

Understanding the antecedents of the acceptance of donation after cardiac death by healthcare professionals*

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LEARNING OBJECTIVES

On completion of this article, the reader should be able to:

1. Explain the barriers to organ donation after cardiac death.
2. Describe the opportunities to increase the number of organ donations after cardiac death.
3. Use this information in a clinical setting.

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Objective: A 3-yr study funded by the U.S. Department of Health and Human Services was conducted to identify potential barriers to and opportunities for increasing the number hospitals with donation after cardiac death (DCD) protocols, the support of DCD by individuals involved in the donation request process, and the number DCD donors recovered. This study reports the qualitative findings.

Design: Methods used included an advisory committee and an extensive array of key informant interviews and focus groups.

Setting: Hospitals and telephone contact.

Subjects: Discussions with nurses, physicians, social service staff, clergy, administrators, and organ procurement organization staff. A total of 216 people participated.

Interventions: Collection and analysis of information regarding perceptions of DCD, potential barriers and opportunities, and strategies for gaining support.

Measurement and Main Results: Key barriers included a lack of knowledge about DCD, psychological barriers for DCD vs. brain death, concerns about whether

death has been reached, saving vs. killing patients, trust in the organ procurement organization, moving from saving patients to being a donation advocate, and concerns with the DCD process. Opportunities included education initiatives, well-trained requesters, a cultural shift, a consistent DCD protocol separating care from recovery, process monitoring, and a strong sense of teamwork.

Conclusions: Our findings provide a better understanding of healthcare professionals' knowledge, attitudes, and behaviors regarding DCD. Understanding these issues is critical to the implementation of strategic plans for DCD programs. One of the biggest barriers to overcome is a lack of knowledge of DCD, which leads to misperceptions, which in turn contribute to negative attitudes and/or discomfort by healthcare professionals. Communication efforts that are able to educate healthcare professionals and eliminate misperceptions will increase support for DCD. Key to future success requires confident and well-trained DCD requesters. (*Crit Care Med* 2008; 36:1075-1081)

KEY WORDS: organ donation; donation after cardiac death

Worldwide there is an ever-widening chasm between the supply and demand for organ donations. In the United States alone >97,200 individ-

uals are on transplant waiting lists, with 17 people dying daily while awaiting a suitable donor (1). In the face of this organ shortage, efforts have intensified to expand the donor pool through donation

after cardiac death (DCD) (2). Patients with pulmonary disease, musculoskeletal disease, and severe and irreversible brain injuries not meeting accepted brain death criteria are eligible DCD candidates fol-

*See also p. 1363.

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lowing a decision to withdraw life-sustaining medical care. Procedurally, organs recovered from brain dead patients are typically recovered by the transplant team while the patient is under hemodynamic and ventilatory support. Conversely, with DCD, the support systems are removed by the attending care provider and death is declared following cessation of circulatory/respiratory function. After death has been declared and an assigned waiting period elapses without the return of cardiac function, organ recovery may begin. As per the dead donor rule (DDR), organs are not removed until after the donor is declared dead. Despite the potential for reducing the organ shortage, only 7% of U.S. organ donors are DCD donors (3).

Unlike brain death donation, which has widespread acceptance in the healthcare community, DCD still carries ethical and psychological concerns (4). Common criticisms of DCD focus on concerns about whether the state of irreversibility exists, concerns that sufficient efforts are undertaken to save donors, conflict of interest between care providers and transplant teams, and a range of potential conflicts arising from the decision to remove life support (5–10). These concerns persist despite strong ethical support for DCD across numerous healthcare agencies (11–15). Compounding the problem is that DCD is not well understood by healthcare professionals, making it more difficult to overcome potential misperceptions about DCD protocol (4).

Within the medical community, one of the barriers to increased support of DCD revolves around the ethical debate of whether DCD violates the DDR. Some argue that DCD fails to satisfy the DDR because it fails to fulfill the concept that death is the irreversible cessation of the integrated functioning of the organism as a whole (16, 17). Others contend that the medical practice standard in death determination is permanence and not irreversibility and that DCD does not violate the DDR (16, 18). Although it is beyond the scope of this article to present a detailed discussion on the merits of each point of view, it is nonetheless essential to acknowledge that there are informed healthcare professionals on both sides of the DDR debate. Whichever perspective ultimately holds sway with an individual healthcare professional will undoubtedly influence his or her attitude toward DCD.

Given the preceding discussion, it is clear that healthcare professionals play a

critical role in facilitating or obstructing DCD (19, 20). These professionals have the unique ability to impede or assist DCD through their actions in three separate areas: their willingness to identify potential donors and to provide referrals to the appropriate procurement agency, whether they themselves actually decide to approach bereaved families with the option to donate, and the strength of their support for DCD during the request process (21). Despite the importance of healthcare professionals in the DCD process, there is a paucity of empirical research investigating the antecedents for increasing support for DCD within this important target population (22, 23).

Project Background

The University of Wisconsin Hospitals and Clinics Organ Procurement Organization (UWHC OPO) has an organ donation identification, referral, and consent protocol for all potential neurologic and cardiac death organ recovery situations. Despite having a certified requesters training program and mandatory certification, individuals involved in the consent process are not equally informed about nor equally supportive of DCD. This lack of support for DCD contributed to generating only 12 donors in 2001 and 14 in 2002. In 2001 and 2002, DCD represented 14% and 16% of all donors in the UWHC OPO network of hospitals. A 3-yr study funded by the U.S. Department of Health and Human Services, Health Resources and Services Administration was undertaken to identify barriers to and opportunities for increasing DCD support among those involved in the donation request process. Each of the respondents across all stages of the research process had their identities protected through institutional review board protocol approved by the University of Wisconsin Hospitals and Clinics.

Purpose of Article

The first phase of this project consisted of the qualitative research efforts to be reported here. Our study extends recent research presented in *Critical Care Medicine* that examined healthcare professionals' perceptions of DCD related to quality of organs, standards of care, motivations for DCD participation, and negative public perceptions (5). The primary outcome of the current qualitative research is a conceptual model of potential

antecedents of the level of support for DCD. We are particularly interested in understanding healthcare professionals' psychological barriers to DCD and, in turn, developing strategies for increasing support for DCD among healthcare professionals who are actively involved in the organ donation request process.

MATERIALS AND METHODS

Data Collection Methods

Forming a 16-member advisory committee, of which nine members were not directly associated with the UWHC, was the first step in the research process; this committee included physicians, nurses, a clergyman, a social service worker, administrators, and families. The committee provided input into key issues to address in the study. Once the initial advisory committee meeting and follow-up communications were completed, the qualitative data-gathering efforts turned toward interviews with 90 key informants from approximately 25 DCD and non-DCD hospitals in the UWHC OPO service area. We defined *key informants* as individuals able to provide experienced-based input into organ donation in general, and specifically to DCD. Key informant categories included nurses, physicians, clergy, social service staff, and administrators (Table 1).

Upon completion of the advisory committee and key informant interviews, the research team conducted 14 focus groups at six hospitals located in the UWHC OPO's service area. Because the primary objective of the research was to increase the number of participating hospitals and subsequent donor recoveries, we contacted internal staff focus groups at three hospitals with a DCD protocol (60 participants) and three non-DCD protocol hospitals (50 participants). Four types of focus groups were formed: 1) nurses; 2) physicians; 3) social service/clergy; and 4) administrators. Each of the focus groups was taped and transcribed verbatim. The verbatim transcripts were then imported into advanced verbal coding software

Table 1. Key informant interviews

| Key Informant Category | No. of Interviews |
|--------------------------------------|-------------------|
| Nurse | 35 |
| Physician | 15 |
| Administrator | 13 |
| Social service/clergy | 10 |
| Families | 6 |
| Other healthcare personnel | 6 |
| Organ procurement organization staff | 5 |
| Total interviews | 90 |

Table 2. Focus group participants by staff type

| Physicians | Nurses | Clergy/Social Service | Administration | Total |
|------------|--------|-----------------------|----------------|-------|
| 7 | 46 | 35 | 22 | 110 |

(SPSS Textsmart) for categorization and quantification. Successful classification averaged 88%, indicating a very high level of response consistency. The researchers then named the categories based on a reading of responses for each category. Of the 110 focus group participants, most had Certified Requester status. Table 2 shows the number of participants by staff type.

Last, and important, although the UWHC OPO has a set of practices and protocols that are similar to many other OPOs across the country, no one standard protocol has been adopted (i.e., is support withdrawn in the intensive care unit or operating room?). As a consequence, some comments across the various qualitative research stages may be unique to the UWHC OPO.

RESULTS AND DISCUSSION

Focus Groups

The focus group findings were very consistent with those found in the advisory committee and key informant interviews. The resulting categories and verbal exemplars are provided in Table 3. Although the exemplars are not meant to be exhaustive, they reflect the sentiment of the response categories and are useful for understanding underlying barriers to DCD acceptance.

Common Themes Across All Groups and Data Collection Types

A number of consistent themes emerged from the three qualitative data collection techniques and across the four target populations. Next we summarize the common themes emanating from the qualitative findings to introduce a model that illustrates antecedents of building support for DCD (Fig. 1).

Barriers/Problems

Severe Knowledge Gap. The lack of knowledge of DCD was a universal support barrier. As one participant stated, "The big barrier is truly education." A common view is that the general population knows relatively little about brain death and even less about DCD. Unfortu-

nately, this education gap also exists within the healthcare community and among certified requesters.

"Unfortunately, a lot of professionals have only a partial understanding of what DCD is and they make assumptions based on this partial information. End of life is a controversial topic that is motivated by fear. It is important to identify and address the misassumptions that exist within the general public and also within the medical community."

Psychological Barriers: DCD vs. Brain Death. Perhaps the biggest psychological barrier that surfaced revolves around the determination of death. Within this realm, an important concern is whether a state of death has been reached (16, 18, 24, 25). Participants perceived a lack of consistency in the determination of death for cardiac death and that the definition of death for DCD is more ambiguous than for brain death. This ambiguity fosters barriers in the minds of healthcare professionals and brings questions regarding the dead donor rule.

"If you bring the word cardiac into it, you make the situation worse and more complicated."

Respondents were also concerned whether DCD translates into active participation in killing the patient. With less defined standards, questions arise as to whether the patient is really dead and when irreversibility actually occurs. Because brain death has a more defined and criteria-based declaration process than does DCD, psychological and ethical concerns of whether death is being assisted are more likely to arise with DCD.

"Removing life support from someone who is not brain dead seems more like killing that person."

Conflict of Interest. Some concern existed that healthcare providers face an either/or decision—saving prospective donors or DCD. Many noted that a conflict of interest occurs if there is the perception that the healthcare team appears to be moving away from saving the patient and becoming organ and tissue advocates. Most understood that the job of transplant teams is to recover organs but stated that they would not put their trust

in transplant organizations unless they believe the organization shares their concern for the prospective donor and assigned procedures. These results suggest that healthcare providers who feel that the transplant team is seeking a high volume of transplants at the expense of donors are less likely to support DCD. This seems to be especially important for physicians who struggle with their own conflict of interest issues.

"Among physicians, there is a true conflict of interest if you are talking to the family and making recommendations about organ donation and also the treating physician at the same time. It is difficult to run both sides of the fence. Although it probably can be done once people adjust, right now I am not sure."

Concerns With DCD Process. The findings provided qualitative evidence that healthcare professionals' personal feelings about end-of-life issues, organ donation, and DCD influence their comfort and concern with the DCD process. Some participants expressed discomfort with the act of making the request. Two nurses noted the following:

"After having to go in there and tell them that their loved one is going to die, you really hate to say 'Oh, and by the way, what about donation?'"

"You're caught up in comforting the family and you're working up to this 'good death' for this patient and requesting is not something that people are comfortable throwing into the mix."

Discomfort also arises in that DCD might reflect poorly on the doctor who was unable to save the patient. Many noted that role uncertainty and inconsistently applied DCD protocols also lead to staff discomfort. Although protocols exist in DCD hospitals, concerns were expressed that protocols are applied inconsistently, particularly with regard of the separation of the decision to withdraw life support and organ donation.

"(Need to be) totally convinced that the protocol you set up clearly separates that second decision (donation) from the first decision (withdrawal). In other words, makes it impossible that you'd ever think about that second decision until you've made that first decision. The problem is that it's really hard to do that in reality."

Family Issues. Families may feel that DCD is eliminating hope and that hope can exist even if the family believes futility has been reached. Families clinging to hope will wait longer for the medical miracle. In

Table 3. Key barriers and verbal exemplars from focus group

| Groups | Examples |
|--|--|
| Nurses | |
| Waiting for the patient to die | <i>Maybe the vulture thing about we're waiting for the organs, you know, dying or waiting. I do have that feeling sometimes.</i> |
| Family not present at death | <i>That's the hardest thing for me to do is to say—you can't be around when your family member takes his last breath or has his last heartbeat.</i> |
| Defining death | <i>I would say not understanding DCD. The paradigm has changed—we worked so hard to understand brain death; now we go back to understanding another kind of death.</i> |
| Perception that physician has failed | <i>Many physicians feel that their patients are not going to die. You can really get yourself into some deep water by telling a patient's family their family member is actively dying if the physician hasn't already stated that to the family in person.</i> |
| Psychological stress nurses face with DCD | <i>Some nurses feel very uncomfortable with death—especially in the OR (DCD life support withdrawal).</i> |
| Family members' concerns about the DCD process/feelings of guilt | <i>I think it is probably harder because there isn't concrete evidence. You know when you say that someone is flat-lined it is a little bit easier.</i> |
| Overall lack of understanding of DCD | <i>I just think there's a lack of knowledge (of DCD), lack of education of what it is and what would need to be done to do something like this.</i> |
| Physicians | |
| Physician lack of understanding of DCD | <i>Physicians are trained about brain death from medical school upward. There is a clear sense of what that is, whereas this other criterion (DCD) is certainly not as well known by physicians as a way to get to organ donation.</i> |
| Role is to save lives, not organ donation | <i>I guess I see one of the issues being failure. You go to doctor school to figure out what is wrong with people and fix it. You don't go to learn how to make people dead.</i> |
| Potential lack of trust with DCD protocol | <i>I don't know of a single case where a brain death was inappropriately declared. The reliability of the criteria for this (DCD) is not as good.</i> |
| Defining death | <i>The methodology of going from brain death to organ donation is simple. (For DCD) you have decided we're going to stop treatment and the patient is going to die because they're almost brain dead.</i> |
| Does futility exist? | <i>With brain death we are able to convince people that their family member is dead. They're still on the breathing machine and their heart is beating but they're dead. (With DCD) you have to be careful telling them that they are dead when you take them to the operating room.</i> |
| Perceived conflict of saving vs. donations | <i>Among physicians there is a conflict of interest if you're making recommendations about organ donation and are also the treating physician.</i> |
| Clergy/social service | |
| Defining death | <i>What trips people up is that (with DCD) they don't assume death is going to happen. When brain death is declared, the patient has been "dead" for a while already.</i> |
| Overall lack of understanding of DCD | <i>As a whole (health professionals) are relatively uninformed about the difference between DCD and brain death. Part of that would be what are the steps and how long does it take?</i> |
| Does futility exist? | <i>(With DCD) if there's still some brain activity, some people would want to wait for a miracle.</i> |
| Rushing decision | <i>With brain death, families have time to decide what to do and how they feel. The machines are keeping the patient alive until a decision can be made. (With DCD) requesters need to communicate the process before families can understand what is happening and make a decision.</i> |
| Administration | |
| Lacks understanding DCD | <i>With DCD there is a total lack of awareness among administrators. This lack of knowledge in part relates to the fact that this procedure exists and is an acceptable way to help meet the need for organ donors.</i> |
| Defining death | <i>Problems relating to understanding organ donation in general, and specifically as it pertains to brain death and DCD—who would be an appropriate candidate for DCD and brain death donation?</i> |
| Perceived conflict of saving vs. donations | <i>Healthcare community doesn't think of DCD as an option so early in the process of the injury. The mindset is on the treatment.</i> |
| Cost issues | <i>DCD is very expensive for the hospital. You need to have the staff and ORs ready, the services are expensive, including drugs, surgery, postsurgery, etc.</i> |
| Healthcare team has failed | <i>Many healthcare professionals see the OPO when they have failed. This is very disappointing for a physician/nurse to make a referral because it means they couldn't save that patient.</i> |
| Lack of trust of OPO | <i>Perceptions that the transplant team is standing above an individual waiting to die, while prepped and draped for surgery.</i> |

DCD, donation after cardiac death; OR, operating room; OPO, organ procurement organization.

agreeing to DCD, families may feel they are playing a role in taking the life of their loved one. In this regard, approaching families in a sensitive, caring way and in a timely manner is critical to the long-term success of DCD programs.

"You cannot rush the family into making a decision when they want to be with their loved ones for as long as possible."

Families have separation anxiety and related emotional dilemmas. This angst makes it difficult to discuss donation-related options and is related to concerns with the DCD process, such as the moving the donor to the operating room before the withdrawal of life support.

"That depends on the family and on members of the family. Sometimes no

one wants to be here, other times everybody wants to be here. I do not like taking patients away from their families to die in the OR. I mean I would personally want to spend time with my loved one to the last heartbeat."

Families often seek spiritual advice during this difficult time, and thus the faith community can be a barrier or an

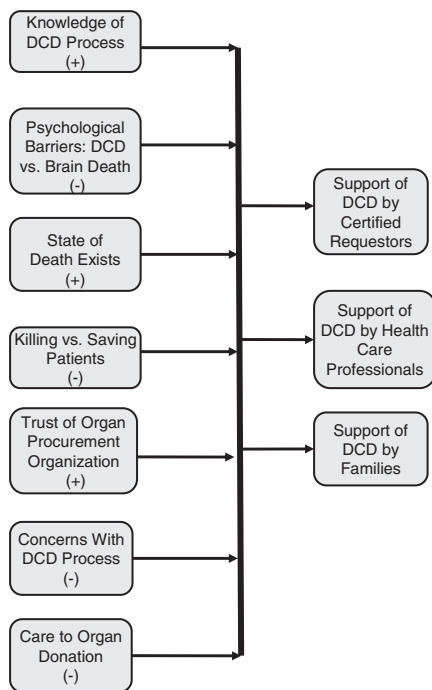


Figure 1. Hypothesized donation after cardiac death (DCD) support model.

asset to DCD. As a hospital chaplain noted:

“When faced with having to decide whether to donate a family member’s organs, many families say ‘let’s call our pastor and wait until he/she comes.’ That’s a problem for a designated requester if that clergy is not educated in DCD.”

Solutions and Strategic Initiatives for Increasing DCD

Overcoming the barriers discussed here is the key to increasing support for DCD. Although not discussed in detail, our qualitative research highlighted a number of potential solutions and strategic initiatives for increasing DCD.

Education. There was overwhelming agreement that extensive education efforts are needed aimed at the general public, the religious community, and the healthcare community. These efforts should communicate what DCD is and what it is not. At this time there is not clear understanding on many of the issues surrounding DCD (26).

“I think there is enough ignorance about DCD. For it to become acceptable there would have to be a fair amount of nursing and physician education to get a better understanding of it.”

Critics might argue that DCD education efforts are often conducted by factions with

a strong incentive to maximize DCD and thus produce biased information. In this regard, moving DCD support forward might require an open forum on the benefits of DCD in conjunction with healthcare professionals who have a concern about the DDR. Moreover, efforts are needed to distinguish between improving the process of DCD and improving education.

Study participants suggested that testimonials by recipients, healthcare professionals, and other credible/emotional sources would be an effective means for increasing DCD support. An effort should be made to emphasize the positive impact that DCD will have on the recipient as well as helping families through the healing process and establishing closure.

Need for Well-Trained Requesters. It is clear that trained certified requesters are a prerequisite for success. The DCD process will move forward only if there is a concerted effort to train and retrain the healthcare and support staff on how to best handle the DCD process, from initial contact through acceptance and donation. Informing families about all aspects of the DCD process is a difficult task, as most lack sufficient knowledge about end-of-life and DCD-related issues and are in a state of high anxiety at the time of the decision.

Cultural Shift Within the Organization. Participants’ comments about their own workplace suggest the importance of efforts to motivate cultural acceptance of DCD throughout hospitals. The OPO may achieve this cultural shift partly through increased education and partly through cooperation and mutual involvement within the healthcare organization, especially in the development of guidelines and the protocol. Such cooperative efforts will help build trust in the OPO. In contrast, pushing those professionals to accept DCD when they believe that it violates the DDR will likely be met with resistance.

Consistent DCD Protocol. Respondents made it clear that while the development of a protocol is an essential first step in the acceptance of DCD, the consistent implementation of the protocol is essential for eliminating ambiguity, creating a higher level of comfort, and ensuring a smoother transition from pre-DCD discussions through the postoperative phase (27). Detailed monitoring is needed to ensure that everyone continues to use the protocol to drive their actions.

Teamwork. The ideal expressed was an environment in which everyone knew ex-

actly what they were supposed to do and in which all involved parties functioned as a team. Creating a team atmosphere will require the identification of role responsibilities among healthcare professionals and support staff, each based on the special experiences and capabilities of involved staff. This team perspective is achievable through ongoing internal communications and must be driven by a supportive organizational culture. The OPO must also be viewed a part of the team, one that is external to the decision to remove life support.

Next Stages

Despite the critical importance of healthcare professionals in the DCD process, little research has examined the antecedents of increasing their support for donations after cardiac death (5). The research reported here represents the initial stage of a 3-yr study funded by the Department of Health and Human Services, Health Resources and Services Administration to identify potential barriers to and opportunities for increasing the number hospitals with DCD protocols, the support of DCD by individuals involved in the donation request process, and, ultimately, the number DCD recovered. Based on this qualitative research, there are a number of empirically testable research issues related to each component/dimension of the model. Our findings offer a research foundation on which future studies can be based. Specific testable research questions are presented in Table 4 and the model presented in Figure 1 will require multiple tests in various settings in order to ascertain the generalizability of the current findings.

CONCLUSION

Based on the qualitative findings, increasing support for DCD will require a better understanding of healthcare professionals’ knowledge, attitudes, and behaviors toward DCD. Two of the biggest barriers were a general lack of knowledge of DCD and feelings that with DCD that a state of death has not been reached. Looking internally, the findings raised some concerns that we have about our DCD efforts. For example, we were surprised by the fact that knowledge about the DCD process seems to be low even among certified requesters who had gone through DCD training. Although withdrawal and donation are independent de-

Table 4. Model dimensions and testable research issues and potential questions

| DCD Dimensions | Potential Research Issues |
|---|--|
| Knowledge about DCD process | <ol style="list-style-type: none"> 1. Self-reported measures of DCD knowledge 2. Measurable assessment of the DCD process and protocol using standardized tests and/or open-ended responses |
| Trust of organ procurement organization | <ol style="list-style-type: none"> 1. Problems associated with transplant/procurement organization and attendees' having different goals 2. Perceived level of trust for transplant/procurement organization 3. Perceptions of the extent to which transplant/procurement organization places too much priority on recovering organs at patients' expense |
| Concerns with DCD process | <ol style="list-style-type: none"> 1. Fear the heart won't stop after support is removed 2. Medical team has to "watch" patients die 3. Families are not with the patient when life support is removed 4. Healthcare team must "wait" for the patient to die 5. Disappointment that not all organs can be used |
| Psychological barriers: DCD vs. brain death | <ol style="list-style-type: none"> 1. Ability of families to "let go" of a brain dead patient compared with a DCD patient 2. Families' comfort with DCD vs. brain death donations 3. Criteria of death for DCD vs. brain death 4. Perceptions of the DCD process vs. brain death 5. Religious beliefs for DCD vs. brain death 6. DCD vs. brain death when donors are younger |
| Saving vs. killing patients | <ol style="list-style-type: none"> 1. Whether with DCD you are hastening a patient's death 2. Whether DCD "trivializes" the patient's death and/or gives the death less meaning 3. Whether healthcare professionals will feel they have an active role in "killing" DCD patients 4. Whether family members will feel they have an active role in "killing" DCD patients |
| Has state of death been reached? | <ol style="list-style-type: none"> 1. Does brain death mean that a patient is not living? 2. Does DCD mean that a patient is not living? 3. Is quality of life gone? 4. Is death inevitable? 5. Has futility been reached? |
| Support for DCD | <p>Multi-public support, including</p> <ol style="list-style-type: none"> 1. Certified requester 2. Healthcare professionals 3. Families |
| Moving from care provider to organ donation | <ol style="list-style-type: none"> 1. Nurse and physician comfort discussing end-of-life issues 2. Difficulty nurse and physicians have moving from saving lives to advocating donation |

DCD, donation after cardiac death.

cisions, we were also concerned about perceptions by some that the OPO is more interested in organs than patients. Finally, although DCD is receiving increased support, the fact that there are reasonable ethical and psychological concerns suggest that considerably more conceptual and empirical studies are needed to sort through these important issues. Commentary from all points of view is necessary to truly understand the array of issues relevant to DCD.

Combined, the advisory committee, key informant interviews, and focus

groups provided a relatively consistent set of barriers to DCD. Because qualitative research is best used in the preliminary stage of a comprehensive research project, the primary purpose of this study was to develop a greater understanding of potential barriers to DCD and support mechanisms to incorporate in the quantitative stage of the 3-yr research process. Figure 1 and Table 4 present the antecedent dimensions that emerged from our qualitative efforts to be tested next through quantitative means. Ultimately, an understanding of the relative strength

of the relationships between these antecedents and DCD support is needed.

Follow-Up

Based in great part on these findings and a follow-up questionnaire, the UWHC OPO developed a communication program designed to increase support of DCD by certified requesters and hospital staff. Print, multimedia, and personal communication materials were developed, resulting in a 93% increase in the number of DCD donors the first year after the communication initiative was launched and 179% to date. Moreover, although the number of brain dead donors increased during this period, the percent of DCD donors relative to the total number of donors increased from 16% to 31%.

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