Organ and Tissue Donation and Recovery

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Author(s)

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Accreditation

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Course Objectives

Upon completion of this course, participants will be able:

1. Describe organ and tissue donation
2. Describe the impact of organ and tissue donation and recovery.
3. Discuss the role of clinical care provider regarding organ and tissue donation and recovery.
4. List the clinical aspects of organ transplantation.
5. Describe the procedure to preserve the donated organ before transplantation.
6. Explain what is meant by living donors.
7. List the overcoming barriers of organ and tissue donation and recovery.

Disclosures

none

Audience

Health Care Workers
Introduction

Organ and tissue donation and recovery is a lifesaving procedure in which a living organ or tissue is taken from a person and transplanted to another person to potentially save his/her life. To donate an organ is equal to donating a life. Many people lose their lives waiting for organ and tissue transplantation because health related professionals have no knowledge about organ and tissue transplantation. In the state of New Jersey, coursework is required regarding organ and tissue donation and recovery.

At the end of this course, nurses will familiar with the benefits of organ transplantation, how a transplant procedure is carried out, how transplanted organ is preserved and what are the common misconceptions of people about organ transplantation.

What is a tissue?
Large masses of similar cells that perform a specific function. Types include muscles, veins, bones and ligaments.

What is an organ?
A combination of tissues and cells, which together perform a specific function in the body. Examples include heart, lungs, liver and kidneys.

Figure 1: Introduction of tissue and organ (Source: www.npr.org)
Impact of Organ and Tissue Transplantation and Recovery

Organ transplantation and recovery has a good impact on the health of a human being. It is studied that one person has potential to save the lives of eight persons by organ donation and increase the lives of 50 people by tissue donation. Irrespective of emotional public behavior regarding donation, people are not registered donors. It is a big problem nationwide, but it is most prevalent in New Jersey. Many people lose their lives due to unavailability of organ donor in New Jersey. Many are waiting for an organ donor for the safety of their lives.

![Organ and Tissue Donation Saves Lives](image)

Figure 2: Organ and Tissue Donation (Source: www.masonicdonatelife.weebly.com)

Role of Clinical Care Provider

The role of health professional in organ donation and recovery is multidimensional. Nurses are directly involved in this procedure and have great potential to affect by using facility’s policy [1]. Nurse’s direct influence may include:

- Working to vigorously spot the likely donors.
- Giving exact information to the general public regarding organ donation.
• Giving clinical skill, emotional support, and knowledge to families who are keen about organ donation.
• Supporting the patients in choosing procedure, identifying the religious beliefs regarding donation.
• Working with the healthcare team for getting preference of such donation.

It is important to know the personal, ethical and cultural beliefs of patients, donors, nurses and physicians regarding transplantation of organs [5]. The American Nurses Association Code of Ethics is very helpful in supporting the rights of nurses and patients. These rights should not be intermixed with each other. The patient has right for self-determination that should not be interfered by nurses’ personal beliefs. The primary commitment of the nurse is the patient. Though, some healthcare providers have religious beliefs and may not involve in organ and tissue donation and recovery.

Some steps are more important for interested nurses for the improvement of donor awareness and to increase the enrollment in donor’s registry [2]. The recommended steps are mentioned in table-1.

<table>
<thead>
<tr>
<th>Recommendations for Healthcare Provider</th>
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<tr>
<td>• Become familiar with the local organ procurement program and encourage colleagues to do the same.</td>
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<tr>
<td>• Study the ethical, cultural, religious, and social issues surrounding the donation of organs and tissues.</td>
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<tr>
<td>• Take part in educational programs and activities regarding organ donation recruitment, including staff development and public awareness campaigns.</td>
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<tr>
<td>• Serve as a resource to colleagues, patients, and families for the distribution of accurate information regarding organ donation.</td>
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<tr>
<td>• Acquire the knowledge and skills required to work with members of the healthcare team, the OPO and/or tissue bank, and the facility in the identification and recovery of viable organs and tissue for transplantation.</td>
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Table 1: Recommendations for Healthcare provider

Moreover, few basic facts of organ donation should be in mind of a care provider. These facts are mentioned in table-2.
Clinical Aspects of Organ Donation

Selection and Processing

It is very important for nurses and general public to understand the importance of organ and tissue donation to overcome the reluctant behavior of organ donor about donation. It should be in mind
that the first and the foremost priority in every case is to save the life of patient (if the living donor, there should be no harm to the donor). If a patient is admitted in very critical condition, all the lifesaving measures should be done. As a registered donor, permission to halt proper care should not be allowed. According to their judgments and abilities, every health professional (physician, nurse and faculty) should provide full care. The deceased is declared as a candidate for organ donation only that time when all the lifesaving measures are helpless.

When brain death is declared clinically, assessment for organ donation should be done by two physicians [4]. This determination should be made by a neurosurgeon. In view of Uniform Determination of Death Act, a person is declared as dead who has sustained one thing from these points mentioned below:

- Irreversible arrest of respiratory and circulatory functions
- Irreversible arrest of all the functions of central nervous system including brain stem

A death is confirmed according to the accepted death standards. The time of the death should be mentioned in record by the attending physician. Death certificate should also be issued by the attending physician. It is important to know the difference between coma and brain death.

In certain cases, cardiac death is taken as prerequisite for organ donation. Some conditions are mentioned in table 3 in which cardiac death is sufficient prerequisite for organ donation.

<table>
<thead>
<tr>
<th>Cardiac Death as Prerequisite for Organ donation</th>
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<tr>
<td>• The family or patient, via an advance directive or discussion with physician, has decided to withdraw life support.</td>
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<tr>
<td>• The suitability for donation has been determined by the New Jersey Organ and Tissue Sharing Network (NJ Sharing Network).</td>
</tr>
<tr>
<td>• Consent is obtained for a do not resuscitate (DNR) order and donation.</td>
</tr>
<tr>
<td>• The attending physician or designee not affiliated with the transplant or organ recovery team will be present when life support is withdrawn to pronounce the death.</td>
</tr>
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Table 3: Conditions in which Cardiac death as Prerequisite for Organ Donation

In accordance with regulations of Federal and New Jersey State, when a patient is near to expire or expired, it should be notified to local OPOs and relevant information about patient should be provided. This information includes name and age of the patient, cause of death, past medical history and other relevant information asked by NJ Sharing Network. The NJ Sharing Network is OPO for New Jersey Hospitals that is designated federally and state-certified. The OPO coordinator is the main
person who determines that potential donor by information and tests carried out by hospital staff. If patient is suitable for donation then OPO coordinator reaches the hospital within 90 minutes of first notification. The OPO starts the complete medical evaluation of patient for suitability of donation. The coordinator does not communicate with the family members until it is finalized that the patient is suitable for donation and the family members are well aware of the patient condition [3]. An interview may be taken from the next of kin to know about the social and medical history of the patient.

![Image](image1.jpg)

**Figure 4: Donated Kidney Preservation (Source: www.nature.com)**

If the donation is not ruled out on the basis of medical evaluation of the patient, the next steps for the management of donor, care and consent’s approach should be discussed by the coordinator with the attending physician. It should be searched in the state donor registry about the enrollment of prior consent of donor. If the consent form is not available, the next of kin is contacted to get consent according to the State policy. If the patient can provide his/her own will, it is better option. During all this procedure, artificial support should be continued for the donor and monitoring should be done by the hospital staff.

It is the responsibility of the OPO to contact with Organ Procurement and Transplantation Network (OPTN) to search the matching recipient of donor in the nation database. Many characteristics (blood group, type of the tissue, height and weight etc) and other concerns (waiting time of the patient, patient’s illness severity and distance between two hospitals etc) of donor organs are compared with recipients. OPTN system has already stored information about the transplant awaiting patients. When the information of the donor is entered in the OPTN system, the matching list of recipients by tissue and organ type is generated by the system. The 1st matching recipient is the main candidate for the donation but it is decided by the transplant surgeon on the basis of recipient’s health status, availability of the recipient and compatibility of each organ/tissue. Maximum share of organ
transplantation (about 75%) is given to the local patients and remaining share of transplantation is given to the other regions of the country.

The tissue donation should be considered in every deceased patient. All the procedures such as consent and matching are similar to the organ donation. The deceased body should be kept in the morgue by covering the eyes with saline soaked gauze. Without the permission of NJ Sharing Network or local eye bank, the dead body should not be sent to the funeral home. By the permission of the family and attending medical officer, the trained recovery surgeons of NJ Sharing System perform the recovery of tissues in the same hospital or any other hospital.

Figure 5: Reasons for Organ and Tissue Donation (source: www.whatsyourgrief.com)

Procedure to Preserve the Donated Organ before Transplantation

The OPO coordinator makes the schedule for the arrival of organ recovery surgical team. The surgical technique that is used for organ recovery is similar to the other surgical techniques. An ice cold preservation solution is prepared before the removal of organ to flush every organ. After the removal of the organ, it is placed in the sterile container covered by icy solution to cool. The kidney is an exceptional organ because it is placed on a pulsatile perfusion machine after removal from the body.
to pump the preservative solution all over the organ. Tissues are recovered from the body after the recovery of organs.

Figure 6: Organ Transplantation Team (Source: www.selffundingmagazine.com)

When all the procedure of organ/tissue recovery is completed, the incision is stitched. The funeral director is contacted by the NJ Sharing System to remove the body from the donated place. As the organs and tissues recovered, the viability decreases quickly. Arrangement for the transport of the recovery organ/tissues to the transplant area is done by OPO coordinator. When the new organ is reached in operating area where the recipient is present, the transplant team works quickly to complete the remaining procedure of transplantation.
Living Donors

Living donation is a procedure in which an organ or tissue is donated by a living person to transplant awaiting person. The most commonly donated organ by living donor is kidney followed by the segment donation of liver. Living donation is of two types:

- **Direct Donation**: in which organ is donated to a specified person.
- **Indirect Donation**: in which organ is donated to a recipient who is unknown to the donor.

Informed consent is required for living donation. Many aspects should be in mind regarding the living donation. Complications should be discussed with the living donors. Two types of complications might be encountered in case of living donation [6].

**Short Term Complications**: Short term complications depend upon the type of organ being donated. These complications are listed here:

- Blood loss during surgery
- Pain at operation site
- Injury to the surrounding tissues
- Infection
- Anesthesia complications like allergic to anesthetic drugs
- Death
Long Term Complications: Long term complications also depend upon the organ to be donated.

- **Kidney donation:** In case of kidney donation, following long term complications may develop.
  - Hernia at operation site
  - Hypertension
  - Decreased kidney function
  - Failure leading to the hemodialysis to save the life
  - Death

- **Liver Segment Donation:** In case of liver segment donation, following complications may develop.
  - Abdominal bleeding
  - Bile leakage
  - Hernia
  - Intestinal blockage
  - Organ failure
  - Death

The financial aspects should always be considered by the living donor. The recipient insurance covers the direct medical cost of operation and immediate follow-up. The remaining medical cost produced due to long term complications is difficult to manage for the donor. When the recovery becomes poor and complications of surgery develop, it is very difficult for the donor to manage the cost of the management.

**Overcoming the Barriers to Donation**

There are a lot of barriers present to the organ donation [7]. These barriers may be influenced by nurses at several levels. Facilities should be helpful in the process of donation and process of donation should be made as easy as possible for donor and families. It is very helpful to provide moral support to the families. Nurses should improve their personal emotions towards organ donation and provide education to the families and donors to overcome the different myths about organ donation. These different myths are mentioned in the table-4.
Table 4: Common Misconceptions about Organ Donation

## Conclusion

It is a vital component of life to share the organs. There is a large gap present between the patients awaiting transplantation and persons who are willing to donate organs. New Jersey nurses can provide the help to lessen this disparity by giving information and moral support to the patients and families. Great advancement has been achieved in clinical aspects of organ recovery. Healthcare professionals are well educated about organ donation and recovery and they can provide better information to the patient and families to help them for the donation of life by donating the organ or tissues to those persons who lives are depended upon it.
References