Issues in ORGAN Procurement, Allocation, and Transplantation

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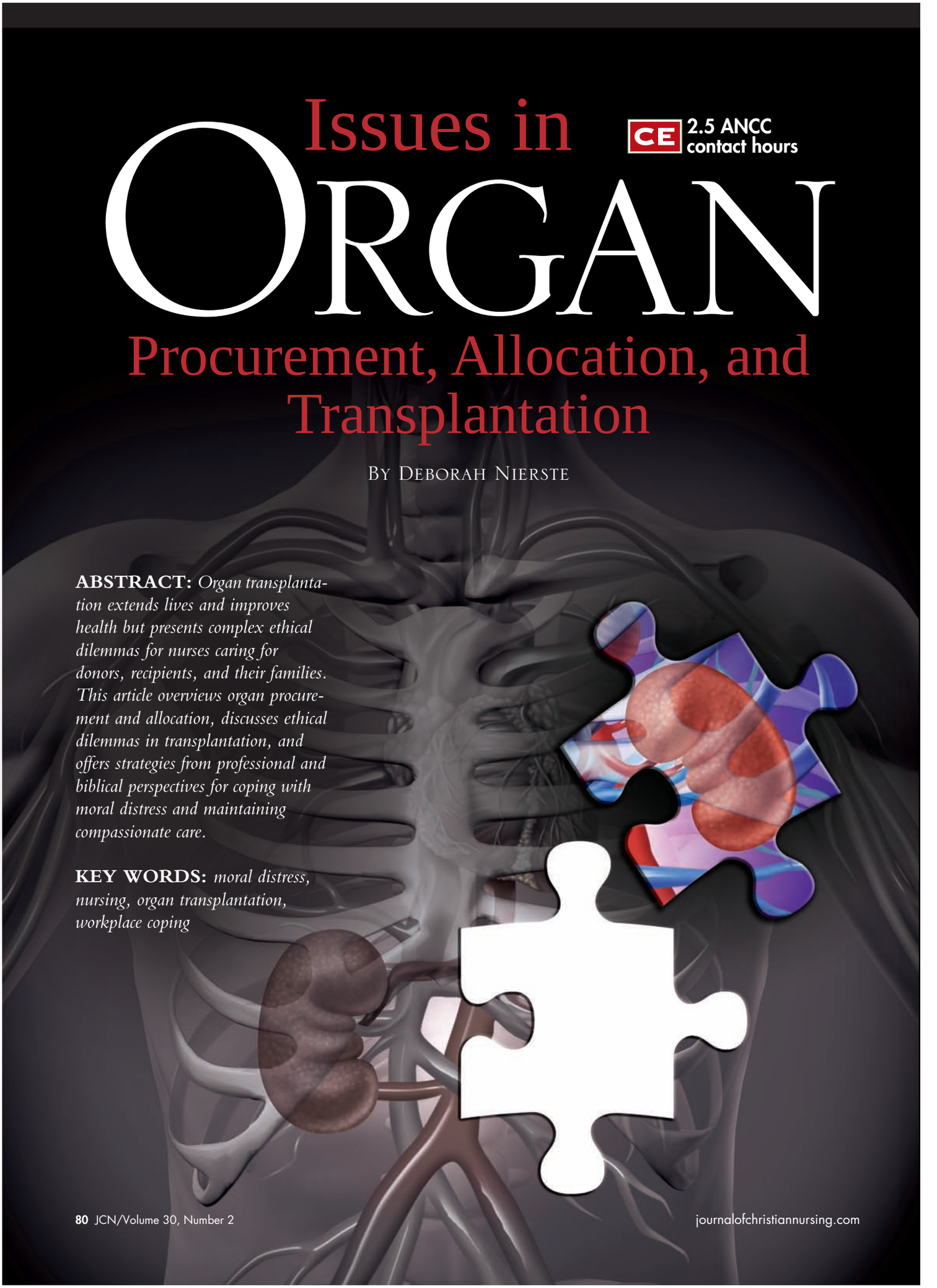
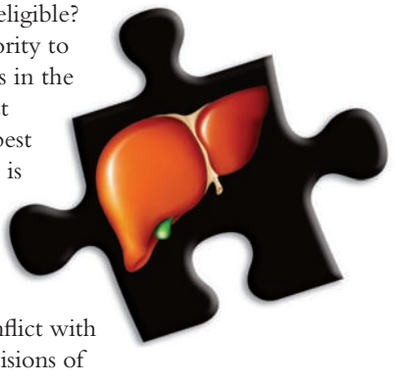
ABSTRACT: *Organ transplantation extends lives and improves health but presents complex ethical dilemmas for nurses caring for donors, recipients, and their families. This article overviews organ procurement and allocation, discusses ethical dilemmas in transplantation, and offers strategies from professional and biblical perspectives for coping with moral distress and maintaining compassionate care.*

KEY WORDS: *moral distress, nursing, organ transplantation, workplace coping*



Expanding knowledge and technology in organ and tissue transplantation are providing hope for the treatment of chronic diseases and new life for those who otherwise would experience incapacity or premature death. Although organ transplantation extends lives and improves health, it presents complex ethical dilemmas and questions that do not have easy answers. Who should be eligible to receive transplants? Should illegal aliens, foreigners, people with a history of addiction or noncompliance, or convicted criminals be eligible? Who should have first priority to receive transplants: patients in the greatest need or those most likely to benefit with the best long-term outcome? How is end-of-life determined for deceased donors?

Nurses working in various settings can find their personal values in conflict with the law, the values and decisions of colleagues, and/or the values of the patients and families who donate or receive transplants. For example, the United States Constitution guarantees healthcare for prisoners (Fung, 2011). A nurse may feel it unfair for a criminal to receive an organ ahead of a law-abiding citizen. Yet nursing actions are directed by the patient's right to autonomy, the law, or decisions made by colleagues—whether or not they agree with the process and outcomes. These conflicts can initiate inner turmoil that, if left unchecked, can lead to moral distress. What help is there for nurses to deal with moral turmoil and continue providing excellent patient care?



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BRIEF HISTORY OF TRANSPLANTATION

Ancient literature suggests human organ transplantation may have been a treatment for diseased tissue as early as 450 BC as the Sushruta manuscripts contain a description of the first skin transplant (Klein, Lewis, & Madsen, 2011). Schlich (2011) credits the "first organ transplant in the modern sense" (p. 1372) to Swiss surgeon Theodor Kocher. In 1883, Kocher transplanted healthy thyroid tissue into patients who had undergone a thyroidectomy to observe whether or not this would reverse symptoms now known as hypothyroidism. His technique established a model for future organ transplantations.

Despite obstacles and setbacks, the process of transplantation progressed. German scientist Karl Landsteiner contributed with his discovery of the blood group system and its relationship to organ rejection. Alexis Carrel and Mathieu Jaboulay furthered the development of organ transplantation with successful vascular suturing techniques. Joseph Edward Murray's use of immunosuppressive drugs allowed the first successful kidney transplant from an unrelated donor in 1962 (Klein et al., 2011). These advancements opened the door for present-day successful organ transplantation.

Today, transplantation of the heart, lung, heart/lung together, liver, kidney, pancreas, pancreatic islets, kidney/pancreas, intestines, hematopoietic stem cells, bone, cornea, skin, and face (composite tissue allotransplantation) is performed (Klein et al., 2011). Organs and tissues from one donor can potentially save up to eight lives, whereas tissues from the same donor can benefit 50 lives (Donate Life, 2010). Recipient complications of transplantation include rejection, infection, and cancer from long-term immunosuppressive therapy (Klein et al., 2011). However, the success of transplantation is demonstrated by 5-year survival rates for organ recipients (Table 1), supporting the value of transplantation programs.

HOW ARE ORGANS PROCURED?

Although some organs (kidney, partial liver, partial lung) are procured from live donors, most organs come from deceased donors. Approximately three of every four organs transplanted are recovered from deceased donors (Steinbrook, 2007). Typically organ donation only is possible when a person dies as a result of irreversible cessation of all brain function, known

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as Donation after Brain Death or DBD, while their heart and lung function is artificially maintained (National Health and Medical Research Council, 2007). Few people die in ways that allow them to become donors. Persons who are HIV, hepatitis B or D seropositive; have current neoplastic conditions (with some exceptions); systemic infection from agents for which treatment is not feasible (i.e., methicillin-resistant *Staphylococcus aureus*); a prion disease (i.e., Creutzfeldt–Jakobs); or for whom risk assessment is not possible cannot donate organs.

The Uniform Determination of Death Act (UDDA) states "an individual, who has sustained either irreversible cessation of circulatory and respiratory function, or irreversible cessation of all functions of the entire brain, including the brain stem, is dead" (U.S. President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research, 1981, p. 2). Current practice allows organs to be removed from patients who are considered brain dead and from those who expire as a result of cardiac death. In every case certain criteria must be met before organs can be procured.

The key term in determining cardiac death is *irreversible*, meaning the heart has permanently stopped beating and cannot be restarted through intervention. Obtaining organs from donors after cardiac death was the approach used prior to 1970 (Steinbrook, 2007). With the formulation of the UDDA in 1981, cardiac death criteria continued to be used, but more attention was given to brain death. Brain death typically denotes that the brain ceases to function before the heart stops beating; breathing and heartbeat are assisted mechanically but will likely cease once mechanical intervention is removed. To determine brain death, a series of tests are performed to determine if there is absence of brainstem reflexes, motor responses, and absence of respiration when removed from artificial ventilation. Other tests can verify absence of brain activity and intracranial blood flow. If a person is declared brain dead then he or she is clinically and legally dead and may be considered a candidate for organ donation. The brain-based definition of death became acceptable as criteria for transplantation since the brain-dead patient is no longer considered living (based on neurological criteria), but maintains viable organs that have been continually perfused by a fully functioning heart (Steinbrook, 2007).

Today, a rising demand for organs and decreasing number of brain-death donors has stimulated a renewed interest in cardiac-death donors (Zamperetti, Bellomo, & Ronco, 2009). Donation after Cardiac Death (DCD), formerly known as non-heart-beating organ donation (NHBOD), is now recognized when defining death. In DCD, solid organs are procured after the heart stops beating (usually within 5 minutes of cardiac arrest) following withdrawal of life-sustaining treatment (WLST) (Rady, Verheijde, & McGregor, 2007). Organ retrieval in this case occurs only after "irreversible cessation of respiration and circulation has been declared" (Rabinstein et al., 2012, p. 414). If solid organ retrieval (heart, kidneys, etc.) cannot occur quickly, other tissues not as dependent on blood perfusion can still be harvested (i.e., skin, cornea, bone).

Many controversies surround both DBD and DCD. Marquis (2010, p. 25) asserts that "...the permanence of the cessation of circulatory function in DCD donors does not entail its irreversibility." He contends that when a person presents in the emergency department (ED) with no heartbeat, but is successfully resuscitated, they were in the same physiological state as a patient declared dead by the DCD protocol, hence a potential conflict. Furthermore, declaring either brain or cardiac death, is fraught with emotional complexity and turmoil for providers and patients' families and friends.

Once a patient has met criteria for becoming a potential donor, a healthcare professional contacts the local organ procurement organization affiliated with the hospital. A professional trained in the donation process makes an onsite visit to assess and evaluate the potential donor's medical

TABLE 1: Five-Year Survival Rates for Select U.S. Organ Transplants Performed 1997–2004[a]

Organ:	Males		Females	
	Number Alive	% Survival Rate	Number Alive	% Survival Rate
Heart	4,522	73.2	1497	69
Lung	802	46.6	815	47.3
Heart/lung	29	35.8	45	41.4
Kidney	19,430	84.2	13,667	85.8
Pancreas	339	84.6	280	79
Kidney/pancreas	1537	86	1036	84.4
Liver	6496	71.8	4460	73
Intestine	62	49	49	45.5

[a]Latest available data as of January 25, 2013.

Source: Organ Procurement and Transplantation Network. (2013). *Data: Data reports: National.* Retrieved from http://www.unos.org/donation/index.php?topic=data

condition and history. Once a physician performs the required tests and declares the patient to be brain dead, a transplant coordinator from the organ procurement organization also makes an onsite visit to review the patient's information and meet with the medical team and family. When consent from the family is obtained, a search for potential recipients begins.

It should be noted that "Nearly all religious groups support organ and tissue donation and transplantation as long as it does not impede the life or hasten the death of the donor" (United Network for Organ Sharing [UNOS], 2012, para 2). Summary statements from a large number of faith traditions about organ donation and transplantation can be found on the UNOS website under "Fact Sheets: Theological Perspectives."

As soon as recipients are located, the donor is taken to the operating room where the organs are removed from the body. The retrieved organs are flushed with a cool solution to remove all blood. The organ is measured, evaluated, and packaged in a sterile environment with ice for transportation. Tissue and blood samples are taken from the donor for further testing (Gift of Life, n.d.).

THE CURRENT ALLOCATION SYSTEM

A system governed by state laws, federal laws, federal regulations, and UNOS policies attempts to guarantee fairness in the distribution of donated organs. The U.S. Department of Health & Human Services (DHHS) asserts that "the field of organ and tissue donation and transplantation is one of the most regulated areas of healthcare today" (n.d., para. 1). State laws generally address the process of donation. The National Conference of Commissioners on Uniform State Laws formulated the Uniform Anatomical Gift Act (UAGA) of 1968. The UAGA regulates state laws on the donation of organs and tissues from cadavers (Clemmons, 2009). This law also lists the hierarchy for next of kin notification.

Federal laws focus on the procurement, allocation, and transplantation of donated organs. The National Organ Transplant Act, enacted in 1984, established the Organ Procurement and Transplantation Network (OPTN). This federal organization maintains a "list of patients waiting for transplants," operates "a system for matching donated organs with individuals on the list," establishes "medical criteria for allocating organs," collects and analyzes "data on organs donated and transplanted," and conducts "work to increase the supply of donated organs" (OPTN, 2012b, para. 2). The OPTN is managed by the UNOS that develops and monitors policies for OPTN, facilitates procurement and allocation of organs, and collects and analyzes data regarding transplantations (Crowe & Cohen, 2006).

Currently in the United States, to be added to the UNOS waiting list a person must be in end-stage organ failure and seen by a physician at a U.S. hospital where transplants are performed (Clemmons, 2009). This includes U.S. citizens, non-U.S. citizens who are U.S. residents, and non-U.S. citizens who are not U.S. residents (OPTN, 2012c). Once the person's pertinent information is entered into the OPTN database, the computer generates a prioritized list of persons suitable to receive organs, matching these candidates to donors (Transplant Living, 2012). The rules for allocation vary by organ but these general principles guide the allocation process: (1) patient's medical urgency, (2) blood, tissue, and size match with the donor, (3) time on the waiting list, and (4) proximity to the donor (Brezina, 2010).

WHO SHOULD RECEIVE ORGANS?

According to UNOS, in February 2013 117,086 people were waiting for organ transplants in the United States; 23,360 transplants occurred January to October 2012 from 11,663 donors (OPTN, 2012a). In 2010, a total of 6,521 patients died while waiting for organ transplants (Donate Life, 2010). Clearly the need for organs is far greater than the quantity available and complex decisions must be made as to who receives available organs. Consider the following true scenarios:

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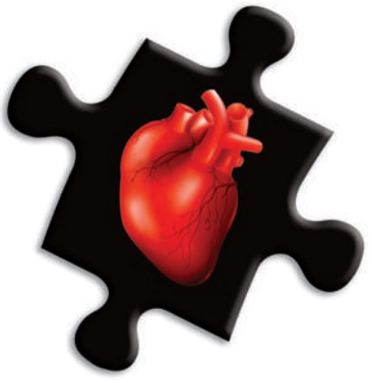


Potential Recipients: A 16-year-old female collapses at a family dinner and is transported to the ED and admitted with a massive myocardial infarction due to thrombosis of a major coronary artery. Her condition deteriorates to the point that a ventricular assist device (VAD) is inserted until heart transplantation can occur. The family is paying for her care with the assistance of medical insurance (Hollar, 2012; Trachtenberg, 2010).

A 27-year-old male is admitted with a previous history of congestive heart failure treated with a pacemaker defibrillator and medication. The patient's condition has worsened and greater intervention is needed. A VAD is implanted while the patient awaits a heart transplant. Armed guards accompany him since he is a prisoner serving an 11-year sentence for drug convictions. The cost of his care is covered by the government (Associated Press, 2009; Green, 2011).

Second Time Around: A 16-year-old male with juvenile diabetes is admitted to a dialysis center in need of peritoneal dialysis due to kidney failure. He has been noncompliant with his diabetic regimen. He is placed on the transplant list and eventually receives a kidney. Posttransplantation he does better with his diabetic care, but eventually stops taking his antirejection medications. He also begins smoking cigarettes and using marijuana. Several years later, the transplanted kidney begins to fail, creating the need for another donor kidney (E. Martin, personal communication, February 15, 2012).

A Tragic Donor: A 23-year-old is rushed to the ED after sustaining massive head trauma in an automobile accident. She is resuscitated, intubated, and placed on a ventilator. She is given intravenous medications and blood transfusions, but remains unresponsive. Over the next few days physicians perform a series of rigorous tests to determine brain activity and blood flow through the brain. Testing reveals absence of brainstem reflexes and motor responses in addition to absence of respiration when removed from the ventilator; other tests verify absence of brain activity and intracranial blood flow. The patient is declared brain dead by two physicians, each having conducted his own independent testing. The family has agreed to donate this patient's organs (BestofBay.com, 2012).

All of these scenarios, as well as many others, occur in the real world. These situations are challenging and controversial, bringing dilemmas nurses face as they provide care. The dilemmas, both discernible and obscure, include allocation and distribution of organs, shortage of organs, and procurement of organs from dying donors.

TABLE 2: General Recipient Contraindications to Transplant[a]

- Incurable or serious active infection
- Active malignancy
- Any condition with a death prognosis < 5 years
- Untreatable severe psychiatric or psychological condition
- Severe neurological deficits
- Severely limited functional status (i.e., severe mental retardation)
- Substance abuse within last 6 months
- Complete absence of reliable/consistent social support system
- Convincing evidence of non-compliance
- Obesity (body mass index [BMI] range > 30–45 kg/m^2)
- Severe cachexia (BMI < 17–18 kg/m^2)
- Inadequate financial resources
- Multiple intercurrent conditions

[a]Collected from a variety of transplant programs in the United States and England; specific organ transplants may have additional contraindications.

ETHICAL DILEMMAS IN TRANSPLANTATION

Transplantation is an expensive procedure involving the cost of the surgical process along with rehabilitation and lifetime immunosuppressive maintenance. Because of the expense, the scarcity of organs, and the risk of rejection or failure of newly transplanted organs, it is necessary to consider only medically suitable recipients. Recipient contraindications from a number of transplant programs are given in Table 2. However, even these contraindications can be imprecise. Questions arise such as: Where do you draw the line when determining which patients are medically suitable? What is fair selection? Does this include choosing those in need as a result of addictive, abusive, or poor health behaviors over those without history of addictions? Most transplant organizations require patients to be smoke-free and substance abuse-free for at least 6 months to be on the waiting list, and it is expected they remain smoke and drug-free. Little research is available that addresses the relapse rate in transplantation cases; however, one study reported one in four heart transplant recipients resume smoking (Macrae, & Hagan, 2008). The relapse rate for alcohol use after transplantation falls within a range of 2 to 10 for every 100 people (McGowan Institute of Regenerative Medicine, 2012). In addition, one cannot individually predict which patients will relapse; this issue raises moral distress and questions of fairness.

Web Resources

United Network for Organ Sharing—http://www.unos.org

Organ Procurement and Transplantation Network—http://optn.transplant.hrsa.gov

International Transplant Nurses Society—http://www.itns.org

Donate Life America—http://donatelife.net

Gift of Life—http://www.donors1.org

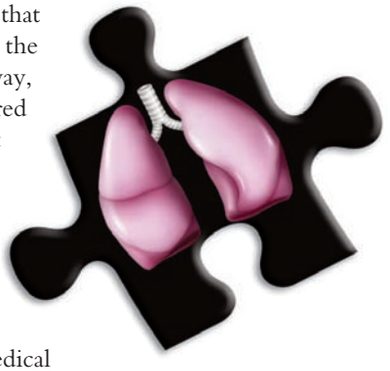
Likewise, is it fair to include those who are incarcerated for heinous crimes, often with a history of addictive behaviors? The law protects prisoner rights to healthcare by virtue of the Eighth Amendment to the Constitution (Fung, 2011). Law-abiding citizens must pay for their own transplants while prisoner transplants are provided for by taxpayers (Hill & Mooney, 2012; Leung, 2009; Loew, 2012). Is it fair for a criminal to receive an organ before a law-abiding citizen? UNOS states that convicted criminals are "sentenced by the judicial system only to a specific punishment, i.e., incarceration, fines, or probation, not to additional punishment such as inability to be considered for medical services" (OPTN, 2012c).

Similarly, where should the line be drawn when a patient is medically suitable but cannot afford transplantation? Patient financial status and insurance coverage can be considerations when placing a person on the waiting list. Research shows the poor and the uninsured are less likely to receive a transplant since their inability to pay for the immunosuppressive medication will result in failure of the donated organ (Laurentine & Bramstedt, 2010).

Salahi (2011) reports that "transplant centers have the right to turn patients away, but physicians are required to care for every patient they see" (Sydney D. Caplan as cited in Salahi, para. 9). In the first scenario above, if the two young patients are determined to have equal medical urgency with the same blood, tissue and size match, and proximity to the donor, but the 27-year-old male patient was placed on the list first, then he could be awarded the organ despite his involvement in illegal drugs and incarceration. Likewise, should the noncompliant diabetic patient in the second scenario test drug-free for 6 months, he could receive a kidney transplant ahead of another patient who also is in need of a transplant and has been compliant with the medical regimen. Is it ethical to give organs to patients who have caused or precipitated their organ failures when others may die as a result?

Given the three scenarios and assuming that all criteria are met, it is possible that the 23-year-old victim rendered brain dead could become the donor of the heart for the criminal whose heart may have been damaged as a result of drug use. At the same time the 18-year-old teenager with a VAD dies while waiting for a heart, through no fault of her own. This same donor could become the donor of a kidney for the patient who is need of a second kidney transplant due to noncompliance and illegal drug use. These outcomes can create emotional conflict and lead to moral distress for nurses caring for these patients. Furthermore, in most cases despite whether or not they agree, final decisions are out of the nurses' hands.

Nurses experience moral distress when personal values conflict with ethical obligations on a regular basis while caring for patients and their families. It is not uncommon for moral distress to result when dealing with end-of-life situations, including those that involve fair allocation of resources and protecting patients' rights (Lazzarin, Biondi, & Di Mauro, 2012; Radzvin, 2011; Repenshek, 2009). Nurses who experience moral distress have reported physical symptoms such as headaches, neck pain, and stomach problems. Psychological and emotional symptoms include anger, guilt, depression, frustration, feelings of reduced self-worth, and withdrawal from family and friends (Gallagher, 2010; Schluter, Winch, Holzhauser, & Henderson, 2008; Wiegand, & Funk, 2012). Moral distress affects the health of nurses and their provision of care, job satisfaction, retention, and personal relationships. The distress can become so great that nurses do not want to care for their patients or their families and begin to work fewer hours, eventually leaving the nursing unit or the profession altogether (Gallagher, 2010; Schluter et al., 2008; Wiegand, & Funk, 2012). How can nurses respond to moral conflicts to manage distress?



The field of organ and tissue donation and transplantation is one of the most regulated areas of healthcare today.

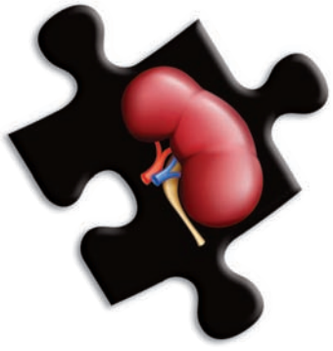
COPING WITH MORAL CONFLICT

Many years ago a wise nursing instructor told me it's necessary to first take care of the nurse, so the nurse can take care of the patient. Individual management of daily stressors is key to nurses' well-being and job performance when dealing with difficult dilemmas. Thankfully, God provides biblical principles to deal with stress and moral conflict.

When Jesus was under stress he applied Scripture. *Knowing God's Word* helped him bout Satan (Matthew 4:1-11), when criticized (Matthew 9:10-13; Mark 2:23-28), and at his Crucifixion (Luke 23:35-43, 46). Studying God's Word provides a way to know God intimately and reveals his wisdom and direction for difficult situations.

Throughout his life, Jesus *got alone and prayed* to seek God's presence (Matthew 14:23; Luke 22:39-46). In

addition to quiet times with God outside of work, nurses can use break time for a brief walk outside or rest in a quiet room for a few minutes. Distance from difficult circumstances enables us to not only release emotions, but reflect on the situation and analyze thoughts, feelings, and emotions (Lim, Bogossian, & Ahern, 2010). A time of prayer and reflection strengthens the spirit and helps us focus on God and gain his perspective (Philippians 4:8). This clearing of the mind and strengthening of the spirit provides the clarity necessary to continue care and work through dilemmas. This is an important concept for a nurse caring for a potential donor. Removing oneself from the situation permits the nurse to mentally transition the focus from caring for the living to maintaining organs that will give others a second chance at life.



Professional and spiritual sources help nurses compassionately care in difficult transplant situations.

Renewing the mind alleviates troublesome thoughts, which, in turn, enables the body to sleep better. *Rest*, along with *proper nutrition and exercise*, can restore the body and give strength. While feeding the 5,000 the disciples were so busy they did not have time to eat. At one point Jesus pulled them aside and accompanied them to a place where they could rest (Mark 6:31). Rest need not always involve sleep but can entail leisure activities such as relaxation practices (walks, massages), vacations, hobbies, and entertainment. Healthy eating and exercise help with endurance and strength. It is important to keep the body healthy and rested so nurses are better prepared for wearing responsibilities.

It is important to *develop personal relationships* to build a support system for challenging times. Lack of social support has a "direct effect on emotional exhaustion and burnout" (Prins et al. as cited in Pardoe, 2011, p. 28). In Scripture, Martha's sister Mary demonstrated building relationships. Mary chose to abandon her duties temporarily and do nothing but sit at Jesus' feet (Luke 10:38-42). Nurses can set priorities to spend time with God and others to help them through stressful events. "Knowing that support is readily available can greatly enhance coping strategies and help ease the tension or perception of stressors" (Gurung, 2006 as cited in Pardoe, 2011, p. 29). Seeking help from in-house support groups for those working with transplant patients or palliative care can be beneficial. Research has shown that these groups help staff members identify the effect of traumatic experiences and losses, while validating their experiences (Hanna, & Romana, 2007).

The Bible encourages God's followers to *persevere* to grow spiritually. Perseverance through difficulty makes a person stronger (2 Corinthians 4:16-18; James 1:2-4; 1 Peter 1:6-7). Jesus was a great example of perseverance throughout his life and especially through his Crucifixion (Hebrews 12:1-3).

The final principle encompasses putting *trust in God* and his faithfulness during difficult times. Because of the relationship Abraham had previously built with God, Abraham was able to trust God when he had no heir and later, to sacrifice his only son Isaac. Because of his faith and trust, Abraham's life was changed forever (Genesis 12-22). Being faced with dilemmas enables nurses to reach out to and reflect on God's faithfulness, knowing God will take care of them and their patients, somehow meeting their needs during difficult times (Proverbs 3:5-6), and working with them to bring about good (Romans 8:28).

PROFESSIONAL CARING

Despite difficult circumstances, nurses have the responsibility to act as an advocate for the patient and to practice compassionately within legal, ethical, and professional standards. The American Nurses Association (ANA) *Code of Ethics for Nurses with Interpretive Statements* (2001) states, "the nurse respects the worth, dignity, and rights of all human beings irrespective of the nature of the health problem. The worth of a person is not affected by disease, disability, functional status, or proximity to death" (p. 3). Shelly and Miller explain that Christian caring is "hands-on, patient-centered, physical, psychosocial and spiritual intervention to meet the needs of a patient *regardless of how the nurse feels*" (2006, p. 250). Puchalski adds that "Compassion is an attitude, a way of approaching the needs of helping others with their suffering, but it is also a way of being, a way of service to others, a spiritual practice, and an act of love" (2009, p. 188). Christ calls us to care for everyone, even the least deserving, as we would care for him (Matthew 25:31-46), reminding us that God values all life and in every detail, stage, and condition

(Luke 12:6-7). These professional and spiritual sources help nurses compassionately care in difficult transplant situations.

Nurses working in areas that relate to organ donation and transplantation—EDs, ICUs, Transplant Units, can be empowered to fulfill the ministry to which God has called them. A key to persevering through difficult times is to remain focused on the purpose; providing care that is legal, ethical, professional, and Christ-like. Centering on the purpose provides motivation, keeps priorities straight, develops potential, and offers strength and energy. God has given nurses a special ministry, and he provides what we need to look beyond difficulties and care compassionately in morally complex situations such as organ donation and transplantation.

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