

Kidney Transportation

Zac Canders

Biomed Seminar 282

Presentation 2 04/12/04

Function of the kidneys:

Balance the body's water content.

Remove waste products from the blood (Waste products come from cells and foods that are eaten)

Keep body chemicals in balance.

Failure of Kidney's (less than 10% working)

Facts:

Chronic kidney disease is the ninth leading cause of death in the U.S. and one of the costliest illnesses in the U.S. today

Approximately 345,000 Americans are being treated for kidney failure

On November 20 2004 nearly 80,000 patients were waiting for kidney transplants

Treatment

There are a variety of methods to treat kidney failure:

Hemodialysis

Peritoneal Dialysis

Kidney Transplantation

Transplant Information:

The Problem: Once an organ is outside the body, doctors have only a small window of time before it will no longer be good to use. (This is due to decoration, and the ability for organ to regain normal function).

- The kidney will last 20 hours
- The liver 16
- The Hear 4 hours.

Two methods of transportation of an organ currently in use worldwide

- Plastic Containers/on ice: Insulated container with organ placed in bag then surrounded with ice.
- Kidney/Organ Pump Technology: Organ is bathed in a solution that's much like the

solutions in a body itself (tricks organ into thinking it is still inside body .

The main question surrounding these two methods is which is more effective (costs/organ preservation).

LifePort:

Designed by Organ Recovery Systems:

Engineering considerations:

- Durable
- Exceptionally portable,
- Perfuse from the time of donation to the time of transplantation
- Simplifies connections with customized, disposable cannulas and tube sets
- Operates with ease using digital one-touch keypads
- Ensures stability, and protection during transit
- Captures and displays key organ performance data in real time
- Be respectable in design (due to nature of contents)

Improves on older pumps by being easier to handle (the size of an ice chest but fully automated instead of needing manual monitoring). Up to almost 48 hours outside of the body. Doctors also have more opportunity to evaluate the organ once it gets to the patient.

Gained FDA approval for use in United States in August 2004.



Sources:

Douglas Schein, Organ Recovery Systems.

•<http://www.ideo.com/portfolio/re.asp?x=50190>

•<http://www.organrecovery.com/nav.html>

•http://www.proseedcapital.com/releases/release_ors_20030805.html

•http://www.kidneywdc.org/transportation_fund.cfm