Everything You Wanted to Know About Transplant….

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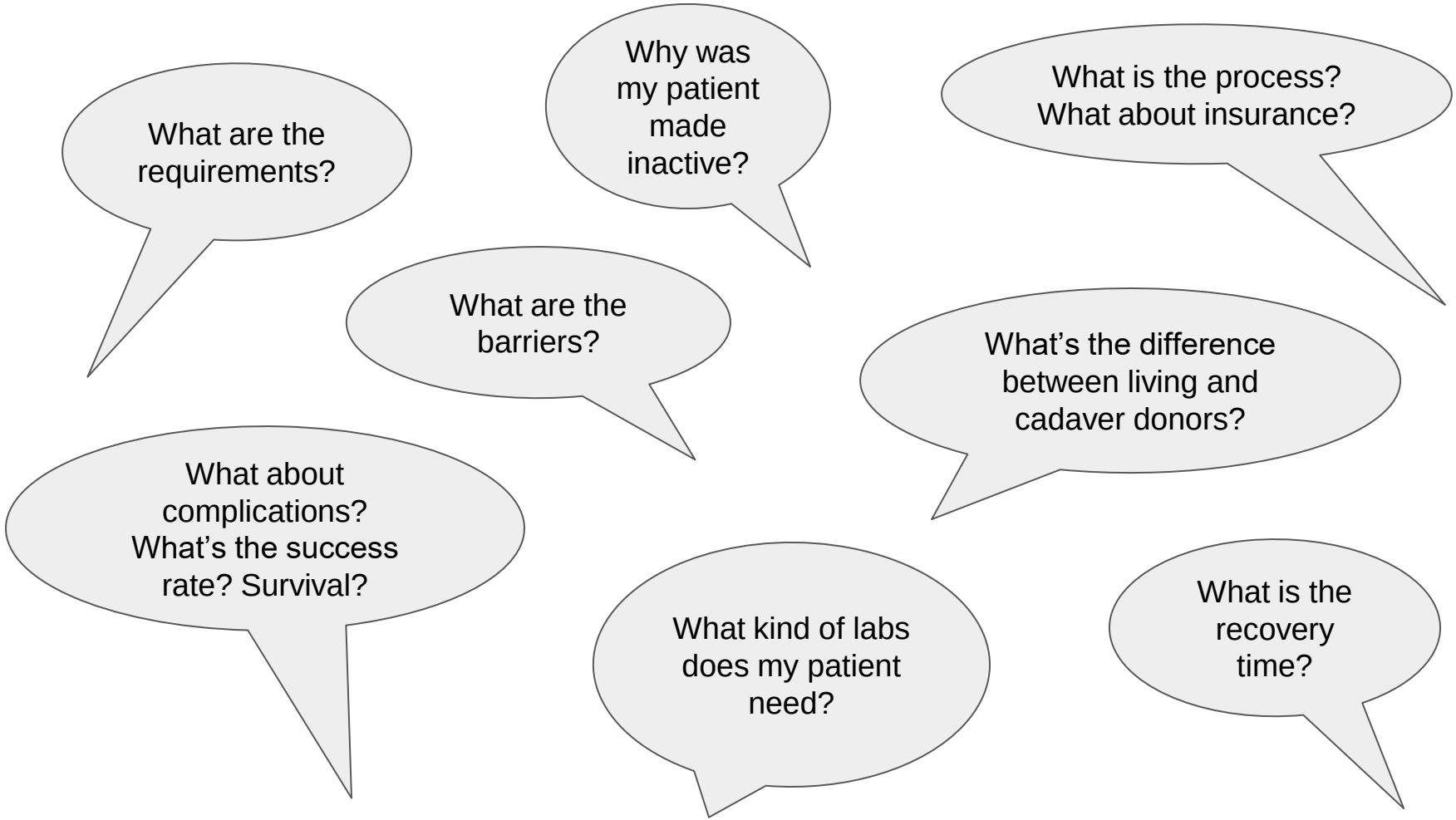
NW Kidney Centers/Lake City


What are the requirements?
Why was my patient made inactive?
What is the process? What about insurance?
What are the barriers?
What's the difference between living and cadaver donors?
What about complications? What's the success rate? Survival?
What kind of labs does my patient need?
What is the recovery time?

Kidney Transplant- A Brief History

First Successful Kidney Transplant in the US

December 1954

Brigham and Women’s Hospital

Dr. Joseph Murray, who received Nobel Prize

Twin brothers, confirmed by finger prints, skin grafts

Richard died in 1963 from recurrent disease

Advances in the last 60 years

Prednisone and cyclosporine really made transplant possible

Improved understanding of immunology

HLA (Human Leukocyte Antigen) testing

Organ preservation techniques

(cadaveric, living donors, kidney pumps, solutions)

Determination of brain death

Xenotransplantation

David Bennett, 57 years, survived 60 days

University of Maryland Medical Center 2022

Bartley Griffith, MD

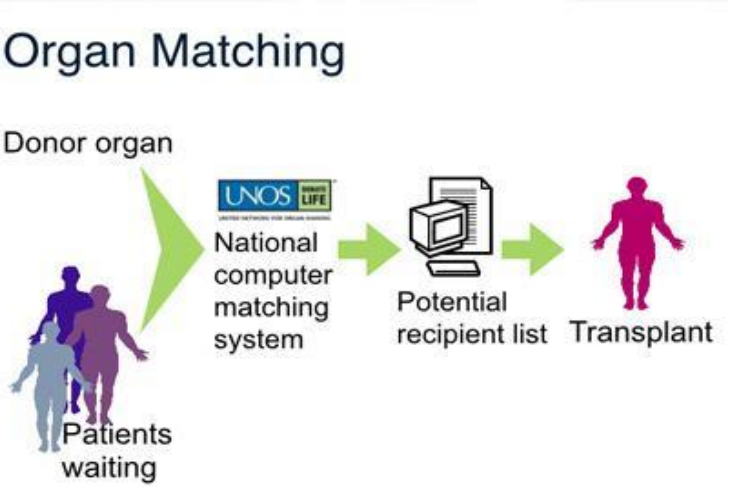
US organ donation and transplant explained

United Network for Organ Sharing (UNOS)-est. 1984

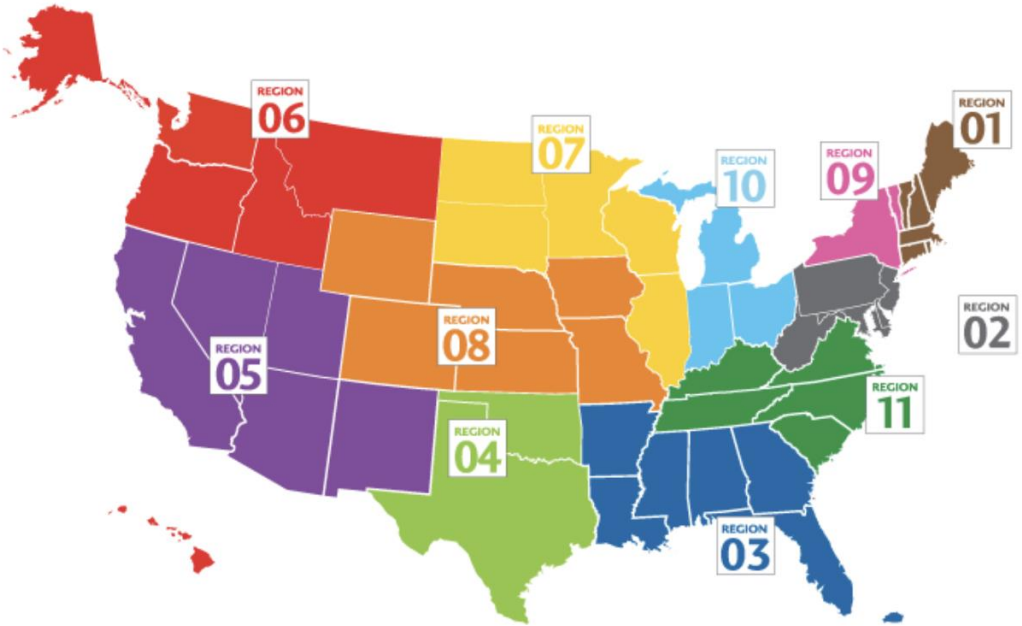
Develops and implements policies regarding recipient listing, organ distribution, transplant program eligibility, donor criteria, data collection

Congressional approval of the National Organ Transplant Act (NOTA) calling for an Organ Procurement and Transplantation Network (OPTN)

UNOS received this contract 1984 as a private non profit organization



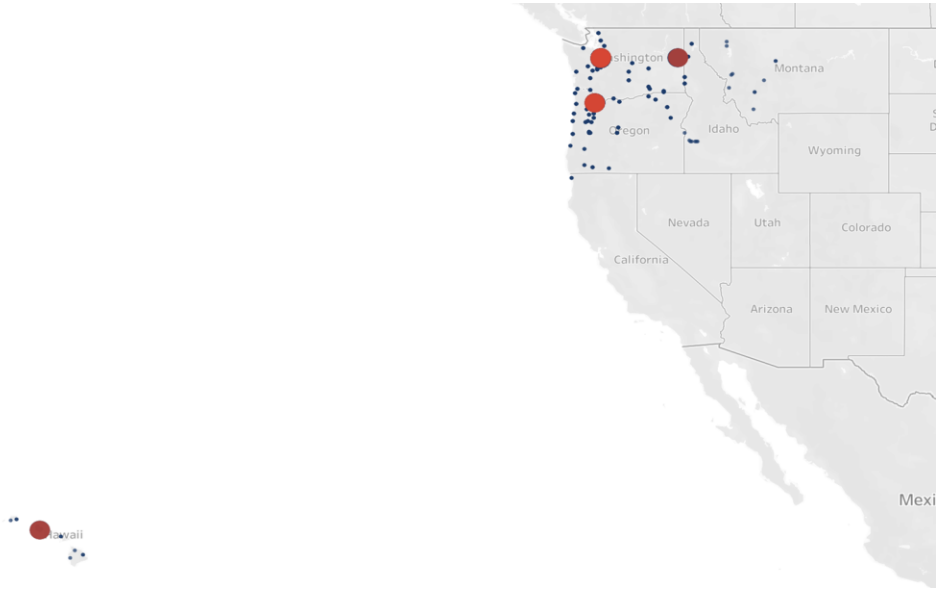
UNOS geographical regions



Kidney Allocation

Changed in 2019 to make kidney and pancreas allocation more equitable.

Instead of match sequencing relying on donation service area and OPTN region, it is now based on geographical distance between donor and recipient.



The OPTN implemented KAS in December 2014

“KAS was developed in response to higher-than-necessary discard rates of kidneys, variability in access to transplants for candidates who are harder to match due to biologic reasons, inequities resulting from the way waiting time was calculated, and a matching system that results in unrealized life years and high re-transplant rates. “

Allocation points

Age at time of listing

Prior living donor status

HLA mismatch (zero or one)

Proximity to donor hospital

CPRA

Prior organ transplant

Medical emergencies

Better matching for recipient and allograft survival

EPTS-Estimated post transplant survival

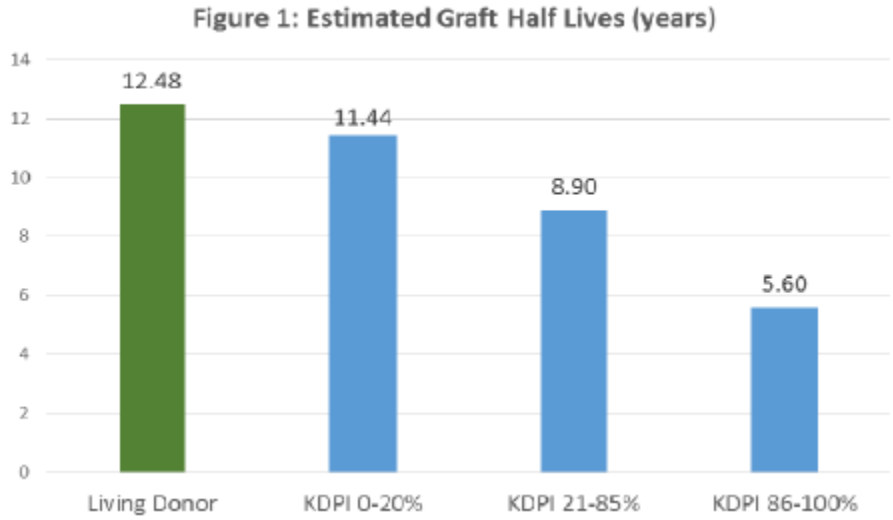
Calculated daily based on patient age, dialysis status, diabetes, previous txplant

Most interested in the top 20% and the bottom 20 % of this group

KDPI- Kidney Donor Profile Index

Estimates longevity of graft post transplant

Donor age, medical history (diabetes,hypertension, cause of death (CVA), serum creatinine, DCD status)



How do I get myself one of those kidneys?

All patients need to go through transplant evaluation, even if they are working with a paired donation, living donor, or “a chain.”

Transplant candidates must first be referred to a kidney transplant center

Seattle area has- UWMC-ML, Swedish MC, Virginia Mason, Children’s HMC.

Spokane has Sacred Heart

First steps include referral to transplant by nephrologist

Transplant Evaluation

Selection committee at transplant center meets to determine eligibility-

Transplant surgeons, nephrologists, social workers, nurse coordinators, APPs

Determination about next steps

Financial clearance, APP or MD evaluation, imaging, psychiatry

Drug screening, cardiac clearance, ID, dental, basic health screening

HLA screening, organ matching

Surgeon’s visit, transplant infectious disease, urology, oncology, neurology

Higher than average risk kidneys/extended criteria

Increases the pool of donors available to patient

Donor with medical history that could include:

History of sex for money

Prison time

History of IVDA

Hemodilution from mass transfusions, unknown medical history

DCD donors

Barriers to active listing

Lack of financial means

Lack of social support

Cannot d/c to SNF, needs 24/7 care for at least 3 months available

Poor cardiovascular health

Nowhere to place the allograft, increased risk of cardiac or vascular event

Ongoing infection risk, cancer history

Needs clearance and sometimes close followup

History of poor adherence to treatments

Missed HD treatments, uncontrolled diabetes, active substance abuse incl smoking

HLA typing and donor crossmatching

Managed through Bloodworks Northwest (downtown HLA labs)

Every 4-6 weeks, patient needs to have profile updated

Sent to HLA lab at BWNW for (cPRA)Panel of Reactive Antibody testing

Need most updated sample for running real time crossmatches with donor

A Brief Moment to Contemplate Transplant Immunology

HLA- Human Leukogen Antigen typing is also referred to as tissue typing.

Identifies antigens in the candidate's blood as part of the listing process. We all have a unique combination of proteins that identify us on our tissues.

We can also form antibodies to any proteins the body is exposed to. **Some individuals have antibodies to human antigens through a variety of exposures.** (blood transfusions, child birth, auto immune disorders, previous transplants)

CPRA- Calculated Panel of Reactive Antibodies- run regularly with received samples at BWNW. Estimates the number of donors the candidate would have antibodies against.

Crossmatch- done at time of the accepted offer, run as a batch, including back up candidates. Runs serum of donor with that of recipient to determine if there are antibodies.

Immunology applied

A **positive crossmatch** means the recipient has antibodies to the donor, the center will decline for this patient.

Highly sensitized candidates with large antibody loads can be treated with rituximab and steroids to decrease the burden and improve chances of transplant

Induction agents at time of transplant include antithymoglobulin (wipes out T cells), baxilixumab (disrupts chemical signal response) and high dose steroids.

Maintainance therapy includes CNIs like tacrolimus or cyclosporin, antimetabolites like myfortic or mycophenolic acid, and low dose prednisone.

About Deceased Donors

Brain dead donors

- Consent by family, donor goes to OR on life support, heart beating.
- Low ischemia time at time of procurement, optimal for graft survival

DCD donors

- Unable to determine brain death, or family wishes to proceed this way
- Life support is withdrawn and heart must stop beating within 60 minutes for kidney
- May have delay of graft function due to this hypoperfused state or

The patient experience

Patient consents to what type of kidneys they will accept at time of the surgeon visit during the listing process.

When offer available, surgeon is contacted by UNOS and needs to evaluate donor as well as the recipient. Includes image and chart review, discussion w/transplant nephrology.

When offer comes up, patient will get a call from a coordinator and will need to accept or decline offer. The list of final recipients is sent to HLA for crossmatch.

Patient is admitted to hospital for physical and history and determination of dialysis needs prior surgery.

Donor profiles

Location of donor, hospital

Brief profile of circumstances, causes of current status

Medical history

Current imaging, labs, culture data

NAT testing for blood transmitted pathogens, including HCV, HBV, EBV, CMV

HLA information for donor

Organ procurement and preservation

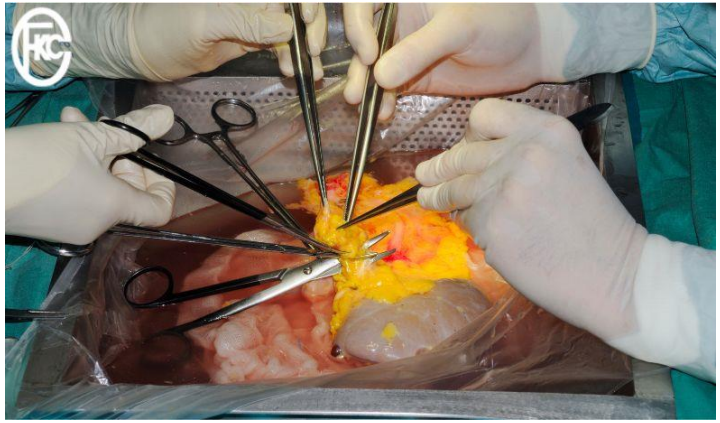
Transported on ice typically, but more are preserved on pump

Can improve graft function at time of transplant.

Preservation fluid is infused in a hypothermic setting.

Most kidneys can tolerate of up to 36 hours of cold ischemia time.

The surgeries

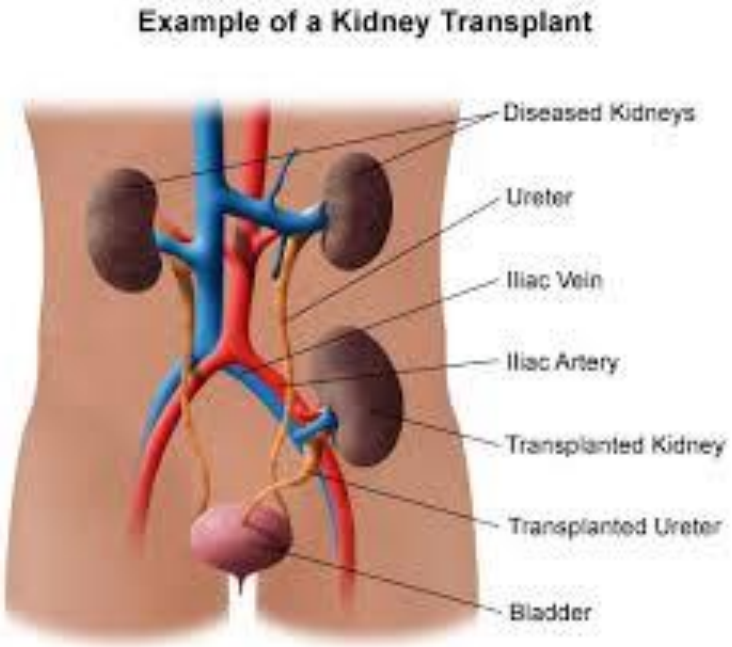


Typically 3-4 hours, including back benching

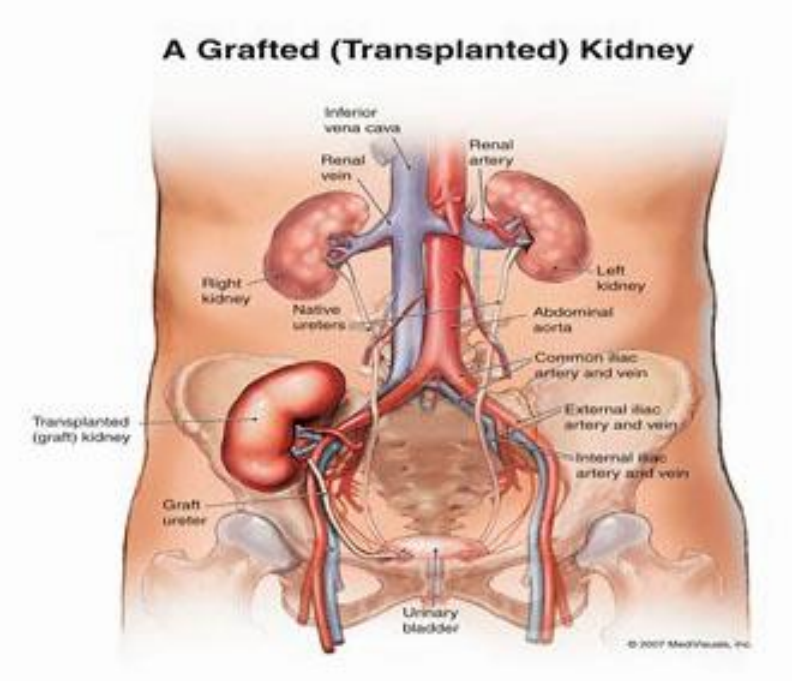
Foley catheter placed during OR, stays 3-7 days

Double J stent is often placed and can be removed as outpatient

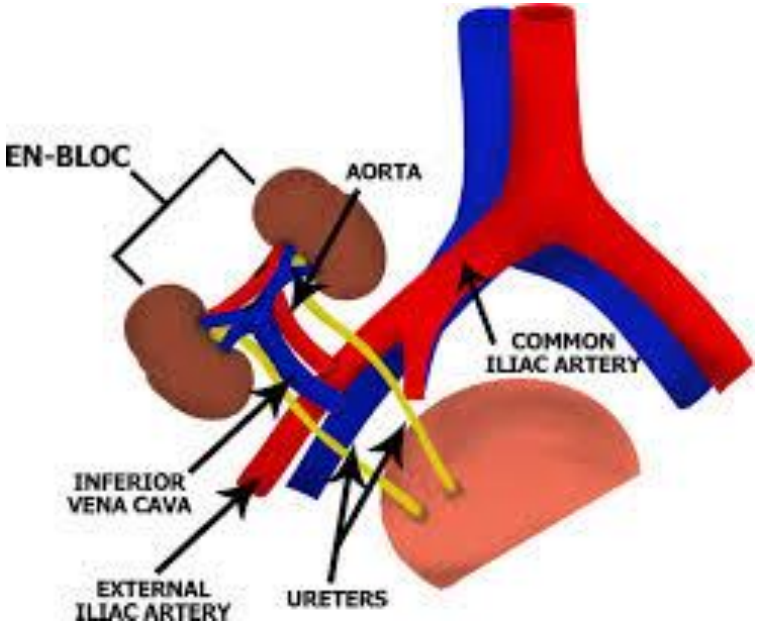
The surgeries

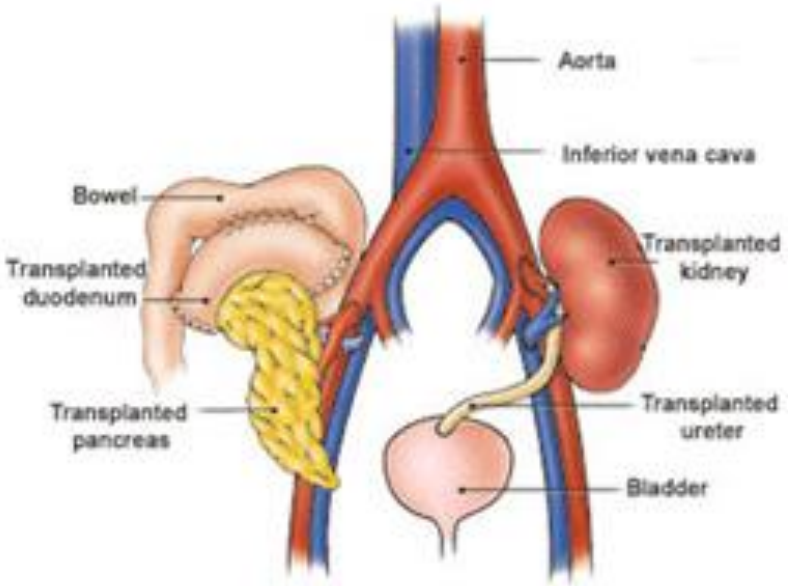


The surgeries



En bloc kidney transplant





Kidney - Pancreas Transplant

Post operative care

Post op ultrasound with doppler to evaluate fluid collections, blood flows, anatomy

Hospital stay can be between 3-7 days, depending on multiple factors

Induction therapy, IV replacement fluids protocol driven

Foley care, sometimes drain placed, staples out in 2 weeks typically

Ambulating and advancing diet by POD 1

May need HD support for hyperkalemia, acidosis, volume management post op

Urine production, clearance may be delayed up to 10 days

New medications!

Immunosuppression: tacrolimus (monitor levels), myfortic, prednisone

Antimicrobial prophylaxis: ganciclovir/acyclovir, bactrim, clotrimazole/fluconazole

Anemia/iron- epo not provided in patient typically

Blood pressure management: adjusted during hospital stay, continues outpatient

Bone mineral metabolism-binders are stopped, often need phos supplementation, magnesium supplementation, PTH re evaluated as outpatient

Glycemic care- prednisone, medical stressors and renal clearance

The transplant team

Nurse Coordinators- pre and post transplant care, provide post transplant patient education, assists in clinic scheduling and adjusting tacrolimus dosing

Pharmacists- assigned to inpatient floor care, outpatient clinic, and inpatient pharmacy on a rotating basis

Dieticians- evaluates patients needs, provides education post transplant

Nephrologists- transplant nephrology is its own service, out of UW Montlake, eventually patient returns to community nephrologist with periodic f/u at UWMC. There is a one year transplant nephrology fellow.

Surgeons- follows patients post op in clinic, brought in for additional assistance or complications

APPs- PAs and NPs, inpatient care and some outpatient followup as well. A constant presence in a rotating cast of surgical residents and transplant surgery fellows

People on waitlist 3/2024

Organ	Needed
Kidney	89,101
Liver	9,862
Pancreas	832
Kidney/Pancreas	2,054
Heart	3,436
Lung	943
Other*	213

Transplants performed

Organ	Received
Kidney	27,332
Liver	10,660
Pancreas	102
Heart	812
Lung	4,545
Other*	99

Waiting list by age

Age in Years	Number on the Waiting List
Under 5	701
6 - 10	477
11 - 17	973
18 - 34	8,399
35 - 49	23,072
50 - 64	43,717
65 +	26,424

*Other includes kidney/pancreas and allograft transplants like face, hands, and abdominal wall.

Questions?

https://unos.org

https://www.organdonor.gov/learn/organ-donation-statistics

https://lcnw.org