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FEBRUARY 25-27, 2016 • PHOENIX, ARIZONA

Conflict of Interest Disclosure

- I have no relevant financial relationships to disclose.
- No off-label use discussion

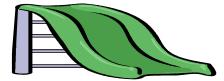


All of the data presented is from Methodist Specialty and Transplant Hospital, San Antonio or is data from UNOS



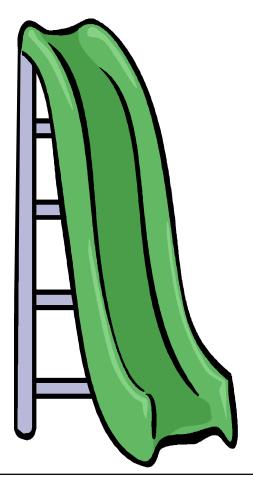
What is the climb:slide ratio for kidney paired donation???

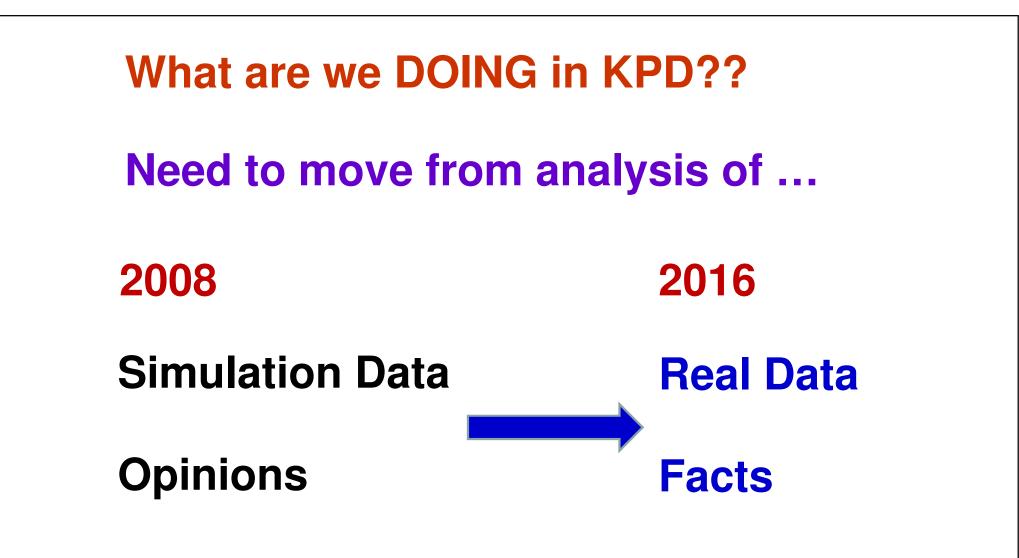


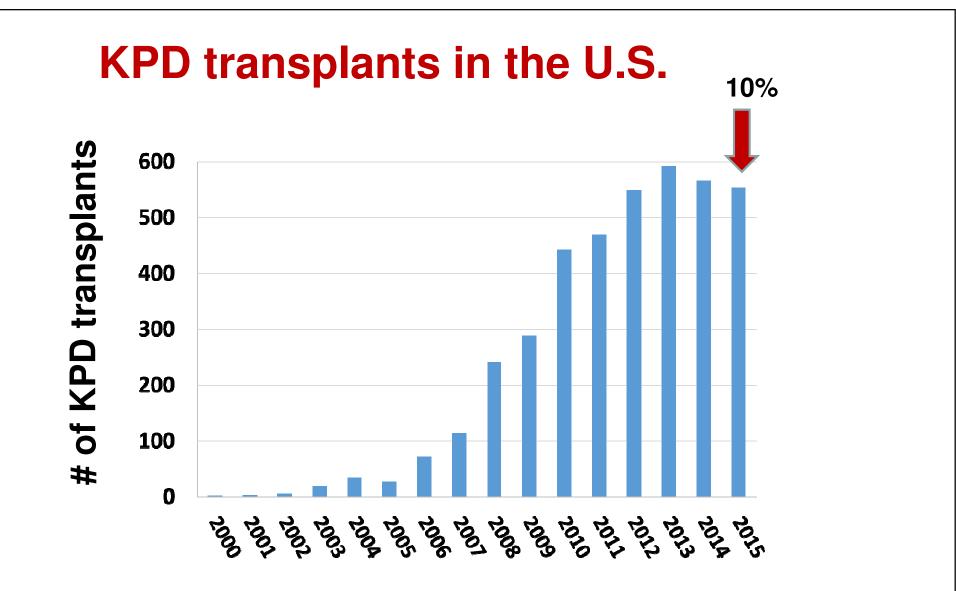


What is the climb:slide ratio for kidney paired donation???









KPD transplants in the United States

KPD transplants are clustered

KPD transplants 2014

0	140 centers
1	29 centers
2	20 centers
3-5	26 centers
6-10	15 centers
11-20	10 centers
21-30	4 centers
>40	1 center

Challenge ... shift in focus Doing KPD transplants Maximizing KPD transplants

- How does your program match up?
- Can you do more?

Need to identify and overcome the barriers!

Barriers to kidney paired donation Which does your center face?

- Logistical
 - Financial
 - -Staff
 - -Education / Consent processes
 - -Teamwork
 - -Matching software
- Immunologic
 - –Donor related
 - -Recipient related

How do you choose a KPD program?

Establishment candidate?

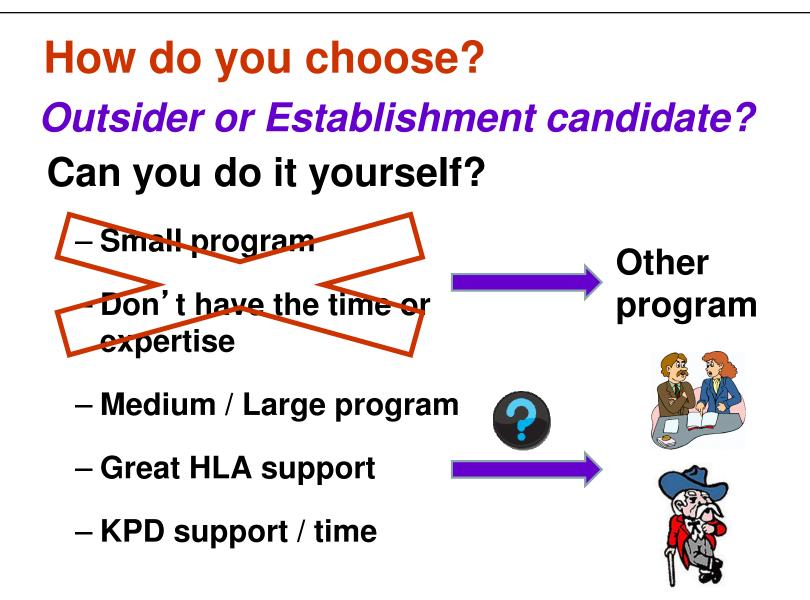
National Private (NKR) UNOS

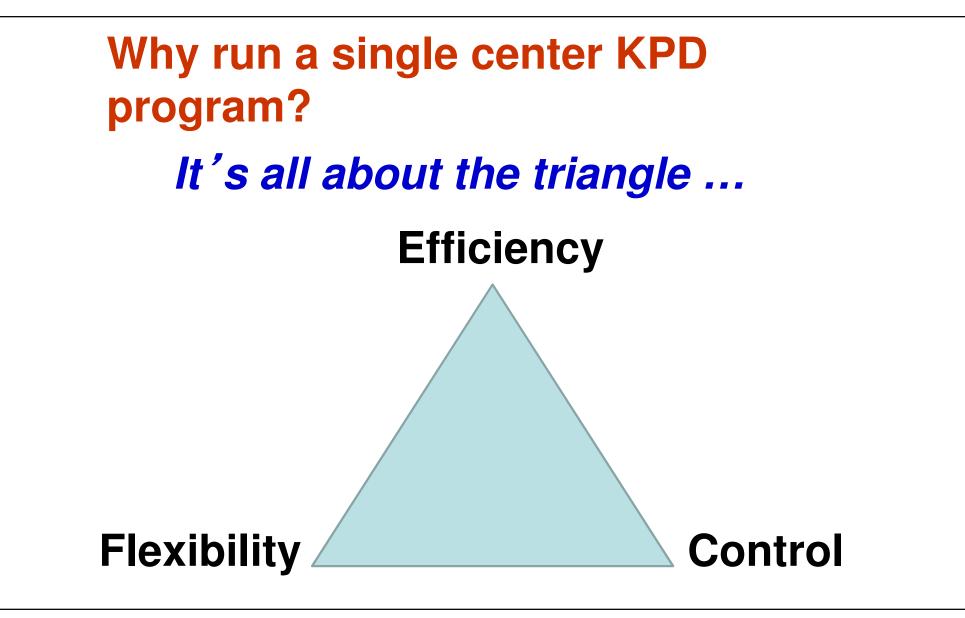


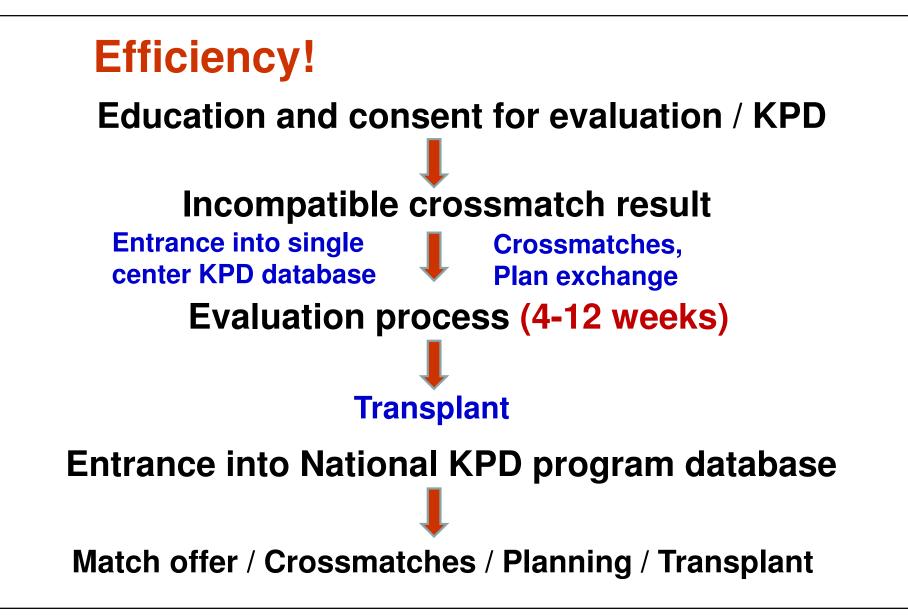
Outsider candidate?

Single Center





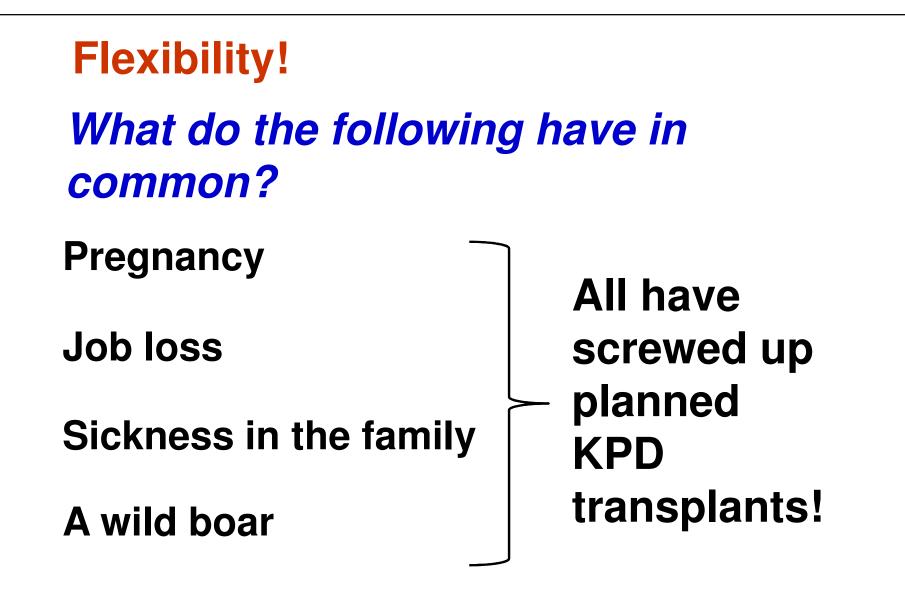




Control! *Positive "failed" crossmatches are the backbone of our program!*



At a single center it is easy to have <u>SUCCESSFUL FAILURES!</u>



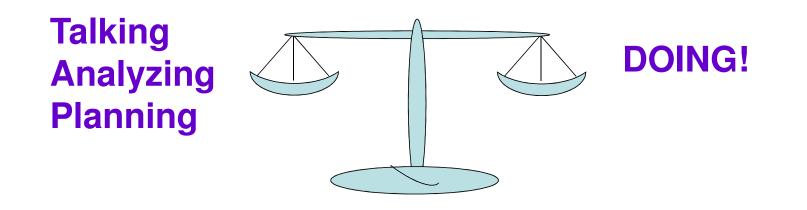
Maximizing KPD transplants... TIME IS AGAINST US!

- Donor issues
 - -Family circumstances
 - -Job circumstances
- Recipient issues
 - -Need a cardiac stent
 - -Infected
 - -Open wound
 - -Death

To maximize KPD transplants you must ...

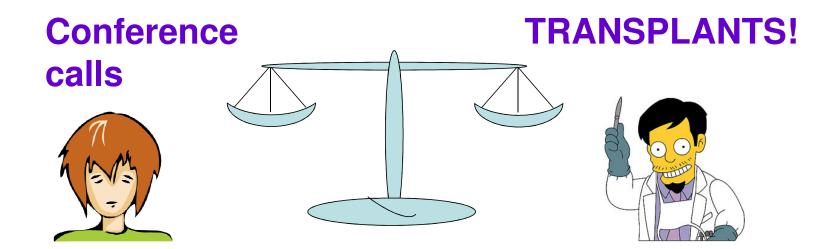
Keep an effective pace!

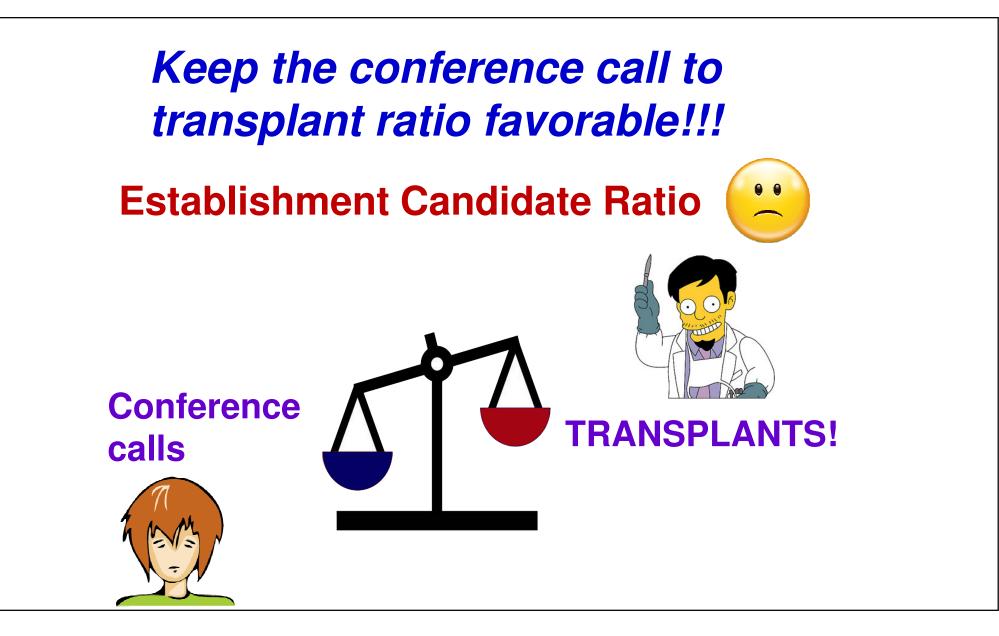
No effective KPD program moves slowly!



To maximize KPD transplants you must ...

Keep the conference call to transplant ratio favorable!!!





Keep the conference call to transplant ratio favorable!!!

Single Center Ratio!



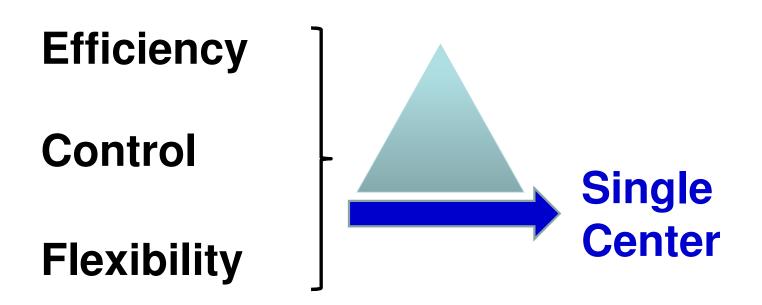
Conference calls







So we all agree ... Right?



... But what are we DOING?

Methodist San Antonio KPD

Private practice hospital, 300 beds / 12 ORs ... 2.2M metroplex - 28th largest market

- No hospital financial support for KPD
- No fellows, no residents, no NPs, no PAs
- No in house HLA laboratory
- Free KPD software program obtained from Johns Hopkins and Dr. Ashlagi – Thank you!
- Collaboration with surgeon, HLA director and transplant coordinator

Single center KPD requires nothing fancy

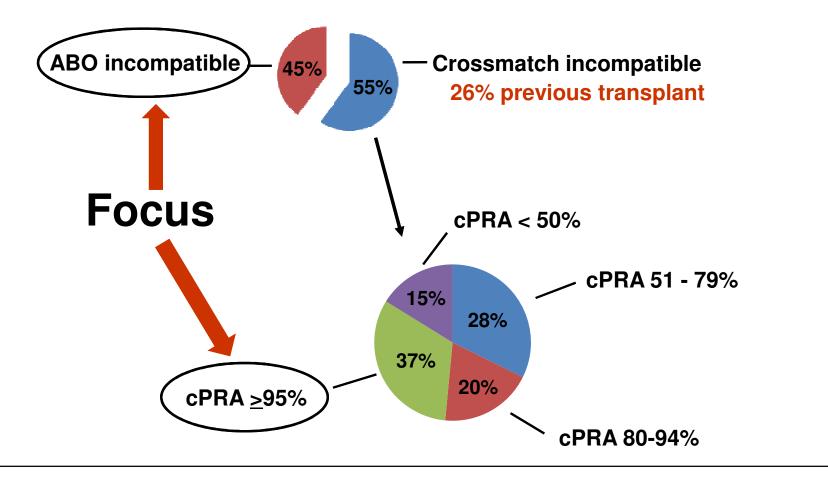
Single center KPD programs can DO a lot of transplants!

319 KPD transplants ... 15 scheduled

- Forty-seven 2-recipient exchanges
- Thirty-one 3-recipient exchanges
- Seven 4-recipient exchanges
- Five 5-recipient exchanges
- One 6-recipient exchange
- One 5-recipient chain
- One 6-recipient chain
- One 8-recipient chain
- One 9-recipient chain
- One 10-recipient chain
- One 12-recipient chain
- One 23-recipient chain

73/319 = 23% transplanted with a non-directed donor

Who is Methodist San Antonio transplanting with KPD?



All *effective* KPD programs transplant the same pairs!



- Recipient candidates with cPRA <95% with a blood type O donor all get transplanted with a negative crossmatch
- All A/B and B/A combinations get transplanted



All KPD programs struggle to transplant the same pairs!



- Blood type O recipient candidates with non-O donors
- Highly sensitized recipient candidates (cPRA > 98%)

Why?

- Blood group imbalance in the pool not enough blood type O donors
- Competition for <u>rare donor HLA types</u> amongst highly sensitized recipient candidates

KPD in 2016 is all about transplanting difficult to match pairs!

- Keys to success facilitated at a single center!
- Use of compatible pairs
 - -Enriched with O donors WHICH WE NEED!
- Combination of KPD with desensitization

–Need to look for <u>close</u> matches for the most highly sensitized recipients!

Why focus on compatible pairs?

Time is against you on dialysis

Does anyone have O recipient candidates with non-O donors waiting ... and waiting ... in a KPD database?

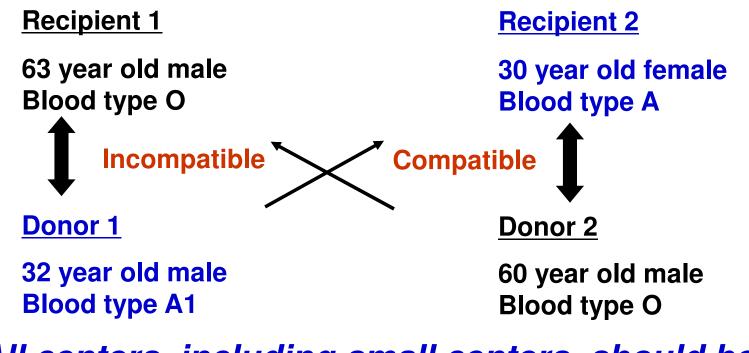


These pairs are NOT favorable!

What is your plan for these pairs?

- Plan A
 - Do you have another donor? ... Obvious ... but usually a failed plan
- Plan B
 - ABO incompatible transplant <u>BUT</u> must have acceptable antibody titer <u>AND</u> ABOi program!
- Plan C
 - Wait and hope ... I am not a fan of plan C!
- Plan D ... A better plan!
 - <u>Compatible exchange</u>!

Use of compatible pairs in 2-way KPD for blood type incompatibility



All centers, <u>including small centers</u>, should be using compatible pairs for O/A and O/B pairs!

Use of compatible pairs in KPD at Methodist San Antonio

44 compatible pairs facilitated ...

- -24 two-way exchanges
- -10 three-way exchanges
- -3 four-way exchanges
- -2 five-way exchanges
- -1 six-way exchange

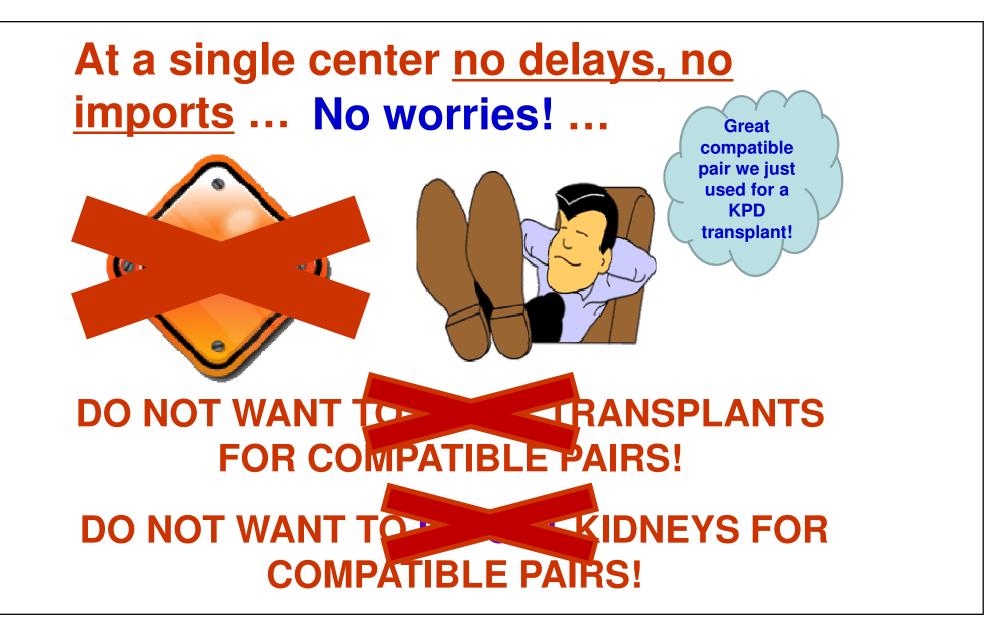
 4 chains (length 10-23 recipients)
 All compatible recipients received kidneys from younger donors

140 KPD transplants



DO NOT WANT TO <u>DELAY</u> TRANSPLANTS FOR COMPATIBLE PAIRS!

DO NOT WANT TO <u>IMPORT</u> KIDNEYS FOR COMPATIBLE PAIRS!



Why focus on the most highly sensitized recipients?

Time is against you on dialysis Does anyone have recipient candidates with a 99-100% cPRA waiting ... <u>and waiting</u> ... in a KPD database?



What is your plan for these pairs?

The goal of a negative flow crossmatch with no DSA is not realistic for all recipients!

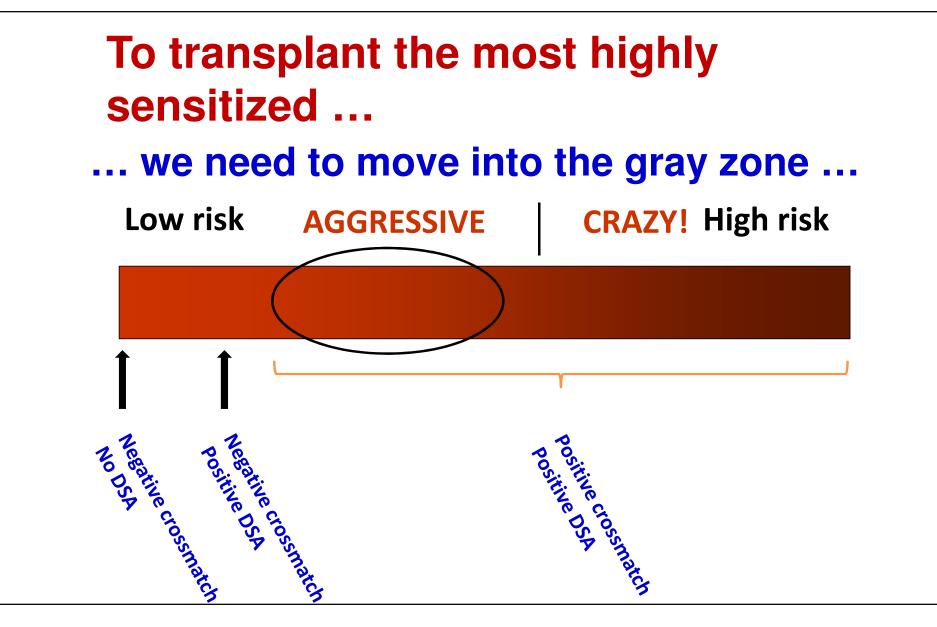
CAVEAT!

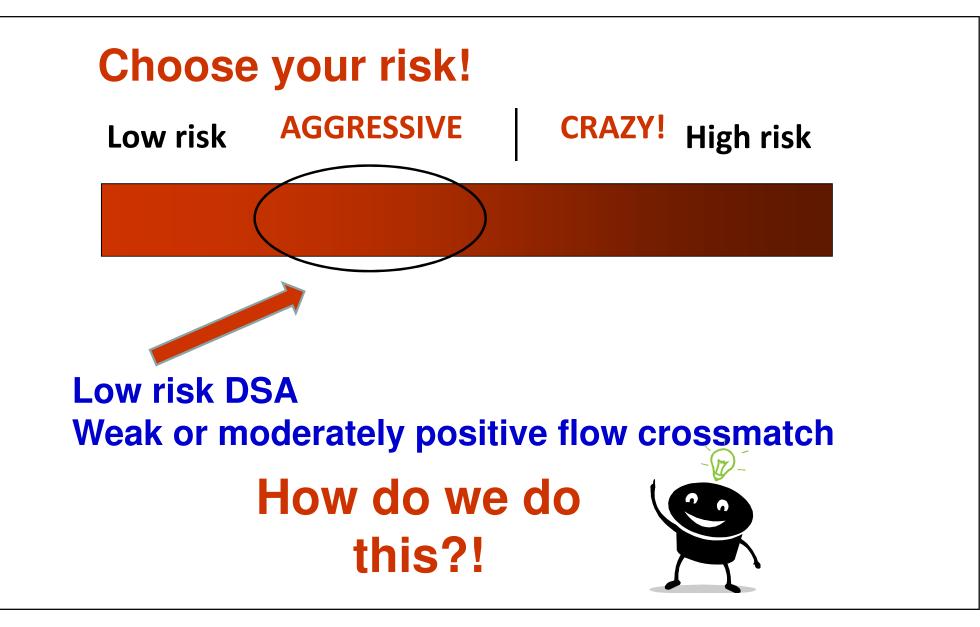
The era of HIGH immunologic RISK transplants is OVER!

Philosophy of risk ... look to Sun Tzu for wisdom



"Victorious warriors win first and then go to war, while defeated warriors go to war first and then seek to win." - Sun Tzu





Strategies to manage immunologic risk in the most highly sensitized YOU MUST CHOOSE A LOW RISK DONOR! STEP 1: UNDER-ASSIGN UNACCEPTABLES!

- Favorable DSA loci (C,DRw,DP,DQ)
- Low level DSA that titers down

STEP 2: EXPLORATORY CROSSMATCH!

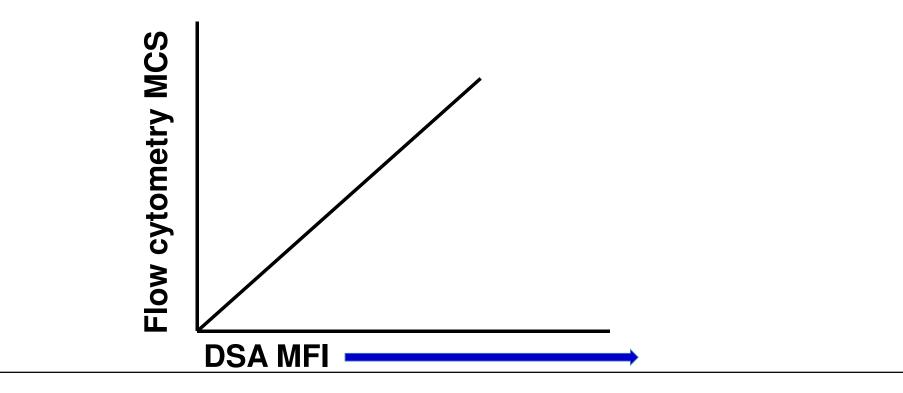
Weak or moderately positive flow crossmatch that titers down

STEP 3: ASK YOURSELF ...

Is this as good as it gets?!

The idea that DSA MFI *reliably* correlates with crossmatch results is **FALSE**!

This relationship is <u>not strictly linear</u>... especially for the most highly sensitized patients!



The idea that DSA MFI *reliably* correlates with crossmatch results is <u>FALSE</u>! *Why*?

- There are not beads available for every allele
- Antigen bead density can vary
- Unreliable "cumulative effect" of multiple DSAs
- Prozone effect
- Lower antigen expression of C and DP on donor cells
- DSA against homozygous HLA ? Double dose
- Non-HLA antibody

If you have never had a failed positive crossmatch then you are not transplanting *enough* highly sensitized patients ...

... you can't be right all the time!

"The key to success is to double your failure rate" - Henry Ford

When your crossmatch fails with an establishment candidate ...

Conference call!



When you fail at a single center, <u>SO WHAT???</u>

Keys to FAILING SUCCESSFULLY!

- You have learned from the failure!
- You failed quickly!
- No one else is hurt by the failure!



Methodist San Antonio approach to the most highly sensitized Look for it ... Try it ... Do it!

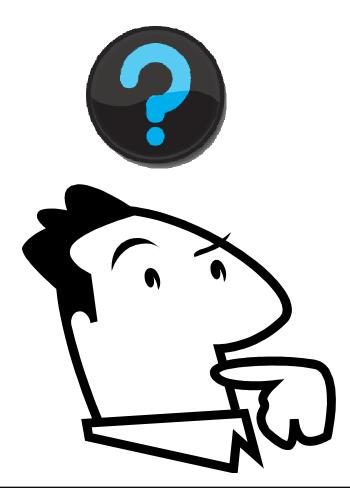
- "She loves me ... She loves me not ..."
- Look! ... Aggressively drop off antibody in a KPD database looking for possibilities ...
- Try! Crossmatch promising pairs with <u>STORED FROZEN DONOR</u> <u>CELLS! ... NO DELAY!</u>
- She loves me? ... TRANSPLANT!
- She loves me not? ... GO FISH!





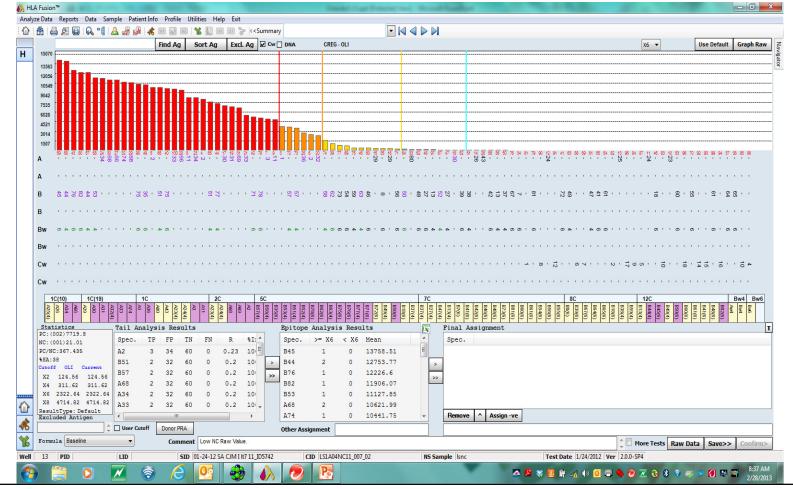


A Game of Go Fish



What would you do?

34 year old man, previous transplant, on dialysis 14 years, multiple lists



34 year old man, previous transplant on dialysis 14 years, multiple lists

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Need to under-assign antibody and search for a great class II match ...



HLA: A24,25 B18,4005 C10,12 DR1,4 DRw53 DQ5,8

Blood type O Calculated PRA – 100% HLA Antibodies – A 1,2,3,11,28,30,31,32,33,34,36,66,68,69,74 B12,17,35,44,45,51,53,57,58,71,75,76,77,78,82 DR 7,8,9,11,12,13,14,15,16,17,18 DRw52 DQ 2,4,7





KPD Donor: A2,29 B56,61 C1,8 DR1,4 DRw53 DQ5,8 Blood type O A2 MFI ?

Which A2?

34 year old man, previous transplant, on dialysis 14 years, multiple lists

🚯 HLA Fusion ~	
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Need to under-assign antibody and search for a great class II match ...



HLA: A24,25 B18,4005 C10,12 DR1,4 DRw53 DQ5,8

Blood type O Calculated PRA – 100% HLA Antibodies – A 1,2,3,11,28,30,31,32,33,34,36,66,68,69,74 B12,17,35,44,45,51,53,57,58,71,75,76,77,78,82 DR 7,8,9,11,12,13,14,15,16,17,18 DRw52 DQ 2,4,7



Need to under-assign antibody and search for a great class II match ...



HLA: A24,25 B18,4005 C10,12 DR1,4 DRw53 DQ5,8

Blood type O Calculated PRA – 100% HLA Antibodies – A 1,2,3,11,28,30,31,32,33,34,36,66,68,69,74 B12,17,35,44,45,51,53,57,58,71,75,76,77,78,82 DR 7,8,9,11,12,13,14,15,16,17,18 DRw52 DQ 2,4,7



KPD Donor: A2,29 B56,61 C1,8 DR1,4 DRw53 DQ5,8 Blood type O



A02:06 MFI 3449! T MCS 80

B MCS 103

Negative!

If you overassign you will not find!

Looking



Calculated PRA – 99%

HLA Antibodies –

A 33,34,68,69

B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 62,63,64,65,67,70,71,75,76,78,80,81,82 C15 DR 1,7,9,10,103 DRw51 DP14,17,20,3,6,9



Looking



Calculated PRA – 99%

HLA Antibodies –

A 33,34,68,69

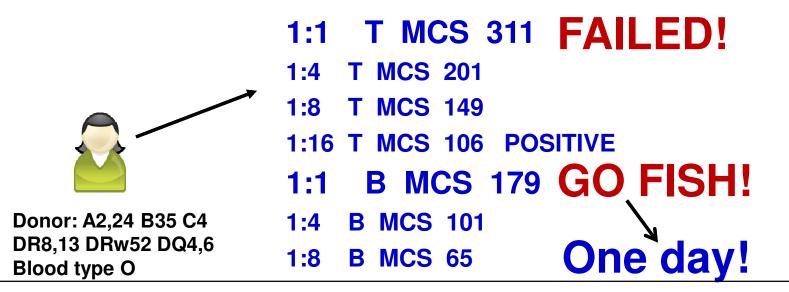
B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 62,63,64,65,67,70,71,75,76,78,80,81,82 C15 DR 1,7,9,10,103 DRw51 DP14,17,20,3,6,9



Trying



Calculated PRA – 100% HLA Antibodies – A 33,34,68,69 B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 62,63,64,65,67,70,71,75,76,78,80,81,82 DR 1,7,9,10,103 DRw51

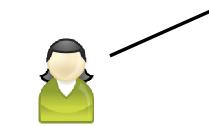


65 yo on dialysis for 4 years

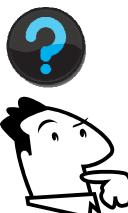


HLA: A2,24 B48,61 C8,15 DR4,11 DRw52,53 DQ7,8

Blood type A Calculated PRA – 100% HLA Antibodies – A 1,3,10,11,19,25,26,28,29,30,31,32,33,34,36,43,66,68,69,74,80 B12,14,18,35,39,41,44,45,51,54,59,60,64,65,75,76,77,78 C3,9,10 DR 1,3,9,10,17,18,103 DRw51 DQ 1,4,5,6



Donor: A2,24 B35 C1,4 DR4,16 DRw51,53 DQ7,8 Blood type A



DRw51 MFI 17,000B35MFI 1,096

Would you find this possible match?

65 yo on dialysis for 4 years



HLA: A2,24 B48,61 C8,15 DR4,11 DRw52,53 DQ7,8

Blood type A Calculated PRA – 100% HLA Antibodies – A 1,3,10,11,19,25,26,28,29,30,31,32,33,34,36,43,66,68,69,74,80 B12,14,18,35,39,41,44,45,51,54,59,60,64,65,75,76,77,78 C3,9,10 DR 1,3,9,10,17,18,103 DRw51 DQ 1,4,5,6



65 yo on dialysis for 4 years



HLA: A2,24 B48,61 C8,15 DR4,11 DRw52,53 DQ7,8

Blood type A Calculated PRA – 100% HLA Antibodies –

A 1,3,10,11,19,25,26,28,29,30,31,32,33,34,36,43,66,68,69,74,80 B12,14,18,39,41,44,45,51,54,59,60,64,65,75,76,77,78 C3,9,10 DR 1,3,9,10,17,18,103 DRw51 DQ 1,4,5,6

-	1:1 T MCS 167
A	1:2 T MCS 127 SUCCESS!
	1:4 T MCS 92
	1:8 T MCS 61 NEGATIVE
Donor: A2,24 B35 C1,4 DR4,16 DRw51,53 DQ7,8	1:1 B MCS 216 All in a
Blood type A	1:2 B MCS 174
B35 MFI 1096	1:4 B MCS 129 day's work!
DRw51 MFI 17,000	1:8 B MCS 96 NEGATIVE

44 yo on dialysis for 17 years



HLA: A2,68 B8,13 C6,7 DR7,17 DRw52,53 DQ2

Blood type O Calculated PRA – 100% HLA Antibodies – A 1,3,11,23,24,25,26,29,30,31,32,33,34,36,43,66,74,80 B27,39,42,48,54,55,56,57,58,60,61,63,67,7,73,81,82 DR1,4,9,10,12,13,14,15 DRw51 DQ4,5,6,7,8,9 DP1,3,5,6,9,10,11,13,14,15,17,18,19 1:1



Donor: A2,3 B18,35 C4,5 DR7,17 DRw52,53 DQ2 DP3,18 Blood type O

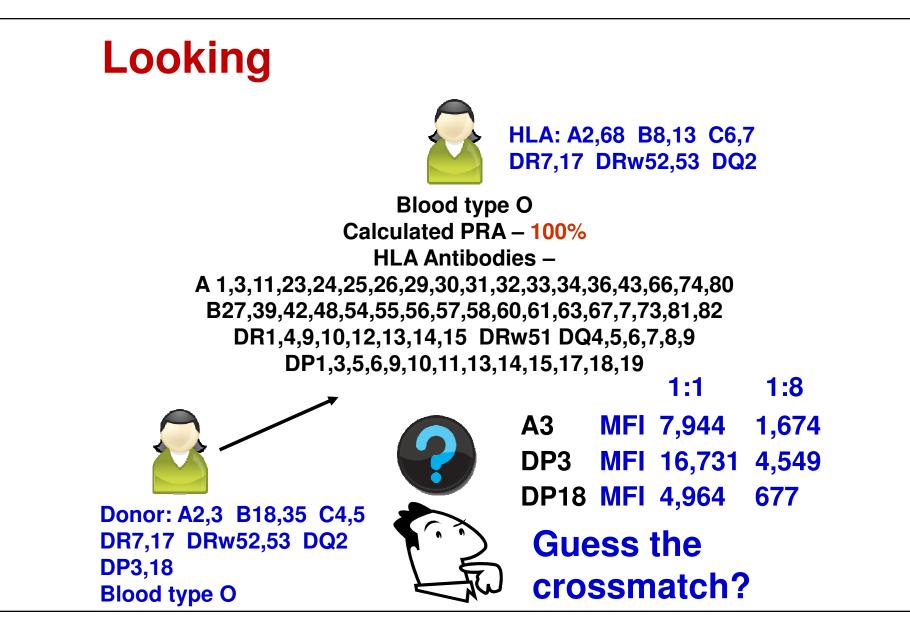


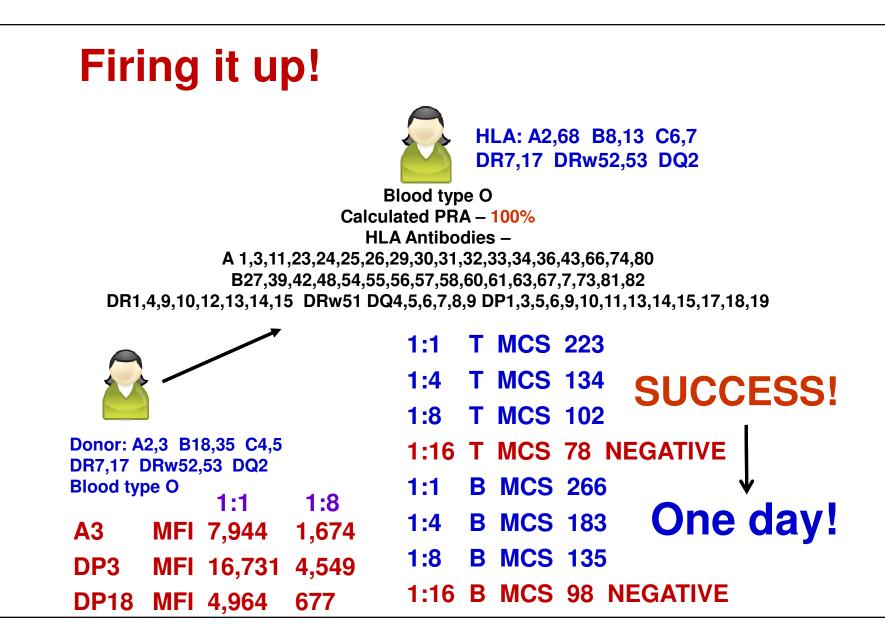


A3MFI7,9441,674DP3MFI16,7314,549DP18MFI4,964677

1:8

Would you find this possible match?



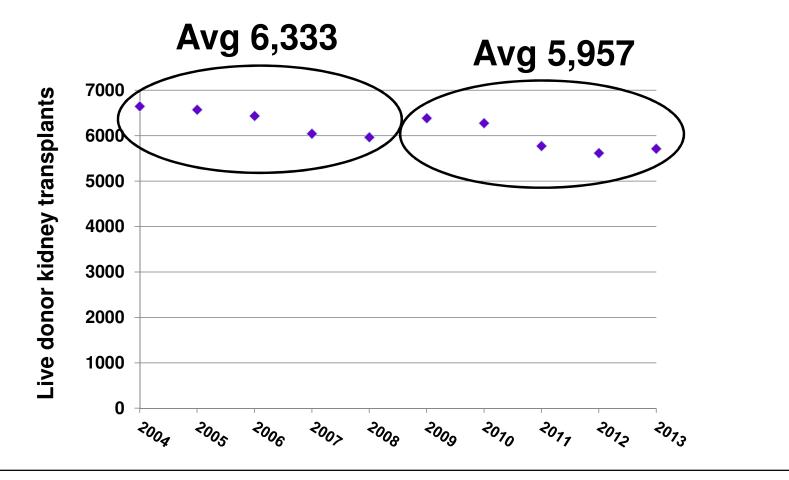


Methodist San Antonio incompatible kidney transplant program 8/09-present, 55 LD kidney transplants in patients with incompatible donors and cPRA > 98%

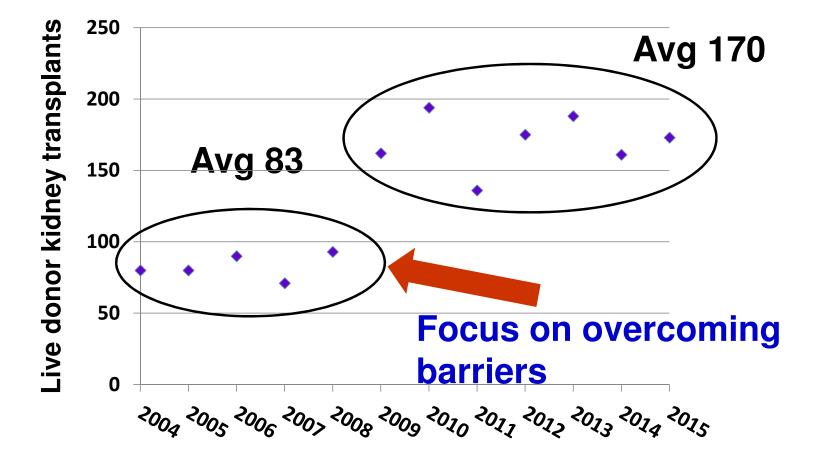
- 5 patients with cPRA 98%
 - 3/5 had desensitization
- 16 patients with cPRA 99%
 - 9/16 had desensitization
- 34 patients with cPRA 100%
 - 22/34 had desensitization
- 51/55 transplanted with KPD
- 33/55 re-transplant patients

Three cases of antibody mediated rejection

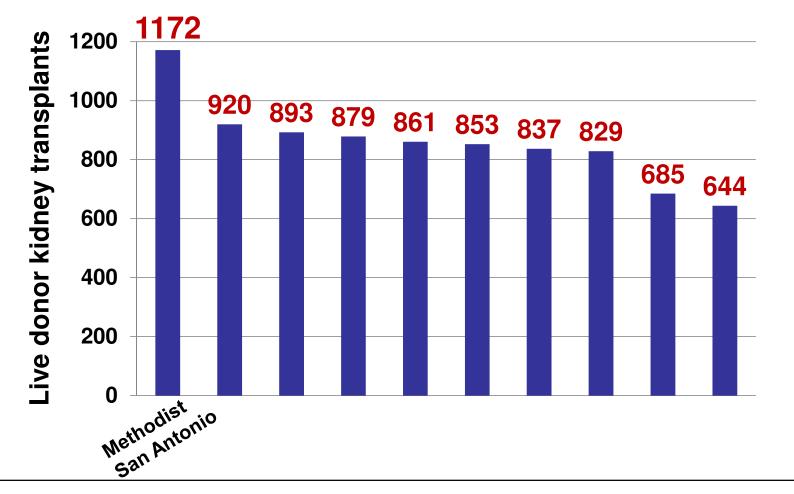
Live donor kidney transplantation in the U.S. is decreasing

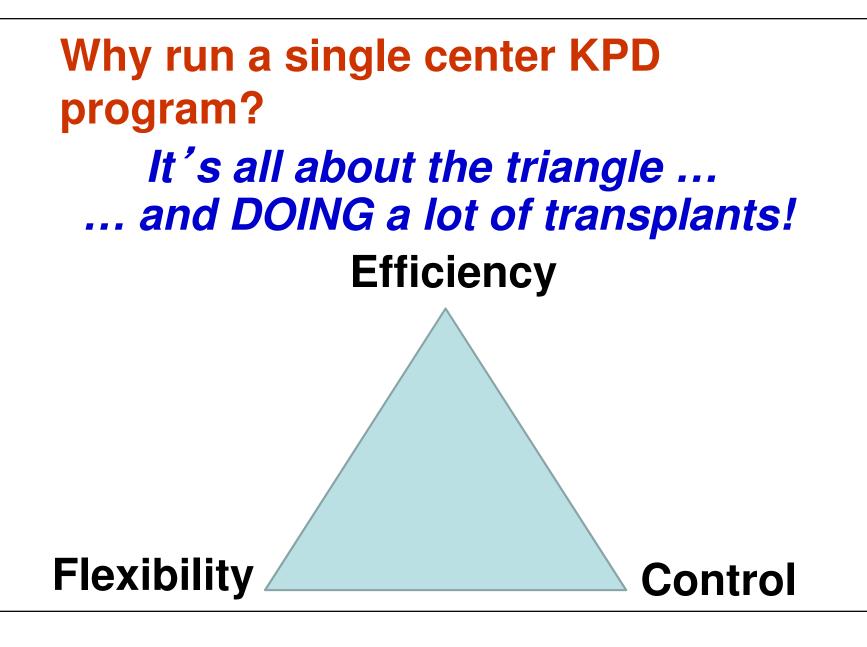


Live donor kidney transplantation at Methodist San Antonio



Largest live donor kidney transplant programs in the U.S. 2009-present





Acknowledgements

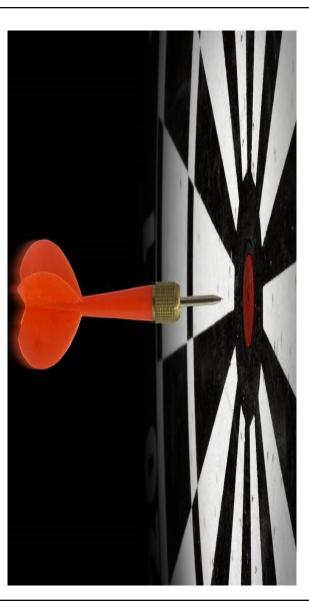
Cathi Murphey, Ph.D.

Southwest Immunodiagnostics, Inc.

The staff at Methodist San Antonio

Thank you for the invitation

Adam.Bingaman@mhshealth.com



Strengths

Weaknesses

Larger pool

Sophisticated software

Heterogeneous HLA populations

Large pool of nondirected donors **Slower**

Difficult to individualize

More rigid

Shipping kidneys

Cost



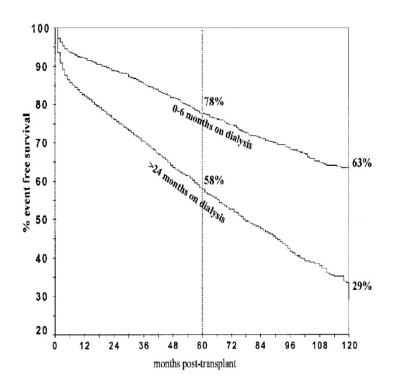


FIGURE 1. Unadjusted graft survival in of 2,405 recipients of paired kidneys with short compared to long ESRD time.

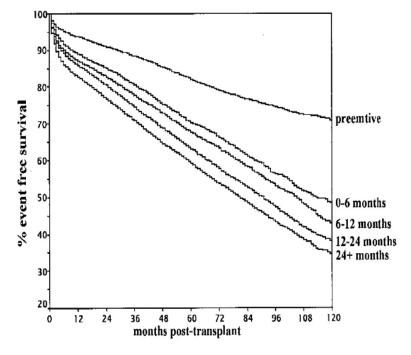
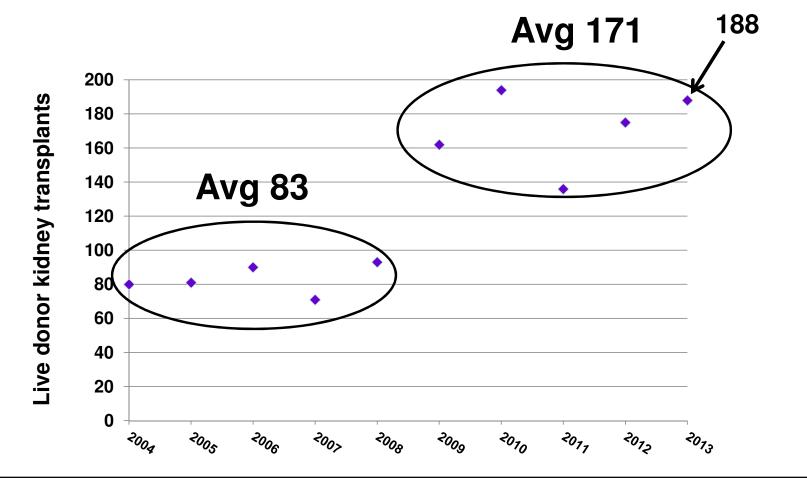


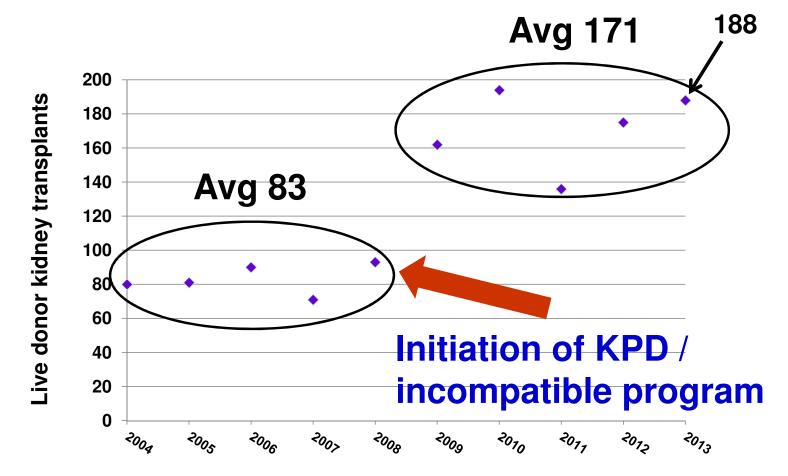
FIGURE 2. Unadjusted graft survival in 56,587 recipients of cadaveric transplants by length of dialysis treatment before transplant.

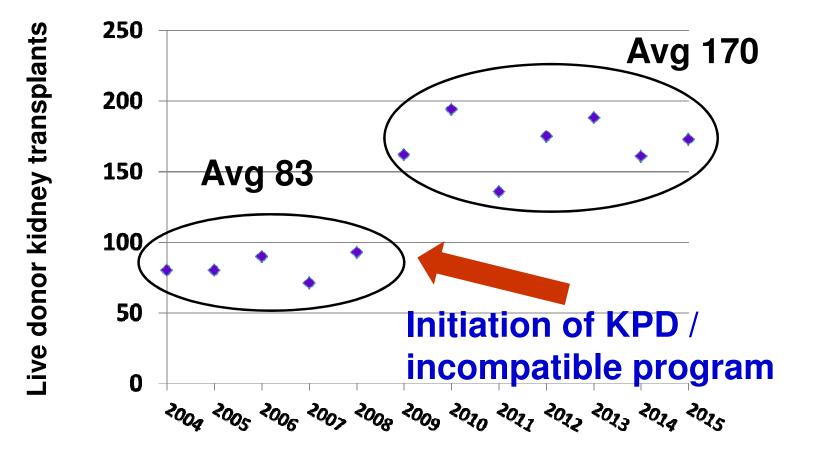
Meier-Kriesche and Kaplan: Transplantation. 2002;74:1377-81

Live donor kidney transplantation at Methodist San Antonio is increasing



Live donor kidney transplantation at Methodist San Antonio is increasing





Modeling does not take into account HUMAN BEHAVIOUR!

Strengths

Weaknesses

Larger pool

Sophisticated software

Heterogeneous HLA populations

Large pool of nondirected donors **Slower**

Difficult to individualize

More rigid

Shipping kidneys

Cost

What does it take?

Talent, Technology, Teamwork and Time are the keys to success!

Summary

Advantages of single center KPD

- More control over your patients
 - Fast time to transplant
 - Easier logistically (work at our own schedule/pace)
- Use of compatible pairs to transplant blood type O recipients with younger non-O donors
 – May be easier to consent within single center
- Combination KPD plus desensitization to transplant the most highly sensitized
 - More aggressive approach, easier logistically
 - Think of it ... Try it ... Do it! with frozen donor cells

- Low risk, excellent results

Efficiency Flow

Improved flow





Improved capacity to see the future





KPD keys to success

- Great KPD staff / a champion / teamwork with the HLA staff
- Recipient / donor education, efficient entry of pairs into database



Single center KPD relies on exchanges ... limited non-directed donors

253 KPD transplants done ...

- Forty-three 2-recipient exchanges
- Twenty-six 3-recipient exchanges
- One 4-recipient exchange
- Two 6-recipient exchanges
- One 5-recipient chain
- One 6-recipient chain
- One 8-recipient chain
- One 9-recipient chain
- One 10-recipient chain
- One 12-recipient chain
- One 23-recipient chain

73/253 = 29%

transplanted with a non-directed donor

Outsourcing KPD...

- Matching program and allocation principles
- Planning the logistics

Example



Calculated PRA – 100% HLA Antibodies – A 3,11,23,25,26,32,33,34,43,66,68,69,74,80 B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57, 58,59,60,61,62,63,64,65,67,70,71,72,75,76,77,78,81,82 C7,12,15 DR 1,4,9,10,14,15,16,103 DRw51 DQ 4,5,7,8,9 DP 1,3,5,6,9,11,13,14,17,18,20,28

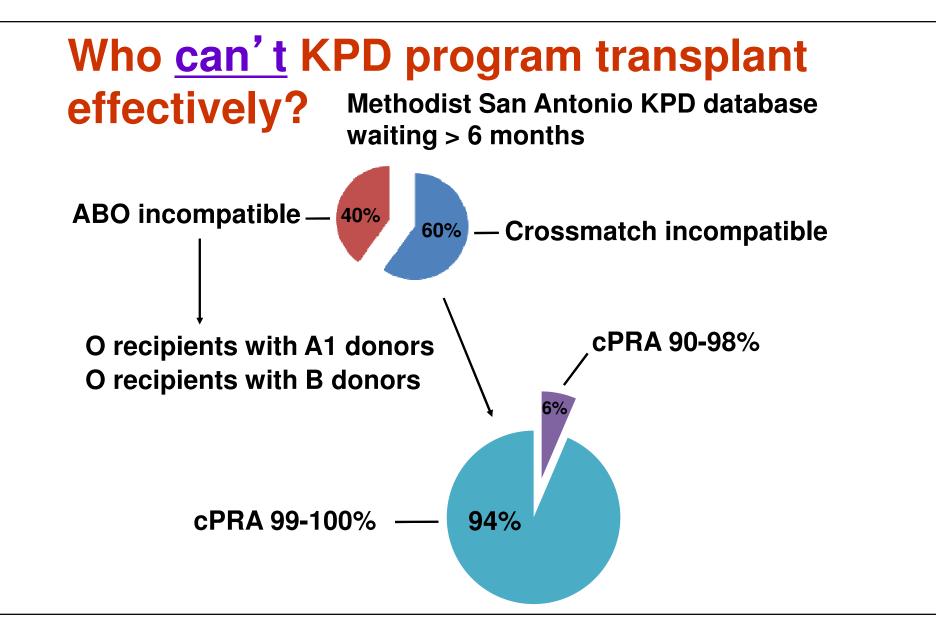
Qualitites of a successful KPD program

- Quick tempo to transplant
- Predictable outcome
- Flexible
- Can transplant hard to match pairs effectively

Signs of an Efficient Program

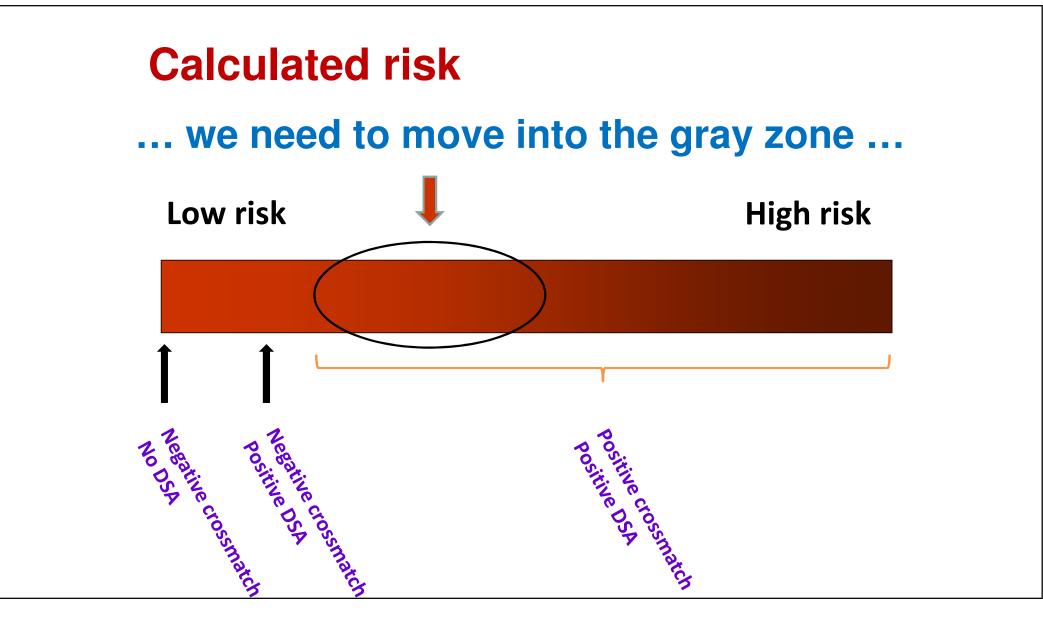
Transplant more pairs

All A/B and B/A combinations get transplanted



KPD keys to success

Calculated risk for hard to match pairs

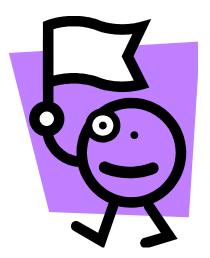


KPD keys to maximum success

Why outsource the matching and planning for transplant of your patients?

Matching = Control

Planning = Flexibility

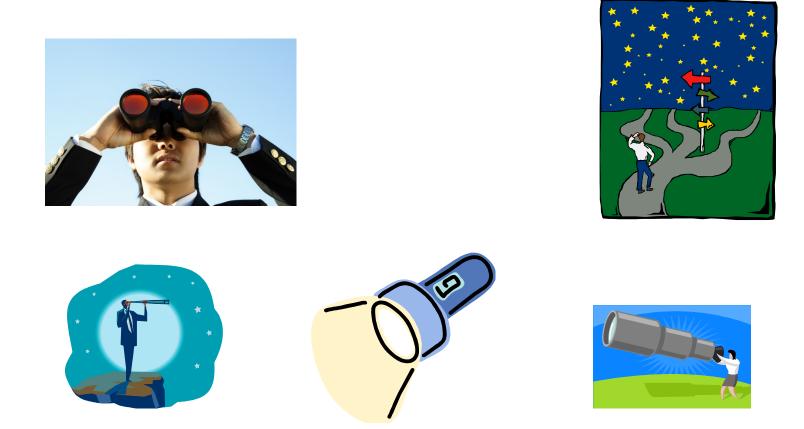


Matching = Control

Control over what?

Control over early entry of pairs into the database

KPD keys to success



Incompatible transplant program

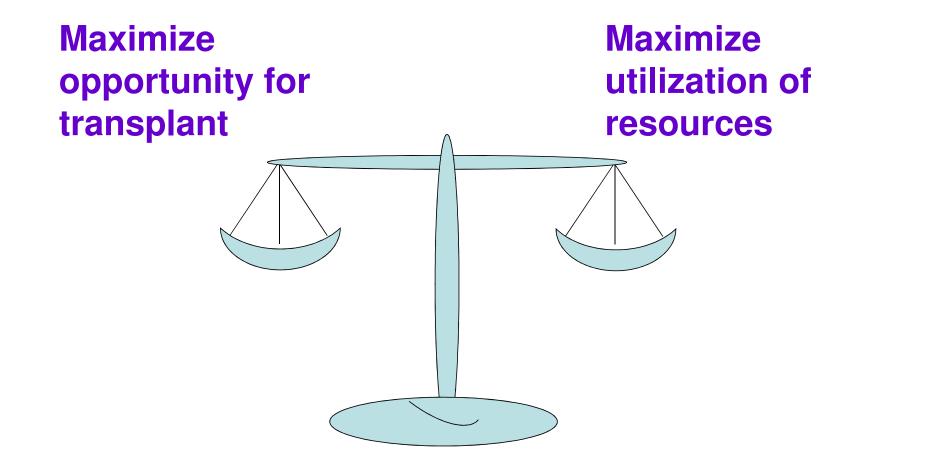
Maximize opportunity

Paired donation Crossmatch incompatible transplants Blood type incompatible transplants

Utilization of resources

Donor / Recipient evaluation process Histocompatibility testing costs Staffing Increased risk

Incompatible transplant program



Staff

An effective KPD program requires ... a champion!



... someone to make it happen

Paired donation programs

What are the options?

- National
 - U.S. pilot program initiated 2010
 - Updated/expanded in 2011
- Regional
 - National Kidney Registry
- Single center
 - Methodist San Antonio

What is the most <u>effective</u> option for you?

Single Center KPD ... things I have heard

- Only the largest transplant programs can run a single center KPD program
- It is expensive to run a KPD program
- Need alot of staff to run a KPD program
- Need non-directed donors for most KPD transplants
- Single center KPD programs cannot transplant a lot of "difficult pairs"

... all of the above are false

Single Center KPD

Methodist San Antonio KPD started in 2008...

- Private practice, 380 bed hospital in San Antonio, 2.2M metroplex
- Live donor program 71 transplants in 2007
- No hospital financial support for KPD
- KPD software program obtained from Johns Hopkins – Thank you!
- Collaboration with surgeon, HLA director and transplant coordinator

Single Center KPD Where Methodist San Antonio is 2009-2013...

- Live donor program 171 transplants per year
- 253 KPD transplants (55 last 12 months)

- KPD is ${\sim}30\%$ of our live donor volume

- No hospital financial support for KPD
- Using KPD software program obtained from Johns Hopkins – Thank you!
- Collaboration with surgeon, HLA director and transplant coordinator

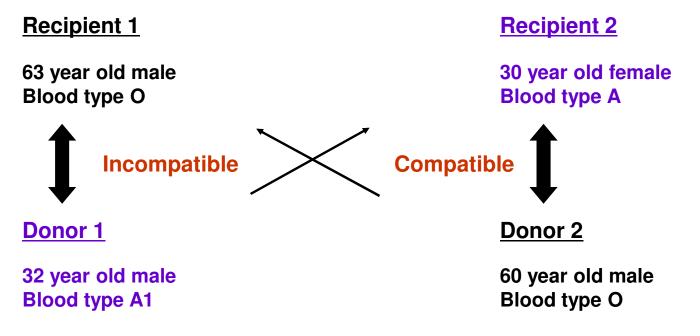
Centers with medium/large LD programs can run a successful KPD program without the need for many extra resources!

Expanding paired donation

- Use of compatible pairs
 - Enriched recipient candidates with O donors
- Combination of KPD with desensitization often needed to transplant the most highly sensitized recipients
 - -Try to find a close match!

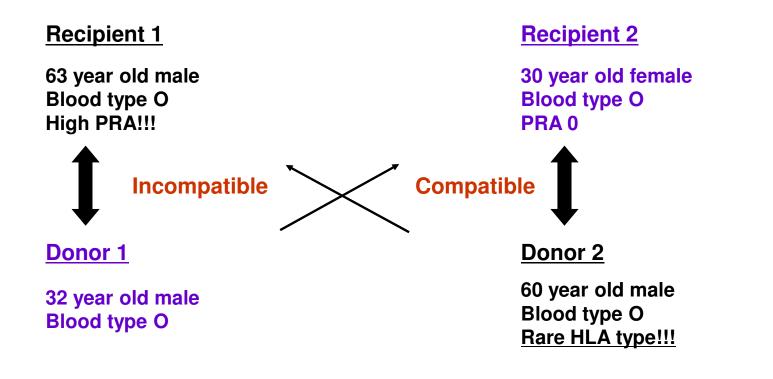
Examples

Use of compatible pairs in 2-way KPD for blood type incompatibility

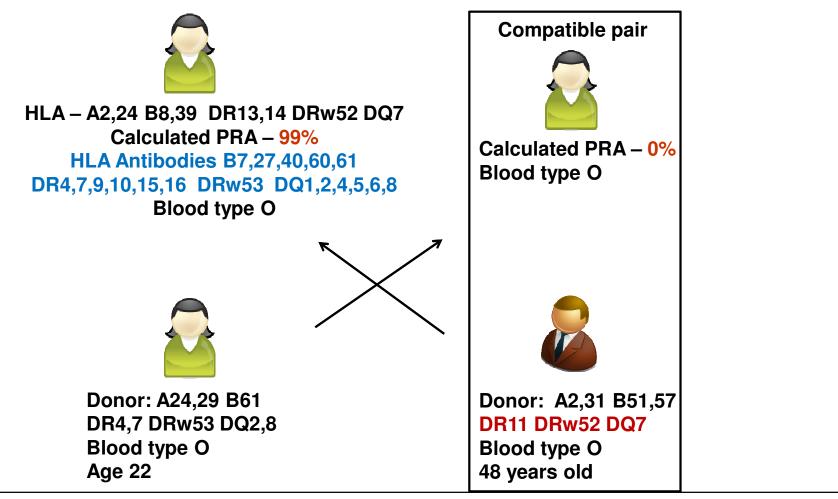


All blood type O recipients with young A or B donors can be transplanted with compatible pairs

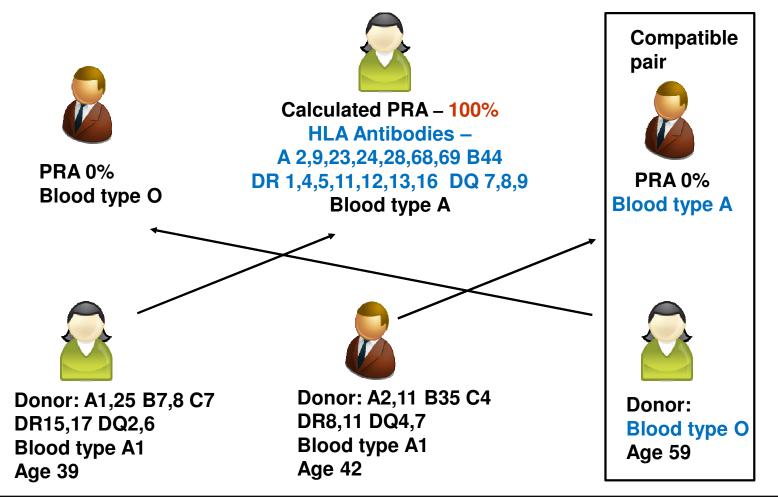
Use of compatible pairs in KPD to transplant highly sensitized recipients



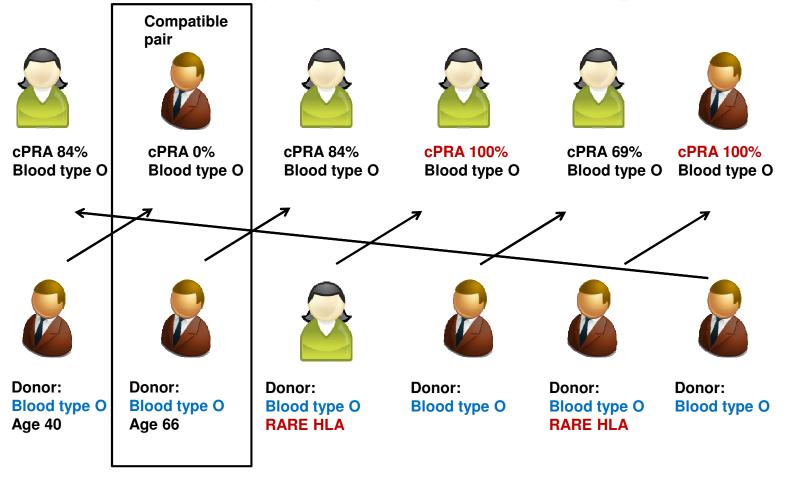
Use of compatible pairs in 2 way KPD for highly sensitized recipient



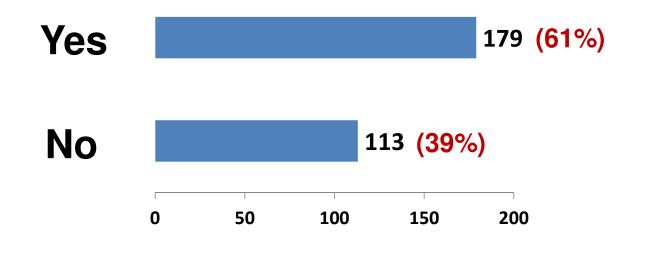
Use a compatible pair to *indirectly* transplant highly sensitized recipients



Use a compatible pair to *indirectly* transplant highly sensitized recipients



The majority of compatible pairs consent for exchange N=292



Use of compatible pairs for KPD

- Utilization of compatible pairs in a large single center KPD program significantly expands KPD options for:
 - Highly sensitized recipients candidates
 - Blood type incompatible recipient candidates
- The majority of compatible pairs consented for exchange

Compatible pairs should be more broadly utilized in KPD programs

How can KPD transplant the most highly sensitized patients *effectively*?



Calculated PRA – 100%

HLA Antibodies -

A 2,23,24,25,28,30,31,32,34,66,68,69

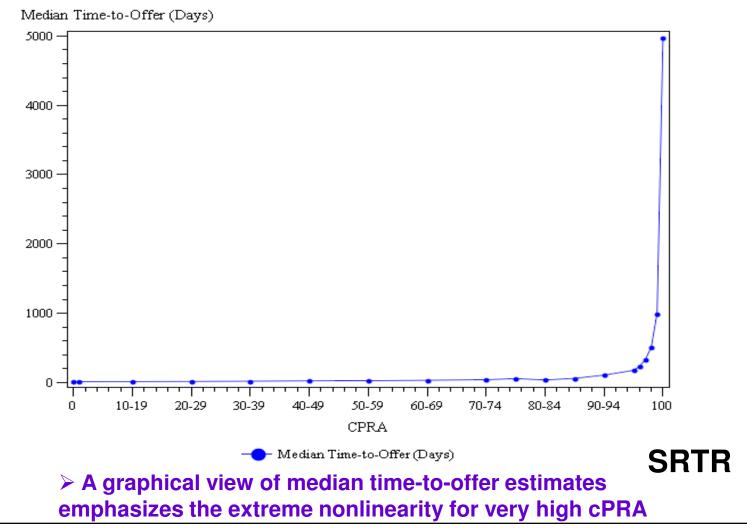
B7,12,13,17,21,27,37,38,40,42,44,45,46,47,48,49,50,5152,53,55,56, 57,58,59,60,61,62,63,67,72,73,76,77,81,82

C1,2,4,5,6,8,9,10,14,15,16,17,18

DR 4,7,9 DRw53 DQ 7,8,9

DP 1,2,4,5,10,11,13,14,15,19,20,23,28

Time to offer distribution estimates



The most highly sensitized (cPRA near 100%) are *truly* disadvantaged on the waiting list

... and this is a big problem

More than 7,250 candidates on the waiting list with cPRA 98-100%

19% of the waiting list has had a previous transplant

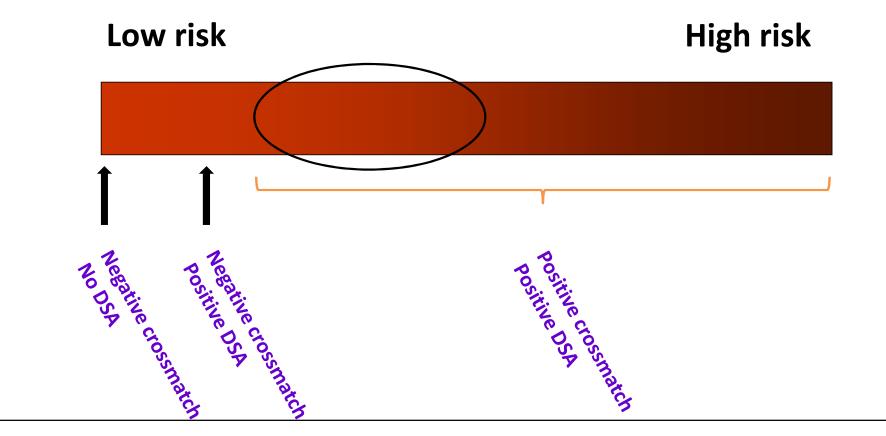
For cPRA 98-100%, chances of transplant off the list or by KPD are very low ...





Must take more risk to get many of these patients transplanted ... look for close matches





Methodist San Antonio *low risk* desensitization program

- Usually combined with KPD to find better matched donor
- Typically reserved for cPRA > 98%
- T and B flow crossmatch MCS < 300 T and B
- Flow crossmatch titers down to negative by 1:16
- DSA titers down at 1:8
- Prefer class I DSA to class II DSA
- As good as it gets? ... could we find better?

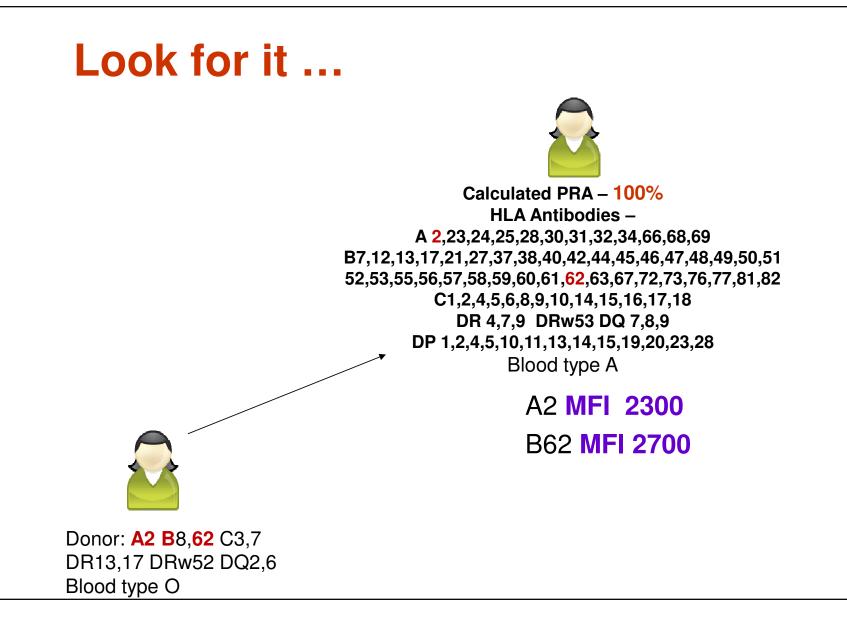
Examples ...

Look for it ... Try it ... Do it!

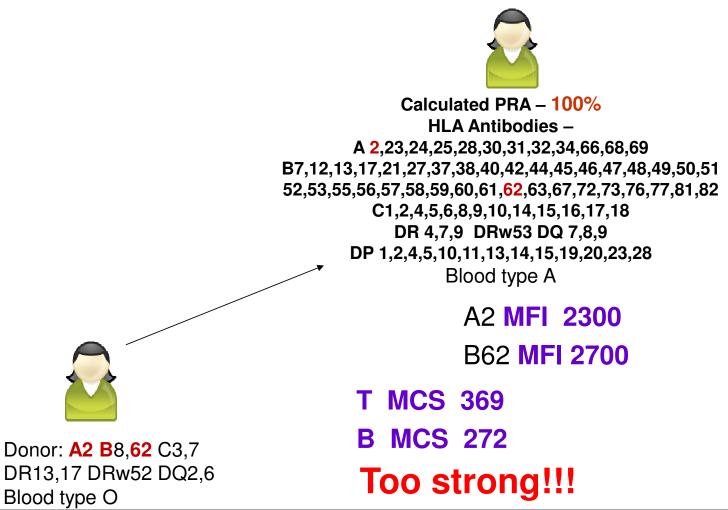
Example ...

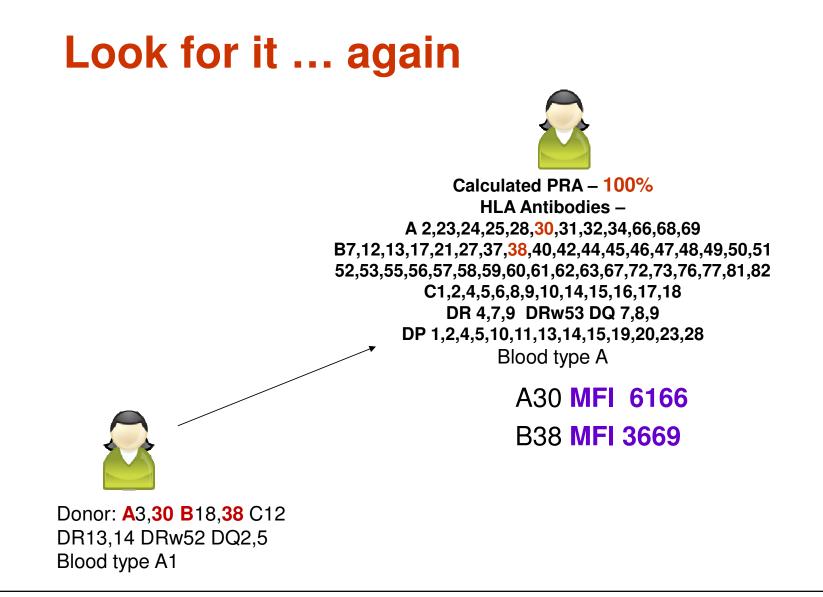


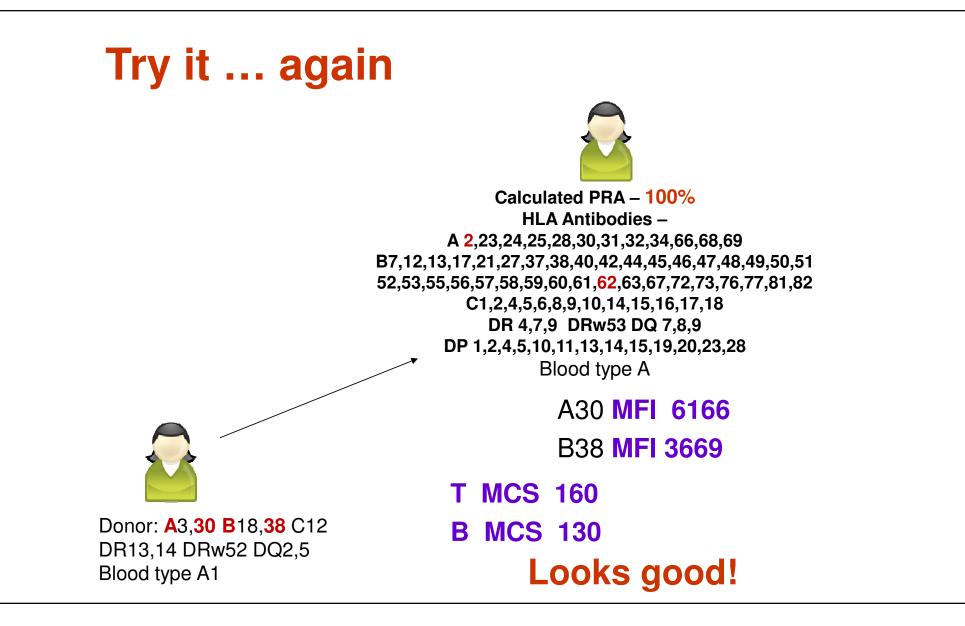
Calculated PRA – 100% HLA Antibodies – A 2,23,24,25,28,30,31,32,34,66,68,69 B7,12,13,17,21,27,37,38,40,42,44,45,46,47,48,49,50,51 52,53,55,56,57,58,59,60,61,62,63,67,72,73,76,77,81,82 C1,2,4,5,6,8,9,10,14,15,16,17,18 DR 4,7,9 DRw53 DQ 7,8,9 DP 1,2,4,5,10,11,13,14,15,19,20,23,28

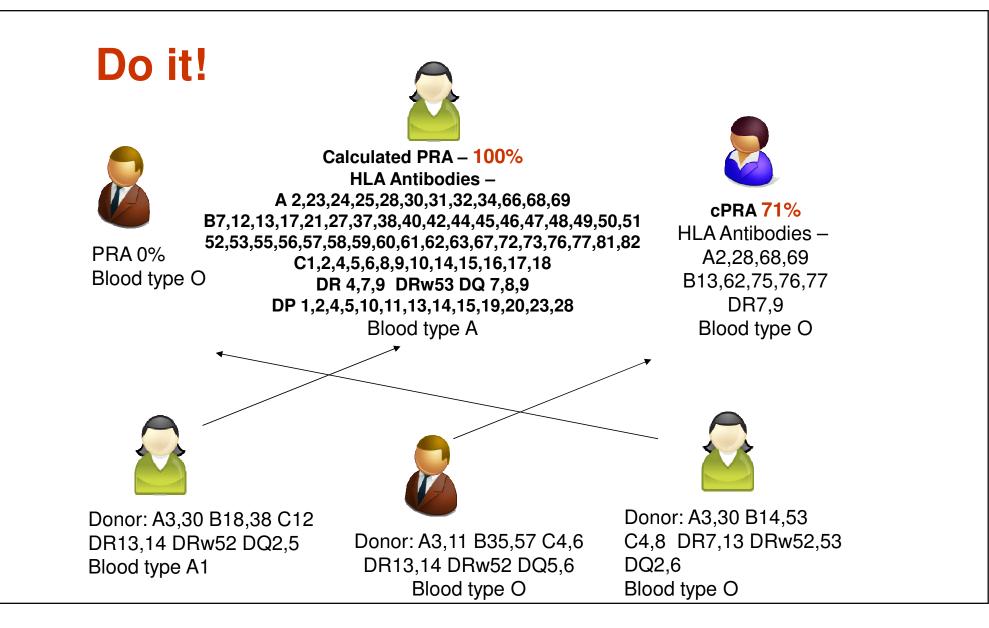












Look for it ...



Blood type O Calculated PRA – 100% HLA Antibodies – A 1,2,3,11,28,30,31,32,33,34,36,66,68,69,74 B12,17,35,44,45,51,53,57,58,71,75,76,77,78,82 DR 2,3,5,6,7,8,9,11,12,13,14,15,16,17,18 DRw52 DQ 2,4,7



A2 MFI 3449

T MCS 80

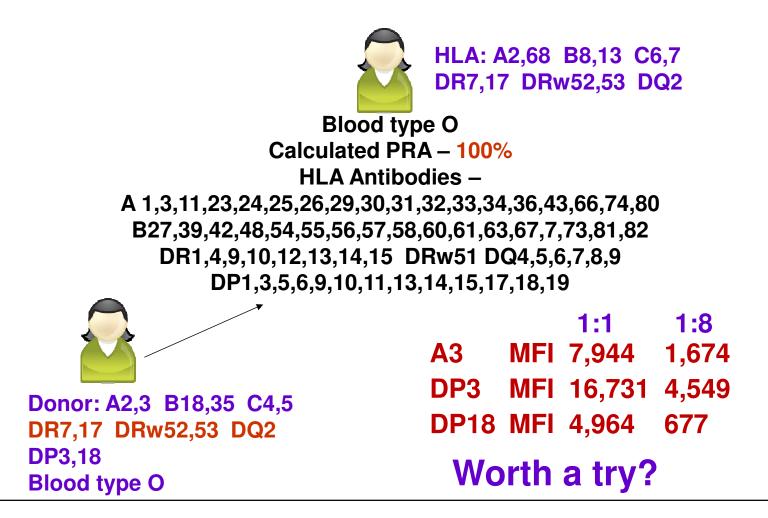
B MCS 103

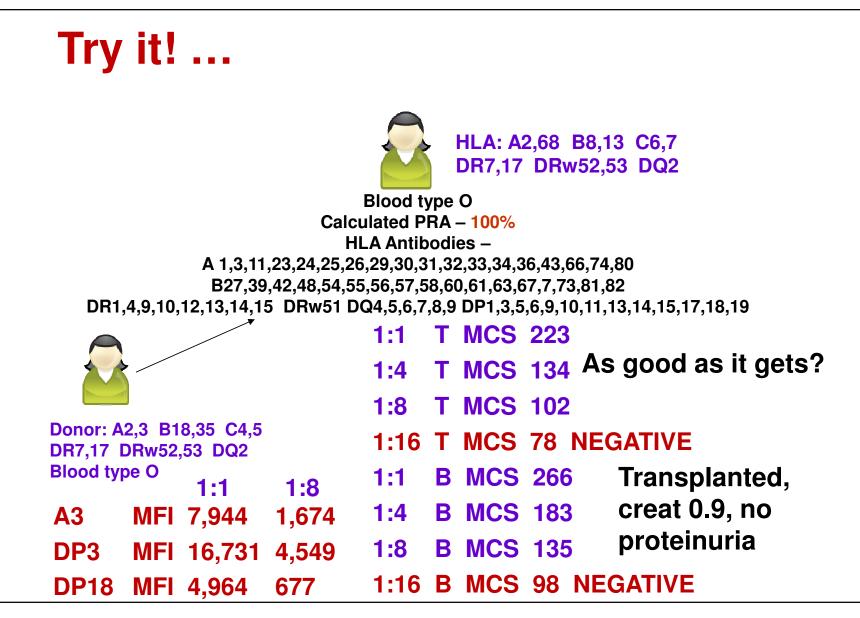
Negative!

KPD Donor: A2,29 B56,61 C1,8 DR1,4 DRw53 DQ5,8 Blood type O

If you don't look you won't find ...

Last Example ... Look for it ...





Methodist San Antonio incompatible kidney transplant program

8/09-present, 38 LD kidney transplants in patients with incompatible donors and cPRA > 98%

- 5 patients with cPRA 98%
 - 3/5 had desensitization
- 9 patients with cPRA 99%
 - 5/9 had desensitization
- 24 patients with cPRA 100%
 - 15/24 had desensitization
- 34/38 transplanted with KPD
- 24/38 re-transplant patients
 One case of antibody mediated rejection

Strengths

Weaknesses

Larger pool

Sophisticated software

Heterogeneous HLA populations

Large pool of nondirected donors **Slower**

Difficult to individualize

More rigid

Shipping kidneys

Cost

Summary

Advantages of single center KPD

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Cost



100

90

80

70

60

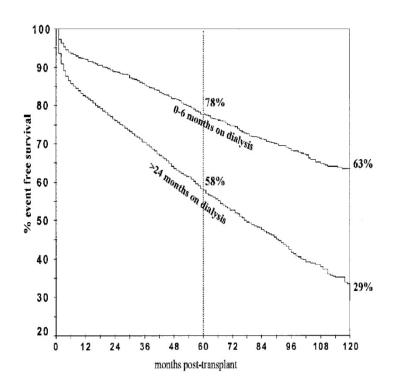
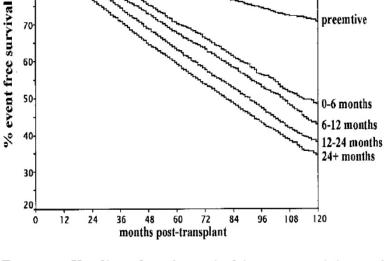


FIGURE 1. Unadjusted graft survival in of 2,405 recipients of paired kidneys with short compared to long ESRD time.



preemtive

FIGURE 2. Unadjusted graft survival in 56,587 recipients of cadaveric transplants by length of dialysis treatment before transplant.

Meier-Kriesche and Kaplan: Transplantation. 2002;74:1377-81

Summary

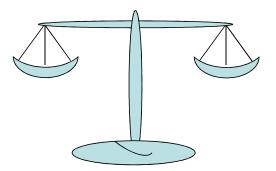
Advantages of single center KPD

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 - Think of it ... Try it ... Do it! with frozen donor cells

- Low risk, excellent results

What is the future of KPD?

- More single center programs?
- Multi-center programs?
- Multiple national programs?
- International programs?



Different programs have different needs

Challenge ...

- How does your program match up?
- Can you do more?

Assistance is available to help you break through the barriers!

Acknowledgements

Cathi Murphey, Ph.D.

Southwest Immunodiagnostics, Inc.

The staff at Methodist San Antonio

Thank you for the invitation



Summary

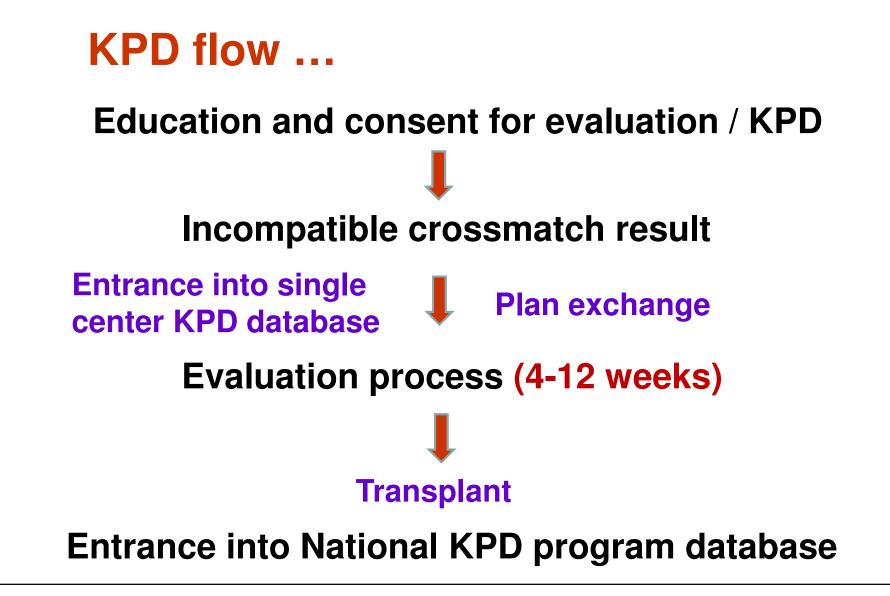
Talent, Technology, Teamwork and Time are the keys to success!

Who benefits from KPD?



Donors are heroes in transplantation!





KPD keys to success



KPD keys to success









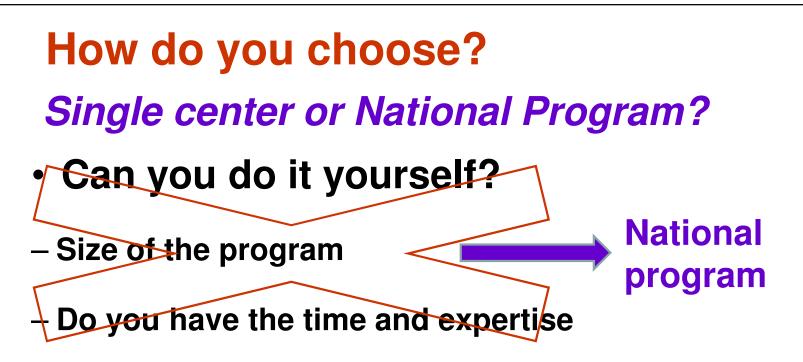




KPD keys to success

- Great KPD staff / a champion / teamwork with the HLA staff
- Recipient / donor education, efficient entry of pairs into database

- Matching program and allocation ?
 principles Outsource
- Planning the logistics



- Will you do more or fewer transplants?
- More or less efficient?
- Faster or slower pace?

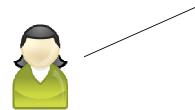
Need to under-assign antibody and search for a great class I match ...



HLA: A2,24 B48,61 C8,15 DR4,11 DRw52,53 DQ7,8

Blood type A Calculated PRA – 100% HLA Antibodies –

A 1,3,10,11,19,25,26,28,29,30,31,32,33,34,36,43,66,68,69,74,80 B12,14,18,39,41,44,45,51,54,59,60,64,65,75,76,77,78 C3,9,10 DR 1,3,9,10,17,18,103 DRw51 DQ 2,4,5,6



1:11:8B51MFI 5,2002,800DQ4MFI 7,4002,400

KPD Donor: A2 B51 C8,15 DR8,14 DRw52 DQ4,7 Blood type A

What should we do?

Need to under-assign antibody and search for a great class I match ...



HLA: A2,24 B48,61 C8,15 DR4,11 DRw52,53 DQ7,8

Blood type A Calculated PRA – 100% HLA Antibodies – A 1,3,10,11,19,25,26,28,29,30,31,32,33,34,36,43,66,68,69,74,80 B12,14,18,39,41,44,45,51,54,59,60,64,65,75,76,77,78 C3,9,10 DR 1,3,9,10,17,18,103 DRw51 DQ 1,4,5,6 I:1 1:8

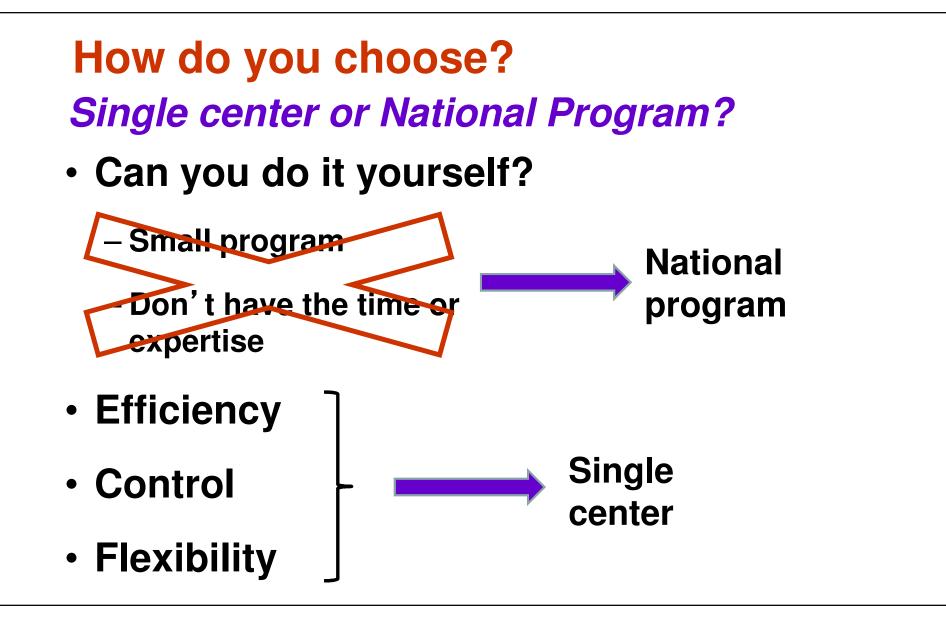
	B51 MFI 5,200 2,800 DQ4 MFI 7,400 2,400
Donor: A2 B51 C8,15 DR8,14 DRw52 DQ4,7 Blood type A	T MCS 322 B MCS 281 Too strong!

Need to under-assign antibody and search for a great class I match ...



HLA: A2,24 B48,61 C8,15 DR4,11 DRw52,53 DQ7,8

Blood type A Calculated PRA – 100% HLA Antibodies – A 1,3,10,11,19,25,26,28,29,30,31,32,33,34,36,43,66,68,69,74,80 B12,14,18,39,41,44,45,51,54,59,60,64,65,75,76,77,78 C3,9,10 DR 1,3,9,10,17,18,103 DRw51 DQ 1,4,5,6 1:1 1:8 B51 MFI 5200 2800 **DQ4 MFI 7400** 2400 Donor: A2 B51 C8,15 T MCS 322 ... We can do better DR8,14 DRw52 DQ4,7 **B MCS 281 Blood type A**



Example



Calculated PRA – 100% HLA Antibodies – A 2,23,24,25,28,30,31,32,34,66,68,69 B7,12,13,17,21,27,37,38,40,42,44,45,46,47,48,49,50,51 52,53,55,56,57,58,59,60,61,62,63,67,72,73,76,77,81,82 C1,2,4,5,6,8,9,10,14,15,16,17,18 DR 4,7,9 DRw53 DQ 7,8,9 DP 1,2,4,5,10,11,13,14,15,19,20,23,28

Example ... guess the crossmatch result?



Calculated PRA – 100% HLA Antibodies – A 2,23,24,25,28,30,31,32,34,66,68,69 B7,12,13,17,21,27,37,38,40,42,44,45,46,47,48,49,50,51 52,53,55,56,57,58,59,60,61,62,63,67,72,73,76,77,81,82 C1,2,4,5,6,8,9,10,14,15,16,17,18 DR 4,7,9 DRw53 DQ 7,8,9 DP 1,2,4,5,10,11,13,14,15,19,20,23,28 Blood type A A2 MFI 2300 B62 MFI 2700 T MCS 369 B MCS 272 17 DBw52 DQ2 6

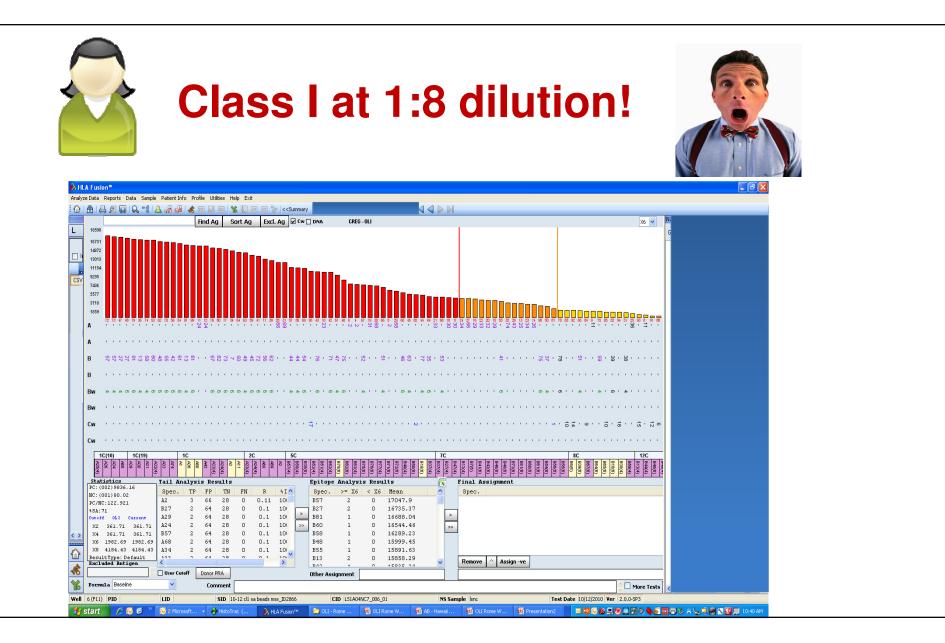
Donor: **A2 B**8,**62** C3,7 DR13,17 DRw52 DQ2,6 Blood type O

Why so strong?????



Class I antibodies undiluted

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The prozone effect ...

A2 1:1 MFI 2300 1:8 MFI 6940!

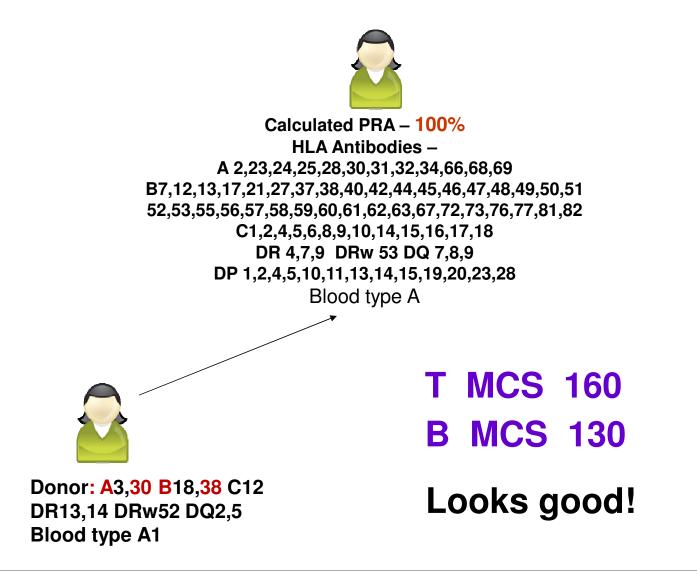
B62 1:1 MFI 2700 1:8 MFI 11,800!

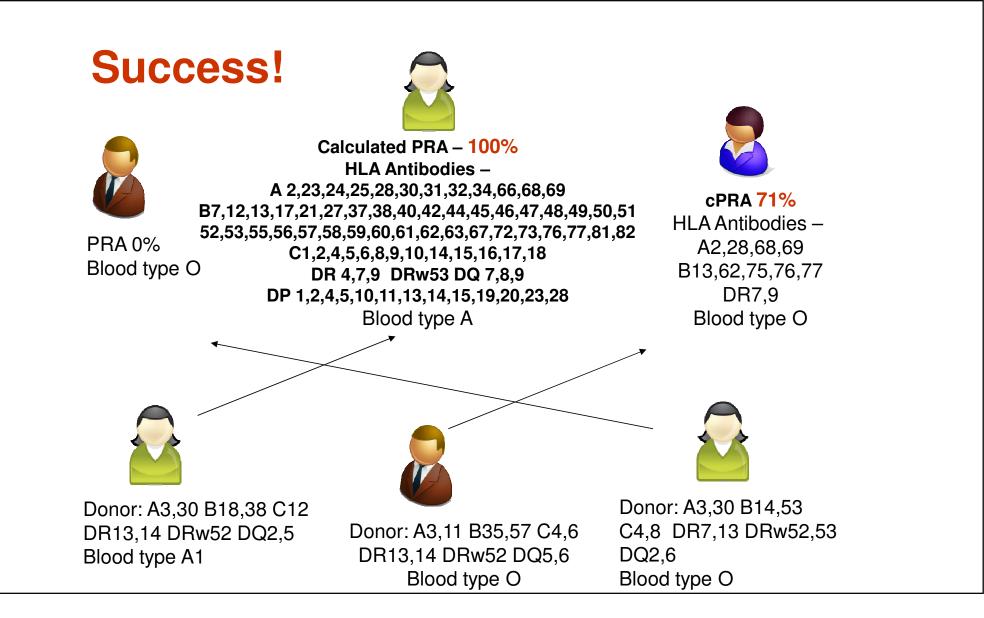
Be careful of the prozone effect ...

- Reassign based on 1:8 dilutions ...
- Donor pops up!

-HLA A3,30;B18,38 C12 DR13,14 DQ2,5 DRw52

- Donor specific antibodies
 - A30 1:1 MFI 6166 B38 1:1 MFI 3669
 - A 30 1:8 MFI 4144 B38 1:8 MFI 1185





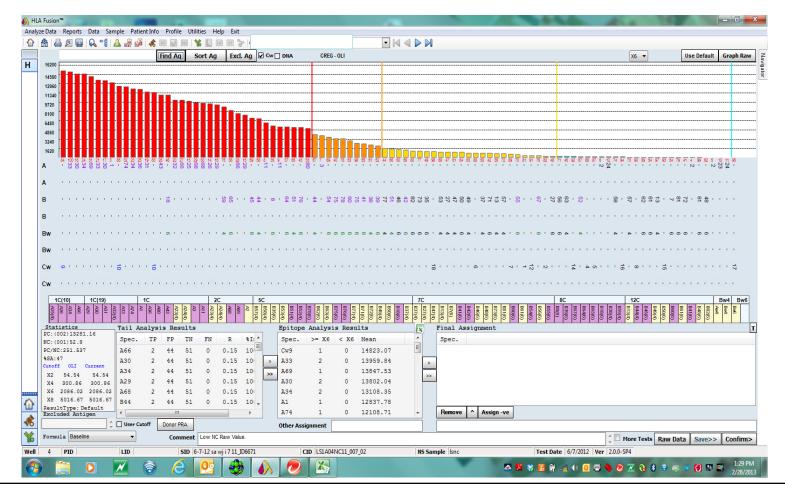
47 year old woman, previous transplant, on dialysis 17 years, multiple lists

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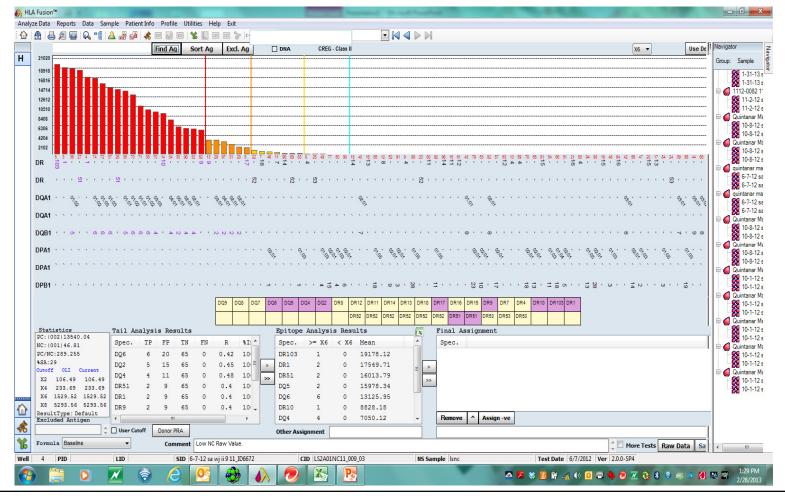
47 year old woman, previous transplant, on dialysis 17 years, multiple lists

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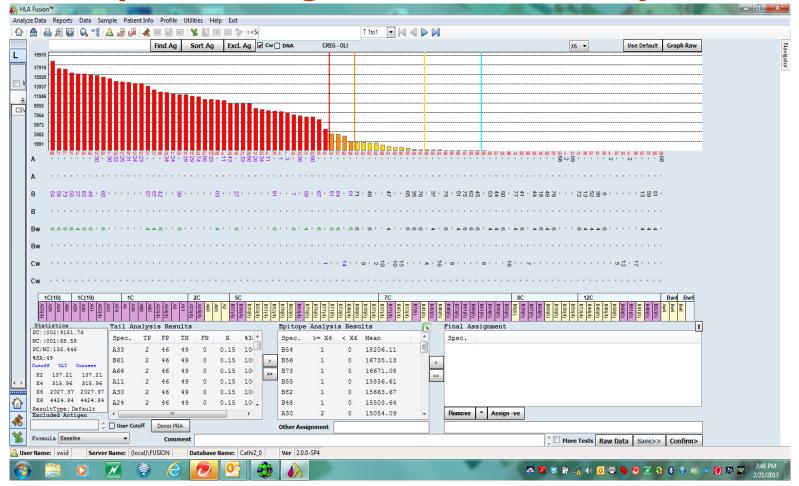
### 65 year old woman, previous transplant never worked, > 7 years waiting time ...



### 65 year old woman, previous transplant never worked ...



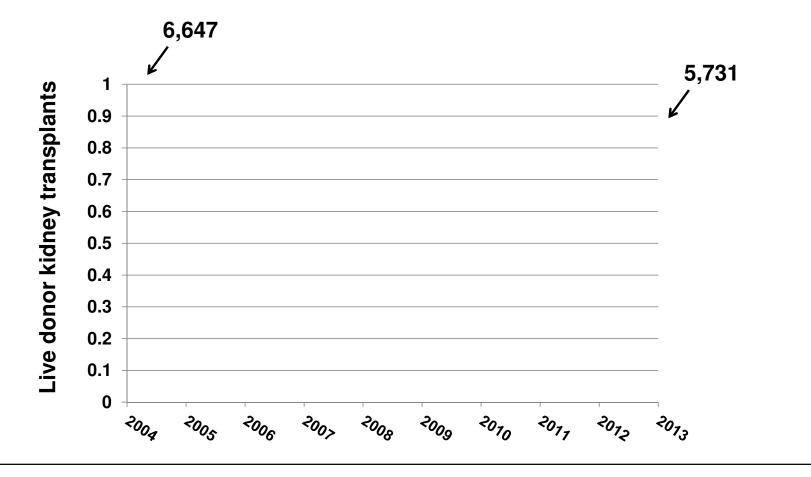
### 37 year old woman, previous transplant, multiple waiting lists for over 10 years



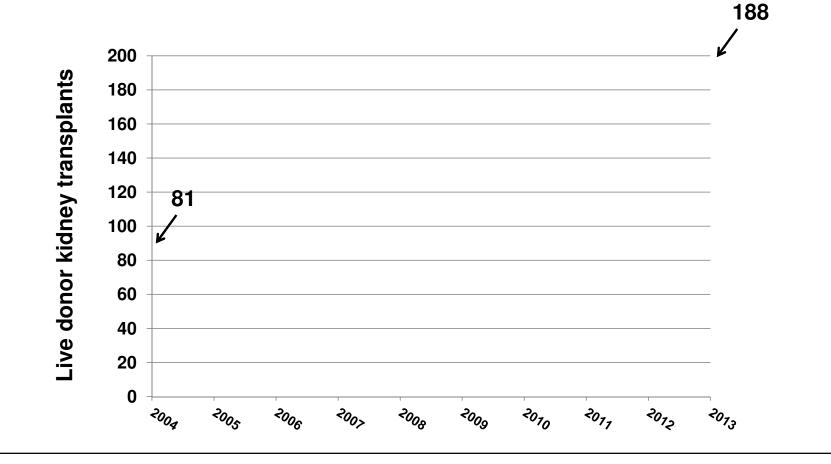
### 37 year old woman, previous transplant, multiple waiting lists for over 10 years

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•	DPA1 DPB1 DP	Tail Spec DQ6 DQ6 DQ1 DQ6 DQ4 25.73 DQ8	© → ☆ Analys . TP 6 5 4 4	sis Res FP 69 64 64 55 55	DQ9 DQ9 Sults TN 16 16 16 16 16	EN 0 0 0 0 0 0	R 0.12 0.12 0.12 0.12 0.12 0.12 0.12	6 DQ5	Q, , , , , , , , , , , , , , , , , , ,	DQ2 DR8 pitope J Spec. DP9 DP3 DP6 DP14 DP17	DR12 D DR12 D DR52 Di Analysi >= X6 1 3 1 1 1	R11 DR1 R52 DR52 S Resu < X6 0 0 0 0 0	Image: Constraint of the second sec	DR17 DR1 DR52 DR51	23 DR15 DR51 P1 S	QR9 DR DR53 DR nal Ass	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	  DR10 [		· · · · 4	, <b>0</b> , 8, 8		9 	•••	T	
	DPA1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DP	Tail Spec DQ6 D24 33.11 DQ7 D03.36 DQ4 255.73 DQ8 176.8 DP18 Ut	© → ☆ Analys . TP 6 5 4 4	sis Res FP 69 64 64 55 55 48	DQ9 DQ9 DQ9 TN 16 16 16 16 16 16	6, , , , , , , , , , , , , , , , , , ,	R 0.12 0.12 0.12 0.12 0.12 0.12 0.12	6 DQ5	Q, ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;	DQ2 DR8 pitope J Spec. DP9 DP3 DP6 DP14 DP17 DP5	DR12 D DR12 D DR52 Di Analysi >= X6 1 3 1 1 1 1 1	R11 DR1 R52 DR52 S Resu < X6 0 0 0 0 0 0 0 0 0 0	DR13         DR16           PR2         DR22           Its         Mean           20205.82         18210.29           18119.94         17770.57           177657.92         17513.25	DR17 DR11 DR52 DR51		DR9 DR DR53 DR nal Ass pec.	7 DR4 53 DR53 signmer	DR10 0		· · · · 4	, <b>0</b> , 8, 8		9 	•••	T	
	DPA1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DP	Tail Spec DQ6 DR4 DR4 DR4 DR4 DR4 DR4 DR4 DR4 DR4 DR4	<ul> <li>analys</li> <li>Analys</li> <li>Analys</li> <li>TP</li> <li>5</li> <li>4</li> <li>3</li> </ul>	55 55 48	DQ9 DQ9 DQ9 TN 16 16 16 16	EN 0 0 0 0 0 0	R 0.12 0.12 0.12 0.12 0.12 0.12 0.12	6 DQ5	0, , , , , , , , , , , , , , , , , , ,	DD2 DR8	DR12 D DR12 D DR52 D Analysi >= X6 1 3 1 1 1 1 6	R11 DR1 R52 DR52 S Resu < X6 0 0 0 0 0 0 0 0 0 0	Image: Constraint of the second sec	DR17 DR1 DR52 DR51		QR9 DR DR53 DR nal Ass	7 DR4 53 DR53 signmer	  DR10 [		· · · · 4	, <b>0</b> , 8, 8		9 	•••	Ţ	
	DPA1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DPB1 DP	Tail Spec DQ6 D24 33.11 DQ7 D03.36 DQ4 255.73 DQ8 176.8 DP18 Ut	<ul> <li>analys</li> <li>Analys</li> <li>Analys</li> <li>TP</li> <li>5</li> <li>4</li> <li>3</li> </ul>	sis Res FP 69 64 64 55 55 48 m Donor P	DQ9 DQ9 DQ9 TN 16 16 16 16	EN 0 0 0 0 0 0 0	R 0.12 0.12 0.12 0.12 0.12 0.12 0.12	6 DQ5	0, , , , , , , , , , , , , , , , , , ,	DQ2 DR8 pitope J Spec. DP9 DP3 DP6 DP14 DP17 DP5	DR12 D DR12 D DR52 D Analysi >= X6 1 3 1 1 1 1 6	R11 DR1 R52 DR52 S Resu < X6 0 0 0 0 0 0 0 0 0 0	DR13         DR16           PR2         DR22           Its         Mean           20205.82         18210.29           18119.94         17770.57           177657.92         17513.25	DR17 DR11 DR52 DR51		DR9 DR DR53 DR nal Ass pec.	7 DR4 53 DR53 signmer	DR10 0	R 103 DR	· · · 6			од · · · · N · · · ·			
6	DPA1 DPB1 0 · · · · 0 0 Statistics DC: (002) 9243.88 NC: (001) 58 PC/NC: 159.377 SA: 82 Cutoff OLI Curr X2 139.11 11 X4 308.36 31 X6 2255.73 22 X8 4176.8 41 BesultType: Defat Excluded Antigen	Tail Spec DQ6 DQ4 255.73 DQ8 255.73 DQ8 176.8 DP18 ↓ ↓ User	<ul> <li>analys</li> <li>Analys</li> <li>Analys</li> <li>TP</li> <li>5</li> <li>4</li> <li>3</li> </ul>	sis Res FP 69 64 64 55 55 48 m Donor F Com	D09 D09 D09 TN 16 16 16 16 16 16	EN 0 0 0 0 0 0	R 0.12 0.12 0.12 0.12 0.12 0.12	<ul> <li>Q. Q. Q.</li> <li>Q. Q. Q.</li></ul>	Q, · · · → · · → · · → · · → · · → · · → · ·	DO2 DR8 ppitope J Spec. DP9 DP3 DP4 DP14 DP17 DP5 DQ6 ther Assig	DR12 D DR32 D7 DR32 D7 Analysi >= X6 1 3 1 1 1 1 6 nment	R11         DR1           R22         DR22           DR3         S           R00         0           0         0           0         0           0         0           0         0           0         0           0         0	DR13         DR18           DR52         DR52           Its         Mean           20205.82         18210.29           18119.94         17770.57           17557.92         17513.25           16996.24	DR17 DR1 DR52 DR51	· 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DR9 DR DR53 DR nal As pec.	1     DR4       1     DR53       1     DR53       1     Sigramer	DR10 0	R103 DR	• • • • • •	e Tests	Raw Dz	ед 			
↔ ŵ well	DPA1 DPB1 DP	Tail Spec DQ6 B9.11 DQ7 B0.36 DQ8 DQ8 DQ8 DQ8 DQ8 DQ8 DQ8 DQ8 DQ8 DQ8	<ul> <li>analys</li> <li>Analys</li> <li>Analys</li> <li>TP</li> <li>5</li> <li>4</li> <li>3</li> </ul>	sis Res FP 69 64 64 55 55 48 m Donor F Com	D09 D09 Sults TN 16 16 16 16 16 16 16 16 16 15 SU 2-2	EN 0 0 0 0 0 0	R 0.12 0.12 0.12 0.12 0.12 0.12 0.12		Q, · · · → · · → · · → · · → · · → · · → · ·	DO2 DR8 ppitope J Spec. DP9 DP3 DP4 DP14 DP17 DP5 DQ6 ther Assig	DR12 D DR12 D DR52 D Analysi >= X6 1 3 1 1 1 1 6	R11         DR1           R22         DR22           DR3         S           R00         0           0         0           0         0           0         0           0         0           0         0           0         0	DR13         DR18           DR52         DR52           Its         Mean           20205.82         18210.29           18119.94         17770.57           17557.92         17513.25           16996.24	DR17 DR1 DR52 DR51	· 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DR9 DR DR53 DR nal Ass pec.	1     DR4       1     DR53       1     DR53       1     Sigramer	DR10 0	R103 DR	More Test Data	e Tests [ 2/21/20	Raw Da	ед N N Save 2.0.0-SP4	>>> Ca	onfirm>	● 🕢 💀

## Live donor kidney transplantation in the U.S. is decreasing



#### Live donor kidney transplantation at Methodist San Antonio is increasing



#### **Example**



Calculated PRA – 100% HLA Antibodies – A 3,11,23,25,26,32,33,34,43,66,68,69,74,80 B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57, 58,59,60,61,62,63,64,65,67,70,71,72,75,76,77,78,81,82 C7,12,15 DR 1,4,9,10,14,15,16,103 DRw51 DQ 4,5,7,8,9 DP 1,3,5,6,9,11,13,14,17,18,20,28

### Methodist San Antonio approach to the most highly sensitized Look for it ... Try it ... Do it!

- "She loves me ... She loves me not ..."
- Look! ... Aggressively drop off antibody in a KPD database looking for possibilities ...
- Try! Crossmatch promising pairs with <u>STORED FROZEN DONOR</u> <u>CELLS! ... NO DELAY!</u>
- She loves me? ... TRANSPLANT!
- She loves me not? ... GO FISH!







#### Looking



A2,29 B44 C5,16 DR7,13 DRw52,53 DQ2,6

Calculated PRA – 100%

HLA Antibodies –

A 3,11,23,25,26,32,33,34,43,66,68,69,74,80

B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 62,63,64,65,67,70,71,72,75,76,77,78,81,82 C7,12,15

DR 1,4,9,10,14,15,16,103 DRw51 DQ 4,5,7,8,9

DP 1,3,5,6,9,11,13,14,17,18,20,28







A2,29 B44 C5,16 DR7,13 DRw52,53 DQ2,6

Calculated PRA – 100%

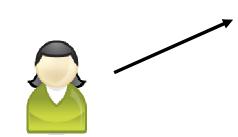
HLA Antibodies –

A 3,11,23,25,26,32,33,34,43,66,68,69,74,80

B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 ,62,63,64,65,67,70,71,72,75,76,77,78,81,82 C7,12,15

DR 1,4,9,10,14,15,16,103 DRw51 DQ 4,5,7,8,9

DP 1,3,5,6,9,11,13,14,17,18,20,28

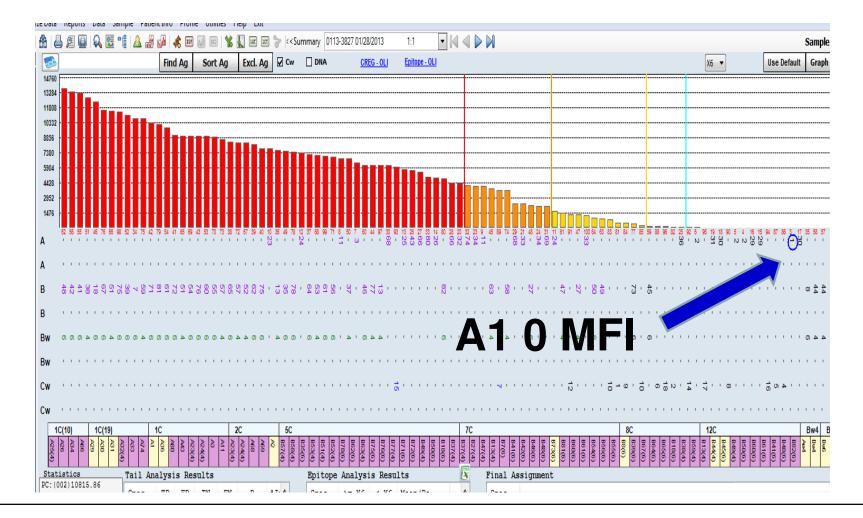


Donor: A1,29 B8,44 C7,16 DR7,17 DRw52,53 DQ2 DP4

1:1 T MCS 642
1:4 T MCS 618 FAILED!
1:8 T MCS 605
1:1 B MCS 477 What ??
1:4 B MCS 453
1:8 B MCS 446

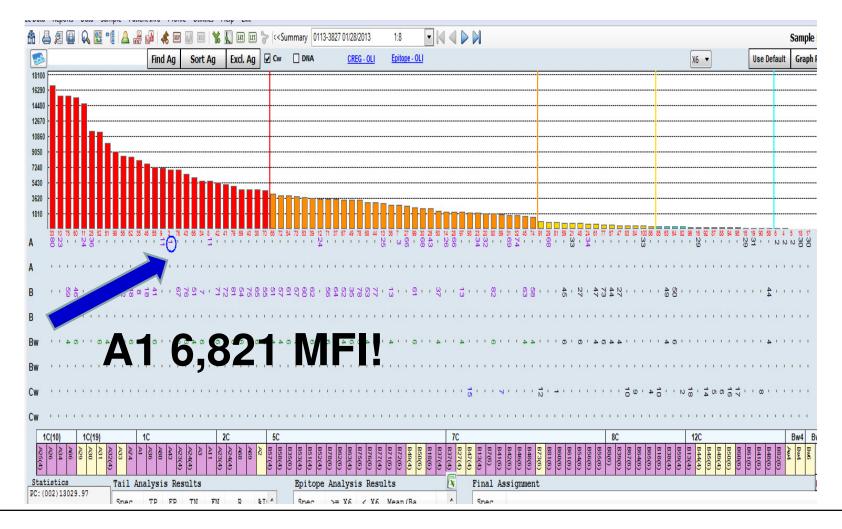
#### What ??...

#### Undiluted



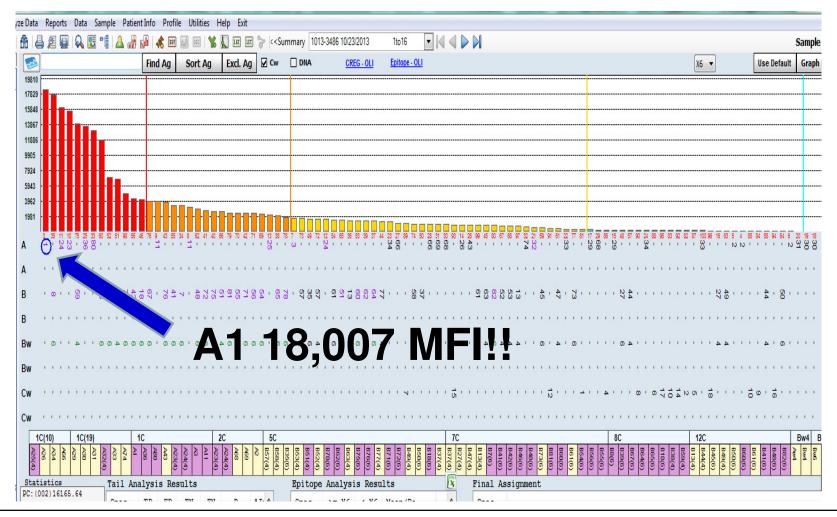
#### What ??

#### 1:8 dilution



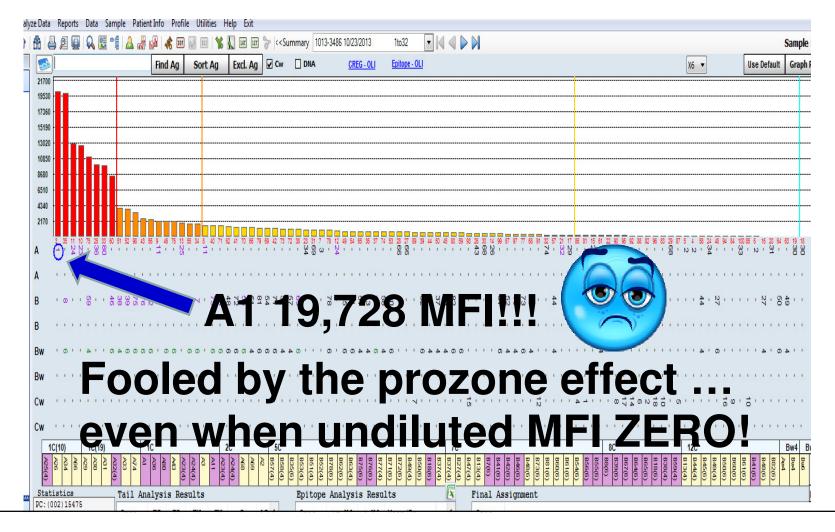
#### What ??

#### 1:16 dilution



#### What ??

#### 1:32 dilution







A2,29 B44 C5,16 DR7,13 DRw52,53 DQ2,6

Calculated PRA – 100%

HLA Antibodies –

A 3,11,23,25,26,32,33,34,43,66,68,69,74,80

B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 ,62,63,64,65,67,70,71,72,75,76,77,78,81,82 C7,12,15

DR 1,4,9,10,14,15,16,103 DRw51 DQ 4,5,7,8,9

DP 1,3,5,6,9,11,13,14,17,18,20,28

	1:1	1:16
	B13 MFI 9,653	2,259
	A68 MFI 2,779	455
Donor: A2,68 B13,44 C6,16 DR7 DRw53 DQ2 DP4	Guess the crossma	_





A2,29 B44 C5,16 DR7,13 DRw52,53 DQ2,6

Calculated PRA – 100%

HLA Antibodies –

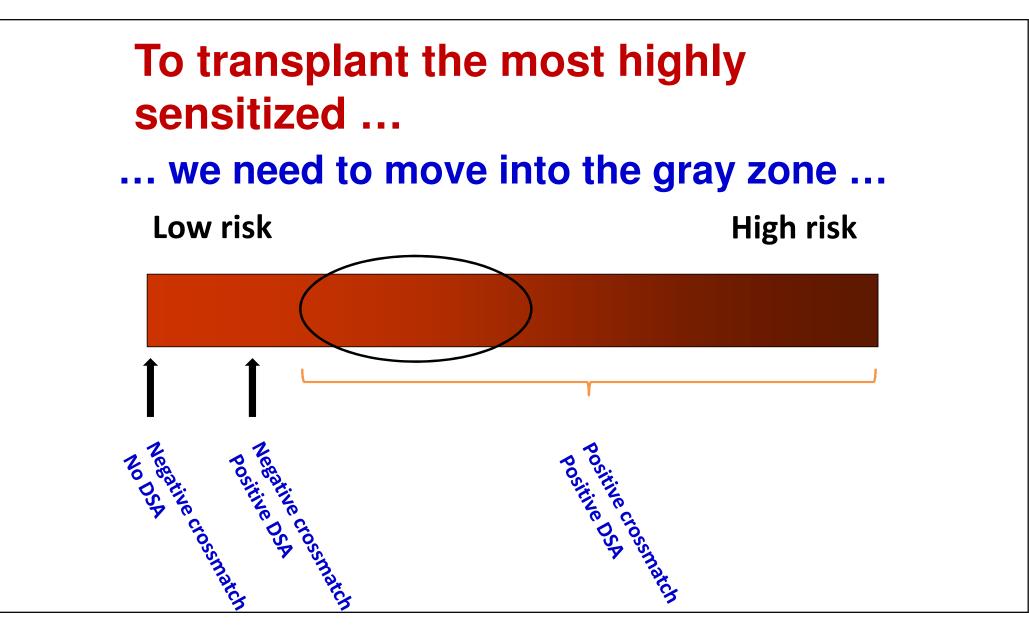
A 3,11,23,25,26,32,33,34,43,66,68,69,74,80

B13,18,27,35,37,38,39,41,42,46,48,51,52,53,54,55,56,57,58,59,60,61 62,63,64,65,67,70,71,72,75,76,77,78,81,82 C7,12,15

DR 1,4,9,10,14,15,16,103 DRw51 DQ 4,5,7,8,9

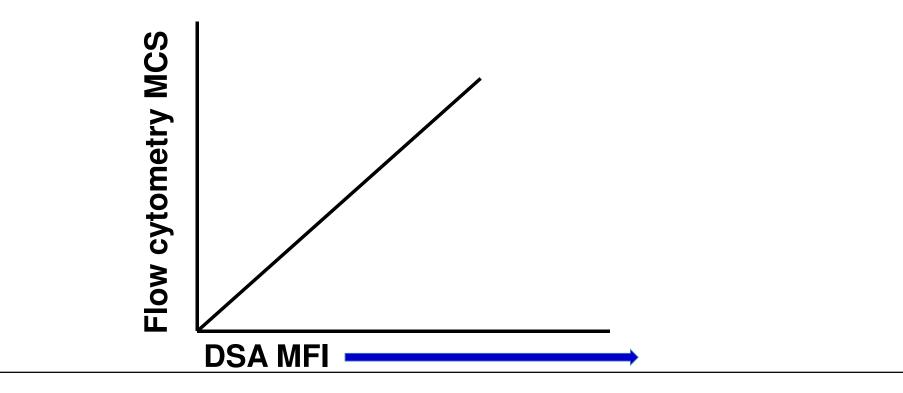
DP 1,3,5,6,9,11,13,14,17,18,20,28

	1:1	Т	MCS	259	
	1:4	т	MCS	138	SUCCESS!
	1:16	т	MCS	<b>62</b>	
	1:1	В	MCS	<b>226</b>	
Donor: A2,68 B13,44 C6,16	1:4	В	MCS	177	
DR7 DRw53 DQ2 DP4	1:8	В	MCS	84	



### The idea that DSA MFI *reliably* correlates with crossmatch results is **FALSE**!

This relationship is <u>not strictly linear</u>... especially for the most highly sensitized patients!



# The idea that DSA MFI *reliably* correlates with crossmatch results is <u>FALSE</u>! *Why*?

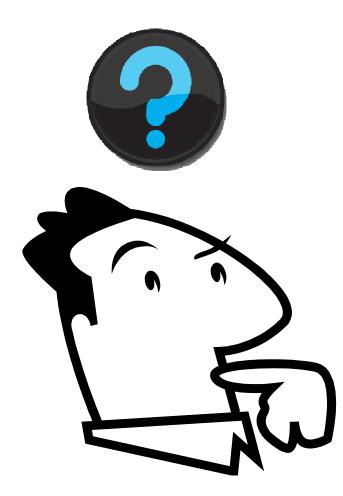
- There are not beads available for every allele
- Antigen bead density can vary
- Unreliable "cumulative effect" of multiple DSAs
- Prozone effect
- Lower antigen expression of C and DP on donor cells
- DSA against homozygous HLA ? Double dose
- Non-HLA antibody

If you have never had a failed positive crossmatch then you are not transplanting *enough* highly sensitized patients ...

#### ... you can't be right all the time!

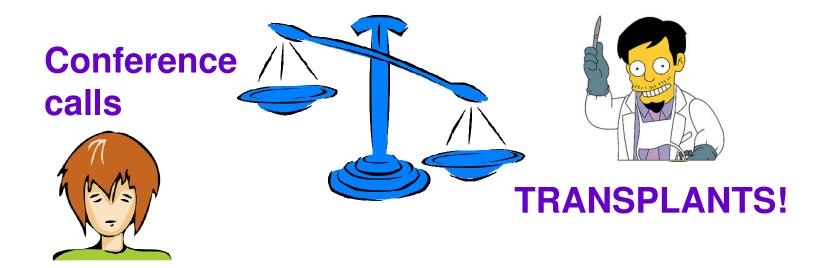
"The key to success is to double your failure rate" - Henry Ford





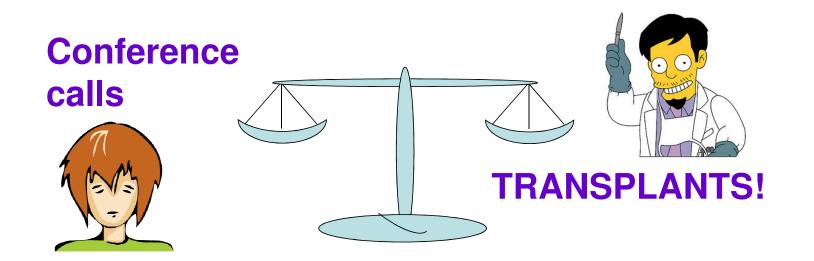
## What would you do?

#### To maximize KPD transplants you must ... Keep the conference call to transplant ratio favorable!!! Single Center Ratio!



To maximize KPD transplants you must ...

## Keep the conference call to transplant ratio favorable!!!



## When you fail with an establishment candidate ...

#### **Conference call!**



## When you fail at a single center, <u>SO WHAT???</u>

Keys to FAILING SUCCESSFULLY!

- You have learned from the failure!
- You failed quickly!
- No one else is hurt by the failure!



### Need to manipulate antibody assignments ...

### How do we know what to assign as unacceptable?

#### **Examples**

#### Good judgement comes from experience ... and experience comes from bad judgement!



... old saying

