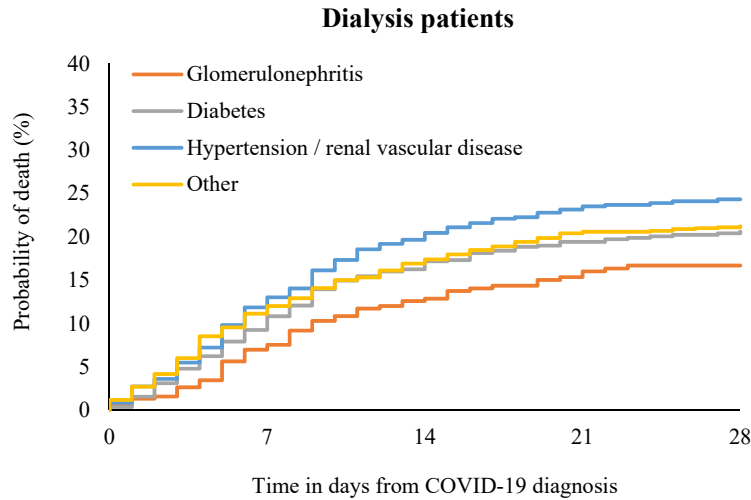
N patients / deaths / censored	2077 / 0 / 0	1781 / 254 / 42	1532 / 378 / 167	1304 / 430 / 343	1031 / 442 / 604
Probability of death (95% CI)		12.4 (11.0-13.9)	18.7 (17.1-20.5)	21.7 (19.9-23.5)	22.5 (20.7-24.4)

N patients / deaths / censored	351 / 0 / 0	304 / 43 / 4	260 / 62 / 29	223 / 68 / 60	169 / 73 / 109
Probability of death (95% CI)		12.3 (9.3-16.2)	18.0 (14.4-22.5)	20.1 (16.2-24.8)	22.2 (18.0-27.1)

N patients / deaths / censored	662 / 0 / 0	590 / 62 / 10	518 / 88 / 56	443 / 111 / 108	362 / 118 / 182
Probability of death (95% CI)		9.4 (7.4-11.9)	13.6 (11.2-16.5)	17.7 (14.9-20.9)	19.1 (16.2-22.5)



**Supplementary Figure 4.** Probability of death among dialysis patients (left panel) and transplant patients (right panel) with COVID-19, by primary renal disease



**Glomerulonephritis**

N patients / deaths / censored	381 / 0 / 0	338 / 28 / 15	299 / 47 / 35	256 / 57 / 68	240 / 59 / 82
Probability of death (95% CI)		7.5 (5.3-10.7)	12.9 (9.8-16.8)	16.0 (12.6-20.3)	16.7 (13.2-21.0)

**Diabetes**

N patients / deaths / censored	839 / 0 / 0	733 / 90 / 16	625 / 140 / 74	550 / 156 / 133	417 / 163 / 259
Probability of death (95% CI)		10.8 (8.9-13.1)	17.2 (14.7-19.9)	19.4 (16.8-22.3)	20.6 (17.9-23.6)

**Hypertension / renal vascular disease**

N patients / deaths / censored	695 / 0 / 0	596 / 90 / 9	500 / 139 / 56	421 / 157 / 117	338 / 161 / 196
Probability of death (95% CI)		13.0 (10.7-15.8)	20.4 (17.6-23.7)	23.5 (20.5-26.9)	24.3 (21.2-27.8)

**Other**

N patients / deaths / censored	1370 / 0 / 0	1177 / 163 / 30	1024 / 232 / 114	876 / 269 / 225	695 / 275 / 400
Probability of death (95% CI)		12.0 (10.4-13.9)	17.4 (15.5-19.5)	20.6 (18.5-22.9)	21.2 (19.1-23.6)

N patients / deaths / censored	224 / 0 / 0	202 / 17 / 5	186 / 21 / 17	156 / 32 / 36	134 / 34 / 56
Probability of death (95% CI)		7.6 (4.8-12.0)	9.5 (6.3-14.2)	15.2 (11.0-20.8)	16.4 (12.0-22.3)

N patients / deaths / censored	130 / 0 / 0	112 / 17 / 1	86 / 29 / 15	68 / 33 / 29	58 / 36 / 36
Probability of death (95% CI)		13.1 (8.4-20.2)	23.1 (16.6-31.5)	27.1 (20.0-36.1)	30.6 (23.0-40.1)

N patients / deaths / censored	107 / 0 / 0	89 / 16 / 2	72 / 25 / 10	64 / 27 / 16	48 / 28 / 31
Probability of death (95% CI)		15.1 (9.5-23.4)	24.1 (17.0-33.6)	26.4 (18.9-36.2)	27.9 (20.1-38.0)

N patients / deaths / censored	552 / 0 / 0	491 / 55 / 6	435 / 75 / 42	381 / 87 / 84	292 / 93 / 167
Probability of death (95% CI)		10.0 (7.8-12.9)	13.9 (11.2-17.1)	16.4 (13.5-19.8)	17.8 (14.8-21.4)