

## **Supplemental Material**

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**Supplemental Table 1. Univariate risk factors for vaccine non-response two doses of SARS-CoV-2 mRNA vaccine BNT162b2 (N=173)**

Characteristics	Anti-S < 50 AU/mL N=7	Anti-S ≥ 50 AU/mL N=166	RR (95% CI)	p
Age ≥ 60 years	3 (43)	89 (54)	0.66 (0.15 – 2.86)	0.71
Men	5 (71)	87 (52)	2.20 (0.44 – 11.04)	0.45
Race				
Black	5 (71)	142 (86)	Reference	
Other	2 (29)	24 (15)	2.26 (0.46 – 11.04)	0.28
Body Mass Index (kg/m <sup>2</sup> )				
Normal or underweight (<25)	4 (40)	48 (28)	Reference	
Overweight or obese (≥ 25)	6 (60)	123 (72)	2.30 (0.28 – 18.64)	0.68
Etiology of ESRD				
Diabetes mellitus	0 (0)	64 (39)	Undefined	0.047
Hypertension	4 (57)	112 (68)	0.66 (0.15 – 2.83)	0.69
Glomerular diseases	0 (0)	14 (8)	Undefined	1.00
Polycystic kidney disease	0 (0)	5 (3)	Undefined	1.00
Other	4 (57)	45 (27)	3.37 (0.78 – 14.53)	0.10
Dialysis Access in Use				
AVF	3 (43)	81 (49)	Reference	
AVG	1 (14)	39 (24)	0.67 (0.07-6.18)	0.72
HD catheter	2 (29)	23 (14)	2.82 (0.51-15.60)	0.23
PD catheter	1 (14)	23 (14)	1.04 (0.11-9.55)	0.97
Dialysis Modality				
In-center HD	6 (86)	143 (86)	Reference	
PD	1 (14)	23 (14)	1.03 (0.13 – 8.22)	1.00
Dialysis Vintage, years				
<1	3 (43)	25 (15)	Reference	
1-3	2 (29)	61 (37)	0.31 (0.05 – 1.84)	0.20
>3	2 (29)	79 (48)	0.24 (0.04 – 1.43)	0.12
Comorbid conditions				
Diabetes	0 (0)	84 (51)	Undefined	0.01
Hypertension requiring anti-hypertensive medications	2 (29)	146 (88)	0.07 (0.01 – 0.33)	<0.001
Coronary artery disease	2 (29)	46 (28)	1.04 (0.21 – 5.19)	1.00
Cerebrovascular accident	1 (14)	26 (16)	0.90 (0.11 – 7.14)	1.00
Congestive heart failure	4 (57)	52 (31)	2.79 (0.65 – 12.03)	0.22
Neurological disease	1 (14)	19 (11)	1.28 (0.16 – 10.05)	0.58
Lung disease	0 (0)	26 (16)	Undefined	0.60
Cirrhosis	0 (0)	4 (2)	Undefined	1.00
Active hepatitis C	0 (0)	6 (4)	Undefined	1.00
HIV with CD4 < 200 cells/mcL	1 (14)	1 (1)	14.25 (2.90 – 70.11)	0.08
Previous COVID-19 infection	0 (0)	25 (15)	Undefined	0.60
Sickle cell disease	0 (0)	3 (2)	Undefined	1.00
Active malignancy	1 (10)	7 (4)	3.44 (0.47 – 25.26)	0.29
Autoimmune disease	1 (14)	15 (9)	1.64 (0.21 – 12.75)	0.50
Prior renal transplantation	2 (29)	17 (10)	3.24 (0.68 – 15.57)	0.17
Current non-renal solid organ transplantation	1 (14)	2 (1)	9.44 (1.59 – 56.17)	0.12
Active on kidney transplant list	1 (14)	24 (15)	0.99 (0.12 – 7.85)	1.00
Lack of response to prior hepatitis B vaccination	4 (57)	34 (21)	4.74 (1.11 – 20.26)	0.04
ESRD comorbidity Index				

<5	3 (43)	116 (70)	Reference	
≥5	4 (57)	50 (30)	2.94 (0.68 – 12.68)	0.21
<b>Medications</b>				
Systemic corticosteroids <sup>a</sup>	2 (29)	6 (4)	8.25 (1.88 – 36.18)	0.04
Hydroxychloroquine	0 (0)	4 (2)	Undefined	1.00
Biologic agent <sup>b</sup>	0 (0)	2 (1)	Undefined	1.00
Other immunosuppressant <sup>c</sup>	1 (14)	7 (4)	3.44 (0.47 – 25.26)	0.29
Any immunosuppressive medication <sup>d</sup>	2 (29)	14 (8)	3.93 (0.83 – 18.62)	0.13
Active chemotherapy	0	0		
ACEI or ARB	1 (14)	60 (36)	0.31 (0.04 – 2.48)	0.42
Intravenous iron, any type or dose	5 (71)	117 (71)	1.05 (0.21 – 5.21)	1.00
<b>Darbepoietin dose per week (mcg)</b>				
< 60	2 (29)	147 (89)	Reference	
60-100	5 (71)	19 (11)	15.52 (3.19 – 75.51)	< 0.001
<b>Laboratory Data</b>				
Kt/V <sub>urea</sub> ≥ 1.2 in HD, ≥ 1.7 in PD	7 (100)	165 (99)		1.00
Ferritin (ng/mL)	1097 (138-2592)	876 (19-2987)		0.30
nPCR (g/kg/day)	1.20 (0.57-1.41)	0.88 (0.30-1.79)		0.20

Values are presented as n (%) or median (range).

Anti-S: antibody against the spike protein of SARS-CoV-2; RR: relative risk; CI: confidence interval; ESRD: end-stage renal disease; AVF: arterio-venous fistula; AVG: arterio-venous graft; HD: hemodialysis; PD: peritoneal dialysis; HIV: human immunodeficiency virus; COVID-19: Coronavirus disease 2019; ACEI: angiotensin-converting enzyme inhibitor; ARB: angiotensin II receptor blocker; nPCR: normalized protein catabolic rate

<sup>a</sup> All prednisone; dose=5 mg (n=6), 7.5 mg (n=1), 20 mg (n=1)

<sup>b</sup> Both adalimumab

<sup>c</sup> Tacrolimus (5), azathioprine (2), leflunomide (1)

<sup>d</sup> Corticosteroids (prednisone), biologic agents (adalimumab), and other immunosuppressants (tacrolimus, azathioprine, leflunomide)

**Supplemental Table 2. Characteristics of Non-responders (those who did not seroconvert) After Receiving Two Doses of SARS-CoV-2 mRNA Vaccine BNT162b2**

<b>Patient</b>	<b>Age (years)</b>	<b>Sex</b>	<b>BMI</b>	<b>Anti-S level (AU/mL)</b>	<b>Previous COVID-19</b>	<b>Non-renal transplant</b>	<b>Renal Transplant</b>	<b>Immunosuppressive Medication</b>	<b>Dialysis Modality</b>
1	61	M	38.6	0	No	No	No	No	In-center HD
2	41	M	21.6	22.2	No	No	Yes	No	In-center HD
3	43	F	55.5	39.3	No	No	No	No	In-center HD
4	70	M	39.9	0	No	Yes, heart	No	Yes	In-center HD
5	58	F	40.7	5.9	No	No	No	No	In-center HD
6	55	M	34.1	6.6	No	No	No	No	In-center HD
7	73	M	29.5	3.7	No	No	Yes	Yes	PD

Anti-S: Antibody against spike protein of SARS-CoV-2; M: Male; F: Female; BMI: Body mass index; COVID-19: Coronavirus 2019; HD: Hemodialysis; PD: Peritoneal dialysis