

COVID19 vaccine type and humoral immune response in patients receiving dialysis

Table of Contents

Supplemental Methods	p2
Supplemental Table 1 Characteristics of patients on dialysis by vaccine type	p3
Supplemental Figure 1 Study flowchart of participants	p4

Supplemental Methods

Assay Characteristics

The Siemens total RBD Ig assay measures IgG and IgM antibodies. This assay is reported by the manufacture to have 100% sensitivity and 99.8% specificity for tests performed ≥ 14 days after a positive reverse transcriptase polymerase chain reaction test¹; it has been validated independently with similar performance characteristics^{2, 3}. We used one of two Siemens RBD IgG assays, which are semiquantitative two-step sandwich indirect chemiluminescent assay with a manufacturer reported 95.6% (95% CI: 92.2-97.8%) sensitivity and 99.9% (95% CI 99.6-99.9%) specificity for tests performed ≥ 21 days post positive reverse transcriptase polymerase chain reaction test. An index value ≥ 1.0 is considered reactive. The two assays are compatible using a conversion factor, but one has a larger maximal index value range (>44 versus > 150).

We classified responses as absent total RBD Ig antibody, absent semiquantitative IgG antibody (index value < 1), diminished antibody (semiquantitative IgG index value < 10), or medium to high antibody (≥ 10)⁴. We chose index value ≥ 10 as a cut-point based on a Siemens study (n=74) evaluating correlation with plaque reduction neutralization test which reported index values ≥ 10 had a positive predictive value of 100% for plaque reduction neutralization test⁵ $> 1:80$.

REFERENCES

1. U.S. Food & Drug Administration. *EUA Authorized Serology Test Performance*. 2020. Accessed June 28, 2021. <https://www.fda.gov/medical-devices/coronavirus-disease-2019-covid-19-emergency-use-authorizations-medical-devices/eua-authorized-serology-test-performance>
2. Schnurra C, Reiners N, Biemann R, Kaiser T, Trawinski H, Jassoy C. Comparison of the diagnostic sensitivity of SARS-CoV-2 nucleoprotein and glycoprotein-based antibody tests. *J Clin Virol*. Aug 2020;129:104544. doi:10.1016/j.jcv.2020.104544
3. Public Health England. *Evaluation of sensitivity and specificity of 4 commercially available SARS-CoV-2 antibody immunoassays*. . 2020. Accessed June 6, 2021. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/898437/Evaluation_of_sensitivity_and_specificity_of_4_commercially_available_SARS-CoV-2_antibody_immunoassays.pdf
4. Anand S, Montez-Rath ME, Han J, et al. Serial SARS-CoV-2 Receptor-Binding Domain Antibody Responses in Patients Receiving Dialysis. *Ann Intern Med*. May 18 2021;doi:10.7326/M21-0256

Supplemental Table 1 Characteristics of patients on dialysis by vaccine type

	Overall	mRNA1273	BNT162b2	Ad26.COV2.S
Patient characteristics	N=2367	N=1527 (65)	N=440 (19)	N=400 (17)
Age				
18-44	199 (8)	100 (7)	37 (8)	62 (15)
45-64	803 (34)	460 (30)	114 (26)	229 (57)
65-79	985 (42)	684 (45)	206 (47)	95 (24)
≥80	380 (16)	283 (18)	83 (19)	14 (4)
Gender				
M	1445 (61)	926 (61)	279 (63)	240 (60)
F	922 (39)	601 (39)	161 (37)	160 (40)
Race and Ethnicity				
Hispanic	820 (35)	479 (31)	173 (39)	168 (42)
Non-Hispanic white	580 (24)	359 (24)	115 (26)	106 (26)
Non-Hispanic Black	232 (10)	95 (6)	31 (7)	106 (26)
Asian	358 (15)	305 (20)	46 (11)	7 (2)
Other	76 (3)	63 (4)	10 (2)	3 (1)
Missing	301 (13)	226 (15)	65 (15)	10 (3)
Geographic region*				
South	512 (22)	82 (5)	47 (11)	383 (96)
West	1855 (78)	1445 (95)	393 (89)	17 (4)
Dialysis Modality				
Hemodialysis	2044 (86)	1322 (87)	378 (86)	344 (86)
CCPD	266 (11)	176 (11)	49 (11)	41 (10)
CAPD	25 (1)	18 (1)	2 (1)	5 (1)
Home Hemodialysis	32 (2)	11 (1)	11 (2)	10 (3)
ESKD Vintage (years)				
< 2	913 (39)	591 (39)	189 (43)	133 (33)
2 – 5	776 (33)	499 (33)	141 (32)	136 (34)
≥ 5	672 (28)	435 (28)	108 (25)	129 (32)
Missing	6 (0)	2 (0)	2 (0)	2 (1)
Diabetes				
Yes	1527 (65)	988 (65)	272 (62)	267 (67)
No	840 (35)	539 (35)	168 (38)	133 (33)
RBD antibody status prior to vaccine[^]				
Seropositive	851 (36)	487 (32)	152 (35)	212 (53)
Seronegative	1513 (64)	1039 (68)	286 (65)	188 (47)

Abbreviations: CCPD, continuous cycler-assisted peritoneal dialysis; CAPD, continuous automated peritoneal dialysis; ESKD, end-stage kidney disease; RBD, receptor-binding domain;

*US Census Regions (South-Texas and Tennessee, West-California); [^]RBD seropositive prior to vaccination indicates likely SARS-CoV-2 infection prior to vaccination; 3 individuals were missing date for first dose which precluded the assessment of seropositive status prior to vaccination;

Supplemental Figure 1 Study flowchart of participants

