

# Nursing knowledge and attitudes toward organ donation

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**Abstract:** This study of 1,416 nurses practicing in critical care, emergency, and operating rooms demonstrates that attitudes supportive of organ and tissue donation do not correlate with knowledge about donation or an ability to offer the option of donation to grieving families. Knowledge deficits related to issues of brain death and donation logistics were evident, and these may interfere with a nurse's ability to appropriately offer the option of donation. As the correlation between knowledge and attitude is weak, educational programs for nurses should address not only knowledge, but attitudes as well.

Mary Vrtis, RN, Ph.D.,<sup>1</sup>  
Bruce Nicely, RN, CPTC<sup>2</sup>

<sup>1</sup>Riverside School of Professional Nursing, Newport News, Virginia; <sup>2</sup>LifeNet Transplant Services, Virginia Beach, Virginia, U.S.A.

Address reprint requests to Bruce Nicely, RN, CPTC, LifeNet Transplant Services, 5809 Ward Court, Virginia Beach, Virginia, 23454, U.S.A.

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## Historical relevance/literature review

### The shortage of organs

As of June 24, 1992, there were 27,391 people on the United Network for Organ Sharing (UNOS) list waiting for transplantable organs. In 1991, 9,949 kidney, 2,125 heart, 2,954 liver, 532 pancreas, 51 heart/lung, and 401 lung transplants were performed. In 1992, 20,992 people were waiting for kidney transplants, 2,563 people were waiting for heart transplants, and 2,136 people were waiting for liver transplants [1]. Every thirty minutes a patient is added to the UNOS waiting list. In 1990, 2,077 people died while waiting for organ transplants [2] and 78 patients die each month while waiting for an organ transplant [3]. The fact that there are not nearly enough organ and tissue donations to meet the need is well documented in the United States, Canada, Scotland, England and other parts of Great Britain [4-10]. For those who do not die, the wait for an organ causes even good candidates for transplantation to deteriorate to poor risks for transplant [11].

### Legislative solutions

The Uniform Anatomical Gift Act (UAGA) of 1968 legalized donor cards and the right of the next-of-kin to donate organs. Since that time, several other national laws have been passed, including the:

- Uniform Brain Death Act of 1978,
- Uniform Determination of Death Act (UDODA) of 1981,

National Organ Transplant Act (NOTA) of 1984, Omnibus Reconciliation Act (OBRA) of 1986, Uniform Anatomical Gift Act Amendments (UAGA) of 1987, Health Omnibus Program Extension of 1988.

As a result of the amended UAGA, OBRA, and many state versions of national legislation, various forms of required request and routine inquiry have gone into effect in recent years [5,6,12-16].

The anticipated increase in donors has not occurred with recent required request legislation [14,17]. It is estimated that only 15 to 20% of the potential organ donor pool is realized annually [17], and that fewer than 40% of potential donors come to the attention of transplant teams [18].

### Factors impacting organ recovery rates

It appears that legislation has not provided the answers because laws cannot address the primary problems. Annas [19] pointed out that legal solutions will never succeed because the real problems are not legal, but rather psychological. Annas suggests that educational efforts and a sensitive appreciation of the needs and concerns of physicians and nurses whose attitudes inhibit donation will result in an increase in donations [19].

The reasons given for poor organ retrieval rates are many. Distrust of medical professionals and the healthcare system, racial and socioeconomic sub-

cultural differences, lack of knowledge about a loved one's wishes, religious beliefs, cultural attitudes regarding the body after death, and the shock, grief, confusion, and time constraints of the situation are factors that affect the next-of-kin [3,6,8,9,13,16,20]. As members of the same dominant cultures as next-of-kin, healthcare professionals are affected by many of the factors that affect significant others.

#### The impact of healthcare professionals' attitudes and knowledge on organ and tissue donation

The attitude of healthcare professionals toward organ and tissue donation is known to impact donation rates. When families are offered the option of organ donation, 70 to 84% agree [8,21–23]. When the professional approaching the significant others is uncomfortable with donation, this discomfort is perceived by the potential donor's significant others and may result in refusal [14,22,24–26]. Healthcare professionals often feel that presenting the organ donation option to bereaved families will have a harmful effect. Fear of "bothering" the significant others or adding to the family's grief increases healthcare professionals' discomfort [14,16,27–29]. Those who are uncomfortable with approaching families with the donation option often find a way to avoid doing so in spite of required request legislation, or they meet the required request obligation in a manner that is not likely to bring forth desired results [9,14,26]. The fact that next-of-kin is not always given the option is a problem that contributes to low organ retrieval rates [8,21].

Healthcare professionals' knowledge level is another factor that impacts organ retrieval rates. Although most healthcare professionals and Organ Procurement Organizations (OPO) agree that appropriate preparation for offering the organ donation option is important, the majority of requesters are untrained, inexperienced, and ill-prepared [3,5,20,30–32]. Knowledge deficits in the areas of brain death criteria and donor identification are also problems that may impact both attitudes and behaviors of professionals [10,13,14,17,30–33].

Few empirical studies have examined the attitudes and knowledge levels of participants in the organ and tissue donation process. Sophie et al. [31] conducted a two-phase study that was designed to explore the attitudes and knowledge levels of Intensive Care nurses ( $n = 312$ ). Sixty-three percent of the nurses perceived ICU and Emergency Room nurses to be key role players in donor recognition, but only 66 to 70% of the nurses made the correct decision regarding medical suitability of potential donors in three of four vignettes. To an

open-ended question regarding feelings associated with care of a potential donor, 32% responded "does not bother me," 25% "worthwhile because it helps another person," 21% "emotionally draining; ambivalent reactions," 12% "subjects the significant others to added stress." Although 86.8% of the nurses approved of organ donation, only 28% had personally signed organ donor cards [31].

Falvo [24] surveyed 51 family practice residents and found that the majority had positive attitudes toward organ donation. Seventy percent indicated that they intended to donate their own organs, but only 17% had signed organ donor cards. There was a strong correlation ( $r = 0.65$ ) between the residents' attitudes toward organ donation and attitudes they attributed to family members. Other concerns addressed by the residents included the desire for information regarding appropriate approaches to families and clarification of declaration of death [24].

Prottas and Batten [34] surveyed 246 neurosurgeons, 222 hospital administrators, 227 directors of nursing, and 878 ICU nurses. Seventy-four percent of the neurosurgeons indicated that physicians find organ procurement emotionally demanding, and 77% of the ICU nurses felt that nurses find organ procurement emotionally demanding. Over 90% of all of the healthcare professionals strongly approved of organ donation personally, and over 90% would consider donating their own organs, but only 52% of the neurosurgeons, 68% of the directors, and 71% of the ICU nurses had discussed organ donation with their families [34].

Wakeford and Stepney [32] surveyed 380 ICU staff (57% nurses and 43% physicians) asking about factors that limited organ donation in the unit. Fifty-five percent of the staff felt that presenting the option of organ donation adds to the relative's distress. Lack of training in how to approach relatives was cited as a possible or definite cause by 49% of the staff. Resentment at the time, effort, and expense involved was viewed as a factor by 13% of those surveyed. General distaste on the behalf of unit members was considered a factor by 26%. Reservations about the validity of brain death criteria was identified as a problem by 11% of the ICU staff [32].

Younger et al. [33] assessed knowledge levels of 40 ICU nurses, 40 OR nurses, 39 residents, 37 anesthesiologists, and 39 attending physicians. Only 35% of respondents correctly identified the legal and medical criteria for determining death, and confusion between brain death and a chronic vegetative state was evident. Respondents who had participated in a teaching program were more likely to have answered correctly than were those who had not participated [33].

Attitudes, knowledge, and educational solutions

There is ample evidence to support the assumption that attitudes and knowledge levels of healthcare professionals have an impact on organ and tissue donations. Knowledge deficits of healthcare professionals can be addressed directly through educational programs once the deficits are identified.

Cultural and subcultural values and social norms tend to affect the attitudes of healthcare professionals. Attitudes related to deeply ingrained cultural and subcultural values and norms are not likely to be changed by educational programs. Those attitudes that are related to erroneous basic assumptions on the part of healthcare professionals, however, may well change as a result of education. To a degree, the negative attitudes of healthcare professionals are based upon erroneous basic assumptions.

For example, professionals who believe that the family members of a potential donor are additionally stressed when the organ donation option is offered will be very reluctant to discuss donation. This assumption is not supported since there is a great deal of evidence to suggest that families are frequently comforted by the opportunity to donate organs and tissues of a loved one [13,14,16, 25-29,35-38]. Similarly, those who believe that organ and tissue donation will result in mutilation of the body after death will be uncomfortable when offering the organ donation option. However, the body is not mutilated as a result of donation [36], and correcting that erroneous assumption may impact attitudes. Healthcare professionals who lack a clear understanding of brain death will most likely have ambivalent feelings toward organ donation because they may not accept that the potential donor is actually dead. Education about brain death is essential to any programs to heighten awareness about organ donation.

**The study**

Purpose of the study

The primary purpose of this study was to measure critical care nurses' knowledge about and attitudes toward organ and tissue donation. It was felt that this information would be helpful in developing new educational programs to address the needs of critical care nurses in the Organ Procurement Organization's (OPO) service area. A version of this survey tool was then used to measure changes in knowledge and attitudes that resulted from educational activities.

Methods

A survey to measure attitudes toward and knowledge about organ/tissue donation was developed by

the research team. The survey method was chosen for both cost and convenience, as the survey was sent to the entire population of critical care, Operating Room (OR), and Emergency Department (ED) nurses in the OPO's service area to obtain a representative sample. Lists of critical care, OR, and ER nurses for each hospital in the service area were generated by the Transplant Coordinators and surveys were sent with a stamped, return envelope to each nurse. Surveys were printed on different colored paper so the researchers could identify the hospital to which it was sent. In order to thank those nurses who did participate and to dispel any erroneous ideas that resulted from the survey, a fact sheet and thank you note were sent to all nurses who returned the survey.

Three separate pilot studies were done using versions of the survey in order to establish reliability and validity of the final tool. Pilot one (n = 16) was done as a preliminary test of questions in order to further refine the survey tool. Pilot two (n = 35) was completed using an expanded survey tool with open-ended questions on the attitude sub scale to determine if it was possible to code responses using a Likert scale so that closed-end questions could be developed. Pilot three (n = 39) was completed using the final version of the survey tool.

The final version of the survey tool consisted of 10 closed-end attitude questions, 25 closed-end knowledge questions, seven informational questions, requests for demographic data, and one open-ended question that did not factor into either score. Six of the attitude questions were closed end questions in which the nurse rated her/his feelings/beliefs on a five point Likert-like Scale (0 = very negative, 5 = very positive, or 0 = very uncomfortable, 5 = very comfortable). The other attitude questions offered YES/NO options. Knowledge questions were of two types: circle the correct answers, and TRUE/FALSE.

The open-ended question which did not factor into the score asked the nurse to state what she/he would say to a family in the event that she/he was responsible for offering the option. The decision regarding coding criteria was made jointly by two transplant coordinators and two nurse educators. Responses were coded by one of two primary researchers as follows:

- 0 = No response, a very negative response, completely erroneous information, or statements that could be harmful.
- 1 = Very negative statements, avoids responding.
- 2 = Vague, very blunt statements that lack professionalism.
- 2.5 = One good line, but confused about ap-

- proach, does NOT contain strong negatives.
- 3 = Blunt, but positive and sincere; oversell, no assessment of what family understands nor recognition of grief.
  - 4 = Acknowledges loss or grief, positive approach; offers option and/or recognizes need for help and states would consult with OPO or more experienced individual. May be too abrupt.
  - 5 = Strongly positive, includes: introduction assessment of family understanding readiness, acknowledgment of loss/death, information/clarification offer of option, non-judgmental statements

The survey was designed to generate both an attitude and a knowledge score, with each score ranging from a possible minimum of zero to a maximum of 50. In addition to demographic data, the nurse was also asked to respond to a number of questions that might assist in explaining variations in attitudes and knowledge during the analysis phase. Survey questions are summarized in the tables below.

Content validity for the instruments used in all three pilot studies was established by asking three transplant coordinators from the OPO to evaluate the instruments and by extensive literature review.

Stability of the instrument was harder to measure, in that anonymity was extremely important; therefore the researchers did not want to use any measures that would identify the respondent for test-retest purposes. In order to measure stability of the instrument, a modified test-retest method was used. For pilot studies two and three, the survey was doubled in length and respondents were asked to fill out two nearly identical versions at the same sitting. The modified test-retest reliability coefficient for pilot study two was 0.95, and for pilot three 0.96. The modified test-retest reliability coefficient for the knowledge scale was 0.75 for pilot two and this result was found to be related to a subset of questions on brain death criteria. The questions were revised prior to pilot three and the modified test-retest reliability coefficient for the knowledge scale for the third pilot was 0.93. The modified test-retest reliability coefficient for the attitude scale was 0.96 for both pilot two and pilot three.

To establish internal consistency, a split half method was used. The reliability coefficients for the whole instrument were 0.83 for pilot two and 0.84 for pilot three. For the attitude sub scale, the

attitude score was correlated with the score of a general question about attitudes toward organ and tissue donation. The reliability coefficients were 0.83 for pilot two and 0.84 for pilot three. The Spearman-Brown correction formula was used.

Inter-rater reliability was not an issue in the pilot studies as only one of the researchers coded all of the responses. Inter-rater reliability was established by having the two primary researchers code the same 78 responses from the third pilot study. Inter-rater reliability was calculated by dividing the number of agreements by the total number of trials, and exceeded 0.95.

#### The research team and data analysis

The research team includes a nurse-sociologist who is presently a nursing educator and a member of the OPO Advisory Board, and a Transplant Supervisor from the OPO. Data were analyzed using descriptive statistics and Pearson's product moment correlation where appropriate. Data were entered into the computer by secretarial support staff after the one open-ended question had been coded by the two researchers.

#### Results and discussion

A total of 1,438 surveys (57.5%) were returned. Of that number, only 1,416 were usable. Respondents included:

- 1,304 RNs (92.1%)
- 80 LPNs (5.6%)
- 32 others (2.3%)

#### Positions included:

- Staff nurses (78.5%)
- Supervisory roles: Head Nurse, Supervisor, Director (12.2%)
- Educators (2.1%)
- Other positions (7.2%)

#### Highest educational level attained was:

- LPN diploma (5.1%)
- RN diploma (27.8%)
- Associate Degree (21.5%)
- Bachelor's Degree (35.3%)
- Master's Degree (4.3%)
- Ph.D./Ed.D. (0.1%)
- Unknown (5.9%)

Units included: 33.3% general ICU; 20.3% ED; 17.0% OR; 9.4% CCU; 13.3% other types of ICU; 6.7% were employed in some other area. Mean years of nursing experience was 13.2, and mean number of years in current specialty was 7.7.

The majority of the respondents were female (94.6%). Most respondents were white (83.3%),

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6.6% were African American, 1.4% were Asian, 0.7% were Hispanic, and 2.7% were other racial/ethnic groups. Religious groups included:

- Catholic (21.9%)
- Baptist (21.3%)
- Protestant (12.9%)
- Methodist (8.8%)
- Episcopalian (5.5%)
- Presbyterian (4.1%)
- Lutheran (2.8%)
- Christian (4.5%)
- Jewish (0.6%)
- Other (17.6%)

## Attitudes

### Offering the option

Given a specific situation where responsibility for offering the option fell to the nurse (Table 1), 32.1% of the respondents felt that they would have positive feelings, 40.5% mixed feelings, and 27.5% negative feelings. For a more general question asking the nurse to rate her/his comfort level with responsibility for offering the option, 36.3% of respondents indicated that they were comfortable, 49.4% mixed, and only 14.3% indicated that they would be uncomfortable with responsibility for offering the option. Nearly half of the respondents (48.8%) had already offered the option of organ and tissue donation in the past.

When asked to identify who they thought should be responsible for offering the option of donation, only 52.3% of respondents indicated that staff nurses should be responsible, whereas 93.6% felt that physicians and 97.3% felt that transplant coordinators should be responsible for this role. For the 23.9% of respondents who indicated that some other individual should be responsible for offering the option, the most common roles specified were chaplain and supervisor. Most nurses (74.0%) felt that questions about patient's preference regarding organ and tissue donation should be on the nursing admission form (Table 1).

Nurses were asked what they would say when offering the option to the family indicated in scenario I. Responses were then coded by the researchers. As shown in Table 3, 36.7% of responses were coded as acceptable ( $\geq 3.0$ ), 49.2% were coded as borderline unacceptable ( $< 3.0 \geq 2.0$ ), and 14.1% were coded as completely unacceptable ( $< 2$ ) (Table 2). Even though most of the respondents obviously viewed organ donation positively, very few knew how to phrase offering the option in a manner that would be likely to result in donation. Only 2.7% of responses were coded excellent (4.5 to 5).

Table 1. Breakdown of responses, scenario I (n = 1,438)

Scenario I: Imagine that you are caring for a young woman who has just been declared brain dead and you are responsible for approaching the family to ask about organ and tissue donation.	
How do you think you would feel?	
Negative	27.5%
Mixed	40.4%
Positive	32.1%
How comfortable would you be today?	
Uncomfortable	14.3%
Mixed	49.4%
Comfortable	36.3%
Who do you feel should be responsible for approaching the family?	
Staff RN	52.3%
Physician	93.6%
Transplant coordinator	97.3%
Other	23.9%
Do you think that questions about the patient's preference regarding organ and tissue donation should appear on the nursing admission form?	
No	26.0%
Yes	74.0%
How do you think the family would feel when approached about organ and tissue donation?	
Negative	17.3%
Mixed	77.8%
Positive	4.9%
Assuming that the family agrees to donate, how do you think they will feel several months later?	
Negative	2.8%
Mixed	16.5%
Positive	80.6%

Some examples of unacceptable responses are shown in Table 3. These responses were flawed in that they reflect:

- resistance to offering the option (a, b, c and d)
- failure to allow family time to comprehend (d)
- poor planning (e)
- overselling (f)
- unprofessional approach (f and g)
- erroneous information (h)

When nurses, physicians, or others offer the option of organ donation inappropriately, significant others in favor of donation prior to speaking to the contact person may decide against organ/tissue donation. This study may therefore provide a partial explanation for why required legislation has failed to result in the anticipated increase in donations. These findings are particularly important since this

Table 2. Evaluation of how respondents would offer the option of transplantation to the family of a brain-dead patient (scenario I)

Unacceptable	14.1%
Borderline	49.2%
Acceptable	36.7%

Table 3. Some examples of unacceptable responses to the question: What would you say when offering the option of transplantation to the family of a brain-dead patient?

- a. I wouldn't.
- b. I realize that what I am about to ask may seem heartless, but state law requires me to ask about donation of organs, tissues, and bone.
- c. Virginia state law requires that we talk for a minute about organ donation.
- d. I am sorry about your family. It is awful to ask you this question, but this is the only time we can ask you this.
- e. Nothing planned. Would be spontaneous to fit the circumstances.
- f. I would ask them do they feel she would want to give any parts of her tissue, organs to help someone else who could live and be thankful for dying gifts. Because that's what I'm doing.
- g. I know you guys know how your family member felt about organ donation, so what do you think she would want done?
- h. The family member is biologically unable to be returned to any form of a quality of life. The organs they would give could give numerous individuals life that their family member could not be given.

sample contained a high proportion of nurses with opinions favorable to organ/tissue donation, and since nearly half had already been responsible for offering the option in the past. This study clearly lends support for required referral legislation and or in-hospital organ/tissue donation teams.

Assumptions about family feelings

Nurse assumptions about how significant others feel when offered the option of organ donation were addressed in questions related to scenario I. The vast majority of respondents (80.6%) felt that the donor family would have positive feelings regarding the donation several months later; however, respondents did not feel that this would be the case when the option was offered. When asked to indicate assumptions about how the family of the young woman in scenario I would feel when offered the option, only 4.9% indicated positive ranges, whereas 77.8% assumed that the family would have mixed feelings and 17.3% indicated negative ranges (Table 1). These findings are consistent with the literature cited above.

Although the correlation coefficient was not strong (0.35), there was a positive relationship between nurse assumptions about how the family would feel and attitude scores. When asked to rate how their own family would feel in the same circumstances (scenario II), 36.3% of the nurses felt that their significant others would have positive feelings, 49.4% mixed feelings, and 14.3% negative feelings (Table 4). When scores for the ques-

Table 4. Breakdown of responses, scenario II (n = 1,438)

Scenario II: Imagine that your family has just been approached about donating organs and tissues of a family member who has been declared brain dead	
Negative	14.3%
Mixed	49.4%
Positive	36.3%

tion referring to the young woman's family were correlated with scores for the question referring to the nurse's own family, the correlation was weak ( $r = 0.29$ ). Unlike the family practice residents studied in Falvo [24] the nurses surveyed in this study did NOT appear to assume that others feel as they themselves do in most cases. This difference may well be related to the differences in professional socialization experienced by nurses and physicians.

Personal desires regarding organ/tissue donation

As indicated above, this sample was biased toward donation. It was assumed that the nurses most likely to complete and return surveys would be those who had either positive or very negative feelings about organ donation. As shown in Table 5, the majority of nurses did wish to donate their own organs and tissues after death (68.4%) and another 13.8% indicated that they may wish to do so. Although 68.4% of respondents indicated that they wished to donate their own organs, only 46.3% had signed an organ donor card. The percentage of signed organ donor cards in this sample was higher than the percentages reported in the studies cited above. Most of the respondents (78.0%) had discussed organ/tissue donation with their own families in the past.

Attitude scores

The mean attitude score was 29.9, with a range from 0 to 50. Although the maximum score was

Table 5. Attitudes about donation of your organs

	No	Maybe	Yes
Do you want your organs and tissues donated after death?	17.9%	13.8%	68.4%
Have you signed an organ donor card?	53.7%		46.3%
Have you and your family ever discussed organ and tissue donation?	22.0%		78.0%
Have you ever cared for anyone who has or is waiting for an organ transplant?	29.2%		70.8%
Do you personally know anyone who has had or is waiting for an organ transplant?	52.0%		48.0%

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50, scores above 40 were considered to be strongly positive as it is reasonable to expect that significant others coping with the death of a loved one may have a mixture of positive and negative feelings when offered the option of organ donation. Although significant others may experience strong positive emotions, in that the option of organ/tissue donation allows the opportunity to make something positive out of something bad, significant others are also grieving their loss. Scores equal to or greater than 40 were recorded in 11.4% of respondents.

Although it was expected that nurses with positive feelings would be more likely to complete and return the survey, another factor that may have contributed to the high attitude scores was the exposure of respondents to actual and potential organ recipients. Most of the nurses (70.8%) had cared for someone who had received or was waiting for an organ transplant. Almost half (48.0%) of the respondents personally knew someone who had received or was waiting for an organ transplant (Table 5). When one becomes acquainted with a person who needs an organ or tissue transplant, the need for organ/tissue donation is no longer abstract.

## Knowledge

### Organs transplanted

The knowledge scale was comprised of a transplantable organs sub scale (maximum 20 points), a brain death sub scale (maximum 18 points), and general questions. Respondents did very well on the transplantable organs sub scale, with a mean of 87.0% correct. As shown in Table 6, most respondents knew the organs that could and could not be transplanted. Over 90% of respondents knew that hearts, kidneys, corneas, and livers are being transplanted, but scores were lower for lungs, pancreas, and bones (Table 9).

### Brain death

Scores for the brain death sub scale were generally low with a mean score of 69.4% correct. As shown in Table 7, 51.7% of respondents did not know that brain dead people do not have spontaneous respirations. Twenty percent of respondents did not know that cranial nerve reflexes were absent in brain death. Confusion between brain death and a chronic vegetative state was evident as 20.3% of respondents answered this question incorrectly. Only 96.5% of respondents knew that a brain dead person would not recover with time. Most respondents (82.8%) did not know that an Electroencephalogram (EEG) is not necessary in Virginia in order

Table 6. Knowledge about organs being transplanted

Which of the following organs and tissues are being-transplanted today? Circle all that apply.	Percent correct
Heart (true)	97.0
Ovaries (false)	93.0
Pancreas (true)	52.3
Lungs (true)	86.9
Gallbladder (false)	93.0
Corneas (true)	95.6
Spleen (false)	86.8
Kidneys (true)	97.4
Liver (true)	93.0
Bones (true)	79.6
Mean organs donated sub scale (17.4 points)	87.0

to diagnose brain death, and 26% did not know that cerebral blood flow studies were not needed in Virginia. For the question regarding reactions to deep, painful stimulus, 17.3% responded incorrectly; however, the research team decided after the survey had been sent out that this question was a poor question since it did not address movement related to spinal reflexes. These findings are consistent with the literature cited above.

Almost half of the nurses (46.1%) indicated that the ventilator and other life support should not be discontinued after brain death was diagnosed and the patient was pronounced (Table 10). However, 24.9% of respondents indicated that the ventilator and life support should be continued after an unsuccessful cardiac arrest as well (see Table 11). The reluctance to discontinue life support in the brain dead person is no doubt linked to failure to understand that brain death is death; however, it is not clear why so many nurses indicated that they be-

Table 7. Brain death sub scale

Brain death sub scale questions	Percent correct
A person who is brain dead may have spontaneous respirations (false)	48.3
In brain death, a swallow, gag and other cranial reflexes are absent. (true)	80.0
A brain dead person may react to deep, painful stimulus. *Bad Question* (false)	82.7
Brain death and a chronic vegetative state are two terms for the same condition. (false)	79.7
A person who is brain dead may recover if enough time is allowed. (false)	96.5
To diagnose brain death in Virginia a cerebral blood flow study must be done. (false)	74.0
A flat EEG is necessary before brain death can be diagnosed in Virginia. (false)	17.2
If organ donation is refused after brain death is pronounced, the physician should discontinue the ventilator and other life support. (true)	53.9
Mean score brain death sub scale (12.5 points)	69.4

Table 8. Resuscitation

Comparison question	Percent correct
When a patient who is not a potential organ donor cannot be resuscitated after a cardiac arrest, life support should be continued. (false)	75.1

lieved life support should be continued in a dead cardiac patient. Despite the fact that the survey was piloted three times, these questions may have been somehow misleading.

The low brain death score that was obtained with the initial pilot survey tool was one of the main reasons that three pilot studies were completed prior to beginning the main survey. The researchers attributed low scores to how questions were phrased until it was clearly established by the end of the third pilot that brain death sub scale scores were consistently low with the questions phrased in several different ways. Narrative responses to the open ended question asking nurses to indicate what they would say to a family supported the low brain death scores as well, as the statements of many nurses indicated that they failed to understand brain death. Failure to fully comprehend the concept of brain death will undoubtedly result in negative attitudes for some healthcare professionals, although this did not seem to be a major factor in this sample as the correlation between brain death score and attitude score was only 0.17.

Question of post-mortem mutilation

Another area of misconception regarding organ and tissue donation frequently verbalized by nurses in organ/tissue donation inservices is the belief that post-mortem mutilation of the body occurs. In this sample, however, the vast majority (95.3%) of respondents answered this question correctly (Table 9). This area of concern is frequently addressed in nurse orientations and other inservices by Transplant Coordinators.

Cost of donor care

Although most of the nurses knew that the cost of care once the individual became an organ donor was charged to the OPO, 23.6% of respondents answered this question incorrectly (Table 9). One nurse's comments were obviously fueled by an erroneous Ann Landers column, and she stated very clearly that she had been in favor of organ/tissue donation until she "found out that the family had to pay." The Ann Landers column, and response

Table 9. General questions

General questions	Percent correct
Organ and tissue donation involves disfigurement that is obvious to the family. (false)	95.3
A murder victim can be an organ donor. (true)	64.0
All medical care delivered once the individual becomes an organ donor is charged to the transplant center. (true)	76.4
If the deceased is carrying a signed, witnessed donor card, the next-of-kin will be asked for consent to recover organs and tissues. (true)	74.0
The family should be asked about organ donation immediately, whether or not they have become emotionally calm enough to understand that their loved one is dead. (false)	70.8

to it, has shown that this is an area where more education is needed.

Medical examiner's case

Another area where misconceptions were apparent was the case where we asked if a murder victim can be an organ donor. For this question, 36.0% of respondents answered incorrectly. This question was included as widespread confusion about medical examiner cases had already been identified as an area of concern by the transplant coordinator, and this study supported that concern. This is also an area where more education is needed.

When to approach significant others

Although most of the nurses knew that significant others would be asked to donate even if the person had a signed, witnessed donor card, 26% of respondents answered this question incorrectly. Another area of concern was identified through both the knowledge question regarding the timing of approach to the family as well as by the narrative response to the attitude question "what would you say?" With the attitude question, it was not uncommon for nurses to indicate a need to rush in offering the option before the family had been able to comprehend the fact that the loved one was dead. For the knowledge question, nearly 30% of respondents believed that the family needed to be asked immediately whether or not they had become emotionally calm enough to understand that the loved one was dead. Although time is obviously an issue in heart-beating cadaver organ donation, it is absolutely necessary that the family be able to comprehend the fact that death has occurred prior to being offered the option. This is clearly another area where increased education is necessary.

Attitude versus knowledge score

One of the underlying assumptions of educational programs directed at nurses is that increased knowledge about organ/tissue donation will improve attitudes. This assumption was not supported by this research, as the correlation between attitude score and knowledge score was only 0.24. If attitudes are to be impacted, then it is necessary to address attitudes directly in educational programs for nurses.

**Summary and conclusions**

This research clearly shows that a positive attitude toward organ and tissue donation does not correlate with the ability to offer the option to people who have lost a loved one. Our study suggests that most nurses do not have the tools needed to discuss organ and tissue donation with next-of-kin—and, in fact, many of the approaches offered may well discourage individuals who are originally pro-donation!

Fifty-three percent of the nurses felt that offering the option was within the realm of their professional responsibilities. Nearly all nurses felt that transplant coordinators should be responsible for offering the option. Although it is important for staff nurses to be involved in offering the option, this finding was viewed positively by the research team since it suggests that most nurses recognized their own limitations and were willing to ask for help. Transplant coordinators are no doubt better prepared to offer the option than any other professional on the healthcare team, and a staff nurse going with the transplant coordinator to be supportive of the family will learn a great deal. In spite of the fact that many nurses were willing to seek assistance from the OPO, a vast number of initial approaches to significant others that the nurses offered would be potentially harmful. We feel that the sooner the nurse consults with the OPO for advice the better. Educational programs for nurses should emphasize not only the availability of transplant coordinators, but also the importance of involving the OPO prior to any discussion whatsoever with the significant others. It may also be helpful to point out why certain approaches may cause pro-donation significant others to refuse.

Another area of misconception was in nurses' assumptions about potential donor family feelings about the option. Although most nurses indicated that they had positive feelings about donating their own and their loved one's organs and tissues, many nurses believed that the families of potential donors would feel differently. The majority of nurses correctly believed that families of donors would feel good about the decision several months later. It was

also evident that the correlation between knowledge about and attitudes toward organ and tissue donation was very weak. It was clear early in this project that educational programs that focused exclusively on the technical aspects of donation were not adequate. As a result, the OPO began to include members of families who have donated and/or transplant recipients in educational programs for the nurses whenever possible. Nurse feedback has suggested that the interaction between donor families and nurses has been most beneficial.

Our results also suggested that many nurses do not understand the concept of brain death, and in fact, many failed to understand that brain death is death. If nurse confusion about brain death is communicated to families of potential donors, the results could be disastrous and the damage may extend far beyond those directly involved in the interaction. Therefore, educational efforts for nurses should definitely include a discussion of brain death.

Other areas of concern included misconceptions about disfigurement and costs for which donor families are responsible. Since the survey was in progress not long after a well-known Ann Landers column that erroneously stated that donor families had to pay for care related to the donation process, many respondents wrote narrative notes about costs. Some nurses even stated that they had changed their minds about donating their own organs as a result of this misinformation. Myths about disfigurement and cost also need to be dispelled during educational programs.

In response to our survey, some nurses indicated that they would NOT offer the option of organ and tissue donation to grieving families. We who are responsible for organ and tissue procurement must take a proactive stance and make it clear to other healthcare providers that there is no excuse for failure to offer the option of donation to grieving families of potential donors, except in those rare instances where the healthcare provider knows that the deceased was against donation or is definitely outside medical criteria for donation. It is important for nurses and other healthcare professionals who feel this way to understand that they have no right to deny families the option, or to coerce significant others into refusing by communicating their own negative feelings. These issues also need to be addressed in educational programs.

In summary, OPOs have long accepted that education is a very important factor in increasing donation rates, and the results of this study support that assumption; our findings, however, suggest that focusing on knowledge issues alone is not enough. Healthcare professionals clearly need to know the technical aspects of the donation process. It is ex-

tremely important that harmful myths about donation be dispelled, but it may be even more important for healthcare professionals to learn what the opportunity for making something good come from the loss of a loved one means to a donor family, and/or what the gift of quality life means to a transplant recipient. Proper education of the general public may well begin with proper and thorough education of healthcare providers.

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