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Regional Differences in Communication Process and Outcomes of Requests for Solid Organ Donation

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Although federal mandate prohibits the allocation of solid organs for transplantation based on "accidents of geography," geographic variation of transplantable organs is well documented. This study explores regional differences in communication in requests for organ donation. Administrative data from nine partnering organ procurement organizations and interview data from 1339 family decision makers (FDMs) were compared across eight geographically distinct US donor service areas (DSAs). Authorization for organ donation ranged from 60.4% to 98.1% across DSAs. FDMs from the three regions with the lowest authorization rates reported the lowest levels of satisfaction with the time spent discussing donation and with the request process, discussion of the least donation-related topics, the highest levels of pressure to donate, and the least comfort with the donation decision. Organ procurement organization region predicted authorization (odds ratios ranged from 8.14 to 0.24), as did time spent discussing donation (OR = 2.11), the number of donation-related topics discussed (OR = 1.14), and requesters' communication skill (OR = 1.14). Standardized training for organ donation request staff is needed to ensure the highest quality communication during requests, optimize rates of family authorization to donation in all regions, and increase the supply of organs available for transplantation.

Abbreviations: DSA, donor service area; OR, odds ratio; SD, standard deviation; FDM, family decision maker; OPO, organ procurement organization; OPTN, Organ Procurement and Transplantation Network

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Introduction

It has been nearly two decades since the U.S. Department of Health and Human Services enacted the Final Rule establishing guidelines for the equitable distribution of transplantable solid organs in the United States and wide variation in access to deceased-donor organ transplantation persists. Of the 10 794 deceased-donor transplantations performed in 1988, the proportion ranged from 16.7% (region 5) to 2.4% (region 6) across the 11 United Network for Organ Sharing regions (1) (see Figure 1). A similar pattern was observed in 2015, with 16.4% of the 24 980 deceased donor transplants performed in region 5 and 3.4% performed in region 6. In addition to state-level differences in patients' Model for End-stage Liver Disease scores at time of transplantation, studies have found a nearly eightfold difference in wait times for kidney transplantation and a 20-fold difference in liver transplant rates across donor service areas (DSAs) (2–4). In response to the well-documented geographic differences in transplant access and outcomes (5–7), the Organ Procurement and Transplantation Network (OPTN) issued multiple revisions to its allocation and distribution policies to improve access to transplantation for all patients in need (8,9). The proposal currently under development will redraw regional boundaries for liver allocation purposes (10,11).

While the observed geographic variations are likely attributed, in part, by the arbitrariness with which the original eleven geographic regions were established (12), the available evidence points to multiple factors, including regional demography, the allocation policies used by the OPTN, incidence of end-stage organ failure within a given population, variations in eligible deaths between regions or DSAs, notification processes regarding eligible deaths used between OPOs and local hospitals, and differences in donor acceptance criteria (6,10,13,14).

An additional, modifiable, but largely overlooked factor is organ availability (3,15). While analysis and discussion of geographic variation in the availability and distribution of transplantable organs have concentrated on access measures, evaluation of geographic variation in the success of organ donation requests to potential donors (i.e. families of deceased patients) has yet to be adequately explored. A recent analysis of potential brain-dead eligible

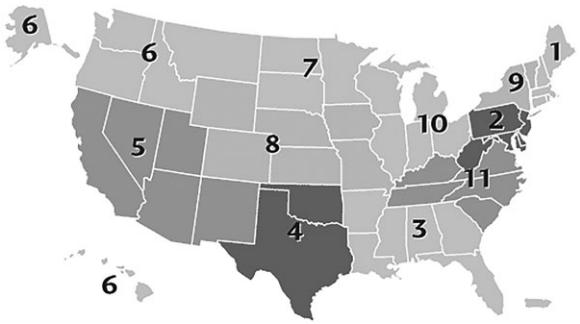

Figure 1: United Network for Organ Sharing regions. Source: Organ Procurement and Transplantation Network, U.S. Department of Health and Human Services, Health Resources and Services Administration, Division of Transplantation; optn.transplant.hrsa.gov.

donors found that family authorization rates for deceased organ donation following an eligible death varied significantly between DSAs, resulting in a loss of >5700 transplantable organs during a 5-ear period (16). A large body of research demonstrates the critical importance of communication to family authorization of donation (17–22). This report examines the communication processes and outcomes in requests for solid organ donation made by OPO staff in 8 of the 11 OPTN regions. The findings may prove helpful to understanding the underlying causes of known geographic differences in the availability of solid organs for transplantation in the United States and inform the ongoing debate over the proposed changes to liver allocation policy (23,24).

Method

Overview

Data were collected on consecutive requests for organ donation from January 2009 through March 2012 as part of a parent study evaluating a communication skills training program for organ request staff (25). The study protocols and recruitment of both the OPO request staff and the families of deceased donor-eligible patients approached about the option of organ donation are described in detail elsewhere (18,25,26). Briefly, request staff were recruited on-site from nine partnering OPOs representing eight OPTN regions (regions 2, 6, and 7 are not included herein). Demographic data were collected from participating OPO requesters on enrollment; requesters were also asked to complete a brief online survey capturing perceptions of each request for donation within 1 week of the approach and the names and contact information of the family member making the final donation decision (i.e. family decision maker [FDM]).

FDMs were recruited by using a well-established protocol in which recruitment packets inviting participation in the research and offering descriptions of the study's purpose and the nature and extent of participation and an opt-out postcard were mailed 2 months after the organ donation request for adult patients and 3 months after the request for pediatric patients (17). If the postcard was not returned within 2 weeks, FDMs were contacted by telephone to solicit questions and invite participation. These protocols were approved by the University's institutional review and privacy boards, and informed consent was obtained from all participants.

In all, 4634 FDMs were approached by 273 participating request staff during the study period. A total of 2402 (51.8%) FDMs had missing or incorrect contact information or were unreachable after multiple attempts. Of 2232 FDMs with whom phone contact was achieved 1601 (71.7%) agreed to participate in one 60-min phone interview.

Measurement

Semistructured interviews with FDMs were conducted by using a guide developed and validated in previous studies (17,27,28). The primary outcome of interest was family authorization to solid organ donation (*yes*/*no*). FDMs' perceptions of the request were assessed in a number of ways. Single, 7-point Likert-type items assessed perceptions of the care the patient received in the hospital (1 = *poor*, 7 = *excellent*) and the care and concern exhibited by the health care providers responsible for the patient's care (1 = *in no way caring and concerned*, 7 = *very caring and concerned*). One categorical item captured initial reactions to the request for donation (*favorable*/*unfavorable*/*unsure*). Surprise at the request was assessed using a single dichotomous item (*yes*/*no*) and one 7-point Likert-type item (1 = *not at all surprised*, 7 = *very surprised*). Single Likert items (1 = *not at all*, 7 = *very*) were used to gauge respondents' comfort with the first person broaching the topic of donation, satisfaction with the request process, feeling pressured or harassed about donation, and comfort with the final donation decision.

Two items gauged the time spent in discussion with the OPO requester (in minutes) and satisfaction with this amount of time (1 = *not at all satisfied*, 7 = *very satisfied*). As measures of the communication occurring during requests, FDMs were asked to report on requesters' use (*yes*/*no*) of 28 donation-related communication skills (e.g. expressing condolences, treating family in compassionate and caring manner). The item set exhibited high internal consistency reliability (Cronbach's $\alpha = 0.93$) and individual items were summed to create a composite score (range, 0–28), with higher values reflecting requesters' use of more skills. FDMs reported on the content of the donation discussion by indicating whether any of 17 donation-related topics were included in the donation discussion (*yes*/*no*). A shortened, 12-item version of Burgoon and Hale's Relational Communication Scale was used to capture FDMs' perceptions of requesters' interpersonal communication skill (29). A single 5-point Likert-type item captured FDMs' overall rating of the quality of the communication with the OPO requester (1 = *poor*, 5 = *excellent*). Finally, FDM sociodemographic data (e.g. age, sex, race/ethnicity, marital status) were collected during the interviews.

Statistical analyses

The samples of patients and FDMs were described by using the appropriate summary statistics (e.g. count, percent, mean, standard deviation). The χ^2 test statistic assessed regional differences for categorical variables, with the z-statistic used to pinpoint differences by region. Brown–Forsythe analyses were performed to assess equality of variance of means for continuous variables. Welch tests (for unequal variance) were then performed to assess between-region differences, and Dunnett's C post-hoc analyses were used to identify specific regions with statistically significant differences. A stepwise multivariable logistic regression analysis was performed regressing authorization on region, patient and FDM demographics, and FDMs' perceptions of the request and the communication variables demonstrating significant associations with the decision to donate. A logarithmic transformation was performed on the time variable to normalize its distribution before use in the regression analyses. The family approach is substantively different in cases where prior knowledge of the patient's donation wishes are known (i.e. first person

authorization) and the outcome is largely invariant (97.6% donate (26)). In our sample, 262 (16.4%) patients were predesignated as posthumous organ donors; we include only cases in which the patient was not a registered donor in these analyses (N = 1339). All analyses were performed with SPSS v.21.0; significance was set at $\alpha = 0.05$.

Results

Patient and family characteristics

A majority of the patients were white (60.5%) and male (60.0%), with a mean age of 43.7 years (standard deviation [SD] = 18.8 years); 10.6% were under the age of 18 (data not tabled). Just over 16% of patients were Hispanic/Latino. Comparatively, the national pool of deceased organ donors is 71.2% white, 59.7% male, 15.0% pediatric (under 18 years of age), and 11.6% Hispanic (1). In 30% of cases, the cause of death was due to trauma, and 13.7% of cases were classed as donation after cardiac death. As exhibited in Table 1, statistically significant regional differences were found in patient demographics, with the exception of patients' sex.

Correspondingly, nearly 70% of FDMs were woman; 65.9% were of European origin and 18.9% were of Hispanic/Latino background (data not tabled). On average, FDMs were 47.1 years of age (SD = 14.7 years) and had obtained 13.7 years of education (SD = 2.4 years). Statistically significant differences were observed in FDM characteristics across regions except for sex and age (Table 2). The greatest racial/ethnic diversity was found in the samples from regions 4, 5, and 9.

Authorization to donation

Overall, 81.9% (N = 1096) of families authorized donation. However, considerable variation was found across regions [$\chi^2(7) = 91.1$, $p < 0.001$], with the highest rate of authorization in region 8 (98.1%) and the lowest rates in regions 10 (60.4%) and 11 (73.6%).

Perceptions of the request

Regional differences were found in families' perceptions of the donation request, including families' ratings of the patient's care [Welch $F(7, 429.9) = 8.9$, $p < 0.001$] and the care and concern demonstrated by the health care providers responsible for the patient's care [Welch $F(7, 430.4) = 7.3$, $p < 0.001$]. Families from region 9, a region with the third lowest authorization rate, reported significantly lower ratings on each measure (see Table 3). Region 9 also had the smallest percentage of respondents reporting favorable initial reactions toward donation [$\chi^2(14) = 33.1$, $p = 0.003$]; only 55.8% of region 9 FDMs were initially favorable toward donation compared with regions 5 (76.9%) and 8 (76.0%). Significantly more respondents from region 9 (43.3%) reported some degree of surprise at the request compared with FDMs from any other region [range: 26.7–36.6%; $\chi^2(14) = 39.6$, $p < 0.001$]. Families from region 9 also reported the

Table 1: Patient demographics

	Region										
Total sample N = 1339	1	3	4	5	8	9	10	11
Patient characteristics								
Sample size (%)	167 (12.5)	160 (11.9)	270 (20.2)	78 (5.8)	104 (7.8)	353 (26.4)	101 (7.5)	106 (7.9)
% of total eligible	19.6% [853]	3.2% [4941]	9.3% [2887]	1.8% [4346]	5.5% [1892]	21.9% [1612]	4.0% [2506]	2.8% [3758]
Mean age in years (SD)***	45.3 (17.6)	41.7 (19.3)	40.0 (18.7)	36.8 (17.2)	40.7 (18.9)	49.9 (17.7)^{H}	43.6 (17.5)	40.6 (20.8)
Sex, female	63 (37.3)	62 (38.8)	99 (36.7)	30 (38.5)	43 (41.3)	155 (43.9)	38 (37.6)	46 (43.4)
Race, nonwhite***	24 (14.4)^{M,L}	46 (28.8)	125 (46.3)^{H,M}	31 (39.7)^{H}	16 (15.4)^{L}	206(58.4)^{H,M,L}	36 (35.6)^{H}	45 (42.5)^{H}
Hispanic/Latino***	13 (7.8)	15 (9.4)	72 (26.7)^{H,M,L}	24 (30.8)^{H,M,L}	1 (1.0)	92 (26.1)^{H,M,L}	1 (1.0)	0 (0.0)
Cause of death***								
Trauma	51 (30.5)	45 (28.1)	111 (41.1)^{L}	35 (44.9)^{L}	32 (30.8)	70 (19.8)	23 (22.8)	35 (33.0)
Donation after cardiac death case***	0 (0.0)	12 (7.5)^{L}	33 (12.2)^{L}	12 (15.4)^{L}	0 (0.0)	39 (11.0)^{L}	58 (57.4)^{M}	29 (27.4)$^{M, L}$
Pediatric case**	13 (7.8)	17 (10.6)	39 (14.4)	10 (12.8)	16 (15.4)	18 (5.1)^{H}	11 (10.9)	18 (17.0)

Statistically significant difference from: region with highest (H) authorization rate (region 8); region with median (M) authorization rate (region 3); region with lowest (L) authorization rate (region 10).
**p < .01. ***p < .001.

Table 2: Family decision maker demographics

Total sample N = 1339	Region 1 (n = 167)	3 (n = 160)	4 (n = 270)	5 (n = 78)	8 (n = 104)	9 (n = 353)	10 (n = 101)	11 (n = 106)
Family decision maker characteristics								
Authorized donation***	145 (87.4)^{H,L}	126 (78.8)^{H,L}	247 (91.5)^{M,L}	72 (92.3)^{L}	102 (98.1)^{M,L}	265 (75.1)^{H}	61 (60.4)^{H,M}	78 (73.6)^{H}
Sex, female	114 (68.3)	107 (66.9)	188 (69.6)	56 (71.8)	74 (71.2)	243 (68.8)	81 (80.2)	65 (61.3)
Race, nonwhite***	27 (16.2)^{L}	35 (21.9)	94 (34.8)^{H}	24 (30.8)^{H}	10 (9.6)^{L}	187 (53.3)^{H,M,L}	35 (34.7)^{H}	44 (41.5)^{H,M,L}
Hispanic/Latino***	20 (12.0)	20 (12.5)	74 (27.4)^{H,M,L}	22 (28.2)^{H,L}	4 (3.8)	105 (29.7)^{H,M,L}	5 (5.0)	3 (2.8)
Primary language***								
Spanish	11 (6.6)	11 (6.9)	45 (16.6)^{H}	15 (19.2)^{H}	3 (2.9)	73 (20.7)^{H,M}	0 (0.0)	1 (0.9)
Age, mean years (SD)	49.3 (14.4)	47.9 (14.9)	45.0 (14.1)	47.1 (14.5)	47.5 (15.3)	47.7 (15.1)	47.7 (13.5)	45.0 (15.2)
Education, mean years (SD)***	14.2 (2.3)^{L}	13.7 (2.1)	13.2 (2.3)	13.6 (2.0)	13.5 (2.1)	14.1 (2.7)	13.3 (2.0)	14.1 (2.3)

Statistically significant difference from: region with highest (H) authorization rate (region 8); region with median (M) authorization rate (region 3); region with lowest (L) authorization rate (region 10).
***$p < .001$.

highest levels of feeling significantly higher levels of pressure or harassment to donate [range: mean pressure 2.2 (region 9)–1.5 (region 8); Welch F(7, 424.8) = 2.9, p = 0.005] and the lowest levels of comfort with the first person who discussed the topic of donation [range: mean comfort 5.5 (region 9)–6.5 (region 8); Welch F(7, 428.5) = 6.0, p < 0.001]. The lowest levels of satisfaction with the request process [Welch F(7, 430.7) = 11.2, p < 0.001] and comfort with the final donation decision [Welch F(7, 437.4) = 6.0, p < 0.001] were also reported in region 9 [range: mean satisfaction 5.8 (region 9)–6.8 (region 8) and lowest mean comfort 6.2 (region 9)–6.8 (region 8)].

Requesters' communication and the request process

Indices of requesters' donation-related and interpersonal communication during the donation discussion are exhibited in Figures 2 and 3. On average, discussion of the greatest number of donation-related topics, including the patient's wishes about donation, the costs associated with donation, and possible delays in the timing of the funeral with donation, were reported by families in regions 5 and 8, both of which had authorization rates of >90% [12.1 and 12.0 topics, respectively; Welch F(7, 423.2) = 6.6, p < 0.001]. The fewest topics were discussed in regions 9 (10.0 topics) and 10 (9.3 topics). A similar pattern of findings emerged in FDM reports of requesters' use of donation-related communication skills during requests—the most skills were reported in high-performing regions (region 5 [26.5 skills] and 8 [26.2 skills]) and the fewest in low-performing regions (region 9 [23.9 skills] and 10 [23.5 skills]) [Welch F(7, 445.1) = 7.8, p < 0.001].

Requesters in region 9 were rated as having the lowest levels of relational communication skill by FDMs; requesters in region 8 were rated as most skillful in this domain [range: 4.2–4.8; Welch F(7, 434.9) = 13.8, p < 0.001]. Families in region 9 also rated the overall communication during the request as poorest [range: 4.0–4.8 (region 8); Welch F(7, 432.3) = 14.7, p < 0.001].

Finally, FDMs from regions with the highest authorization rates (regions 5 and 8) reported the longest discussions about donation with their respective OPO requesters (Figure 4). Although FDMs from regions 10 (53.2 mean minutes) and 11 (65.5 mean minutes) reported the shortest conversations about donation [Welch F(7, 421.4) = 2.6, p = 0.012], families from regions 9 and 11 were least satisfied with the time spent discussing donation with OPO request staff [mean satisfaction 6.0 and 6.2, respectively; Welch F(7, 436.9) = 11.9, p < 0.001].

Predictors of family authorization

Results of the final model of the stepwise multivariable logistic regression analysis are exhibited in Table 4. Across all steps in the analysis, OPO region emerged as a significant predictor of family authorization. Other significant predictors of authorization in the final model

Table 3: Family decision maker perceptions of the request

	Region							
Total sample N = 1339	1 (n = 167)	3 (n = 160)	4 (n = 270)	5 (n = 78)	8 (n = 104)	9 (n = 353)	10 (n = 101)	11 (n = 106)
Perceptions of patient's care, mean (standard deviation)								
Patients' care***	6.5 (1.0)	6.4 (1.2)	6.4 (1.2)	6.8 (2.6)	6.6 (0.9)	5.8 (1.6)^{H,M,L}	6.4 (1.2)	6.6 (0.8)
Provider care and concern***	6.5 (1.1)	6.3 (1.4)	6.4 (1.2)	6.4 (1.2)	6.6 (0.8)	5.9 (1.4)^{H}	6.3 (1.3)	6.5 (0.9)
Initial reactions to request, count (percent)								
Favorable**	115 (68.9)	113 (70.6)	186 (68.9)	60 (76.9)	79 (76.0)	197 (55.8)^{H,M}	59 (58.4)	67 (63.2)
Unsure	33 (19.8)	27 (16.9)	54 (20.0)	11 (14.1)	19 (18.3)	101 (28.6)	27 (26.7)	27 (25.5)
Unfavorable	19 (11.4)	20 (12.5)	30 (11.1)	7 (9.0)	6 (5.8)	55 (15.6)	15 (14.9)	12 (11.3)
Surprised***								
Yes	46 (27.5)	47 (29.4)	72 (26.7)	21 (26.9)	32 (30.8)	153 (43.3)	37 (36.6)	33 (31.1)
Comfort and satisfaction with request, mean (standard deviation)								
Comfort with person broaching topic***	6.0 (1.6)	6.0 (1.6)	6.2 (1.4)	6.1 (1.4)	6.5 (1.2)	5.5 (2.0)^{H}	5.8 (1.8)	5.8 (1.8)
Felt pressured or harassed**	1.7 (1.6)	1.7 (1.7)	1.7 (1.5)	1.8 (1.7)	1.5 (1.4)	2.2 (2.0)^{H}	1.8 (1.8)	1.9 (1.7)
Satisfied with request process***	6.4 (1.2)^{H}	6.2 (1.7)^{H}	6.5 (1.1)	6.5 (1.2)	6.8 (0.8)^{M,L}	5.8 (1.8)^{H}	6.2 (1.5)^{H}	6.1 (1.6)^{H}
Comfort with donation decision***	6.7 (0.8)	6.5 (1.1)	6.5 (1.2)	6.7 (0.7)	6.8 (0.7)	6.2 (1.5)^{H,M}	6.4 (1.4)	6.5 (1.2)

Statistically significant difference from: region with highest (H) authorization rate (region 8); region with median (M) authorization rate (region 3); region with lowest (L) authorization rate (region 10).
**p < .01. ***p < .001.

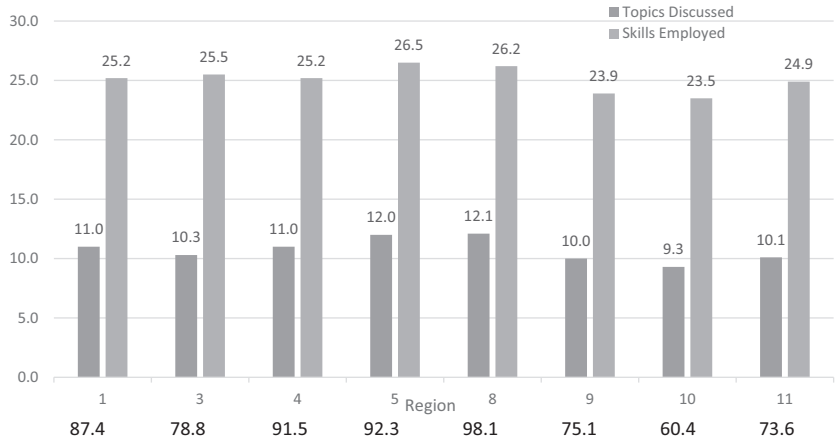

Figure 2: Donation-related topics discussed and skills used by region.

were as follows: the odds of family authorization increased with increasing time spent in discussion about donation (odds ratio [OR] = 2.11), number of donation-related topics discussed (OR = 1.18), and requesters' donation-related communication skill (OR = 1.14). Conversely, donation was less likely as FDMs' perceptions of pressure about donation (OR = 0.86) and satisfaction with the time spent discussing donation increased (OR = 0.76). Patient age and race were significant in bivariate analyses and when included with OPO region in the second model; when analyzed in combination with FDMs' experiences with the request and the communication occurring during discussions about donation, they were no longer significant, indicating the critical aspects of family authorization are communication and experiences in the authorization process. The final model accounted for 60% of the variance in authorization.

Discussion

The findings of this study are consistent with those reported by Goldberg et al and illustrate that the observed regional variations go well beyond differences in authorization rates. While the 11 regions are known to differ in terms of the total population and number of

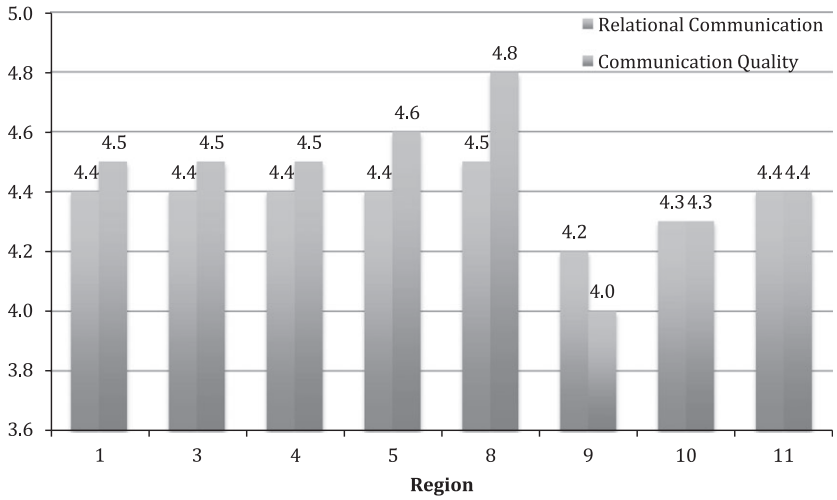

Figure 3: Requesters' relational communication and overall quality of the communication during the request by region.

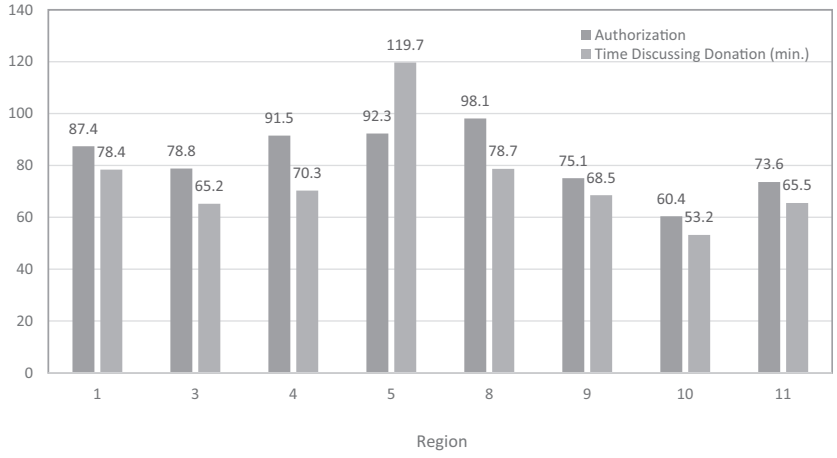

Figure 4: Authorization to donation and time spent discussing donation by region.

states served, the number of OPOs and transplant centers in operation, and the number of patients awaiting transplantation (1), our analyses identified variations in FDMs' perceptions of patient care and requester interactions. Consider that FDMs from region 8, a region historically associated with the highest rates of authorization (1), reported the highest levels of perceived quality of care and concern from health care providers, comfort with the person discussing donation, satisfaction with the request process, and comfort with their donation decisions. Notably, FDMs from this region rated requesters' communication more positively than did families from other regions. Conversely, respondents from regions with the lowest performance in authorization (regions 9, 10, and 11) reported significantly poorer perceptions of their communications during the donation request. This potentially modifiable factor of donation, accounted for 60% of the variance in authorization.

Although this study was not designed to elucidate the specific communicative factors impacting the quality of requests, a growing body of literature has documented the impact of requesters' communication on donation outcomes (17,19–22,25,28). For example, a qualitative interview study of OPO organ procurement coordinators identified message strategies commonly used to secure family authorization for organ donation (30,31). Persuasive tactics, including intervening with families early, providing additional support, and discussing the benefits of donation, explained 32% of the observed variation in the conversion of potential donors to actualized donors (31). Moreover, requesters exhibiting confidence and high levels of sensitivity and compassion for the family have also demonstrated a greater likelihood of obtaining family authorization (21,22,28,32). Additional research is needed to better understand the regional differences observed in the communication exhibited during requests for

Table 4: Results of multivariable logistic regression analysis

Variable	Standard error	Odds ratio	95% confidence interval
Region			
Region 1, referent			
Region 3	0.42	0.47	0.21, 1.10
Region 4	0.43	2.21	0.95, 5.15
Region 5	0.63	1.01	0.29, 3.48
Region 8	0.97	8.14*	1.21, 54.90
Region 9	0.37	0.62	0.30, 1.26
Region 10	0.44	0.24**	0.10, 0.58
Region 11	0.45	0.38*	0.16, 0.92
Patient characteristics			
Age, years	0.01	0.99	0.98, 1.00
Race, white			
Nonwhite	0.22	0.69	0.45, 1.06
Family decision makers' perceptions of the request			
Initial reaction, favorable			
Unsure	0.24	0.24***	0.15, 0.38
Unfavorable	0.29	0.22***	0.12, 0.38
Pressured/harassed	0.06	0.86*	0.76, 0.96
Comfort with donation decision	0.07	1.18*	1.03, 1.36
Communication and request process variables			
Time spent discussing donation, min	0.10	2.11	1.74, 2.57
Satisfaction with time	0.08	0.76**	0.65, 0.89
Donation-related topics discussed	0.03	1.18***	1.12, 1.25
Donation-related communication skills	0.02	1.14***	1.09, 1.19

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

donation. Ideally, such work would qualitatively analyze audio-recorded requests as they occur in real-time to avoid the limitations associated with retrospective studies common to this line of inquiry.

Notably, substantial increases in the number of organ donors have been observed in the years since this study was conducted, with an all-time high of 9079 deceased donors in 2015 (1). It is unclear whether these increases result from national efforts to increase the number of designated donors, improved public education about organ donation, or improvements in the referral and request processes. Nonetheless, this study suggests that OPO staff were missing opportunities to increase the supply of available deceased-donor organs nationwide and equalize regional variations in donation, conversion, and transplantation rates. Existing evidence demonstrates the benefits of communication skills training on requesters' comfort discussing donation and their success in obtaining family authorization (25,28). The establishment of national standards to ensure all individuals approaching families about the option of donation are trained to do so sensitively and effectively are paramount to optimizing the opportunities for donation. Initial training is needed to acquire and develop the informational and relational communication skills needed to optimize the likelihood of donation; ongoing training is needed maintain and hone those skills.

This study is the first to assess regional differences in requests for solid organ donation, but it has a number of limitations. First, participating FDMs were asked to recall details of an experience occurring 2–3 months earlier, subjecting the data and these findings to both recall error and bias. However, this study took all precautions to ensure accurate recall and there is no reason to believe that subjects in various regions had poorer recall than others. Second, the sample is skewed toward FDMs who authorized donation (71.7%). Authorization rates for the 631 FDMs who were contacted and refused participation (i.e. nonresponders) were considerably lower (56.1%). While some degree of selection bias is evident, these findings paint a more positive portrait of the request process than likely truly exists given the comparatively poorer request experiences reported by refusing FDMs (17,19,25,28). The lower number of nonauthorizing FDMs recruited into the study reflects the logistical and financial challenges of locating and contacting refusing families, as information about these families was sparse or nonexistent. Additionally, no OPOs from regions 2, 6, or 7 participated in this study and, given the large proportion of donors who come from these regions, it is likely their exclusion impacted the findings reported herein. Finally, authorization rates are affected by the interplay of multiple factors at various levels, including policies regarding patient eligibility, the timely identification of potential donor-eligible patients and OPO notification, and OPO–hospital relationships. Our analyses focused on only FDMs' perceptions of the donation request. Research incorporating factors known to influence donation rates at multiple levels is needed.

Conclusion

The ongoing debate regarding redistricting or revising the geographic boundaries of the OPTN regions may be premature (10,11) given the identification of potential flaws in the model used to determine the proposed regions (23,24) and the fact that efforts to optimize the organ donor potential in the United States have yet to be exhausted. In particular, national standards for request staff communication training and certification are not established even though the existing evidence points to the critical importance of communication during requests and the success of currently available training options (25,28).

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Disclosure

The authors of this manuscript have no conflicts of interest to disclose as described by the *American Journal of Transplantation*.

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