Foundational Concepts of Kidney Paired Donation

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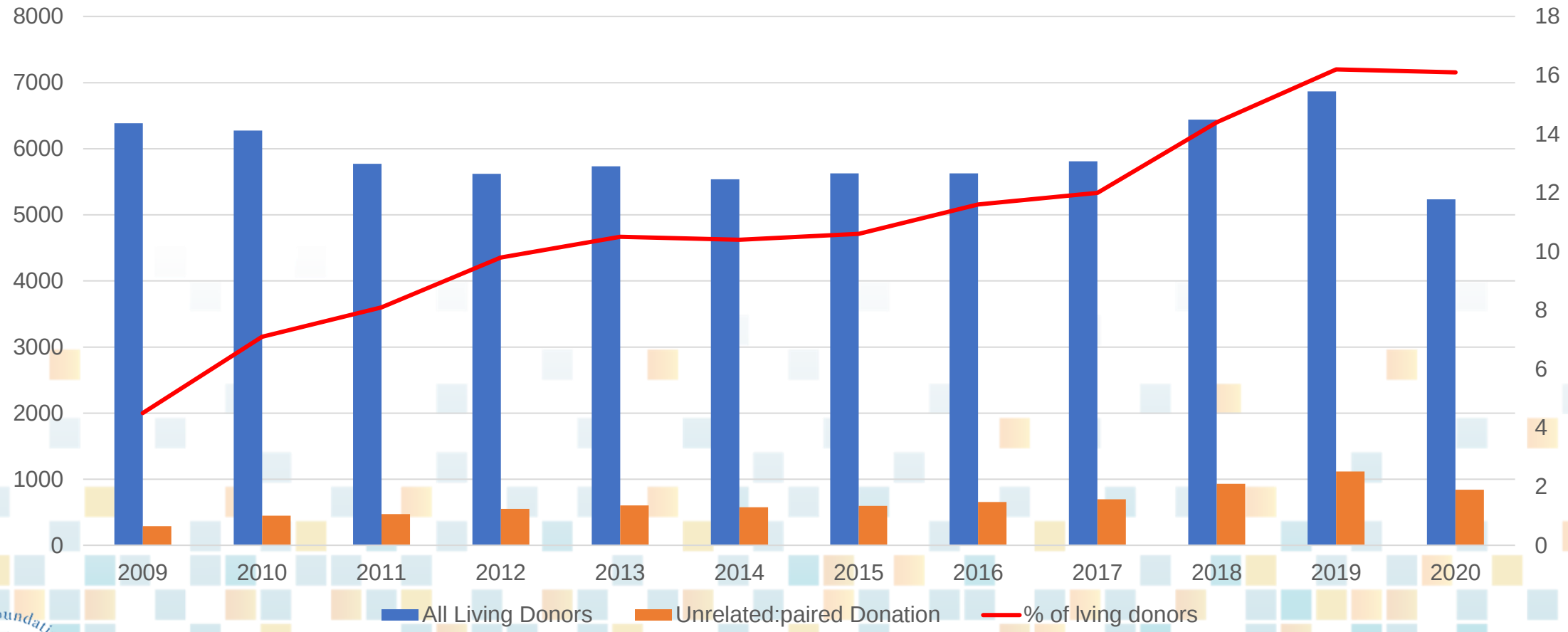
Disclosures

I have nothing to disclose

Objectives

- Gain knowledge of the state of the art of KPD in the United States
- Describe the decision algorithm to determine which patients and donors would benefit from KPD.
- List 10 foundational concepts that will lead to success with KPD.

Growth of KPD transplants as compared to all Living Donor transplants



Based on OPTN data as of 3/38/21

Milestones in KPD

1986: Idea of international KPD proposed by Felix Rappaport, MD

2000: First 2 way KPD at Rhode Island Hospital

2001: First 2 way KPD at Johns Hopkins Hospital (JHH)

2003: First 3 way KPD at JHH

2004: Non-directed donors first used to begin domino exchanges.

First KPD where recipient required desensitization prior to transplant

First domino KPD performed with listed patients at end of domino

2005: Optimization theory applied to KPD matching software.

2006: First sequential vs. simultaneous KPD performed

First 7 way KPD performed

Regional KPD programs set up: APD, NCRC, NEPKE

2007: First KPD performed with shipping of living donor kidney

First NEAD chain performed, utilizing 'bridge' donor

Congress passes legislation exempting KPD from NOTA which states it is illegal to transfer a human organ for 'valuable consideration'.

NKR established

2008: First 'Rescue' KPD performed

2009: First time donor trusted to be 'bridge' donor and reneged

2010: UNOS KPD Program instituted

2012: First Compatible Pair KPD

KPD in the United States

- National Programs
  - Alliance for Paired Donation: 2006; 70 transplant centers
  - National Kidney Registry: 2009; 100 transplant centers
  - UNOS OPTN: 2010; 64 transplant centers

- Center-Specific Programs: (examples)
  - Texas Methodist, San Antonio
  - Mayo Clinic : Minnesota, Arizona, Florida
  - St. Barnabas Hospital, NJ
  - Centers will participate with all programs
  - Centers will join small consortiums

KPD Glossary

- Conventional
- Unconventional
- Domino
- NEAD
- Open Chain
- Closed Chain
- Paired Donation
- Daisy Chain
- Compatible Pair Donation
- Advanced Donor
- Voucher Donor
- Bridge Donor

I’m so confused!

Which recipient/donor pairs can benefit from KPD?

Must have living donor.

1. The patient who is HLAi with their intended living donor
   How sensitized is the patient:

   a) Is the patient 100% with a broad range of low level DSA or narrow range with high level of just a couple of antibodies?

   b) Waiting for a living donor in KPD provides time to properly desensitize the patient.

   c) How easy/difficult would it be to desensitize the patient?

100%

The actual CPRA provided to a candidate is calculated by UNet based solely on the unacceptable antigens that are entered by the transplant center for that candidate. The value produced by the CPRA Calculator on this Web site is for your informational use only.

A: 2, 3, 11, 23, 25, 26, 29, 30, 31, 32, 33, 34, 43, 66, 68, 69, 74

7, 13, 18, 27, 35, 37, 42, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57,
B: 58, 60, 61, 62, 63, 67, 71, 72, 73, 75, 76, 77, 78, 81, 82

BW:

C:

DR: 1, 10, 103

DRW: 53

DQB1:

Back

CPRA value used for allocation per OPTN policy: 100
Detailed CPRA value: 0.9950

100%

The actual CPRA provided to a candidate is calculated by UNet based solely on the unacceptable antigens that are entered by the transplant center for that candidate. The value produced by the CPRA Calculator on this Web site is for your informational use only.

A: 1, 2, 3, 9, 11, 19, 26, 28, 34, 36, 43, 66, 80

7, 8, 12, 13, 16, 17, 21, 22, 27, 37, 40, 41, 42, 47, 48, 59, 67, 70, 76, 81, 82,
B: 2708

BW:

C:

DR: 1, 4, 7, 8, 9, 10, 103

DRW: 52, 53

DQB1: 2, 3, 4, 5

Back

CPRA value used for allocation per OPTN policy: 100
Detailed CPRA value: 1.0000

Which recipient/donor pairs can benefit from KPD

2. ABOi pairs:

A. Favorable HLA (homozygous, common antigens)and donor ABO ‘O’

Unfavorable:

Recipient ‘O’/ Donor ‘A’
Recipient ‘O’/ Donor ‘B’
Recipient ‘O’/ Donor ‘AB’
Any recipient ABO/ Donor ‘AB’

B. Favorable age:

Unfavorable: Donor >60 and ABO ‘A’

Which recipient/donor pairs can benefit from KPD

3. Compatible Pairs

Advantages:

a. Better age donor
b. Better HLA match
c. Donor size/kidney size
d. Altruistic benefit of helping more people be transplanted
e. Timing with distance between donating and transplantation 

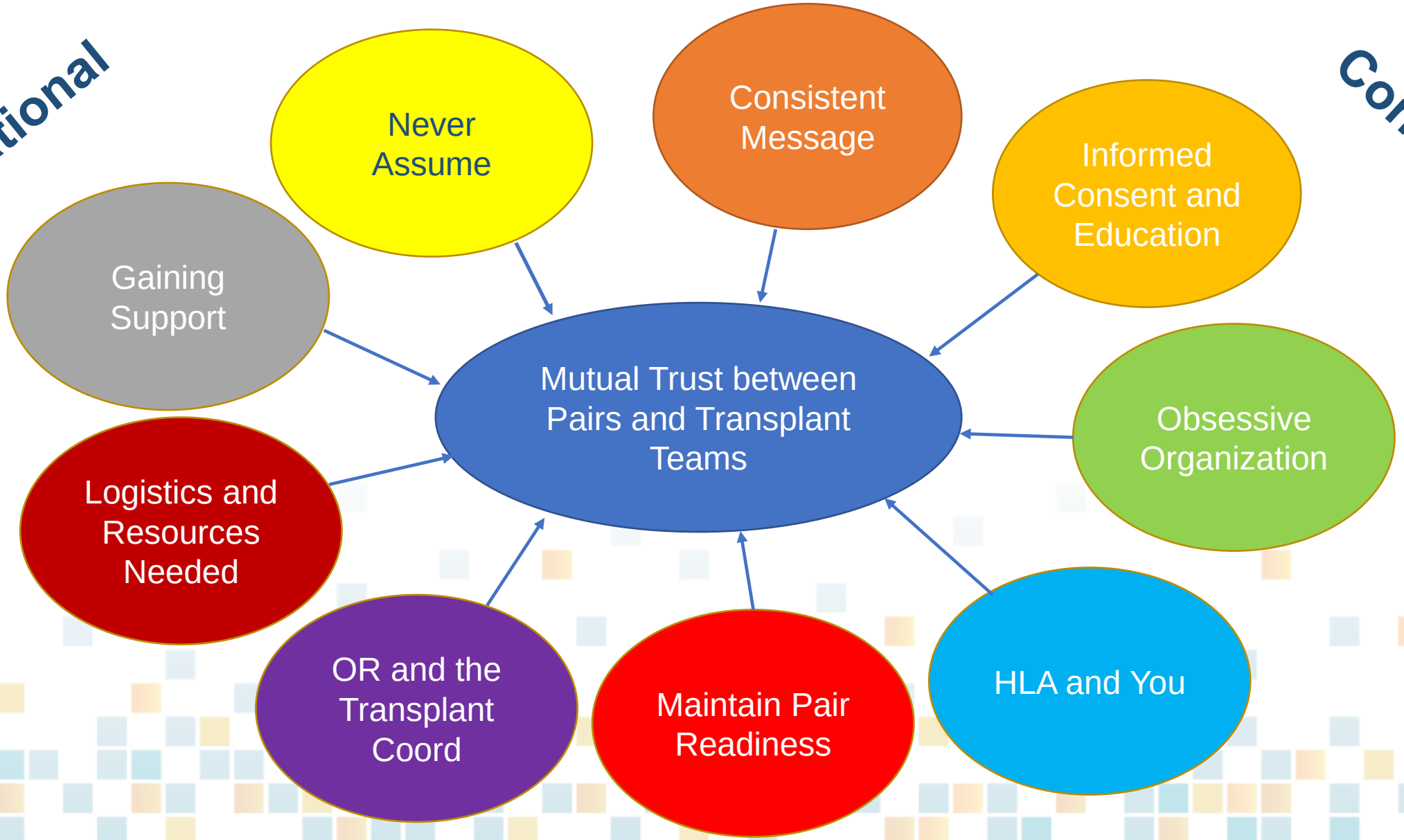
Disadvantages:

a. Timing of surgery uncertain. Pairs can set deadlines
b. Complexity of exchange → may lead to increased chance of cancellation.

Which recipient/donor pairs can benefit from KPD

- Living donors who want to maximize their gift
- Living donors who want to generate a voucher for their loved ones in future need of a kidney transplant

Foundational Concepts



Mutual Trust between Pairs and Transplant Team

Trust

"Acceptance of a vulnerable situation in which the truster believes that the trustee will act in the truster's best interests." Thom D, Hall M, Pawlson L. Measuring patients' trust in physicians when assessing quality of care. Health Affairs, 23;4, 124-132.

Consistent Message

- “I was a little apprehensive, but in the end I trusted and believed in the medical staff …in dealing with Hopkins over the past several yrs I knew I was in good hands.” (recipient #3, 9 mo. post-txp)
- “Trust came in the communication, you never lied, you always followed up and were clear. My family was never spoken to in terms we didn't understand, nor were questions seen as a sign of stupidity, but seen as courage. Trust comes in all the intangibles about the people/patients and relationships that all members of your team excel at.” (Donor #2, 1 yr after donation)

Consistent Message

- No confusion; entire team agrees to decision to enter exchange
- Always move forwar equal donor as intended donor
- Diverting to different p ter one plan set in motion chips away at trust between patients and transplant team

Consistent Message

Consistent Message

- Uncertainty about other participants (anonymity)

- Managing patient expectations: emotional roller-coaster of failed exchanges, longer than expected wait for transplant.

Informed Consent and Patient Education

EDUCATION for KPD D RECIPIENTS

Informed Consent and Education

- Disclosure of Me ated to KPD.
- Level of difficulty
- Shipment of living
- Non-directed donors
- Bridge donors
- Logistics
- Donor equality
- Anonymity between exchange donors and recipients
- Possible untoward events, failed matches
- Commitment of pairs to exchange

Obsessive Organization

Obsessive Organization

ESSENTIAL

Kidney Paired Donation Donor OR Checklist

Take the following items to the OR:

- ☐ Verification Form
- ☐ TIEDI Form
- ☐ KPD OR Recovery Form
- ☐ 2 Donor ABO's
- ☐ 2 Recipient ABO's
- ☐ Logistics Information with contacts of other center
- ☐ Blood tubes requested by recipient center
- ☐ GPS
- ☐ Box labels (red, black and white)
- ☐ Donor Chart. Include pre-op NAT testing and lab work

Match Offer:

All steps below should be occurring almost simultaneously as soon as possible after offer.

- ☐ Review match offer
- ☐ Did we already accept in pre-select? If not, review immediately!
- ☐ Email HLA lab for virtual XM (point person for KPD)
- ☐ Email surgeon for donor info review and CT review.
- ☐ Check Living Donor OR schedule to see if date looks available.
- ☐ Check with assistant to make sure donor and recipient surgeons are available on target date.
- ☐ If the steps above are OK, then enter acceptance into KPD match offer site.
- ☐ If the steps above are NOT OK, ie. OR Date, donor quality not acceptable (hoping not as you pre-selected this donor), hold off on declining the match offer til last possible

End of Chain Donors

How to choose the recipient: this can be very time-consuming

- ☐ Send HLA of end of chain donor to tissue typing and request a 'match run' be done so a recipient can be chosen
- ☐ Once you have the list of potential recipients, send to surgeon and on-call team for their review and to give you a list of who to get virtual crossmatches for.
- ☐ Send list of patient to get a virtual XM to tissue typing.
- ☐ Once the virtual crossmatches are back, send to surgeon and on-call coordinator. on-call coordinator give you a report on each of the highlighted potential recipients to see who is ready and in what priority you should contact them.
- ☐ You will usually have about 5 patients to work with. Begin by calling #1 and work through the list. You want to make sure the recipient is ready to go to the OR.
  - Evaluation testing updated and acceptable
  - Nephrologist in agreement
  - Any current health issues, ie. Infections, admissions, etc.
  - Confirm any insurance changes, nephrologist changes, etc.
- ☐ Once the recipient has been decided, follow the usual process to prepare a recipient for a living donor kidney transplant

Your organizational skills will prevent swap failures and miscommunication which can chip away at your pair's trust in you. 

Immunogenetics Lab and You

HLA and You

- Review all pairs at team meeting
  - Determine parameters for DSA
- Obtain fresh blood sample for most up-to-date antibody testing prior to entering pair
- eptable antigens from tics lab and update quarterly
- all match offers with HLA lab prior to accepting
- Be aware of allele level mismatch-makes acceptance very difficult

Maintain Pair Readiness

Entering Pair into KPD d[illegible]

Maintain Pair Readiness

Make sure both D[illegible]ent are cleared for

- Set Parameters for donor acceptance:
  1. Age
  2. HLA match/mismatch
  3. # of arteries
  4. Laterality of donor kidney
  5. Accept +HepBCAb?
  6. DSA to include?

Maintain Pair Readiness

DONOR

- Donor Information
  - Obsessive organization
  - Complete charts organized by subject
- Donor Evaluation Date: update testing as needed
- Pre-listing ABO verification #1 and #2, UNOS Donor ID obtained.
- Determine donor’s timeline, especially that of NDD
- All Donor consents and Educational documents completed

Maintain Pair Readiness

RECIPIENT

- Activate on deceased donor list
- Consents completed and documented
- Unacceptable antigens obtained and reviewed
- Update antibody sample
- ABO verification #1 and #2
- Alert recipient about KPD registration for readiness

Maintain Pair Readiness

- Pair predicted to be Easy to Match?

Do Not Activate until completely ready! 

Maintain Pair Readiness

Once entered into KPD databases:

Recipient:

Similar to deceased donor waitlist management except more frequently, at least quarterly.

- Demographics
- Insurance
- HLA antibody sample quarterly
- Sensitizing events: blood transfusions, infections, surgeries, pregnancies, etc.
- Determine continued interest in KPD and readiness for transplant.

Maintain Pair Readiness

Donor

- Annual Updates: labs, ILDA, Social Worker
- Determine continued interest and availability for donation
- If Bridge Donor: determine that donor still wishes to wait every 3 months and document

Maintain Pair Readiness

Pre-Select Status of Donors up-to-date

- Various KPD registries have different requirements for Pre-Select of donors

  - **UNOS KPD**: review at least once/week
    - Recipients with PRA >90 must have all pre-selects reviewed or they will not be included in a match offer
    - Recipients with PRA < 90 should have all pre-selects reviewed but it is not necessary in order to be matched
    - Height, Weight, GFR, HLA, Sex

Maintain Pair Readiness

Pre-Select Status of Donors up-to-date

- **NKR:** review on a daily basis
  - Transplant consequences
  - Financial consequences
  - Need to maintain % of pre-select status
  - Always Review parameters for pre-selecting a donor prior to entering pair and on a routine basis.

OR and the Transplant Coordinator

Checklist for duties in the OR during Hopkins KPD donor surgery:

- ☐ Let LLF coordinator know you are there
- ☐ Review UNOS ID # and laterality with I… …rware container is labeled
- ☐ Complete the KPD OR Recovery Form… …t, anatomy of kidney
- ☐ Complete Living Donor Label verification … …lator and OR circulator nurse
- ☐ Print the ABO Verification Form from EPIC Report: this is done in the OR
- ☐ Label donor blood tubes with NKR Alias and 'blood' if not on the tubes
- ☐ Fill out Labels from LLF: Large lavender box label and small label that is attached to the outside bag containing kidney.

OR and the Transplant Coord

OR and the Transplant Coordinator

Checklist for duties in the OR during Hopkins KPD donor surgery:

- ☐ Give GPS device, blood tubes, donor chart with all OR documentation to LLF coordinator to pack in box

- ☐ Make copies of forms as follows:
  - ABO verification Form: one to go with the chart in kidney box, one to come back to Transplant Office
  - KPD OR Recovery Form: One to go with the chart in kidney box, one to come back to Office.
  - Living Donor Label Verification Form: one to go with chart in kidney box, one to the LLF coordinator, one to come back to office

- ☑ Transfer kidney to courier. Courier must have the UNOS ID # of our donor in order to release kidney to them. Have courier sign out the kidney in the Transplant Organ/Vessel Release Log at OR desk on Zayed 3.

- ☐ Once back in office, scan copy of KPD OR Recovery Form to Recipient Coordinator. Request that once they know the “end of cold time” they complete the form and email or fax back to us.

Logistics and Resources Needed

Special Considerations

1. Logistics:
   - Exchange Registry
   - Hospital team
   - Procurement team
2. Recipient beginning desensitization therapy
3. Abnormal lab values and/or diagnostic testing on donor or recipient at pre-op.
4. Encourage donor surgeon to talk with recipient surgeon BEFORE day of exchange to discuss complicated anatomy

Logistics and Resources Needed

Special considerations:

5. Packaging and Shipping requirements
6. Coordinating multiple exchanges at same time
7. Communication between Transplant Centers

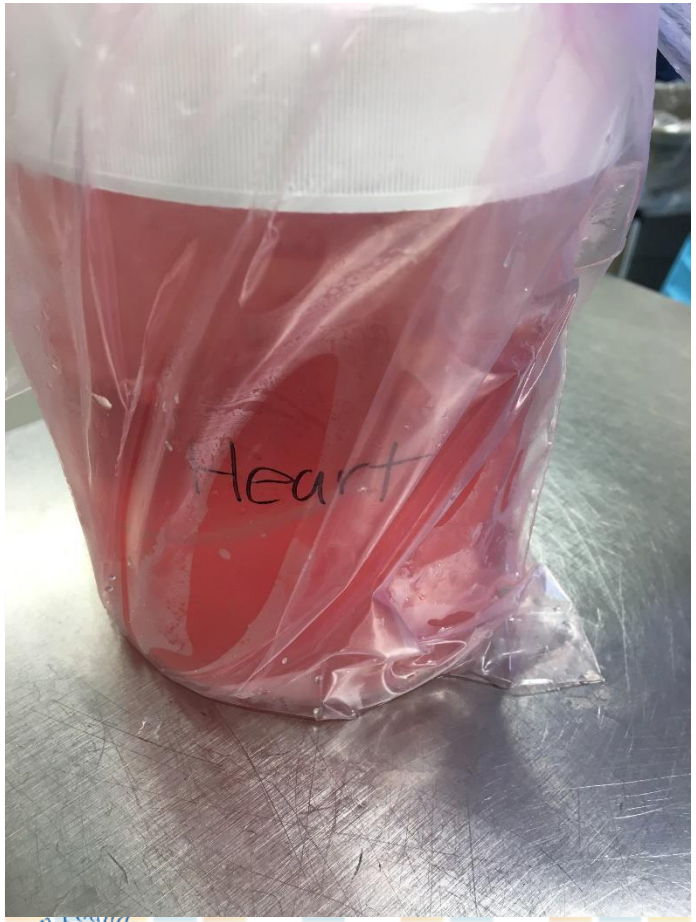
Packaging and Shipping Requirements

Unique to external exchanges:

1. Follow UNOS Policy 16.1 to 16.7. for packaging, shipping and labeling of living donor organs
2. Vigilance when more than one organ is being packaged and shipped at your center
3. Recommend taking pictures of kidney, labeled box, items packaged into box.
4. Recommend transplant coordinator intimately familiar with exchange to be present in OR when packaging and labeling of kidney is done.

Quality Control Essential with External Exchanges

1



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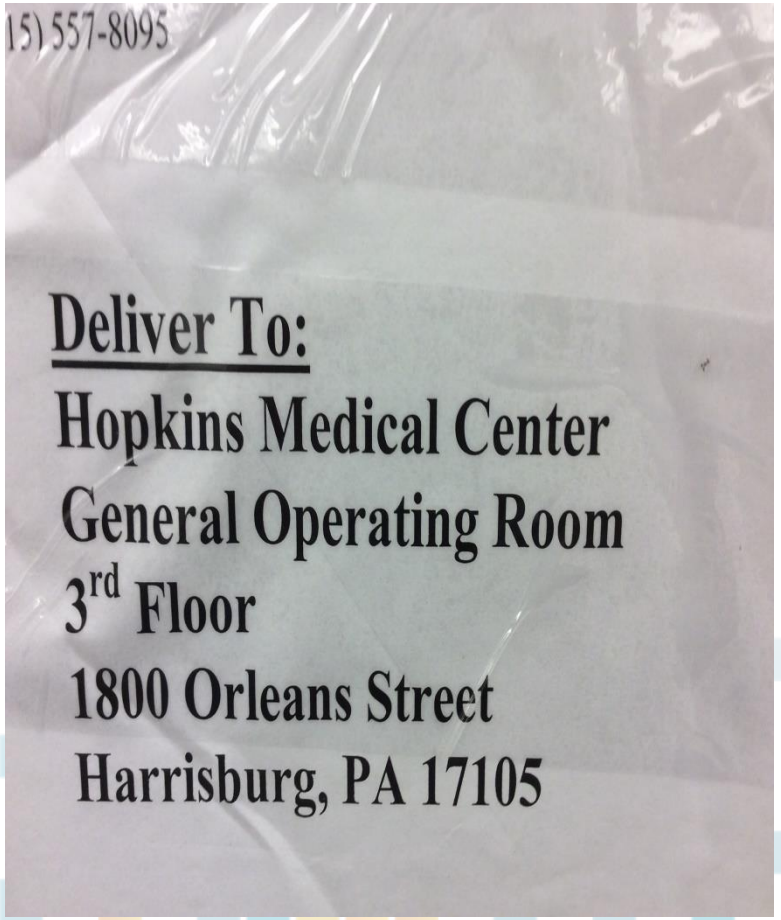
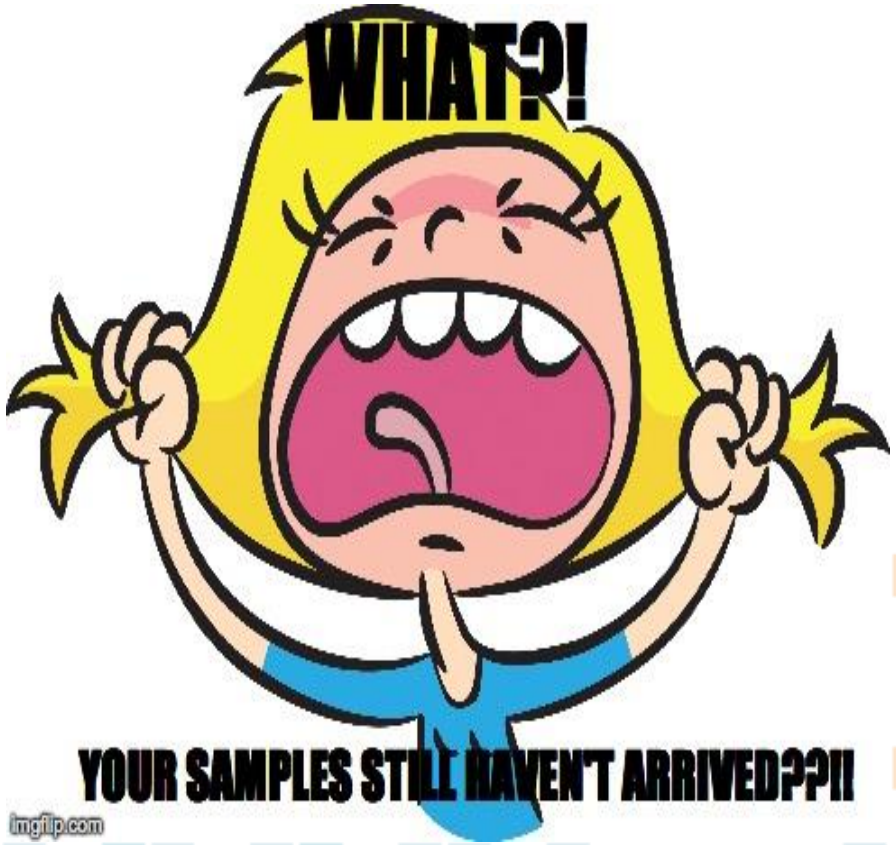
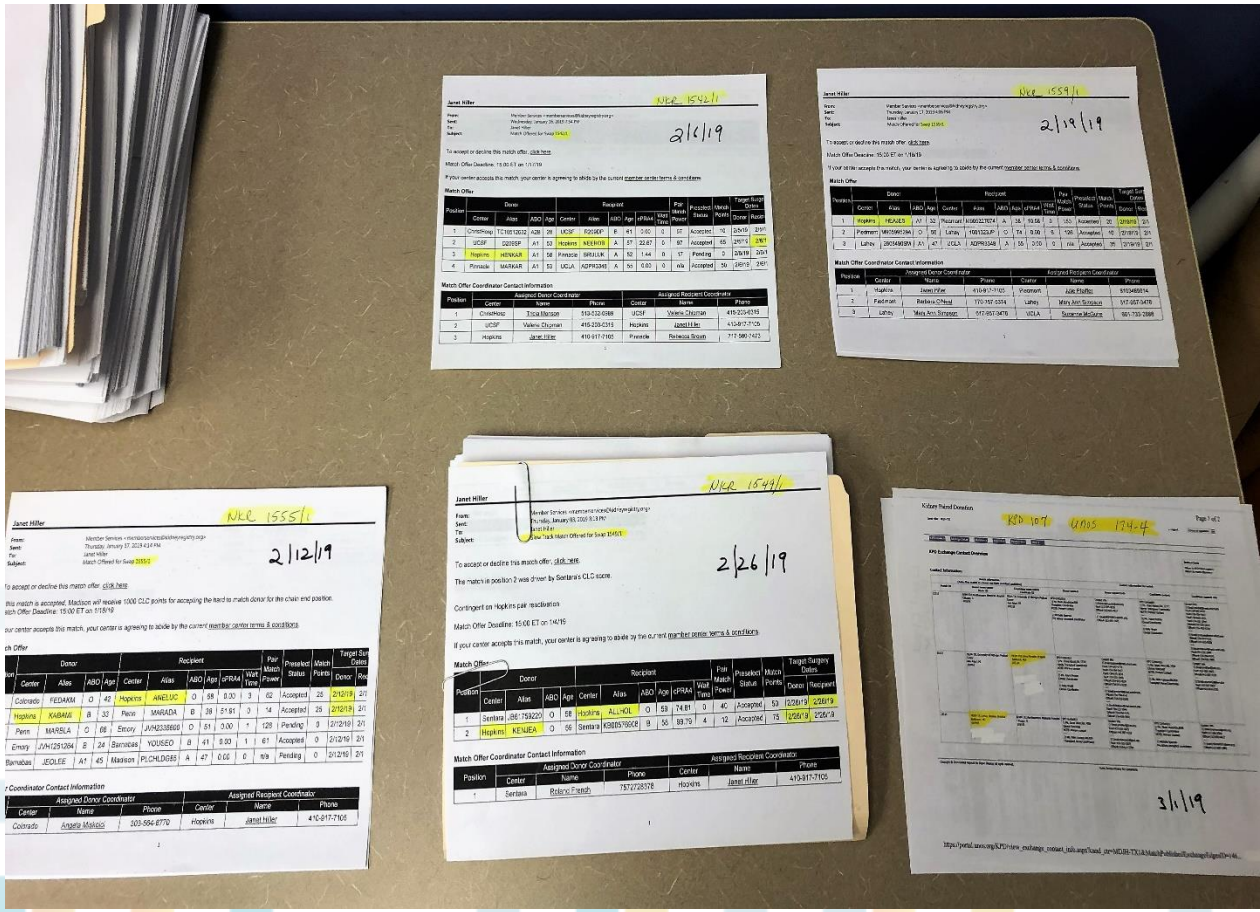


Coordinating Multiple Exchanges at Once





Coordinating multiple exchanges at the same time

Suggestions for success

1. Are your pairs easy to match? If so, consider entering them a week apart from each other so offers are not incoming at same time.
2. Display exchange scenario visually with important deadlines highlighted and made very apparent.
3. Set reminders on phone and computer

Coordinating multiple exchanges at the same time

Suggestions for success

5. Be explicit with members of team involved in decision making and crucial information needed.
6. Cross train coordinators for assistance
7. Be extremely specific with ancillary departments-don't assume anything!!! 
8. Use checklists and keep them up-to-date

Interactions between Transplant Centers

- Surgeon to surgeon trust and communication 

- Policies for communication vary from center to center:

  Donors: some discouraged by lack of contact from recipient, others by too much contact! Finding the balance is difficult.

Gaining Interdepartmental and Team Support

Find your Champion/Promoter:

Administr… …lephrologist

- Educate yourself
- Have process maps: if this …, we do this….
- Have clear data for outcomes
- Know who to go to in times of need

Gaining Interdepartmental and Team Support

- Have a face to face contact with each department to describe your needs
- Be helpful: “I’ll do that for you” It won’t last forever…
- Be physically present
- Be enthusiastic
- Have diagrams, pictures

Gaining Interdepartmental and Team Support

Visibility

- Staff Meetings
- QAPI Meetings
- Outcome Meetings
- Lunch and Learn
- Living Donor Meetings
- Faculty Meetings

If all else fails, provide food!

NEVER ASSUME!!

- Leads to failed exchange
- Leads to disappointed pients

Never Assume

- Communicate often and t
- Request and receive acknowledgement of emails

- Ask questions!

Beware of obstacles preventing good outcomes

- Pairs who want to space out their surgeries by time, such as 2 weeks. Care to prevent reneging.
- Diverting to different plan of care after one plan set in motion undermines trust between patients and transplant team
- Your organizational skills will prevent swap failures and miscommunication both of which erodes your pair's trust in you
- Do Not Activate until completely ready!

- Determine patient continued interest in KPD and readiness for transplant
- Be extremely specific with ancillary departments-don't assume anything!!!
- Surgeon to surgeon trust and communication
- Know who to go to in times of need

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