Communicating effectively about donation: an educational intervention to increase consent to donation

Context—Families' refusal to consent to solid organ donation is a major contributor to the organ deficit in the United States. Previous research has identified organ procurement coordinators as best able to obtain consent from families; however, few studies have examined the effects of coordinator training programs on consent rates.

Objective—To test the effects of the Communicating Effectively About Donation intervention on the rate of family consent to solid organ donation.

Design—A nonrandomized repeated measures design.

Setting and Participants—Participants included 17 hospitals, 502 donor-eligible patients and their families, and 22 coordinators from an organ procurement organization in Ohio.

Intervention—Coordinators were given in-service training on the use of effective relational and affective communication techniques through a day-long interactive workshop and simulated donation scenarios.

Main Outcome Measures—Families' final donation decision and coordinators' donation-related behaviors.

Results—Training of coordinators was associated with increases in coordinators' comfort speaking with patients' families about donation and answering donation-related questions, in the amount of time coordinators spent discussing donation with family members, and in the number of donation-related topics discussed with families. Consent rates increased from 46.3% to 55.5% after the intervention.

Conclusions—The results suggest that improving coordinators' communication skills may be a fruitful avenue for increasing the rate of family consent to donation; however, a more definitive test of the training is needed to confirm the intervention's effectiveness. (*Progress in Transplantation.* 2009;19:35-43)

Laura A. Siminoff, PhD,
Heather M. Marshall, PhD,
Levent Dumenci, PhD,
Gordon Bowen, MS, CPTC, MT,
Aruna Swaminathan, MS,
Nahida Gordon, PhD
Virginia Commonwealth University, Richmond (LAS, HMM, LD, AS), LifeBanc, Cleveland, Ohio (GB), Case Western Reserve University, Cleveland, Ohio (NG)

Corresponding author: Laura A. Siminoff, PhD, Department of Social and Behavioral Health, School of Medicine, Virginia Commonwealth University, PO Box 980149, 1112 E. Clay St., Richmond, VA 23220 (e-mail: lasiminoff@vcu.edu)

Solid organ donation and transplantation have been heralded as medical miracles of the 20th century. In 2006, 28 931 transplants of organs from 14 755 donors (8024 deceased and 6731 living) were performed in the United States.[1] Even so, this left 68 751 individuals on the transplant waiting list, many of whom will die before a suitable organ is found.[1] Despite the public's stated enthusiasm for organ donation,[2] donation consent rates have remained relatively low. Research has consistently demonstrated that more than 30% of families decline donation in any given year.[3] Improving the rates of consent from deceased donor families is critical to increasing the number of organs available for transplant.[4-6]

The organ procurement organization (OPO) coordinator's role in the donation process is to ensure family members' understanding of organ donation, to answer family members' questions and assuage any fears or concerns about donation, and to persuade families to give consent for donation. Requests for donation come at a time when families are struggling to understand and accept their loved one's imminent death. Moreover, requests made to families of donation after cardiac death patients occur before the patient has died and present a different set of circumstances for OPO coordinators to manage. To be successful, coordinators must communicate in a manner that is sensitive to the families' situation and emotionally supportive, yet effective in gaining consent for donation. Coordinators' expertise and experience in donation and transplantation make them uniquely suited for this difficult task.[7] However, coordinators'

ongoing training and education in evidence-based, best practices for obtaining consent is crucial to their continued success and to maintaining a high level of quality in coordination activities.[8]

In a 6-year study of an ongoing coordinator training program, Santiago et al[9] found that the educational programs increased the number of actual donors and the number of organs procured, and decreased transplant candidates' waiting period. The training reviewed the donation process and equipped coordinators with communication techniques for providing emotional support and "psychological first aid" to family members and for skillfully requesting donation.[9] Similar efforts to provide coordinators with in-service training have improved request, consent, and transplantation outcomes.[8,10] Thus, it appears that improving coordinators' knowledge about donation and their ability to communicate with patients' families could help alleviate the current organ shortage. Moreover, imbuing coordinators with advanced communication skills may help reduce the rate of coordinator turnover by alleviating some of the stress involved with requesting donation. Such training may also enhance family members' satisfaction with the request process and ensure that family members are fully informed before consenting to donation.

The current research uses an innovative educational intervention to train OPO coordinators in the best methods of requesting donation from the families of donor-eligible patients. The Communicating Effectively About Donation intervention provides coordinators with didactic and skills-based training on effective communication techniques in a workshop setting and through simulated family scenarios. Our primary hypothesis was that the rate of family consent to donation would increase significantly after coordinators received the training. We also hypothesized that coordinators' request-related behaviors and perceptions, including the time coordinators spent discussing donation with families, the number of donation-related topics discussed, and coordinators' level of comfort talking with families and answering questions, would increase significantly after the intervention. This article presents the results of the initial test of the intervention on rates of consent to donation within the service area of an OPO in northeastern Ohio.

Methods and Measures

A nonrandomized repeated measures design was used to determine the effects of the intervention. The period before the intervention spanned from January 1, 2004, through August 31, 2004, and was immediately followed by a 3-month period of coordinator training. The period after the intervention extended from December 1, 2004, through September 30, 2006. Data were collected in all periods (see Figure 1 for a
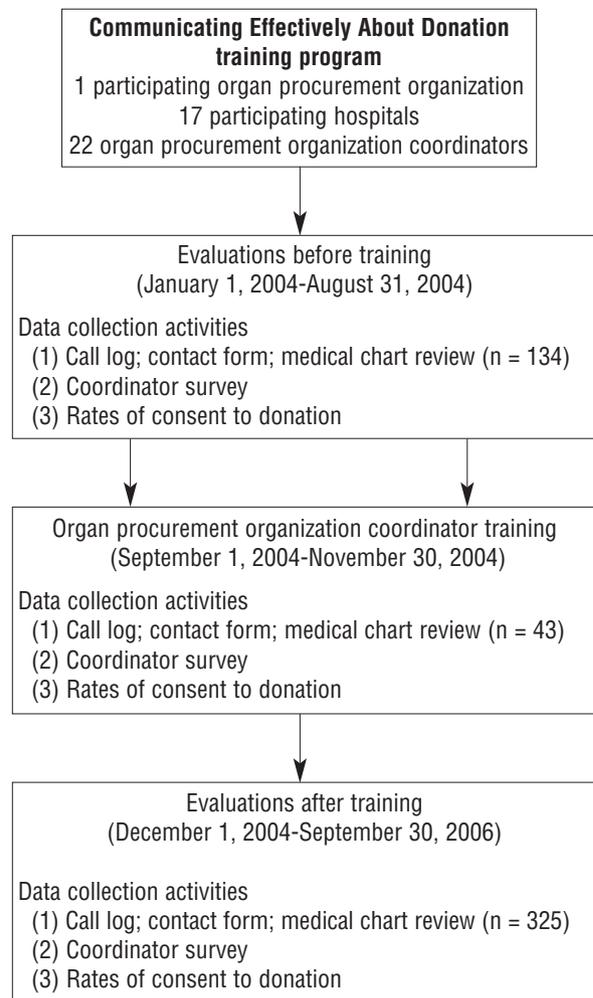

Figure 1 Consolidated Standards of Reporting Trials statement adapted for the Communicating Effectively About Donation training program.

depiction of the study timeline). To ensure that an adequate number of donor-eligible patients and their families would be referred into the study, 17 hospitals with the potential for 5 or more organ donors per year were asked to participate; all 17 consented.

Donor-eligible patients were identified on a weekly basis by using 2 sets of records maintained by the OPO. The first was the OPO's "call log," which tracked all hospital reports of potential donors to the OPO. The second was the "contact form" completed by each OPO coordinator who was assigned to a donor case. Data obtained included the patient's age, sex, ethnicity, date and time of death, cause of death, and length of stay. Additional information collected on each patient included the timing of the patients' referral to the OPO, the families' final donation decision (yes/no), the reason(s) why families consented or did not consent to donation, and the reason(s) why organs were not recovered. The medical charts of 1575 patients were reviewed during the course of the study. Of

---

Appendix Simulated scenarios

Scenario 1

Patient is a white man with a severe head trauma from a motor vehicle accident. He is recently widowed and has 2 young children. Family members present in the hospital are his mother and father. The father is angry at the death of his son. He is protective of the mother and does not want to upset her any more. His major concern about donation is fear of mutilation. The mother is quiet and overwhelmed. Brain death testing is underway. Before the staff from the organ procurement organization arrived, the physician spoke with the family and explained brain death. The physician is cold and impatient with the staff from the organ procurement organization. He regards them as vultures, their presence punctuating his failure as a physician.

Scenario 2

Patient is a 16-year-old African-American girl with a gunshot wound in her abdomen, caught in the crossfire during a convenience store robbery. Family members present at the hospital include mother, grandmother, and 23-year-old brother. The mother and grandmother are in shock. The brother is very angry and frustrated and is mistrustful of the health care system. The grandmother cannot understand the concept of brain death, but mother and brother are also having a hard time with this. An opportunity to speak with their minister may be helpful. The family feels frustrated that no one in the hospital will answer their questions or give them any information about how the patient is doing.

Scenario 3

Patient is a donation after cardiac death case. The family members have 2 or 3 concerns that need to be addressed before they will consent to donation. The family's anger and irrationality will increase in response to missed cues and opportunities for the coordinator to respond to the family's concerns. If the concerns are heard and addressed, the family members will calm down. If the concerns are ignored or glazed over, the family members will get angrier and angrier.

---

those, 502 patients (31.9%) were identified as donor-eligible on the basis of OPO records.

In addition to these records, we asked and obtained consent from the study OPO and each OPO coordinator to complete a self-administered survey within a week of the contact with the patient or the patient's family. The participating OPO employed 22 coordinators who requested donation from donor-eligible patients' families; all 22 (100%) consented. The semi-structured survey focused on capturing the process of identifying, approaching, and requesting donation from donor-eligible families. It asked coordinators to confirm that they had contacted the family, to provide a review of the discussions they had with the family, to identify the relationship of the family decision maker to the patient, to identify at what point in the process they met with the family, and to identify the activities of the hospital-based health care providers related to donation before their contact with the patient's family. The coordinator survey was developed previously and is described in more detail elsewhere.[4,11] All aspects of the study were approved by the university's institutional review board and by each of the 17 hospitals' institutional review boards.

Communicating Effectively About Donation

All 22 OPO coordinators received the communication training for 3 months as part of the OPO's ongoing coordinator education. The training was divided into a day-long interactive group workshop, taught by the principal investigator (L.A.S.), and then individual skills-based simulated donation scenarios with feedback. The workshop exposed coordinators to the theoretical basis for relational and affective communication and stressed the importance of ongoing coordinator training. The workshop also advised coordinators on the application of effective communication techniques for initiating the request, gathering and giving information about the patient and family, eliciting family members' donation beliefs, building relationships with families, and closing the donation discussion. Finally, the workshop allowed coordinators to practice those techniques through role playing.

The simulated donation scenarios provided coordinators with the opportunity to practice effective communication techniques further with actors posing as the families of donor-eligible patients. Coordinators were presented with 3 simulated scenarios: the first an uncomplicated scenario portraying a couple whose son experienced severe brain trauma from a motor vehicle accident; the second a single parent, African American family whose teenage daughter was a victim of a fatal gunshot wound; and the third a case of donation after cardiac death. (A full description of each scenario is presented in the Appendix.) In each scenario, coordinators were videotaped using basic skills, such as framing donation positively, using statistics to explain the benefits of donation, engaging the family in a discussion of their values, probing and responding to family members' fears or misinformation about donation, and attending to families' emotional needs, to request donation from family actors. Because they were presented as a series, coordinators worked through increasingly challenging scenarios and encountered family-specific issues such as family dysfunction, cultural differences, and families who are divided about whether to donate. The videotapes were reviewed by an expert consultant from the university's medical school who was trained in the use of standardized patients such as those employed in the simulated scenarios. The

consultant provided each coordinator with a critique of his or her performance during the simulation.

Measures

The primary objective of this study was to test the effects of the intervention on rates of family members' consent to the donation of deceased loved ones' organs. Consent was measured as a dichotomy: consented or refused. Other variables thought to affect the process by which donation is requested of families were measured and compared before and after the intervention, including the following variables.

Time-Sensitive Referrals. The timely referral of donor-eligible patients to the OPO allows coordinators sufficient time to develop relationships with patients' families. A referral was defined as "timely" if it occurred before or during brain death protocols for a given patient. Referrals were classified as not timely if the patient was already dead according to cardiopulmonary or brain death criteria when the OPO was called, if the family had been asked about donation by hospital health care providers and a donation decision was made before referral, if a do-not-resuscitate order was placed before the referral, or if the family left the hospital without meeting with an OPO coordinator.

Time Spent With Families. Coordinators recorded the amount of time spent discussing donation with family members in hours and minutes.

Donation-Relevant Topics Discussed With Families. Coordinators were asked to indicate whether each of 14 donation-related topics was discussed with family members (yes/no). Responses were summed for the total number of topics discussed with each family.

Coordinators' Comfort With Family. Two measures were used to assess coordinators' general comfort with the family and coordinators' comfort answering questions about donation. Both used a 7-point Likert scale; higher scores signified greater comfort.

Role of the Health Care Provider in the Request Process. Four measures were used to characterize the health care provider's role in the request process. The first 2 measures asked coordinators to indicate whether they were introduced by the health care provider only (yes/no) and whether the health care provider requested donation from the family (yes/no). Coordinators also rated the cooperation they received from health care providers in the request process on a 7-point Likert scale, with higher ratings indicating more cooperation. Finally, coordinators used the same 7-point Likert scale to rate their personal comfort with the health care providers' role.

Data Analysis

Contingency tables and mean differences were examined to determine whether the samples from before and after the intervention differed significantly and whether associations existed between the training intervention and the measured variables. Frequencies and percentages are reported for categorical-level variables, and means and standard deviations are reported for interval-level variables. A path analysis was performed to evaluate the relative contributions of the training intervention, time-sensitive referrals, the time spent with family members, the donation-related topics discussed, and patients' age and race on families' consent to donation. The time that coordinators spent discussing donation with families was highly skewed and, thus, we applied logarithmic transformation before the analysis. We explicitly took account of the clustered sampling design (ie, respondents nested within hospitals) in estimating the path model. A subsequent multivariate logistic regression was conducted to determine the unique effects of the donation-related topics on consent. Data from 43 cases collected during the coordinator training period were not included in the analyses (N = 459). Analyses were conducted by using SPSS (SPSS, Inc, Chicago, Illinois) 15.0 for Windows, SAS (SAS Institute, Cary, North Carolina), and MPlus software version 5.12.

Results

One hundred thirty-four patients were included in the sample before the intervention and 325 in the sample after the intervention (N = 459). Table 1 presents patients' demographic characteristics for the whole sample and by intervention period. Overall, patients were predominantly male (60.1%) and white (78.2%); the patients' mean age was 46.0 years (SD, 19.6). A third of the patients had signed an organ donor card or had registered as donors with the Department of Motor Vehicles. For most patients, the cause of death was not trauma related, and the mean length of stay in the hospital was 2.7 days (SD, 3.1). Compared with patients in the group after the intervention, patients in the group from before the intervention were younger (mean age, 42.8 vs 47.3 years, P = .03), more likely to have a trauma-related cause of death (44.0% vs 32.0%, P = .009), and more likely to be a candidate for donation after cardiac death (22.4% vs 14.5%, P = .04). No other characteristics of patients differed significantly from before to after the intervention.

Of the 22 coordinators participating in this research, 72.7% were female, 86.4% were white, and 50.0% were Protestant. The mean age of the coordinators was 38.9 years (SD, 8.6) and all had, at a minimum, a high school education. On average, coordinators spoke with 2 decision makers per patient about the option of organ donation (SD, 0.99). Most often these discussions took

Table 1 Patients' demographic characteristics by intervention period[a]

Characteristic	Before intervention (n = 134)	After intervention (n = 325)	Total (N = 459)
Sex			
Male	74 (55.2)	202 (62.2)	276 (60.1)
Female	60 (44.8)	123 (37.8)	183 (39.9)
Race			
White	103 (76.9)	256 (78.8)	359 (78.2)
Nonwhite	31 (23.1)	69 (21.2)	100 (21.8)
Age, mean (SD), y[b]	42.8 (18.7)	47.3 (19.9)	46.0 (19.6)
Signed donor card/license			
Yes	38 (28.4)	115 (35.4)	153 (33.3)
No	96 (71.6)	210 (64.6)	306 (66.7)
Cause of death[c]			
Trauma	59 (44.0)	104 (32.0)[d]	163 (35.5)
Nontrauma	75 (56.0)	218 (67.1)[d]	293 (63.8)
Length of stay in hospital, mean (SD)[d]	2.7 (3.6)	2.7 (3.0)	2.7 (3.1)
Candidate for donation after cardiac death [e]			
Yes	30 (22.4)	47 (14.5)	77 (16.8)
No	104 (77.6)	278 (85.5)	382 (83.2)

[a] Values expressed as number (%) of patients unless otherwise indicated.
[b] $P = .03$.
[c] $P = .01$.
[d] After the intervention, the No. of patients was 322 because of missing values.
[e] $P = .04$.

place with the patient's spouse or significant other (46.9%), although the patient's parents (41.6%), children (40.2%), and siblings (36.2%) were also included in many donation conversations.

Effect of the Intervention on Families' Consent to Donate

The primary goal of the training intervention was to increase consent rates for solid organ donation from families of donor-eligible patients. Donation consent rates increased from 46.3% before the intervention to 55.5% after the intervention ($P = .07$). Consent rates increased approximately 20% (9.2 percentage points) after coordinators had completed the training.

A path analysis (Figure 2) was performed to determine the relative contributions of the training intervention and other candidate variables on consent to donation. The results indicated that the influence of the training on families' final donation decisions was mediated by the length of the donation discussion and the number of topics discussed (both of which were important components of the training intervention). Specifically, the intervention was predictive of the amount of time coordinators spent discussing donation

with families, such that after the training coordinators spent more time with patients' families ($\beta = -0.18$). The increased time with the families directly influenced the number of donation topics discussed ($\beta = 0.52$) and families' consent to donation ($\beta = 0.25$). Patients' timely referral to the OPO also was predictive of the time coordinators spent with families ($\beta = 0.23$), the number of donation-related topics discussed ($\beta = 0.21$), and consent to donation ($\beta = 0.20$), after the effects of age and race on both timely referral and consent were controlled for. Patients' age and race were predictive of the timing of their referral to the OPO ($\beta = -0.28$ and $\beta = 0.13$, respectively) and families' final donation decisions ($\beta = -0.22$ and $\beta = 0.15$, respectively). Patients who were younger and white were more likely to be referred to the OPO in a timely manner, and the families of young, white patients were more likely to consent to donation. This finding bolsters similar, earlier findings on the relationship between patients' age and race and families' consent to donation.[13-16]

A subsequent multivariate logistic regression of consent on the various donation discussion items was conducted to examine the unique contributions of the topics to the consent. Of the 14 topics included in the
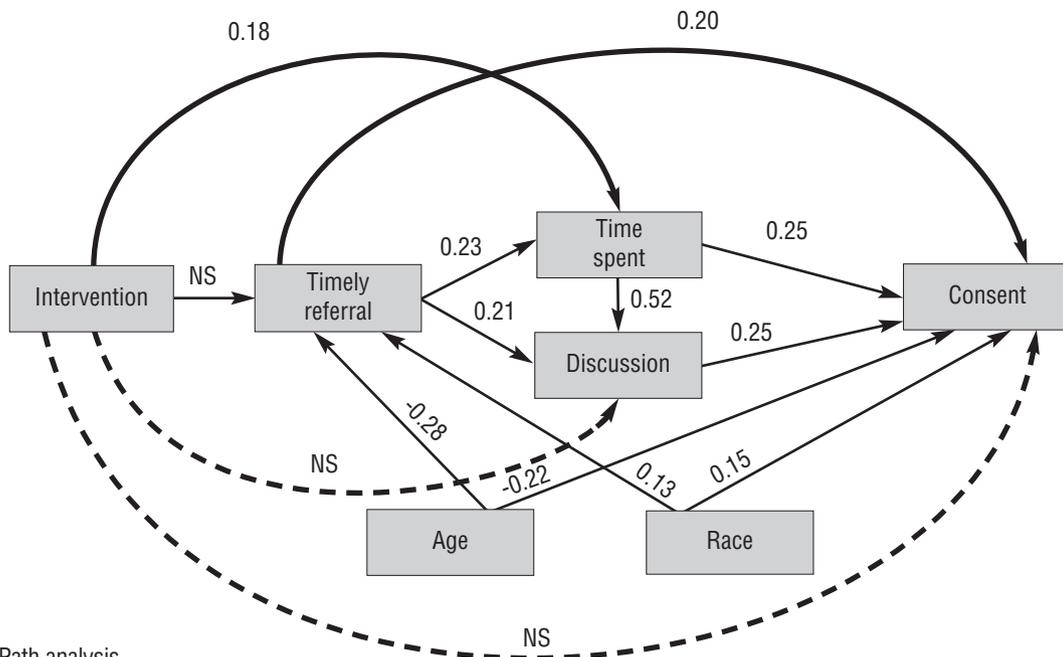
Figure 2 Path analysis.

Abbreviation: NS, not significant.

analysis, discussions about the length of time required for the donation process, autopsy issues, funeral arrangements/open casket issues, notification of or correspondence with recipients, donation for research purposes, and disfigurement issues were predictive of consent (Table 2).

Effects of the Training Intervention on Coordinator Behaviors

After being exposed to the didactic and skills-based training of the module, OPO coordinators reported higher levels of comfort talking with families than they had reported before the training, although the difference was not statistically significant (mean comfort 6.4 vs 6.3, $P = .23$; Table 3). However, coordinators' comfort in answering family members' questions about donation increased reliably from before to after the intervention (mean comfort 6.4 vs 6.6, $P = .01$). Differences were also found in the amount of time coordinators spent with the families of eligible patients. The mean amount of time that coordinators spent with families in discussions about donation-specific issues increased significantly ($P < .001$) from before (50.1 min) to after (83.2 min) the intervention.

In addition, the overall number of donation-related topics increased significantly. Before the intervention, coordinators discussed a mean of 7.4 (SD, 5.04) topics with families, as compared with 8.5 (SD, 4.30; $P = .03$) topics after the intervention (Table 3). The topics that increased in frequency were discussion of the donation process, the time required for donation, the cost of donation, issues surrounding funeral arrangements, the process of organ matching, and future

Table 2 Results of the logistic regression predicting consent

Discussion topic	Consent to donation Odds ratio (upper, lower)
Funeral arrangements/open casket issues	0.22 (0.10, 0.50)[a]
Research	0.42 (0.20, 0.86)[b]
Time for donation process	0.39 (.018, 0.83)[b]
Autopsy in relation to donation	0.50 (0.29, 0.86)[c]
Disfigurement/mutilation issues	3.85 (1.70, 8.74)[d]
Notification of/correspondence with recipient	0.35 (0.16, 0.79)[c]
The donation process	1.00 (0.43, 2.14)
Patients' medical history	0.72 (0.41, 1.27)
Patients' wishes regarding donation	1.07 (0.63, 1.83)
Body treatment during procurement	1.18 (0.58, 2.42)
Organ matching	1.56 (0.70, 3.51)
Costs associated with donation	1.58 (0.71, 3.51)
Brain death	1.60 (0.77, 3.30)
Religious beliefs	1.10 (0.59, 2.05)

[a] $P < .001$.
[b] $P = .02$.
[c] $P = .01$.
[d] $P = .001$.

contact with recipients. The frequency in discussion of brain death, autopsy, and research in relation to donation decreased from before to after the intervention.

Analyses also revealed that, before the training, coordinators were more likely to discuss patients'

Table 3 Bivariate results for the training intervention[a]

Variables	Before intervention (n = 134)	After intervention (n = 325)	P
OPO comfort talking with family	6.2 (0.91)	6.3 (1.01)	.23
OPO comfort answering questions	6.4 (0.88)	6.6 (0.61)	.009
Time spent discussing donation (min)	50.1 (3.98)	83.2 (3.55)	<.001
No. of donation-related items discussed	7.4 (5.04)	8.5 (4.30)	.03
OPO rating of HCP role	6.0 (1.05)	5.9 (1.53)	.18
OPO rating of HCP cooperation	6.2 (1.09)	6.1 (1.37)	.74
Time-sensitive referrals, No. (%) of patients	116 (86.6%)	281 (86.5%)	.97
Consent to donation, No. (%) of patients	62 (46.3%)	176 (55.5%)	.07

Abbreviations: HCP, health care provider; OPO, organ procurement organization.
[a] Values are expressed as mean (SD) unless otherwise indicated.

medical history (69.9% vs 45.2%, $P = .01$) and the length of time required for the donation process (62.1% vs 33.3%, $P = .005$) with the families of white patients than with the families of minority patients; conversely, coordinators were more likely to discuss brain death (96.8% vs 79.9%, $P = .02$) and religious beliefs (30.0% vs 14.6%, $P = .05$) with the families of minority patients than with the families of white patients. After the training, however, coordinators discussed 8 topics—the donation process, the length of time for the donation process, the patient's donation wishes, funeral arrangements, costs of donation, organ matching, correspondence with the recipient, and research—with the families of white patients more often than with the families of minority patients. The remaining 6 topics were discussed equally with families of all patients, regardless of race.

Neither coordinators' evaluation of health care providers' role in the request process nor coordinators' evaluation of the level of cooperation they received from health care providers differed significantly between before and after the intervention (6.0 vs 5.9, $P = .18$ and 6.2 vs 6.1, $P = .74$, respectively; Table 3). The number of time-sensitive referrals made from the hospital to the participating OPO did not differ significantly ($P = .97$) from before (86.6%) to after (86.5%) the intervention either.

Discussion

The results of the single-site test of the intervention are promising. During the study, consent rates increased 9.2%. To put this into perspective, national data obtained from the United Network for Organ Sharing for the same periods indicated an increase in the rate of consent of only 2.1% (62.7% vs 64.8%, respectively).[1] It should be noted that the consent rates obtained during the study period were lower than the national average. One interpretation of these findings

is that consent rates had reached their lowest point and that any type of educational intervention would have produced results similar to those achieved by the training program. Another potential explanation concerns the OPO's relationship with the participating hospitals. The OPO in this study had historically experienced difficulties obtaining referrals and, more specifically, timely referrals from its regional hospitals. Late referrals do not give coordinators enough time to develop relationships with family members or adequately discuss the subtleties of donation and often result in family refusal.[5,17]

Indeed, the results of the path analysis revealed that time-sensitive or "timely" referrals were predictive of the amount of time coordinators spent with family members, the number of donation-related topics discussed, and ultimately, families' decisions regarding donation. Federal legislation requires that hospitals "have and implement written protocols that . . . notify, in a timely manner, the OPO . . . of individuals whose death is imminent or who have died in the hospital."[18] However, it is estimated that, on a national basis, 16% of potential donors are never referred.[19] Future research and interventions should focus on hospital development initiatives to improve the rate of time-sensitive referrals to regional OPOs.

The findings of the initial test of the training intervention suggest that the substantive and theoretical information provided to OPO staff members during the training boosted coordinators' confidence and ability to communicate with the families of donor-eligible patients. After completing the training, coordinators reported higher levels of comfort in speaking with family members and answering donation-related questions. Coordinators also spent more time discussing donation and discussed more donation-related topics with the families of donor-eligible patients after completing the training. The frequency with which each

item was discussed with individual families was not measured, however.

The topics discussed mirror the topics in the training, which stressed the application of evidence-based communication. We know from previous research that issues of paramount importance to making donation decisions are costs and funeral arrangements, for example, whereas brain death is important as a point of information for families, but does not affect the decisions made by donor-eligible families.[20,21] To ensure success in requesting donation, coordinators must be made aware of the topics most likely to influence families' donation decisions and coordinators must be provided ample time to discuss those and other topics with family decision makers. The increased time that coordinators spent with families most likely allowed them to provide additional emotional support to individual family members and to find the most appropriate time to broach various donation-related issues, as opposed to engaging families in hurried conversations regarding the option to donate.

The training intervention aimed to refine coordinators' abilities to communicate effectively about donation with the families of donor-eligible patients. The initial test of the intervention has revealed its potential to increase rates of consent to solid organ donation and to effect changes in coordinators' donation-related behaviors, underscoring the need for ongoing education and training for OPO coordinators who are on the front lines of the battle to increase consent. However, results concerning the specific topics discussed with minority and white families indicate that the intervention should be developed further to help improve coordinators' cultural competence. After the training, coordinators discussed several topics with white families more often than with minorities. The remaining topics were discussed equally with both groups of families. Coordinators should be aware of the concerns related to disfigurement, religion, and medical mistrust[22,23] that are unique to minority populations and should strive to include these issues in their donation discussions.

Limitations of the Study

In addition, a number of limitations to this research should be considered. First, the study constitutes a test of the training intervention within the service area of one OPO. This limited the population of hospitals, coordinators, and donor-eligible patients available for inclusion in the research and restricted the generalizability of the findings. Second, minorities were underrepresented in the patient sample. More than three-quarters (77.5%) of the sample was white and 19.5% of the sample was African American; the remaining 3% of the sample comprised patients of Hispanic, Asian, or American Indian origins. Third, little information about the families' decision makers, aside from their final dona-

tion decision, was collected as part of this project. It would be interesting to understand the ways in which the communication training affects family decision makers' perceptions of the donation request process and to ascertain whether communications could be further tailored to family needs.

The most significant limitation concerns the study's pre-post design without a control group. The lack of a control group makes it impossible to claim, with confidence, that the training intervention was solely responsible for the increased rates of consent found after the intervention. For instance, hospital development efforts, public education initiatives, and the Health Research and Services Administration's (HRSA) Organ Donation Breakthrough Collaborative may have contributed to the increased rates of consent. In fact, quality improvement research was being conducted in the 17 hospitals participating in this research during the study period. The research was directed toward identifying and correcting barriers to donation in the hospitals and increasing the number of time-sensitive referrals made from the hospitals to the study OPO. As noted previously, no change in the number of time-sensitive referrals was found; this result suggests that the effort had minimal impact on consent as well. Given these limitations, a large-scale investigation of the communication training using a pre-post design with a control group across multiple OPOs would provide a definitive test of the intervention's effects on consent and would increase the generalizability of the findings. Such an examination might also enable us to ascertain the intervention's capacity to yield consent rates that surpass the national average.

Financial Disclosures

References
1. United Network for Organ Sharing (UNOS). 2007. http://www.unos.org/data/. Accessed October 1, 2008.
2. The Gallup Organization I. 2005 National Survey of Organ and Tissue Donation Attitudes and Behavior. Prepared for the Division of Transplantation, health Resources and Services Administration. 2005. http:\\www.organdonor.gov. Accessed October 1, 2008.
3. Health Resources and Services Administration (HRSA). August 2007. Improvement Leaders Connection. http://www.organdonationnow.org/Newsletter/2007/august/Newsletter_August.html. Accessed August 4, 2008.
4. Siminoff L, Gordon N, Hewlett J, Arnold RM. Factors influencing families' consent for donation of solid organs for transplantation. *JAMA.* 2001;268(1):71-77.
5. Ehrle RN, Shafer TJ, Nelson KR. Referral, request and consent for organ donation: best practice—a blueprint for success. *Crit Care Nurse.* 1999;19(2):21-30, 32-33.
6. Verble M, Worth J. Dealing with the fear of mutilation in the

donation decision. *J Transpl Coord.* 1999;9(1):54-56.

7. Bires MH. Comparison of consent rates between hospital-based designated requesters and organ procurement coordinators. *J Transpl Coord.* 1999;9(3):177-180.

8. Tokalak I, Emiroğlu R, Karakayali H, Bilgin N, Haberal M. The importance of continuing education for transplant coordination staff. *Prog Transplant.* 2005;15(2):106-111.

9. Santiago C, Gomez P, Olivares J, de La Concepcion M. Evaluation of organ procurement in an area under the influence of a training program. *Transplant Proc.* 2005;37:3649-3650.

10. Yücetin L, Keçecioğlu N, Akaydin M, Ersoy FF. The solution to organ shortage in Turkey: trained transplant coordinators. *Transplant Proc.* 2004;36:24-25.

11. Siminoff LA, Arnold RM, Caplan AL, Virnig BA, Seltzer DL. Public policy governing organ and tissue procurement in the United States: results from the National Organ and Tissue Procurement Study. *Ann Internal Med.* 1995;123:10-17.

12. Muthén LK, Muthén BO. *Mplus User's Guide.* 5th ed. Los Angeles, CA: Muthén & Muthén; 1998-2007.

13. Gortmaker SL, Beasley CL, Sheehy E, et al. Improving the request process to increase family consent for organ donation. *J Transpl Coord.* 1998;8(4):210-217.

14. Gortmaker SL, Beasley CL, Bringham LE, et al. Organ donor potential and performance: size and nature of the organ donor shortfall. *Crit Care Med.* 1996;24(3):432-439.

15. Rodrigue JR, Cornell DL, Howard RJ. Organ donation decisions: comparison of donor and nondonor families. *Am J Transplant.* 2006;6:190-198.

16. Siminoff L, Mercer MB, Graham G, Burant C. The reasons families donate organs for transplantation: Implications for policy and practice. *J Trauma.* 2007;62:969-978.

17. Siminoff LA, Lawrence RH, Zhang A. Decoupling: what is it and does it really help increase consent to organ donation? *Prog Transplant.* 2002;12(1):52-60.

18. Health Care Financing Administration (HCFA). Medicare and Medicaid programs: Hospital Conditions of Participation; Identification of Potential Organ, Tissue and Eye Donors and Transplant Hospitals' Provisions of Transplant-Related Data. *Federal Register.* 1998;63(119):33856-33874.

19. Sheehy E, Conrad S, Bringham LE, et al. Estimating the number of potential organ donors in the United States. *N Engl J Med.* 2003;349:667-674.

20. Siminoff LA, Arnold RM, Hewlett J. The process of organ donation and its effect on consent. *Clin Transplant.* 2001; 15:39-47.

21. Siminoff LA, Mercer MB, Arnold R. Families' understanding of brain death. *Prog Transplant.* 2003;13(3):218-224.

22. Siminoff LA, Saunders Sturm CM. African-American reluctance to donate: Beliefs and attitudes about organ donation and implications for policy. *Kennedy Institute Ethics.* 2000; 10(1):59-74.

23. McNamara P, Guadagnoli E, Evanisko MJ, et al. Correlates of support for organ donation among three ethnic groups. *Clin Transplant.* 1999;13:45-50.