

Issues in Organ Donation

OBJECTIVES/RATIONALE

As success with organ transplants has grown, ethical issues have developed. The student will identify organ transplant barriers and related ethical issues.

TEKS: 121.15 (c) 2C, 4B, 4C, 4D, 5C
121.3 (c) 1F, 7A, 7B, 8A, 8B

TAKS ELA 1, 4
Science 1

KEY POINTS

- I. Organ transplants are life-saving procedures for many people and often the only possible treatment available. Some noteworthy facts about diseases and transplantation are:
- A. More than 200,000 people in the U. S. suffer from kidney failure.
 - B. Treatment of kidney failure generates medical expenses of more than \$7 billion annually.
 - C. Each year more than 60,000 Americans die from liver failure.
 - D. When bone marrow transplantation is successful, it is restorative for leukemia, immunodeficiency, sickle cell anemia, and certain metabolic disorders.
 - E. Success rates vary for the different types of organs transplanted and can be as high as 90% or as low as 50% for one year.
 - F. Scarcity of donor organs means only small fraction of patients actually receive transplants.
 - G. Procedural barriers and social restrictions result in lower access to transplantation for minorities.
 - H. Immunologic rejection is one of the major barriers to successful transplantation.
- II. History of Organ and Cell Transplantation
- A. Transplantation actually began in ancient times - ancient India-transplantation of skin on the leg
 - B. In 1670 Russians performed the first xenotransplantation by using a bone from a dog to repair a cranial defect in a human baby.
 - C. First organ transplant in modern times was performed in Chicago in 1906 - Transplanted new heart into a dog and new kidney into a cat
 - D. First kidney transplant in U.S. was in 1950
 - E. First lung transplant at University of Mississippi in 1963
 - F. First successful pancreas transplant in 1967
 - G. Also in 1967, Dr. Christian Bernard performed first successful heart transplant in South Africa
- III. History of Immunosuppressant Drugs
- A. At the core of the transplant recipients' long-term survival is the principal immunosuppressive drug, **cyclosporine**.
 - B. Cyclosporine revolutionized realm of organ transplantation in 1983 because it selectively suppressed recipient's immune system - it works by inhibiting T-cell activation, thus preventing T-cells from attacking transplanted organ.
 - C. Cost to patient of immunosuppressive therapy

1. approximately \$12,000 to \$15,000 the first year following transplant
2. approximately \$10,000 to \$12,000 each year thereafter

IV. Transplant Candidacy

- A. Since organs are scarce, allocation is a huge issue. Who gets the organ? Who are the best candidates?
- B. What factors are taken into consideration:
 1. Life Expectancy
 - a. Are there other medical conditions that might compromise life expectancy?
 - b. What is the age of recipient in respect to how many years left to live?
 2. Organ Failure Due to Abusive Behavior
 - a. Alcoholism
 - b. Drug abuse
 - c. Smoking
 - d. Eating disorders
 3. Patient Compliance/Adherence Concerns
 - a. Is patient reliable and consistent?
 - b. Will patient take medicines and follow physician's orders?
 4. Presence of Alternative Therapies - are alternate therapies available that can delay or prevent transplantation?

IV. Obstacles That Confront Transplantation

- A. The number of people needing transplants increases each year.
- B. Rejection is the body's natural reaction to transplanted organs and tissues. This threatens each patient with loss of the new organ or even loss of life.

V. Ethnic Groups and Transplantation

- A. Biological differences can have significant effects on risk for certain diseases and the need for, access to, and outcome of transplantation.
 1. Several autoimmune diseases, such as diabetes and systemic lupus erythematosus, can lead to end-stage organ failure.
 2. These diseases affect some groups of patients significantly more than others.
 - a. End-stage renal disease is four times greater in African-Americans than in whites, mainly because of higher rates of hypertension and autoimmune disease.
 - b. End-stage renal disease is increasing most rapidly among Native Americans because of a significant growth in the incidence of diabetes.
 - c. Autoimmune diseases are six times more common in women than in men.
- B. Forty-six percent of individuals currently waiting for organ transplants are ethnic minorities - by contrast, minorities represent only about 25% of organ donors making successful transplantation for specific minority groups more difficult.
- C. Some groups of patients are transplanted less frequently than others, because of immunologic incompatibility.
 1. In kidney transplantation, women, African-Americans, and children are among these disadvantaged groups.
 - a. Less than 1% of organ donors are African-American
 - b. Because of under representation, tissues matches are more difficult

VI. Future of Transplantation

- A. Scarcity of organs for transplantation

- B. Today, more than 25 organs and tissues may be transplanted (bone and cartilage, corneas, solid organs, bone marrow)
- C. Researchers are experimenting with alternative measures to increase pool of suitable organs
1. Xenotransplantation
 2. Cut-down livers
 3. Stem cell research
 4. Cloning organs
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- I. Report over the book, *Many Sleepless Nights: The World of Organ Transplantation*.
- II. Engage in biomedical debate over one of the following:
- Living donors: How much risk should a healthy person be exposed to for the sake of someone who will die?
 - Do prisoners have the right to receive organs?
 - Should people who have abused their bodies have the right to receive organs?
 - Should humans use animals for organs?
 - Is the cost of transplantation too costly to society?
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MATERIALS NEEDED

Many Sleepless Nights: The World of Organ Transplantation – insightful book; describes the patients who go through transplantation, the intricate medical procedures, the surgeons and nurses who work in this particularly complex milieu, and the ethics that complicate this high-tech "miracle". ISBN: 0822959054

Impact of Organ Transplantation on Economy
<http://istf.ucf.edu/ISTFSites/97/97002/economy.html>

HOSA biomedical debate competitive event format

List of transplantation links: http://www.novartis-transplant.com/public/resource_links.jsp

Organ Donation/Transplantation Facts & Myths: <http://www.optn.org/about/myths.asp>

Successful completion of activity.

For reinforcement, the students will report on an organ procurement agency (Life Gift, Southwest Organ Donor Center etc.)

For enrichment, the student will prepare a comparative cost analysis on one of the following: different types of organ transplantation; mean cost of organ transplantation versus life-time cost of maintaining individual in prison system; mean cost of organ transplantation versus multiple births.

REFLECTIONS
