SARS-CoV-2 Vaccine Acceptability in Patients on Hemodialysis: A Nationwide Survey

Pablo Garcia,[1] Maria E. Montez-Rath,[1] Heather Moore,[2] Johnie Flotte,[2] Chris Fults,[2] Martha S. Block,[2] Jialin Han,[1] Mary Dittrich,[2] Julie Parsonnet,[3] Glenn M. Chertow,[4] Geoffrey A. Block,[2] and Shuchi Anand[1]

[1] Department of Medicine (Nephrology), Stanford University, Stanford, California
[2] Office of the Chief Medical Officer, US Renal Care, Plano, Texas
[3] Departments of Medicine (Infectious Diseases and Geographic Medicine), and Epidemiology and Population Health, Stanford University, Stanford, California
[4] Departments of Medicine (Nephrology), and Epidemiology and Population Health, Stanford University, Stanford, California

ABSTRACT

Background Patients on dialysis are at increased risk for COVID-19–related complications. However, a substantial fraction of patients on dialysis belong to groups more likely to be hesitant about vaccination.

Methods With the goal of identifying strategies to increase COVID-19 vaccine uptake among patients on hemodialysis, we conducted a nationwide vaccine acceptability survey, partnering with a dialysis network to distribute an anonymized English and Spanish language online survey in 150 randomly selected facilities in the United States. We used logistic regression to evaluate characteristics of vaccine-hesitant persons.

Results A total of 1515 (14% of eligible) patients responded; 20% of all responders, 29% of patients aged 18–44 years, and 29% of Black responders reported being hesitant to seek the COVID-19 vaccine, even if the vaccine was considered safe for the general population. Odds of vaccine hesitancy were higher among patients aged 18–44 years versus those 45–64 years (odds ratio [OR], 1.5; 95% confidence interval [95% CI], 1.0 to 2.3), Black patients versus non-Hispanic White patients (OR, 1.9; 95% CI, 1.3 to 2.7), Native Americans or Pacific Islanders versus non-Hispanic White patients (OR, 2.0; 95% CI, 1.1 to 3.7), and women versus men (OR, 1.6; 95% CI, 1.2 to 2.0). About half (53%) of patients who were vaccine hesitant expressed concerns about side effects. Responders' main information sources about COVID-19 vaccines were television news and dialysis staff (68% and 38%, respectively).

Conclusions A substantial proportion of patients receiving in-center hemodialysis in the United States are hesitant about seeking COVID-19 vaccination. Facilitating uptake requires outreach to younger patients, women, and Black, Native American, or Pacific Islander patients, and addressing concerns about side effects.

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Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection results in high rates of hospitalization and death among patients receiving dialysis. Medicare data tracking coronavirus disease 2019 (COVID-19) hospitalizations indicate that close to 7000 persons with ESKD are hospitalized per 100,000 beneficiaries, a rate three- to four-fold higher than in older or disabled persons.[1] On hospitalization, early reported mortality rates exceeded 25%.[2]

Considering the serious health implications of SARS-CoV-2 infection in patients receiving dialysis, combined with the potential for increased risk for exposure with travel to, from, and during the provision of in-center hemodialysis or crosstraffic between dialysis facilities and skilled nursing facilities,[3] some states are prioritizing vaccination to these patients, almost half of whom are also over 65 years of age. A substantial fraction of persons receiving dialysis, however, belong to racial, ethnic, socioeconomic, cultural, and religious groups more likely to be vaccine hesitant.[4–7]

To inform programs and policies aimed at promoting COVID-19 vaccine uptake in this vulnerable population, we offered a nationwide survey to persons undergoing in-center hemodialysis in

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Correspondence: Shuchi Anand, Division of Nephrology, 777 Welch Road, Suite DE, Palo Alto, CA 94304. Email: sanand2@stanford.edu

150 randomly selected facilities in January 2021. Our goal was to estimate rates of vaccine hesitancy, and describe the demographic and clinical characteristics of vaccine-hesitant persons and elicit their major concerns.

METHODS

We distributed an anonymized online survey in facilities of a mid-to-large–sized dialysis organization from January 8 to February 11, 2021. The study received Institutional Review Board approval from the Stanford Institution Review Board.

Sampling

Our sampling frame consisted of 331 hemodialysis facilities with ≥30 patients managed by US Renal Care. These facilities are located throughout the United States, and treat a population that is representative of the overall US dialysis population by age, sex, and race/ethnicity, although underrepresenting the Midwest (Supplemental Table 1). We randomly selected 150 facilities using implicit stratification by region and zip code, followed by systematic sampling with fractional polynomials.[8] We removed from the sampling frame a single facility where we piloted the survey.

Survey

We designed a survey with 28 questions, and four major subheadings: COVID-19 and vaccine, COVID-19 effects, responder health and family structure, and demographic data (Supplemental Survey). These subheadings followed the conceptual framework recommended by the SAGE Working Group on Vaccine Hesitancy,[9] with four questions related to COVID-19 vaccine hesitancy drawn from published surveys in the United States and worldwide.[4,5,9–12] Demographic questions were on the basis of the US Census or National Health and Nutrition Examination Survey.

Because Spanish is the second most commonly spoken language in the United States,[13] a native speaker (P.G.) created a Spanish language version of the survey. We generated the survey using Qualtrics software, Version XM (Qualtrics, Provo, UT). We estimated the time required to complete the survey to be 9 minutes. Before publishing the survey, we piloted in one facility with English and native Spanish speakers. We deployed a final version with an accompanying instructional video and slide deck sent to facility managers and social workers; social workers were designated survey "champions." We held several progress calls with facilities to assist with survey uptake.

We distributed the surveys to all patients aged ≥18 years using one of two methods: (*1*) facility iPads with a link to the survey, or (*2*) quick response codes to access the survey *via* a smartphone. If participants answered at least one survey question, we included their responses.

Statistical Analyses

We expressed categorical variables as counts (percentage). We used logistic regression to calculate odds ratio (OR) and 95% confidence interval (95% CI) for correlates of vaccine hesitancy. We linked zip codes to the US census region. For the purposes of the logistic regression analysis, we defined vaccine hesitancy as answering not sure, probably not, or definitely not, to any of the four COVID-19 vaccine-related questions. In total, 93% of the responders completed all questions. Two responders missing the outcome (vaccine hesitancy) and four missing regions were removed from the logistic regression analysis. We assumed data were missing at random, conditional on observed variables and used multiple imputation through chained equations to generate eight imputed datasets.[14,15] The imputation model included all independent variables and the outcome of vaccine hesitancy. We combined the estimates and SEMs obtained from the logistic regression model applied to each imputed dataset using Rubin's rules.[16]

We used SAS version 9.4 (SAS Institute, Inc, Cary, NC) and Stata MP version 16.1 (StataCorp, College Station, TX) to perform the analyses.

Significance Statement

High uptake of the SARS-COV-2 vaccine among patients on dialysis is critical to mitigating the devastating rates of COVID-19–related complications and deaths observed in the dialysis population. In a nationwide vaccine acceptability survey involving 150 dialysis facilities in the United States and broadly representative of this patient population, the authors found that, overall, one in five patients had vaccine hesitancy, as did one in four Black patients or patients aged 18–44 years. One in three responders identified dialysis staff as key sources of information about COVID-19 vaccines. Patients on hemodialysis who were vaccine hesitant were chiefly concerned about side effects. These findings highlight the opportunities available to dialysis networks in facilitating vaccine uptake among patients on dialysis and identify specific subgroups for which additional outreach is necessary.

RESULTS AND DISCUSSION

A total of 1515 patients among 10,974 responded to the survey, a response rate of 14%. Supplemental Figure 1 depicts the locations from which surveys were returned; no responses were returned from Northwestern facilities, but otherwise responding zip codes matched the geographic distribution of sampled facilities. A majority (98%) of the responses were returned in January 2021, before widespread roll out of vaccines. As shown in Supplemental Table 1, patients responding to the survey matched the distribution of the US dialysis population by age, sex, and race/ethnicity. Patients on dialysis from the Midwest (12% of survey responders) were slightly underrepresented (19% of US patients); patients from the US South and West were slightly overrepresented.

Responders from the Northeast were older, responders from the West were more likely to be male and of Hispanic ethnicity, and responders from the South were more likely to be Black responders (Table 1). Of survey responders, 15% had a family member or close acquaintance who had died from COVID-19. Only 13% of responders did not receive, or were not planning to receive, an influenza vaccine during the 2020–21 season.

Table 1. Characteristics of survey responders by US Census region of residence

Patient Characteristics	Total[a] *n*=1515	Northeast *n*=177	South *n*=733	Midwest *n*=185	West *n*=418
Age, yrs, *n* (%)					
18–44	149 (10)	9 (5)	77 (11)	15 (8)	48 (12)
45–64	608 (40)	62 (35)	325 (44)	65 (35)	156 (37)
65–79	557 (37)	80 (45)	243 (33)	71 (39)	163 (39)
≥80	158 (10)	24 (13)	64 (9)	32 (17)	38 (9)
Missing	43 (3)	4 (2)	24 (3)	2 (1)	13 (3)
Sex, *n* (%)					
Male	806 (53)	85 (48)	386 (53)	96 (52)	239 (57)
Female	647 (43)	88 (50)	312 (42)	85 (46)	162 (39)
Missing	62 (4)	4 (2)	35 (5)	4 (2)	17 (4)
Race and ethnicity, *n* (%)					
Hispanic	372 (24)	12 (7)	183 (25)	11 (6)	166 (40)
Non-Hispanic White	448 (30)	94 (53)	179 (24)	113 (61)	62 (15)
Non-Hispanic Black	456 (30)	57 (32)	304 (42)	50 (27)	45 (11)
Asian	119 (8)	8 (5)	15 (2)	2 (1)	94 (22)
Other[b]	77 (5)	4 (2)	28 (4)	6 (3)	39 (9)
Missing	43 (3)	2 (1)	24 (3)	3 (2)	12 (3)
ZCTA poverty, *n* (%)					
<10%	431 (29)	35 (20)	188 (26)	65 (35)	143 (34)
10% to <20%	549 (36)	137 (77)	216 (30)	25 (14)	171 (41)
20%to <30%	259 (17)	4 (2)	183 (25)	59 (32)	13 (3)
≥30%	239 (16)	0 (0)	113 (15)	36 (19)	90 (22)
Missing	37 (3)	1 (1)	33 (5)	0 (0)	0 (0)
Level of education, *n* (%)					
<9th grade	144 (10)	10 (6)	68 (9)	10 (5)	56 (13)
9–11th grade	154 (10)	22 (12)	78 (11)	21 (11)	33 (8)
High school	548 (36)	62 (35)	282 (39)	89 (48)	115 (28)
College	626 (41)	81 (46)	281 (38)	63 (34)	201 (48)
Missing	43 (3)	2 (1)	24 (3)	2 (1)	13 (3)
Family member or close acquaintance[c] with COVID-19, *n* (%)					
Yes	576 (38)	68 (39)	292 (40)	84 (45)	132 (31)
No	893 (59)	105 (59)	420 (57)	97 (52)	271 (65)
Missing	46 (3)	4 (2)	21 (3)	4 (2)	15 (4)
Family member or close acquaintance[c] died from COVID-19, *n* (%)					
Yes	229 (15)	26 (14)	114 (16)	37 (20)	51 (12)
No	1246 (82)	150 (85)	597 (81)	146 (79)	353 (85)
Missing	40 (3)	1 (1)	22 (3)	2 (1)	14 (3)
Multigenerational household, *n* (%)					
Yes	506 (33)	49 (28)	242 (33)	62 (34)	152 (36)
No	971 (64)	125 (71)	471 (64)	121 (65)	254 (61)
Missing	38 (3)	3 (1)	20 (3)	2 (1)	12 (3)
Got the influenza vaccine or planning to get the influenza vaccine, *n* (%)					
Yes	1285 (85)	137 (77)	626 (85)	152 (82)	369 (88)
No[d]	191 (13)	39 (22)	86 (12)	31 (17)	35 (8)
Missing	39 (2)	1 (1)	21 (3)	2 (1)	14 (4)

ZCTA, zip code tabulation area.
[a]Including those from an unknown location.
[b]A majority (64%) were Native Americans or Pacific Islanders.
[c]Close acquaintance defined as someone who the respondent interacts with weekly.
[d]Includes those who said "Have not decided."

In total, 65% of responders had at least one additional comorbid condition, including 14% with a history of a kidney transplant or on immunosuppressant medications.

Among responders, 20% were reluctant to seek the COVID-19 vaccine even if the vaccine was considered safe for the general population (Figure 1), with younger age groups and Black responders more likely to indicate hesitancy (29% in responders aged 18%–44% and 29% in Black responders). If the vaccine was offered at the dialysis facility, vaccine hesitancy was slightly lower overall (18%) and in both groups (25% in responders aged 18%–44% and 26% in Black responders).

Correlates of vaccine hesitancy included age, sex, race and ethnicity, level

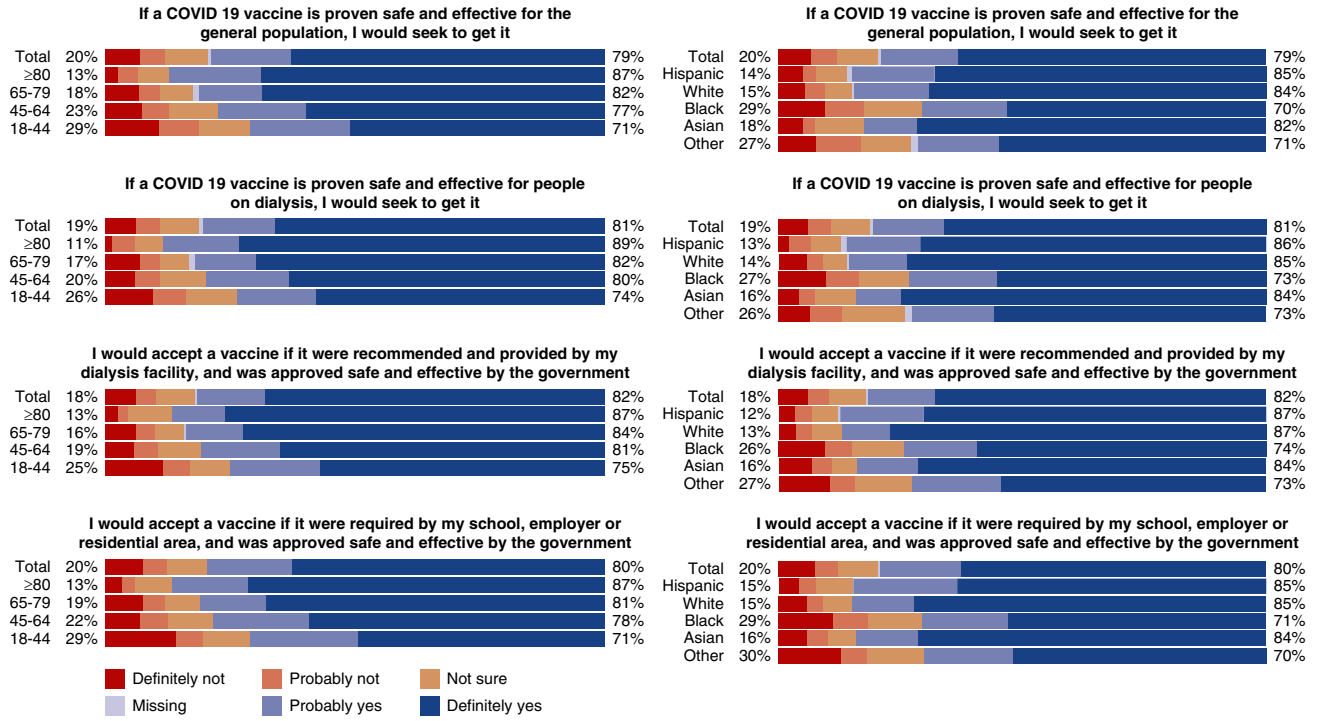

Figure 1. Responses to four vaccine acceptability questions by age and race/ethnicity. Responders in the age group 18–44 years had the lowest likelihood of vaccine acceptancy. Overall rates of vaccine hesitancy improved if vaccine was offered at dialysis facilities. Rates of definitive "no" were low ranging from 6% to 7.5% in the four vaccine acceptability questions.

of education, death of a family member from COVID-19, and whether the patient had received or was planning to receive the influenza vaccine. The odds of vaccine hesitancy were higher among patients aged 18–44 years (OR, 1.5; 95% CI, 1.0 to 2.3), women (OR, 1.6; 95% CI, 1.2 to 2.0), Black patients (OR, 1.9; 95% CI, 1.3 to 2.7), and patients identifying as "other" race or ethnicity (OR, 2.0; 95% CI, 1.1 to 3.7). The last category was comprised largely of patients identifying as Native Americans or Pacific Islanders. The odds of vaccine hesitancy were lower among patients aged ≥80 years (OR, 0.4; 95% CI, 0.3 to 0.7), among those with some college education (OR, 0.4; 95% CI, 0.2 to 0.6), and among those who received or were planning to receive the influenza vaccine (OR, 0.2; 95% CI, 0.1 to 0.3) (Figure 2, Supplemental Table 2). The overriding concern of patients who were vaccine hesitant related to side effects, followed by doubts on the efficacy of the vaccine, and being uncomfortable with vaccines in general (Figure 3). The main sources of information about the COVID-19 vaccines were television news (68%), followed by dialysis staff (38%). Younger responders were more likely to use social media as a source of information than older responders (Supplemental Figure 2).

In summary, in our vaccine acceptability survey broadly representative of the US dialysis population, we found that approximately one in five patients on in-center hemodialysis was reluctant to receive the COVID-19 vaccine. Overall vaccine hesitancy rates were nearly half that of the most recently reported rates for the general US population.[5,11] Characteristics of patients who were vaccine hesitant, however, were similar to those described for the general population[4,5,7,12] and for the dialysis[6] population: younger age, Black race, and lack of a college education. In contrast to results from the general population, however, we found that women receiving hemodialysis had a higher rate of vaccine hesitancy than men.

Surveys have described a change in vaccine acceptance over time in the United States, with one reporting an increasing acceptance,[5] whereas a serial survey of the same population reported increasing hesitancy.[11] Both report overall rates of vaccine hesitancy around 40% in early December, despite the release of data that two tested vaccines were likely to be highly efficacious. Higher rates of vaccine acceptance in patients on hemodialysis may indicate a greater level of trust or comfort with medical care in general, or an awareness of the population's vulnerability to COVID-19. The higher rates of COVID-19 vaccine acceptance in our surveyed population compared with the general population are also compatible with 85% of our responders receiving or planning influenza vaccination, a proportion similar to available data on influenza vaccine coverage in the Dialysis Facility Report.[17] Routine provision of influenza and hepatitis B vaccine in hemodialysis facilities may have encouraged higher vaccination acceptance overall.

The strengths of our survey include its broad and timely reach, including to Hispanic populations *via* the use of a

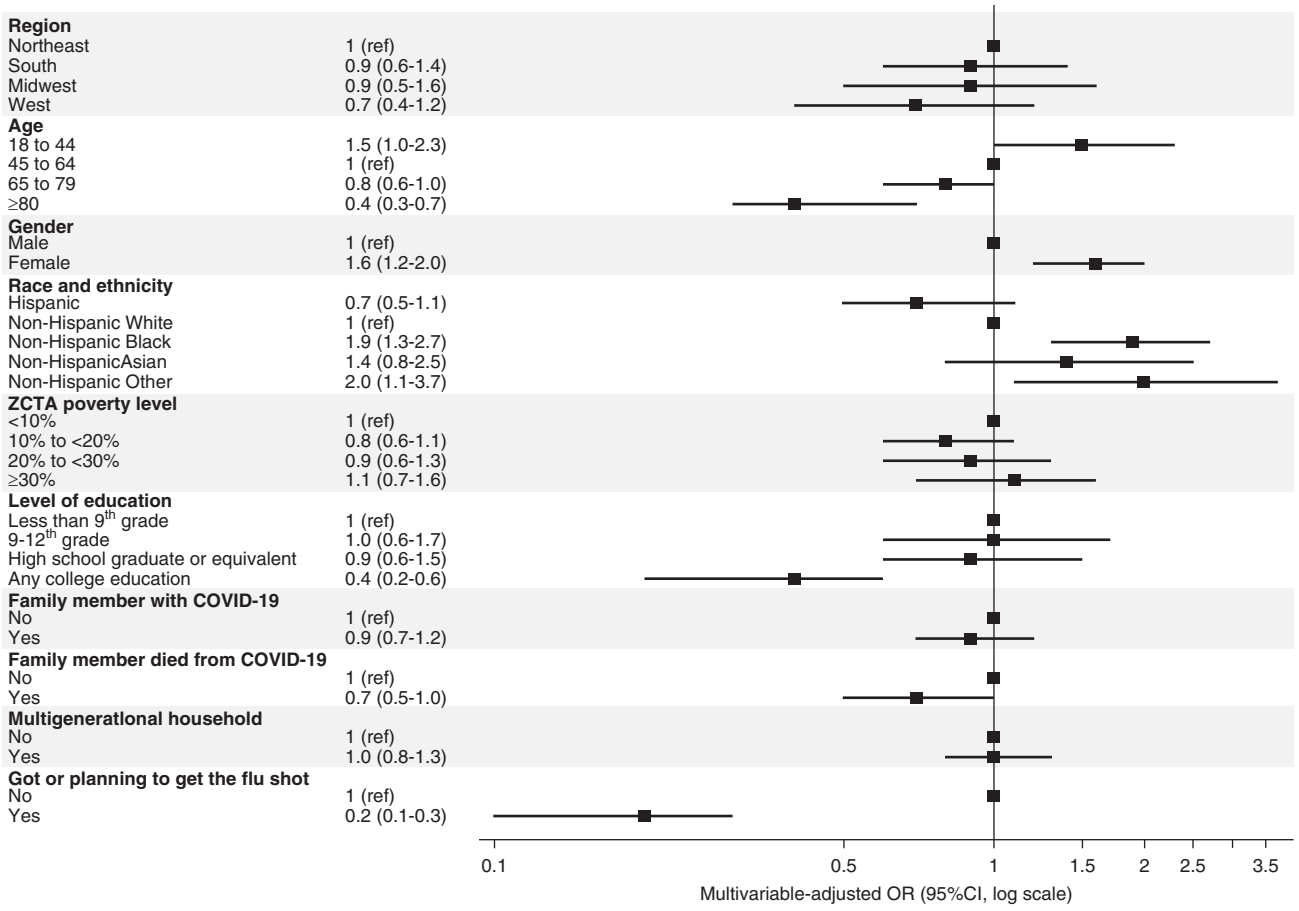

Figure 2. Correlates of vaccine hesitancy. The likelihood of vaccine hesitancy on one of four questions was *lower* among older, non-Black, and college-educated responders. Men, responders living in the West, responders in whose family or close circle someone had died from COVID-19, and responders who had received an influenza vaccine also had lower levels of vaccine hesitancy.

Spanish language version and broadly representative sample.

The study's limitations are the requirement of the interface with an online platform, which may be more challenging for older patients, patients with lower levels of education, and those with visual impairment.[18] The first two categories were nonetheless well represented in our responders. Our response rate, although similar to another vaccine acceptability survey,[4] was relatively low, possibly implying that a subpopulation with higher levels of health and technology literacy may have more likely engaged as responders. Some vaccine hesitancy questions that were adapted from a widely distributed international survey[10] embedded complex concepts. In our pragmatic approach, responders did not have opportunities to ask for clarification. Another limitation is the absence of responses from the Northwestern region, and that the survey is a single time-point snapshot—vaccine acceptance may increase or decrease as data on efficacy and safety accrue over time.

Our results highlight opportunities for improving SARS-CoV-2 vaccine uptake through dialysis facilities. On the basis of these survey results, we would advise dialysis organizations and patient advocacy groups to focus vaccine promotion efforts among younger age groups, women, and Black, Native American, and Pacific Islander patients, and to develop patient-friendly educational material describing the rates and nature of vaccine-related adverse effects. The caveats that side effects and efficacy have not been specifically evaluated in patients on dialysis complicate outreach efforts. Dialysis care providers and public health agencies should capture data on safety (adverse effects) and provisional efficacy (seroconversion) in the dialysis population, and rapidly disseminate these data to facilitate vaccine uptake.

DISCLOSURES

G. Block reports having consultancy agreements with Akebia, Keryx, Kirin, and Reata; has an ownership interest in Ardelyx and Reata; reports receiving research funding from Akebia, Ardelyx, and GlaxoSmithKline; reports receiving honoraria from Amgen and Kirin; reports being a scientific advisor or member of Ardelyx, *CJASN*, Kirin, and Reata; and other interests/relationships as former member of the Executive Summary Committee of Kidney Disease Improving Global Outcomes, former Medical Director at Davita, and >previous employment with Reata. G.M. Chertow is on the Board of Satellite Healthcare, a not-for-profit dialysis organization; reports consultancy agreements from Akebia, Amgen, Ardelyx, AstraZeneca, Baxter, Cricket, DiaMedica, Gilead, Miromatrix, Reata, Sanifit, Unicycive, and Vertex; reports

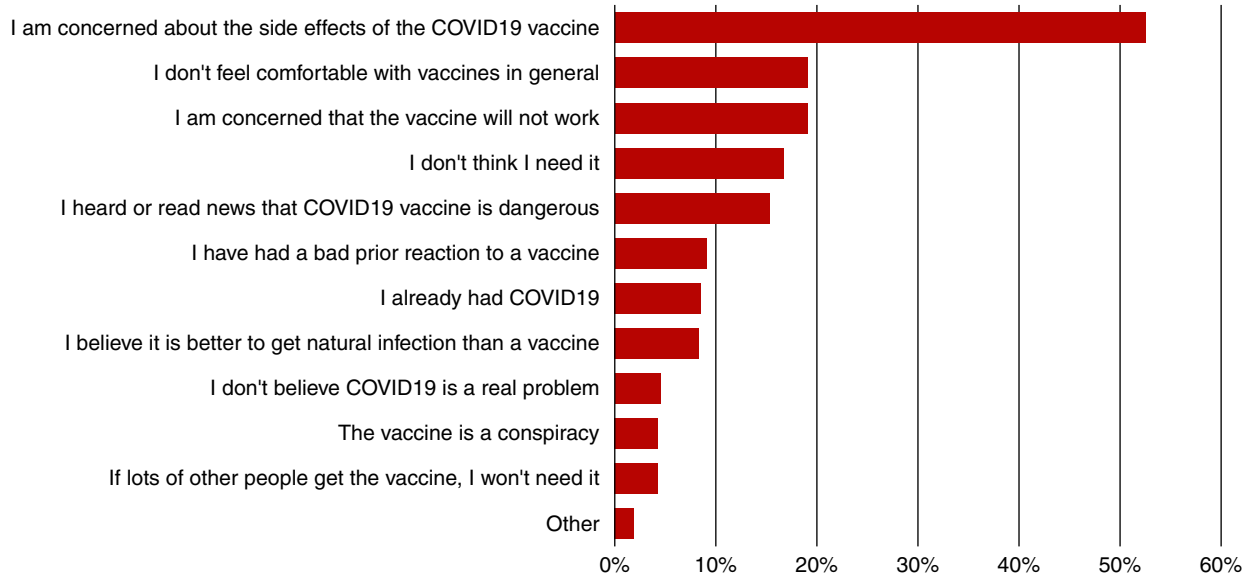

Figure 3. Reasons for vaccine hesitancy. In total, 53% of participants who were hesitant to receive the COVID-19 vaccine were concerned about its side effects; 12% believed it was dangerous; 19% were concerned about its efficacy, but a sizeable fraction was influenced by their general beliefs (19%) about or prior reaction to (9%) vaccines.

having an ownership interest in Ardelyx, CloudCath, Durect, DxNow, Eliaz Therapeutics, Outset, Physiowave, and PuraCath; reports receiving research funding from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) and National Institute of Allergy and Infectious Diseases; reports being a scientific advisor or member as Co-Editor of Brenner & Rector's The Kidney (Elsevier); and other interests/relationships with Data and Safety Monitoring Board service: NIDDK, Angion, Bayer, ReCor. J. Flotte reports being a scientific advisor or member of US Renal Care. S. Anand reports receiving research funding from Applied Pragmatic Research Grant from Satellite healthcare; reports receiving honoraria from American Kidney Fund; and reports being a scientific advisor or member of the International Society of Nephrology i3C and Consortium for the Epidemic of Nephropathy in Central America and Mexico. M. Montez-Rath reports receiving research funding from Sanofi. C. Fults is employed by and has ownership interest in US Renal Care. M.S. Block is employed by US Renal Care. M. Dittrich is employed by and has ownership interest in US Renal Care. M. Dittrich also has Ownership Interest in Signify Health, and Multiple dialysis units. All remaining authors have nothing to disclose.

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SUPPLEMENTAL MATERIAL

This article contains the following supplemental material online at http://jasn.asnjournals.org/lookup/suppl/doi:10.1681/ASN.2021010104/-/DCSupplemental.

Supplemental Table 1. Distributions of age, sex, race/ethnicity and region in the survey responders, overall US Renal Care population in comparison to the US adult dialysis population obtained through the United States Renal Data System (USRDS).

Supplemental Table 2. Characteristics of survey responders by vaccine-hesitant status.

Supplemental Figure 1. Location of zip codes from which surveys were returned and sampled facilities.

Supplemental Figure 2. COVID-19 vaccine information sources.

Supplemental Survey. Surveys in English and Spanish.

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Supplemental Table 1. Distributions of age, sex, race/ethnicity and region in the survey responders, overall US Renal Care population in comparison to the US adult dialysis population obtained through the United States Renal Data System (USRDS).

Supplemental Table 2. Characteristics of survey responders by vaccine-hesitant status

Supplemental Figure 1. Location of zip codes from which surveys were returned and sampled facilities

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Supplemental Surveys. Surveys in English and Spanish

Supplemental Table 1. Distributions of age, sex, race/ethnicity and region in the survey responders, overall US Renal Care population in comparison to the US adult dialysis population obtained through the United States Renal Data System (USRDS).

		US Renal Care	
	USRDS n=499,150	Total n=21,483	Survey n=1515
Age			
18-44	12	11	10
45-64	41	40	40
65-79	35	37	37
≥80	12	12	10
Unknown			3
Sex			
M	57	57	53
F	43	43	43
Missing			4
Race/Ethnicity,			
Hispanic	18	14	24
Non-Hispanic white	41	29	30
Non-Hispanic Black	35	23	30
Other	7	13	13
Unknown	7	21	3
Region*			
Northeast	16	10	12
South	43	50	48
Midwest	19	10	12
West	22	30	28

U.S. adult population in 2018, U.S. adult patients on dialysis population as of January 1, 2017. *Region and ZCTA poverty is based on dialysis facility location. Abbreviations: ZCTA-zip code tabulation area

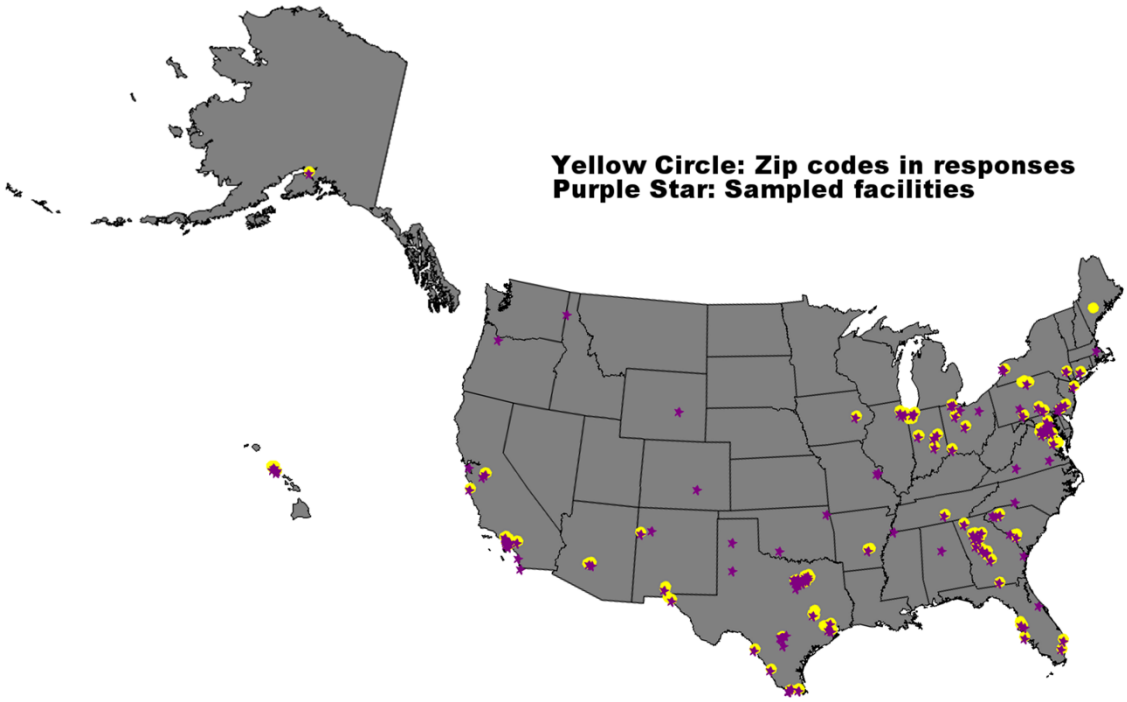
Supplemental Table 2. Characteristics of survey responders by vaccine-hesitant status

Patient characteristics	Vaccine acceptance N=1092	Vaccine hesitant N=419	Missing N=4
Age			
18-44	92 (8)	57 (13)	0 (0)
45-64	425 (39)	183 (44)	0 (0)
65-79	418 (38)	138 (33)	1 (25)
≥80	130 (12)	28 (7)	0 (0)
Missing	27 (3)	13 (3)	3 (75)
Gender			
M	617 (57)	189 (45)	0 (0)
F	438 (40)	208 (50)	1 (25)
Missing	37 (3)	22 (5)	3 (75)
Race and Ethnicity			
Hispanic	299 (28)	73 (18)	0 (0.0)
Non-Hispanic white	352 (32)	95 (23)	1 (25)
Non-Hispanic Black	279 (26)	177 (42)	0 (0.0)
Non-Hispanic Asian	90 (8)	29 (7)	0 (0.0)
Non-Hispanic other	46 (4)	31 (7)	0 (0.0)
Missing	26 (2)	14 (3)	3 (75)
Region			
Northeast	121 (11)	56 (13)	0 (0)
South	512 (46)	218 (52)	3 (75)
Midwest	128 (12)	57 (14)	0 (0)
West	329 (30)	88 (21)	1 (25)
Missing	2 (1)	0 (0)	0 (0)
ZCTA Poverty			
<10%	314 (29)	117 (28)	0 (0)
10% to <20%	406 (37)	143 (34)	0 (0)
20% to <30%	184 (17)	75 (18)	0 (0)
≥30%	167 (15)	71 (17)	1 (25)
Missing	21 (2)	13 (3)	3 (75)
Level of education			
Less than 9th grade	104 (9)	40 (9)	0 (0.0)
9-11th grade	105 (10)	49 (12)	0 (0.0)
High school	356 (33)	192 (46)	0 (0.0)
College	501 (46)	124 (30)	1 (25)
Missing	26 (2)	14 (3)	3 (75)
Family member or close acquaintance^ with COVID-19			
Yes	431 (39)	145 (35)	0 (0)
No	634 (58)	258 (61)	1 (25)
Missing	27 (3)	16 (4)	3 (75)

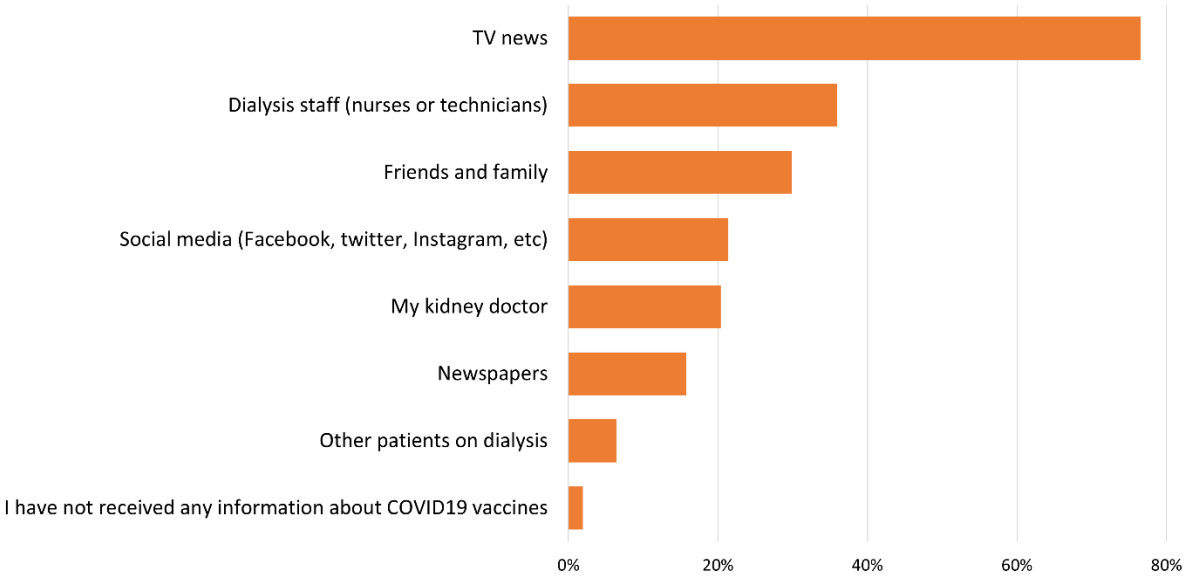
Family member or close acquaintance^ died from COVID-19			
Yes	181 (17)	48 (12)	0 (0)
No	888 (81)	357 (85)	1 (25)
Missing	23 (2)	14 (3)	3 (75)
Multigenerational household			
Yes	361 (33)	145 (35)	0 (0)
No	709 (65)	261 (62)	1 (25)
Missing	22 (2)	13 (3)	3 (75)
Got the flu vaccine or planning to get the flu vaccine			
Yes	997 (91)	287 (69)	1 (25)
No*	72 (7)	119 (28)	0 (0.0)
Missing	23 (2)	13 (4)	3 (75)

*Includes those who said, “Have not decided”. ^close acquaintance defined as someone who the respondent interacts with weekly. Abbreviations: ZCTA-zip code tabulation area

Supplemental Figure 1. Location of zip codes from which surveys were returned and sampled facilities



Supplemental Figure 2. COVID-19 vaccine information sources



Vaccine Acceptability SA

Start of Block: Block 3

DESCRIPTION:

You are invited to participate in a research study on COVID19 vaccine perspectives in patients who are on dialysis. Vaccines to prevent COVID will become available in upcoming months. As your dialysis care provider, we want to understand your views on COVID vaccines. With Stanford University, we are conducting a survey in our dialysis units. The survey is anonymous.

By answering the survey, you provide your permission for your views to be added to that of other participants' views. Your responses cannot be traced back to you, and your personal information will not be shared with anyone. How you answer these questions will not affect your dialysis or other medical care in any way. Once the survey is completed, we will share the pooled results with patients, doctors, and researchers.

TIME INVOLVEMENT:

Your participation will take approximately 10 minutes.

RISKS AND BENEFITS:

We don't anticipate any risk from this study. Your information will help policymakers understand views of pateints on dialysis on COVID19 vaccines. We cannot and do not guarantee or promise that you will receive any benefits from this study. Your decision whether or not to participate in this study will not affect your medical care in anyway.

PAYMENTS:

You will not receive any payments for this survey.

PARTICIPANT'S RIGHTS:

If you have read this form and have decided to participate in this survey, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty or loss of benefits to which you are otherwise entitled. The alternative is not to participate. Your individual privacy will be maintained in all published and written data resulting from the study.

CONTACT INFORMATION:

Questions: If you have any questions, concerns or complaints about this research, its procedures, risks and benefits, contact the Protocol Director, Shuchi Anand, MD, 650 725 2207.

INDEPENDENT CONTACT:

If you are not satisfied with how this study is being conducted, or if you have any concerns,

complaints, or general questions about the research or your rights as a participant, please contact the Stanford Institutional Review Board (IRB) to speak to someone independent of the research team at (650)-723-5244, or toll free at 1-866-680-2906. You can also write to the Stanford IRB, Stanford University, 1705 El Camino Real, Palo Alto, CA 94306.

Please print a copy of this page for your records (or please ask our staff and we will provide you a copy).

If you agree to participate in this research, please proceed to answer the questions in the survey.

Are you 18 years old or older?

- ○ Yes
- ○ No

What is your 5 digit dialysis facility zip code? (look at the flyer located in your facility unit for the zip code)

_____

End of Block: Block 3

Start of Block: COVID19

COVID19

This section is related to your views on the COVID19 and the COVID19 vaccine

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For the following questions, please choose one answer that best suits to the complete statement below: **"If a COVID 19 vaccine is proven safe and effective for the general population, I would … :**

- ○ Definitely get the vaccine
- ○ Probably get the vaccine
- ○ Probably not get the vaccine
- ○ Definitely not get the vaccine
- ○ I am not sure if I would seek to get it

For the following questions, please choose one answer that best suits to the complete statement below: "If a COVID 19 vaccine is proven safe and effective for people on dialysis, I would … :

- ○ Definitely get the vaccine
- ○ Probably get the vaccine
- ○ Probably not get the vaccine
- ○ Definitely not get the vaccine
- ○ I am not sure if I would seek to get it

Please state **your opinion** about the statements below:
"I would accept a vaccine if it were recommended and provided by my **dialysis facility,** and was approved safe and effective by the government."

- ○ Completely agree
- ○ Somewhat agree
- ○ Neutral/no opinion
- ○ Somewhat disagree
- ○ Completely disagree

Please state **your opinion** about the statements below: "I would accept a vaccine if it were **required by my school, employer or residential area**, and was approved safe and effective by the government."

- ○ Completely agree
- ○ Somewhat agree
- ○ Neutral/no opinion
- ○ Somewhat disagree
- ○ Completely disagree

Please check all that apply regarding your concerns for the COVID19 vaccine:

- ☐ I don’t think I need it
- ☐ I definitely already had COVID19, so I don't need the vaccine
- ☐ I think I have already had COVID19, so I don't need the vaccine
- ☐ I don’t believe COVID19 is a real problem
- ☐ I believe it is better to get natural infection than a vaccine
- ☐ I heard or read news that suggested the COVID19 vaccine is dangerous
- ☐ I am concerned that the vaccine will not work to protect people against COVID19
- ☐ I am concerned about the side effects of the COVID19 vaccine
- ☐ If lots of other people get the vaccine, I won’t need it
- ☐ I don’t believe in or don’t feel comfortable with vaccines in general
- ☐ I have had a previous bad experience or reaction with a vaccine
- ☐ The vaccine is a conspiracy and really isn’t for preventing disease
- ☐ Other reason _____

How much confidence do you have in the current COVID19 vaccine development process?

- ○ A great deal
- ○ A fair amount
- ○ Not too much
- ○ None at all

From where do you receive information about the COVID19 vaccines (Select **all** that apply)?

- ☐ Dialysis staff (nurses or technicians)
- ☐ My kidney doctor
- ☐ Other patients on dialysis
- ☐ Friends and family
- ☐ TV news
- ☐ Newspapers
- ☐ Social media (Facebook, twitter, Instagram, etc)
- ☐ I have not received any information about COVID19 vaccines
- ☐ Other _____

Were you ever asked to participate in any studies related to COVID19 vaccine?

- ○ Yes
- ○ No

Did you agree to participate in the COVID19 vaccine related study?

- ○ Yes
- ○ No

End of Block: COVID19

Start of Block: COVID19 Effects

COVID19 Effects
This questions asks you about the effects of the pandemic

On a scale of 1-5 **with 5 being the worst effect**, how much has COVID19 pandemic affected your overall sense of well being?

- ○ No effect (I'm living my life identical to before the epidemic)
- ○ Mild effect (I've cut out a few things but, overall, I don't notice too much)
- ○ Moderate effect (My life is clearly impacted; I notice it every day)
- ○ Marked effect (I have had marked changes in my social or working life that are troublesome to me)
- ○ Severe effect (I feel my life is taken a severe turn for the worse and that I'm a major loss of wellbeing)

What is your best guess as to whether you will get COVID19 in the next 6 months (select one)?

- ○ I think will get a mild case of COVID19
- ○ I think I will get seriously ill from COVID19
- ○ I have already had COVID19 and won't get it again
- ○ I don’t think I will get COVID19

End of Block: COVID19 Effects

Start of Block: HEALTH & FAMILY

HEALTH & FAMILY This section pertains to the health of you and your family

Do you have, or have you ever had, diabetes?

- ○ Yes
- ○ No
- ○ Don't know

Have you had a kidney transplant?

- ○ Yes
- ○ No

In the past 12 months have you been on **medications** that may **lower your ability to fight infections** (e.g., an immunosuppressant)?

- ○ Yes
- ○ No
- ○ Don't know

Do you do dialysis via a tunneled catheter?

- ○ Yes
- ○ No

How many years have you been on dialysis?

- ○ less than 1 year
- ○ 1 to 3 years
- ○ more than 3 years

Has a close family member (parent, partner, brother or sister, child, grandparent or grandchild) or a close acquaintance (a person you see or interact with weekly) been sick with COVID19?

- ○ Yes
- ○ No

Has a close family member or a close acquaintance died of COVID19?

- ○ Yes
- ○ No

Do you live in a multigenerational household (household with elderly adults such as grandparents, and children)?

- ○ Yes
- ○ No

Have you gotten the flu shot?

- ○ Yes
- ○ No

Do you plan to get the flu shot this year 2020/2021?

- ○ Yes
- ○ No
- ○ Have not decided

End of Block: HEALTH & FAMILY

Start of Block: DEMOGRAPHICS

DEMOGRAPHICS

Now, we will ask a few brief questions about you. Your answers are anonymous and cannot be traced back to you individually.

Age in years

- ○ 18-44 years old
- ○ 45-64 years old
- ○ 65-79 years old
- ○ 80 years or older

Sex

- ○ Male
- ○ Female
- ○ Prefer not to answer

Do you self identify as Hispanic, Latino or of Spanish Origin?

- ○ Yes
- ○ No
- ○ Prefer not to share

Do you self identify as (select one):

- ○ White
- ○ Black or African American
- ○ American Indian or Alaska Native
- ○ Asian Indian
- ○ Chinese
- ○ Filipino
- ○ Japanese
- ○ Korean
- ○ Vietnamese
- ○ Native Hawaiian
- ○ Guamanian or Chamorro
- ○ Samoan
- ○ Other pacific islander
- ○ Other _____
- ○ Prefer not to share

What is the highest grade or level of school you completed or the highest degree you have received?

- ○ Less than 9th grade
- ○ 9-11th grade (includes 12th grade with no diploma)
- ○ High school graduate / GED or equivalent
- ○ Some college or AA degree
- ○ College graduate or above

End of Block: DEMOGRAPHICS

Aceptabilidad de vacunas SA

Start of Block: Block 3

DESCRIPCIÓN:
Usted está invitado a participar en un estudio de investigación acerca de las perspectivas de la vacuna contra COVID19. Las vacunas para prevenir COVID van a estar disponibles en los próximos meses. Como su proveedor de diálisis, queremos comprender sus opiniones sobre las vacunas contra COVID. Con la Universidad de Stanford, estamos realizando una encuesta en nuestras unidades de diálisis. La encuesta es anónima.

Al responder la encuesta, otorga su permiso para que la información se combine con la información de otras personas. Los investigadores solo tendrán acceso a información agrupada. Nadie sabrá quién completó la encuesta y su información personal no se compartirá con nadie. La forma en que responda estas preguntas no afectará su diálisis u otra atención médica de ninguna manera.Una vez que se complete la encuesta, compartiremos los resultados con los pacientes, los médicos y otros proveedores de atención médica. Tambien vamos a compartir los resultados con los investigadores.

TIEMPO DE PARTICIPACIÓN:
Su participación tomará aproximadamente 10 minutos.

RIESGOS Y BENEFICIOS:
No anticipamos ningún riesgo de este estudio. Esperamos el beneficio de poder compartir sus opiniones y las de otros pacientes sobre las vacunas COVID19 con los legisladores y científicos. No podemos garantizar ni prometemos que recibirá ningún beneficio de este estudio. Su decisión de participar o no en este estudio no afectará su atención médica de ninguna manera.

PAGOS:
No recibirá ningún pago por esta encuesta.

DERECHOS DEL PARTICIPANTE:
Si ha leído este formulario y ha decidido participar en esta encuesta, comprenda que su participación es voluntaria y que tiene derecho a retirar su consentimiento o interrumpir la participación en cualquier momento sin penalización ni pérdida de los beneficios a los que tiene derecho. La alternativa es no participar. Su privacidad se mantendrá en todo momento en los datos publicados y escritos que resulten del estudio.

INFORMACIÓN DEL CONTACTO:
Preguntas: Si tiene preguntas, inquietudes o quejas sobre esta investigación, sus procedimientos, riesgos y beneficios, comuníquese con la Directora del Protocolo, la Dra. Shuchi Anand, 650-725-2207.

CONTACTO INDEPENDIENTE:
Si no está satisfecho con la forma en que se lleva a cabo este estudio, o si tiene alguna inquietud, queja o pregunta general sobre la investigación o sus derechos como participante, comuníquese con la Junta de Revisión Institucional de Stanford (IRB) para hablar con alguien independiente del equipo de investigación al (650)-723-5244, o al número gratuito 1-866-680-2906. También puede escribir a Stanford IRB, Stanford University, 1705 El Camino Real, Palo Alto, CA 94306.

Imprima una copia de esta página para sus registros (o pregunte a nuestro personal y le proporcionaremos una copia).

Si acepta participar en esta investigación, proceda a responder las preguntas de la encuesta.

Usted tiene 18 años o mas?

- ○ Si
- ○ No

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*

¿Cuál es el zip code de 5 digitos de su unidad de diálisis? (Ver en el flyer de su unidad de diálisis para obtener esta información)

_____

End of Block: Block 3

Start of Block: COVID19

COVID-19
Esta sección está relacionada con sus opiniones sobre la vacuna y la enfermeda de COVID19

Para las siguientes preguntas, elija la respuesta que mejor se adapte al enunciado completo a continuación: **“Si se demuestra que una vacuna COVID 19 es segura y eficaz para la poblacion en general yo ...:**

- ○ Definitivamente obtengo la vacuna
- ○ Probablemente obtengo la vacuna
- ○ Probablemente no obtengo la vacuna
- ○ Definitivamente no obtengo la vacuna
- ○ No estoy seguro si buscaria obtener la vacuna

Para las siguientes preguntas, elija la respuesta que mejor se adapte al enunciado completo a continuación: “Si se demuestra que la vacuna COVID 19 es segura y eficaz para las **personas en diálisis**, yo ...:

- ○ Definitivamente obtengo la vacuna
- ○ Probablemente obtengo la vacuna
- ○ Probablemente no obtengo la vacuna
- ○ Definitivamente no obtengo la vacuna
- ○ No estoy seguro si buscaría obtener la vacuna

Por favor seleccione **su opinion** para los siguientes enunciados
"Aceptaría una vacuna si la **recomendara** y la proporcionara **mi centro de diálisis** y el gobierno la aprobara como segura y eficaz"

- ○ Completamente de acuerdo
- ○ Parcialmente de acuerdo
- ○ Neutral / sin opinión
- ○ En desacuerdo
- ○ Totalmente en desacuerdo

Por favor seleccione su opinion para los siguientes enunciados "Aceptaría una vacuna si fuera **requerida por mi universidad, empleador o área residencial**, y el gobierno la aprobara como segura y efectiva".

- ○ Completamente de acuerdo
- ○ Parcialmente de acuerdo
- ○ Neutral / sin opinión
- ○ En desacuerdo
- ○ Totalmente en desacuerdo

Marque todo lo que corresponda con respecto a sus inquietudes sobre la vacuna COVID19:

- [ ] No creo que lo necesite
- [ ] Definitivamente ya tuve COVID19, entonces no necesito la vacuna
- [ ] Yo creo que a mi ya me dio COVID19, entonces no necesito la vacuna
- [ ] No creo que COVID19 sea un problema real
- [ ] Creo que es mejor contraer una infección natural que una vacuna
- [ ] Escuché o leí noticias que sugerían que la vacuna COVID19 es peligrosa
- [ ] Me preocupa que la vacuna no funcione para proteger a las personas contra COVID19
- [ ] Me preocupan los efectos secundarios de la vacuna contra COVID19
- [ ] Si muchas otras personas reciben la vacuna, no la necesitaré
- [ ] No creo en las vacunas o no me siento cómodo con las vacunas en general
- [ ] He tenido una mala experiencia previa o una reacción con una vacuna
- [ ] La vacuna es una conspiración y realmente no es para prevenir enfermedades
- [ ] Otra razon _____

¿Cuánta confianza tiene en el proceso actual de desarrollo de la vacuna para COVID19?

- ○ Bastante confianza
- ○ Un buena cantidad de confianza
- ○ Poca confianza
- ○ Nada de confianza

¿De dónde recibe información sobre la vacuna COVID19? (seleccione **todas** las que correspondan)

- ☐ Personal en la unidad de diálisis (técnicos o enfermeras/os)
- ☐ Mi doctor de los riñones
- ☐ Otros pacientes en diálisis
- ☐ Amigos o familia
- ☐ En las noticias en la TV
- ☐ Noticias en los periodicos
- ☐ Redes sociales (Facebook, twitter, Instagram, etc)
- ☐ Yo no he recibido ninguna información acerca de las vacunas contra COVID19
- ☐ Otra _____

¿Alguna vez se le pidió que participara en algún estudio relacionado con la vacuna COVID19?

- ○ Si
- ○ No

¿Estuvo de acuerdo en participar en el estudio relacionado con la vacuna de COVID19?

- ○ Si
- ○ No

End of Block: COVID19

Start of Block: Block 4

Efectos de COVID19
Estas preguntas preguntan acerca de los efectos de la pandemia

En una escala de 1 a 5, **siendo 5 el peor efecto**, ¿cuánto ha afectado la pandemia de COVID19 a su sensación general de bienestar?

- ○ Sin efecto (estoy viviendo mi vida idéntica a antes de la epidemia)
- ○ Efecto leve (he recortado algunas cosas pero, en general, no noto demasiado)
- ○ Efecto moderado (Mi vida está claramente afectada; lo noto todos los días)
- ○ Efecto marcado (he tenido cambios marcados en mi vida social o laboral que me resultan problemáticos)
- ○ Efecto severo (siento que mi vida ha empeorado gravemente y que soy una gran pérdida de bienestar)

¿Cuál es su mejor estimación sobre si le va a dar COVID19 en los próximos 6 meses (seleccione una)?

- ○ Creo que tendré un caso leve de COVID19
- ○ Creo que me enfermaré gravemente de COVID19
- ○ Ya me dio COVID19
- ○ No creo que me vaya a dar COVID19

End of Block: Block 4

Start of Block: SALUD Y FAMILIA

SALUD Y FAMILIA
Esta sección se refiere a su salud y la de su familia.

¿Tiene, o ha tenido alguna vez diabetes?

- ○ Si
- ○ No
- ○ No se

¿Alguna vez ha tenido un trasplante de riñón?

- ○ Si
- ○ No

¿En los últimos 12 meses ha estado tomando **medicamentos** que pueden **disminuir su habilidad para combatir infecciones** (ej. Inmunosupresor)?

- ○ Si
- ○ No
- ○ No se

¿Recibe diálisis usando un catéter tunelizado?

- ○ Si
- ○ No

¿Cuántos años lleva en diálisis?

- ○ Menos de 1 año
- ○ 1 a 3 años
- ○ Mas de 3 años

¿Algún familiar cercano (padres, pareja, hermano o hermana, hijo, abuelo o nieto) o amigo cercano suyo (persona con la que usted interactua semanalmente) ha estado enfermo de COVID19?

- ○ Si
- ○ No

¿Algún familiar cercano o pariente cercano suyo falleció por COVID19?

- Si
- No

¿Vive en un hogar multigeneracional, es decir, un hogar con adultos mayores como abuelos e hijos?

- Si
- No

¿Ha recibido la vacuna contra la influenza?

- Si
- No

¿Tiene planes de recibir la vacuna contra la influenza este año (2020/2021)?

- Si
- No
- No me he decidido

End of Block: SALUD Y FAMILIA

Start of Block: Demografía

DEMOGRAFÍA
Ahora, le haremos algunas preguntas breves sobre usted. Sus respuestas son anónimas y no se pueden rastrear hasta usted individualmente.

Edad en años

- ○ 18-44 años
- ○ 45-64 años
- ○ 65-79 años
- ○ Mas o igual a 80 años

Género

- ○ Masculino
- ○ Femenino
- ○ Prefiero no contestar

¿Se identifica como Hispano, Latino o de origen español?

- ○ Si
- ○ No
- ○ Prefiere no contestar

Se identifica con algunas de las siguientes razas (seleccionar uno):

- ○ Blanca
- ○ Afroamericana o raza negra
- ○ Amerindio o nativo de Alaska
- ○ Asiático/a de la India
- ○ Chino
- ○ Filipino
- ○ Japones
- ○ Coreano
- ○ Vietnamés
- ○ Hawaiano nativo
- ○ Guameño o Chamorro
- ○ Samoano
- ○ Otro isla del pacífico
- ○ Alguna otra raza _____
- ○ Prefiero no compartir

¿Cuál es el nivel o grado más alto que completo o el titulo más alto que ha recibido en la escuela?

- ○ Menos que 9no. Grado
- ○ 9-11vo. Grado (incluye grado 12 sin diploma)
- ○ Graduado de la secundaria
- ○ Asistió a la universidad o un técnico superior universitario
- ○ Título universitario o más alto

End of Block: Demografía