Kidney Transplant: Preparation by the Donor and Recipient

VELMA P. SCANTLEBURY, MD, FACS, GCM
CHRISTIANA CARE KIDNEY TRANSPLANT PROGRAM
Kidney Transplantation: The Need

Nationally, there are 113,000 people in need of a lifesaving transplant.

The majority of patients are awaiting kidney transplantation.
Deceased and Living Donor Transplants

 Nearly 40,000 transplants* Seventh consecutive record breaking year.

 There were nearly 7,400* living donor transplants in 2019, an all-time new record.

 There were nearly 11,900 deceased donors in 2019. Ninth consecutive record breaking year.
every 10 minutes another person is added to the waiting list.

20 people die each day waiting for a transplant.

95% of U.S. adults support organ donation but only 58% are actually signed up as donors.

only 3 in 1,000 people die in a way that allows for organ donation.
What Causes Kidney Disease?

Other:
1. Medications induced kidney failure
2. Lupus nephritis
3. Cocaine/heroin nephropathy
4. Kidney stones
5. Chronic infections
6. Congenital abnormalities
7. IgA nephropathy
8. Tumors
Kidney Disease Progression
Stages of Kidney Disease

Abnormalities

- Water and waste excess
- Poor balance of sodium, potassium and phosphorus
- Less release of hormones that control blood pressure, make red cells and keep bones healthy
Treatment of End Stage Kidney Disease (ESRD) or Kidney Failure

- Definition: Kidney function or estimated glomerular filtration rate (eGFR) is < 20%
- Dialysis done not have to occur before kidney transplantation – transplant can be pre-emptive at the time of replacement therapy
Why Get evaluated for Kidney Transplant?

- Minimize the morbidity mortality (death) associated with dialysis and maximize quality of life
- Survival advantages to kidney transplantation – any age, gender, ethnicity, with/without diabetes
- Protect living donors and the scarce resource of deceased and living donor kidney
Recipient Preparation: Getting Listed

- Kidney function at 20% or less for initiation of workup
- Patients can be self-referred or by physician or dialysis unit
- Evaluation takes place at the transplant center of choice – seen by a multi-disciplinary team:
  - transplant coordinator (educational session)
  - financial coordinator
  - nutritionist
  - social worker/psychologist
  - pharmacist
  - transplant coordinator
  - transplant nephrologist/surgeon
What is the Evaluation Process?

- Thorough history & examination
- Extensive cardiac evaluation
- Chest and abdominal CT scans
- Dental evaluation
- Colonoscopy (age >50 yrs)
- Prostate exam (males > 40 yrs)
- Mammogram (females >35 yrs)
- Pap smear (females > 18 yrs)
Recipient Testing (when required)

- Emphysema or COPD -> Pulmonary function tests
- On anticoagulation -> Evaluation for clotting disorders
- History of stroke -> vascular Flow studies of neck
- Peripheral vascular disease -> lower leg flow studies/vascular consult
- Previous heart bypass or stents -> Consultation by heart specialist
- History of hepatitis B or C -> Consultation by liver specialist
- Sleep apnea workup
- BMI > 40 -> Weight loss program
Relative/ Absolute Contraindications to Transplantation

- **Relative Contraindications**
  - Age > 75
  - Active disease process (lupus, cancer treatment)
  - Significant peripheral vascular disease
  - Inability to comply with a medical regimen
  - BMI > 45
  - Unstable social situation/support system
  - HIV positive*

- **Absolute Contraindications**
  - Severe heart disease without possibility of intervention
  - Expected survival < 2 years post transplant
  - Other organ failure requiring transplant – can be referred for combined
  - Active illegal drug use
  - Metastatic cancer
  - AIDS or active Hepatitis B infection
HIV and Kidney Transplantation

Criteria for Transplantation in HIV

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Eligibility criteria for HIV-infected transplant candidates</th>
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<tbody>
<tr>
<td>Meet center-specific criteria for specific organ transplant</td>
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<tr>
<td>HIV-related criteria</td>
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</tr>
<tr>
<td>• Kidney: CD4+ T-cell count &gt; 200 cells/mm³</td>
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</tr>
<tr>
<td>• Liver: CD4+ T-cell count &gt; 100 cells/mm³ (CD4+ T cell count &gt; 200 cells/mm³ if history of opportunistic infection or malignancy)</td>
<td></td>
</tr>
<tr>
<td>• HIV RNA suppressed (or expected suppression post-transplantation)</td>
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<tr>
<td>• Stable antiretroviral regimen</td>
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<tr>
<td>• No active opportunistic infection or neoplasm</td>
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</tr>
<tr>
<td>• No history of chronic cryptosporidiosis, primary CNS lymphoma or progressive multifocal leukoencephalopathy</td>
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<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>• Liver (HCV): BMI &gt; 21 kg/m², no need for combined kidney transplant, no HCV+ donor</td>
<td></td>
</tr>
</tbody>
</table>

Transplant Hope

HIV Organ Policy Equity Act

- U.S. federal law (National Organ Transplant Act of 1984) prohibited transplant of organs from HIV-infected donors
- HOPE Act November 21, 2013: Organs infected with HIV may be transplanted into individuals who are: (1) infected with such virus before receiving such an organ; and (2) participating in clinical research approved by and IRB, or if participation in research is no longer warranted, receiving a transplant under such standards and regulations
  - Uninfected may be transplanted faster because HIV-infected patient will be able to draw from a unique supply
  - Infected patients may be transplanted faster
  - More HIV patients will be referred for transplant

Most kidney transplants between people with HIV have long-term success

Recipients living with HIV show no indication of secondary infection with donor HIV strain.
Next steps: To List or not to List

- **Inactive Listing (listed status 7):** added to the list to gain time on the list but not ready for transplant (incomplete testing, eGFR increased >20%)

- **Active Listing (status 1):** testing complete and ready to receive a transplant (living or deceased donor kidney)
Wait-list and Organ Allocation for Transplant Candidates

- Can be listed at multiple centers in different regions of the country (listing is local and national)
- Evaluations are completed at each center separately – transfer records
- **Listing is according to blood type: Type O, A, B, or AB**
- Match run score: - tissue match
  - blood type
  - time on list (start of dialysis or date listed if NOD)
  - immune status (sensitization)
  - recipients age

### Region 2

<table>
<thead>
<tr>
<th>State</th>
<th>OPO</th>
<th>TXC</th>
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<tbody>
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<td>Pennsylvania</td>
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<td>1</td>
</tr>
<tr>
<td>West Virginia</td>
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</tr>
</tbody>
</table>

OPO: Organ Procurement Org.
TXC: Transplant Center
Overall Changes to Allocation System

Waiting time calculation
- Pre-registration dialysis time added

Candidate classification
- Estimated Post Transplant Survival Score (EPTS)

Kidney donor classification
- Replace SCD/ECD with Kidney Donor Profile Index (KDPI)

OPTN
Recent Allocation Component Changes

Priority for sensitized candidates
- Calculated panel reactive antibody (CPRA) sliding scale, regional/national sharing for CPRA greater than 98%

Pediatric kidney allocation
- KDPI priority

Blood type eligibility
- A2 and A2B to B compatible

OPTN
Donor allocation: Kidney Donor Risk Index (KDPI) Score

A variety of donor factors are combined to summarize the risks of graft failure after kidney transplant into a single number.

KDPI expresses the relative risk of kidney graft failure for a given donor compared to the median kidney from last year.

A donor with a KDPI of 80% has higher expected risk of graft failure than 80% of all kidney donors recovered last year.

Donor factors: age, height/weight, ethnicity, hypertension, diabetes, cause of death, serum creatinine, HCV status, DCD donor.
<table>
<thead>
<tr>
<th>Sequence A</th>
<th>Sequence B</th>
<th>Sequence C</th>
<th>Sequence D</th>
</tr>
</thead>
<tbody>
<tr>
<td>KDPI &lt;=20%</td>
<td>KDPI &gt;20% but &lt;35%</td>
<td>KDPI &gt;=35% but &lt;=85%</td>
<td>KDPI &gt;85%</td>
</tr>
<tr>
<td>Highly Sensitized 0-ABDRmm (top 20% EPTS)</td>
<td>Highly Sensitized 0-ABDRmm Prior living donor Local pediatrics Local adults Regional pediatrics Regional adults National pediatrics National adults</td>
<td>Highly Sensitized 0-ABDRmm Prior living donor Local Regional National</td>
<td>Highly Sensitized 0-ABDRmm Prior living donor Local Regional National</td>
</tr>
<tr>
<td>Prior living donor Local pediatrics Local top 20% EPTS 0-ABDRmm (all) Local (all) Regional pediatrics Regional (top 20%) Regional (all) National pediatrics National (top 20%) National (all)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Kidney Candidates Estimated Post Transplant Survival (EPTS) score:
- Time on dialysis
- Candidates age
- Prior transplant
- Diagnosis of Diabetes

LOWER SCORE = BETTER SURVIVAL

Candidate with EPTS score of 20% will be offered kidneys with KDPI scores of 20% or less

EPTS Match Classification Priority

<table>
<thead>
<tr>
<th>EPTS score used to identify two groups of patients*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Those with scores of 0-20%</td>
</tr>
<tr>
<td>Those with scores of 21-100%</td>
</tr>
</tbody>
</table>

*The top 20% EPTS is calculated based on a national pool of candidates from a certain time period.
<table>
<thead>
<tr>
<th>Sequence A</th>
<th>Sequence B</th>
<th>Sequence C</th>
<th>Sequence D</th>
</tr>
</thead>
<tbody>
<tr>
<td>KDPI ≤ 20%</td>
<td>KDPI &gt; 20% but &lt; 35%</td>
<td>KDPI ≥ 35% but ≤ 85%</td>
<td>KDPI &gt; 85%</td>
</tr>
<tr>
<td>Highly Sensitized 0-ABDRm (top 20% EPTS)</td>
<td>Highly Sensitized 0-ABDRm Prior living donor Local pediatrics</td>
<td>Highly Sensitized 0-ABDRm Prior living donor Local Regional pediatrics Regional adults National pediatrics National adults</td>
<td>Highly Sensitized 0-ABDRm Local Regional National</td>
</tr>
<tr>
<td>Prior living donor Local pediatrics</td>
<td>Local adults Regional pediatrics Regional adults National pediatrics National adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local (all) Regional pediatrics Regional (top 20%) Regional (all) National pediatrics National (top 20%) National (all)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Kidney Priority Sequencing: Based on KDPI of Donor Kidney

OPTN
EPTS & KDPI in the New System

EPTS 0-20% → Longevity Matching → KDPI 0-20%

OPTN
### CPRA Match Classification Priority

<table>
<thead>
<tr>
<th>Sequence A</th>
<th>Sequence B</th>
<th>Sequence C</th>
<th>Sequence D</th>
</tr>
</thead>
<tbody>
<tr>
<td>KDPI &lt;=20%</td>
<td>KDPI &gt;20% but &lt;=25%</td>
<td>KDPI &gt;=35% but &lt;=55%</td>
<td>KDPI &gt;85%</td>
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<tr>
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<td>Highly Sensitized</td>
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<td>Prior living donor</td>
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<td>Prior living donor</td>
<td>Local pediatric</td>
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<td>Local + Regional</td>
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<tr>
<td>Local top 20%</td>
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<td>Regional adults</td>
<td>National</td>
</tr>
<tr>
<td>EPTS</td>
<td>National pediatric</td>
<td>National adults</td>
<td></td>
</tr>
<tr>
<td>0-ABDRmm (all)</td>
<td>Regional (top 20%)</td>
<td>National</td>
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<tr>
<td>Local (all)</td>
<td>Regional (all)</td>
<td>National pediatric</td>
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</tr>
<tr>
<td>Regional pediatrics</td>
<td>National (top 20%)</td>
<td>National</td>
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</tr>
</tbody>
</table>

**CPRA score**

Based on unacceptable antigens listed for the candidate

Used to calculate how many donors will be incompatible with the candidate

Ranges from 0-100%
What is PRA?
Panel Reactive Antibodies

- In order to determine whether or not a patient already has any specific HLA antibodies, a lab specialist will test a patient’s blood (serum) against lymphocytes (white blood cells) obtained from a panel of about 100 blood donors.
- These 100 donors represent the potential HLA makeup for a donor from that area. Percent PRA (%PRA) is the number of reactions within that panel.
- If a candidate’s serum does not react with any of the donor samples, the candidate is not sensitized and has a PRA of 0.
- If a candidate’s serum reacts in 80 out of 100 samples, the patient has a PRA of 80%. Theoretically, that means that if a donor becomes available from that donor pool, the recipient would experience acute rejection 8 out of 10 times.
### Kidney Allocation for Donors with KDI 3546 - 85% MATCH RESULTS

**ECG Donor Match**

<table>
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<tr>
<th>Match ID:</th>
<th># Per Page:</th>
<th>Hide empty classifications</th>
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#### 100% CPA, 0-ABO mismatch, Local, blood type identical or permissible

<table>
<thead>
<tr>
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<th>Center</th>
<th>Name</th>
<th>Age</th>
<th>ABO</th>
<th>CPRA</th>
<th>Score</th>
<th>Mismatch</th>
<th>Height</th>
<th>Weight</th>
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<th>Dialysis Time</th>
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#### 100% CPA, 0-ABO mismatch, Regional, blood type identical or permissible

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#### 99% CPA, 0-ABO mismatch, Local, blood type identical or permissible

<table>
<thead>
<tr>
<th>Seq#</th>
<th>Center</th>
<th>Name</th>
<th>Age</th>
<th>ABO</th>
<th>CPRA</th>
<th>Score</th>
<th>Mismatch</th>
<th>Height</th>
<th>Weight</th>
<th>BHF</th>
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<td></td>
<td></td>
<td></td>
<td>X 803</td>
</tr>
</tbody>
</table>
Kidney from a person who died

- Kidney usually lasts 10–15 years.
- Kidney patients usually wait many years to get a transplant.
- Kidney patients spend more time on dialysis, which can lead to more health problems.
- Kidney patients don’t know when a kidney may become available.

Kidney from a living donor

- Kidney lasts longer—usually 15–20 years.
- Transplant can happen within 1 year if a matching donor is found.
- Kidney patients spend less time on dialysis, which means fewer health problems.
- Surgery can be scheduled at a time that’s best for the donor and kidney patient.
Types of Deceased Donor Kidneys

- **Brain-dead donors**: anoxic brain injury from the following, and declared brain dead by 2 separate examinations
  1. Severe head trauma
  2. Cerebrovascular injury
  3. Prolonged cardiac resuscitation or asphyxia
  4. Tumors brain surgery

- **Non-brain dead donors - DCD** (Donation after Circulatory Death)
  Persistent brain stem function (breathing, gag reflex) but no cortical brain flow
  Unable to be declared brain dead -> removal from life support in operating room
Phases of Ischemic Injuries for Organ Donation After Circulatory Death and After Brain Death
Use of Organs with Increased Risk of Infections for Transplantation

Public Comment Proposal

Guidance on Explaining Risk Related to Use of U.S. PHS Increased Risk Donor Organs When Considering Organ Offers

Table 2: Comparison of 1994 CDC High Risk and 2013 U.S. PHS Increased Risk Guidelines

<table>
<thead>
<tr>
<th>1994 Guidelines</th>
<th>2013 Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSM* in the preceding 5 years</td>
<td>MSM in the preceding 12 months</td>
</tr>
<tr>
<td>Non-medical injection drug use in preceding 5 years</td>
<td>Non-medical injection drug use in preceding 12 months</td>
</tr>
<tr>
<td>Sex in exchange for money/drugs in preceding 5 years</td>
<td>People who have had sex in exchange for money or drugs in the preceding 12 months</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inmates of correctional systems</strong></td>
<td>People who have been in lockup, jail, prison, or a juvenile correctional facility for more than 72 consecutive hours in the preceding 12 months</td>
</tr>
<tr>
<td><strong>Persons whose history or physical, exam, medical records, or laboratory reports indicate sexually transmitted disease</strong></td>
<td>People who have been newly diagnosed with, or have been treated for, syphilis, gonorrhea, Chlamydia, or genital ulcers in the preceding 12 months</td>
</tr>
<tr>
<td><strong>Not listed</strong></td>
<td>People who have been on hemodialysis in the preceding 12 months (hepatitis C only)</td>
</tr>
</tbody>
</table>

Comparison of Window Period Days (NAT Vs Serology Tests)

Table 3: Estimated risk of window period infection (per 10,000 donors)

<table>
<thead>
<tr>
<th>Risk per 10,000 donors</th>
<th>HIV ELISA</th>
<th>HIV NAT</th>
<th>HCV ELISA</th>
<th>HCV NAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV drug users</td>
<td>12.1 (0.12%)</td>
<td>4.9 (&lt;0.1%)</td>
<td>300.5 (3%)</td>
<td>32.4 (0.32%)</td>
</tr>
<tr>
<td>Commercial sex worker</td>
<td>6.6 (&lt;0.1%)</td>
<td>2.7 (&lt;0.1%)</td>
<td>114.9 (1.2%)</td>
<td>12.3 (0.12%)</td>
</tr>
<tr>
<td>Blood product exposure</td>
<td>1.5 (&lt;0.1%)</td>
<td>0.6 (&lt;0.1%)</td>
<td>4 (&lt;0.1%)</td>
<td>0.4 (&lt;0.1%)</td>
</tr>
</tbody>
</table>
Use of Hepatitis C Positive Kidneys into Negative Recipients

Trends in Utilization and One-Year Outcomes with Transplantation of HCV-Viremic Kidneys

<table>
<thead>
<tr>
<th>Methods</th>
<th>Utilization</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis of National Transplant Registry</td>
<td>HCV-Viremic Kidneys between January - March 2019</td>
<td>1:2 Matched Analysis</td>
</tr>
<tr>
<td>Deceased Donor Kidney Transplants (4/1/15 – 3/31/19)</td>
<td>200 Transplanted</td>
<td>HCV-Viremic</td>
</tr>
<tr>
<td></td>
<td>69 Transplanted</td>
<td>Non-Viremic</td>
</tr>
<tr>
<td>HCV-Viremic</td>
<td>Uninfected Recipient</td>
<td>Similar Quality</td>
</tr>
<tr>
<td></td>
<td>HCV-Seropositive Recipient</td>
<td>1-year GFR (ml/min)</td>
</tr>
<tr>
<td>Non-Viremic</td>
<td>66.3</td>
<td>67.1</td>
</tr>
</tbody>
</table>

CONCLUSION Most HCV-Viremic kidneys are now transplanted into uninfected recipients. HCV-Viremic kidneys have similar function compared to nearly-identical uninfected kidneys at the end of 1-year. HCV-Viremic kidneys are a valuable resource for transplantation.

doi: 10.1681/jASN.2019050462
Informed Patient Consent

- Choice to have procedure – Kidney Transplantation
- If no living donor, then listing for deceased donor kidney may take 5-8 years depending on blood type
- Can be removed from the list if irreversible complications occur
- Will be assessed every 6-12 months to determine suitability for transplant
- Transplantation is not a CURE, but will improve longevity and quality of life
- Aware of the complications of surgery:
  - bleeding
  - infection
  - pneumonia
  - blood clots
  - kidney non function
Case Presentation - #1

- 65 y.o M. Aquasan has hx diabetes and hypertension for 25 years
- Stated hemodialysis in 2010
- History of heart disease, had a cardiac bypass surgery in 2015, and subsequently 2 cardiac stents placed
- Obese, with BMI of 40
- Does very little outside of going to dialysis
- No living donors

Case Presentation - #1

Estimated EPTS is 96%

► Workup needed:
  1. Heart assessment – will he survive another 3-5 years
  2. Medically suitable – risks of cancer, peripheral vascular disease
  3. Obesity – weight loss required
  4. Social support – who will assist him?

*More transplants are going to long dialysis duration recipients.*

*Fewer preemptive (before dialysis) transplants.*
Patient Survival by Recipient EPTS Score

Kaplan-Meier Patient Survival Curves by EPTS Score
Deceased Donor, Adult, Solitary Kidney Transplants from 2003-2010
Based on OPTN data as of Feb 7, 2014
Case Presentation # 2

- 23 y.o M. Bryan with CRD not yet on dialysis
- History of proteinuria as a child and was diagnosed with membrano-proliferative glomerulonephritis (MPGN) by biopsy
- History of steroid use with weight gain, and eGFR is 18%.
- Brother wants to be a donor
Living Kidney Donation

- First Successful Living Kidney Donation 1952

Why is a kidney from a living donor better?

- Shorter wait time (Months, not years!)
- Scheduled surgery (Recovery is easier!)
- Kidney lasts \(2x\) as long
- Great kidney (Best match!)
- Longer success
- Shortens waitlist (Removes person from list!)

Living donor

- Family members
- Spouse
- Friend
Patients will die while on dialysis

Statistics show...

6 out of 10 patients will die while on dialysis within 5 years.

Source: USRDS 2015; unadjusted & within 5 years, 40% survival on dialysis.
Living Donor Assessment

Health Matters!
- Evaluate for risks of kidney disease
- Assess family history
- Determine compatibility
- Anatomy: option for long term health with remaining kidney
- Medical health improvement plan
Paired Living Donation – option for non-compatible pairs
Medical Workup

Donors declined due to:

- Age
- One kidney or horse shoe kidney
- Undiagnosed medical issues i.e. diabetes, hypertension, cancer
- Bilateral kidney stones
- Anatomy of the kidney: size, multiple arteries
- Psychological issues
Anatomy of Donor Kidney
Immediate/Surgical Risks

The following is a comprehensive list of complications that may occur surrounding the surgery:

- Pain
- Infection (such as pneumonia or wound infection)
- Blood clot
- Reaction to anesthesia
- Death (Worldwide mortality rate for living kidney donors is 0.03% to 0.06%)
- Conversion to open nephrectomy
- Need for re-operation (such as for bleeding)
- Re-admission to hospital
- Hernia
- Intestinal obstruction
- Testicular swelling and discomfort (male donors)
Living Donor Kidney Surgery
Hand Assisted Technique

Giving the gift – The donation process
Living Donor Video

https://www.youtube.com/embed/FfrNR05v1zU
Kidney removal and preparation
Strategies for increasing access to Living Donor Kidney Transplantation

<table>
<thead>
<tr>
<th>Education and outreach</th>
<th>Removal of disincentives</th>
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<tbody>
<tr>
<td><strong>Target audiences</strong></td>
<td><strong>Uncompensated costs for donors</strong></td>
</tr>
<tr>
<td>• Patients with kidney failure</td>
<td>• Travel</td>
</tr>
<tr>
<td>• Potential living donors</td>
<td>• Medications</td>
</tr>
<tr>
<td>• Social networks</td>
<td>• Lost time from work</td>
</tr>
<tr>
<td>• General public</td>
<td>• Dependent care</td>
</tr>
<tr>
<td><strong>Research needed to optimize</strong></td>
<td><strong>Research needs</strong></td>
</tr>
<tr>
<td>• Frequency</td>
<td>• Develop and assess mechanisms for achieving cost neutrality</td>
</tr>
<tr>
<td>• Content</td>
<td><strong>Improving safety and defensibility of donor selection</strong></td>
</tr>
<tr>
<td>• Delivery modalities</td>
<td><strong>Transparency</strong></td>
</tr>
<tr>
<td></td>
<td>• Incomplete risk assessment and disclosure may reduce public</td>
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<tr>
<td></td>
<td>trust in the donation process</td>
</tr>
<tr>
<td></td>
<td><strong>Research needed to optimize</strong></td>
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<tr>
<td></td>
<td>• Scope and precision of long-term risk prediction</td>
</tr>
<tr>
<td></td>
<td>• Methods for risk communication</td>
</tr>
</tbody>
</table>

**Evaluation efficiency**

**Complex donor evaluation process**

• Delays may discourage donors
• Delays may lead to recipient starting dialysis before transplant

**Research needs**

• Define efficiency in the donor evaluation
• Develop standards to address modifiable process delays
Honor Walk

Honor Deceased donors and family members
Post-Operative Phase

Living Donor
- One to 4 days in hospital
- Out of bed and ambulating asap
- Pain control management
- Bowel regimen
- Return to work varies

Transplant Recipient
- 4-5 day hospital stay
- Transplant anti-rejection medications
- Pain control management
- Bowel regimen
- Assess for urine output and repeat ultrasound
- May go home with the Foley catheter
- Assess kidney function – possible need for dialysis
Organ Donation Saves Lives

Statistics at a Glance

113,000+
Number of men, women and children on the national transplant waiting list as of July 2019.

36,528
transplants were performed in 2018.**

20
people die each day waiting for a transplant.

We All Need to Register. Here’s Why:

95%
of U.S. adults support organ donation
but only

58%
are actually signed up as donors.

every 10 minutes
another person is added to the waiting list.

only 3 in 1,000
people die in a way that allows for organ donation.
Living Kidney Donation

DO YOU HAVE A KIDNEY CHAMPION?
Thank you