

Organ Transplants

History of Organ Transplantation

1900/1907: Discovery that blood comes in types (A, B AB, O).

1954: 1st successful kidney transplant (live donor) (Murray/Hume)

1962: 1st successful kidney transplant (dead donor).

1963: 1st human lung transplant (Hardy)

- Chimpanzee kidneys transplanted into 13 different humans.

1964: 1st chimpanzee heart transplanted into a human (2 hr survival).

1966: 1st successful pancreas/kidney transplant (Lillehei/Kelly)

- 1st chimpanzee liver to human (Starzl).

1967: 1st successful heart transplant (Barnard/South Africa)

- 1st successful liver transplant (Starzl)

1981: 1st successful heart/lung transplant (Reitz)

1983: Cyclosporine approved by FDA.

1992: Baboon liver to human (70 day survival)(Starzl).

1998: 1st successful hand transplant (Dubernard/France)

Main Issues to Consider

Who needs organs?

- Supply and demand

Procuring organs

- Where do they come from?
- When can we collect them?

Allocating organs

- Who gets them?

Who Needs Which Organs?

Figures for the USA

- About 100,000 people are on the organ donor list at any given time.
- 10,000 people die each year for lack of an organ.
- About 50,000 receive a vital organ each year.
- 60% of all transplants are kidneys, 20% are livers.

Procurement: Where do they come from?

(1) Cadavers

[heart, lung, liver, kidneys, bone, stomach, intestine, pancreas, cornea, ...]

- 15,000 brain-dead potential donors/year
- 3.6 organs/donor
- Less than half of the potential organs are donated.

(2) Living donors

[kidney, liver lobe, lung lobe, pancreas segment (as well as tissue, like blood and bone marrow)]

- 52% of all kidneys come from living donors.
- Five-year survival rates for living donor kidneys jump from 80% to 90%.

(3) Other animal species?

(4) Your clone...

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[heart, lung, liver, kidneys, bone, stomach, intestine, pancreas, cornea, ...]

with permission: donated (opting in/opting out)

without permission: salvaged

(2) Living donors

[kidney, liver lobe, lung lobe, pancreas segment (as well as tissue, like blood and bone marrow)]

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Procurement: Where do they come from?

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[kidney, liver lobe, lung lobe, pancreas segment (as well as tissue, like blood and bone marrow)]

—infants, the sick, the mentally impaired, strangers

—coercing vulnerable family members...

(3) Other animal species?

(4) Your clone...

Procurement: **When can we collect them?**

(1) Dead donor rule: “only the dead may donate vital organs”.

(2) What is death? When is a person dead?

- Whole brain death
- Higher brain death
- Cardiac arrest (“five minute rule”)
- Pittsburgh Protocol (“two minute rule”)
- “Irreversible loss of the circulatory system” (Denver)

(3) Divided Loyalties in Healthcare

- Caring for the dying patient
- Caring for the organ and organ recipient

Allocation: Where do they go?

— Allocation rules based on organ source (living vs dead)?

(1) Family **vs** strangers

(2) Socially directed organ donations

(3) Organ swapping

(4) Organs for those making “bad life choices”

(5) Organs for the “rich and famous”

Small Group Discussion

How should we increase the supply of transplantable organs?

Back to Procurement...

(1) Why is the organ supply so low?

- Less than 20% of American adults sign a donor card
- Religious worries about desecrating the dead
- Victimized populations worry about being badly cared for
- Conflict of interest in the hospital
- Too many safe drivers! (seatbelts, airbags, helmets for bikers, stigma of driving while inebriated)

(2) How might we increase the supply?

- “presumed consent” (in effect in most of Europe)
- “mandated choice” (you must decide to donate or not)
- Free Market: Organs for sale!
- Clones and/or extra babies!
- Baboons!
- Lower the bar on when we are dead
- ...

Buying Organs at the Market

