THE JOURNEY TO ORGAN TRANSPLANTATION IN THE 21ST CENTURY

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DISCLOSURES

- None
- Trick or treat?
HISTORICAL TALK

- Birds-eye view
- Key events
ANCIENT MYTHOLOGY
Alexis Carrel and others refine vascular anastomoses.

First animal transplants (pigs, goats, etc).
1954 WORLD SERIES
INDIANS vs. GIANTS
1954

- Joseph Murray
- First live donor kidney transplant
- Identical twins
- 8 years
ETHICAL QUESTIONS

- Primum non nocere
- Lack of immunosuppression
TRANSPLANTATION EXPANSION

Kidney 1954
Kidney/Pancreas 1966
Liver, Heart 1967
ADVANCES IN IMMUNOSUPPRESSION

- **1950s** no immunosuppression
  - Steroids
  - Radiation
- **1960** 6-mercaptopurine
  - Precursor to azathioprine
INITIAL TRANSPLANT RESULTS

- 18-day survival
- 20-month survival
- 105 heart transplants in 1 year with poor immunosuppression
- 50 of 55 livers had less than 6 month patient survival
MANY NEW QUESTIONS

- Is a (heart) donor really dead?
- Heart-lung machine
- Quality of life after transplant?
  + How good does it have to be to make it worthwhile?
WHAT DEFINES DEATH

- Brain death introduced in 1968
  + Harvard criteria
  + Loss of all cerebral function
  + Loss of brainstem reflexes
  + Apnea test

- Cardiopulmonary death
  + Donation after cardiac death
  + Two teams with different roles and interests
ADVANCES IN IMMUNOSUPPRESSION

- 1950s no immunosuppression
  - Steroids
  - Radiation
- 1960 6-mercaptopurine
  - Precursor to azathioprine
- 1987 cyclosporine A
- 1994 tacrolimus
- 1995 mycophenolate mofetil
1943 Kolff made the dialyzer
Scribner made a device to connect the dialyzer to the patient’s vessels
The demand for organs continued to outpace the supply – even today 18 patients die waiting every day

Dialysis was and is expensive

Hospital could take on only so many patients
+ 17 at Swedish Hospital

Laypeople committee included one surgeon

Minister, lawyer, housewife, labor leader, state government official, banker, surgeon

Shep Glazer dialyzed in front of Congress

1972 ESRD act
Patients on the Kidney Waiting List vs. Annual Transplant Operations, 1988 to 2013

Registered Patients on the Waiting List

Source: Dept. of Health and Human Services

Kidney Transplant Operations

Carpe Diem Blog

100,019 as of 4/4/2014

16,893 in 2013

LVAD PATIENT AT HOME
WHAT’S IN YOUR PURSE?
RECIPIENT SELECTION

- Louis Washkansky
  + First heart recipient
- Who should qualify?
  + Compliance?
  + Social worth?
  + Children?
  + Criminals?
  + Sickest first?
  + Age?
ORGAN DISTRIBUTION AND WAITLISTS

- No system in the 1970s
  - Limited sharing
- NOTA 1984 created UNOS
  - distributes organs to listed candidates
  - does not address who gets listed
    - ACCESS to care
    - Multiple listing
    - Re-transplants
ORGAN ALLOCATION ISSUES

- Sickest first?
  - Regional sharing for livers
- Closest first?
- Does outcome matter?
INFORMED CONSENT

- Surgical risks
- Long-term outcomes
- Side effects
- Complications
- Alternatives
DONORS

- Kidney donors – since the 1950s
- Liver and Lung donors
- Selling organs
- Living donors
- Deceased donors
MY HOMEWORK ASSIGNMENT IN 6TH GRADE

- (for an essay) Describe what your life would be like as a 12-13 year old if you had been born one century ago.

- Cheeky answer (I’d had a kidney transplant in 1988): I would have been dead.