

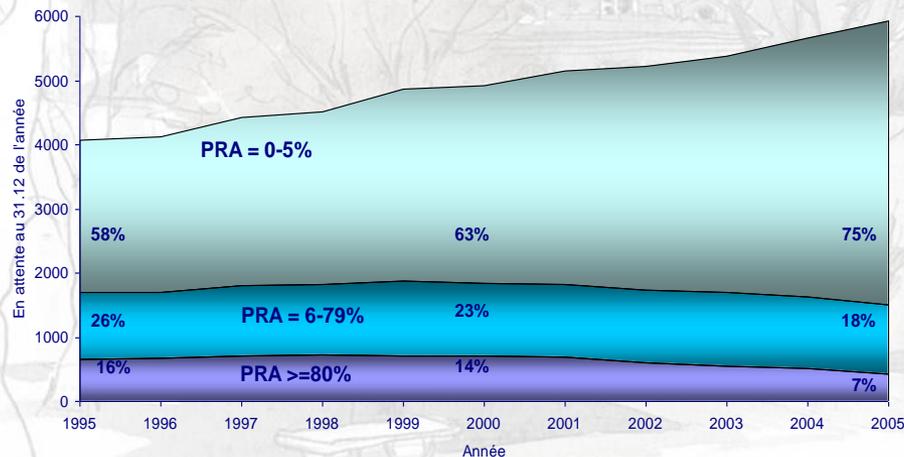
Transplanting the sensitized patient: current strategies



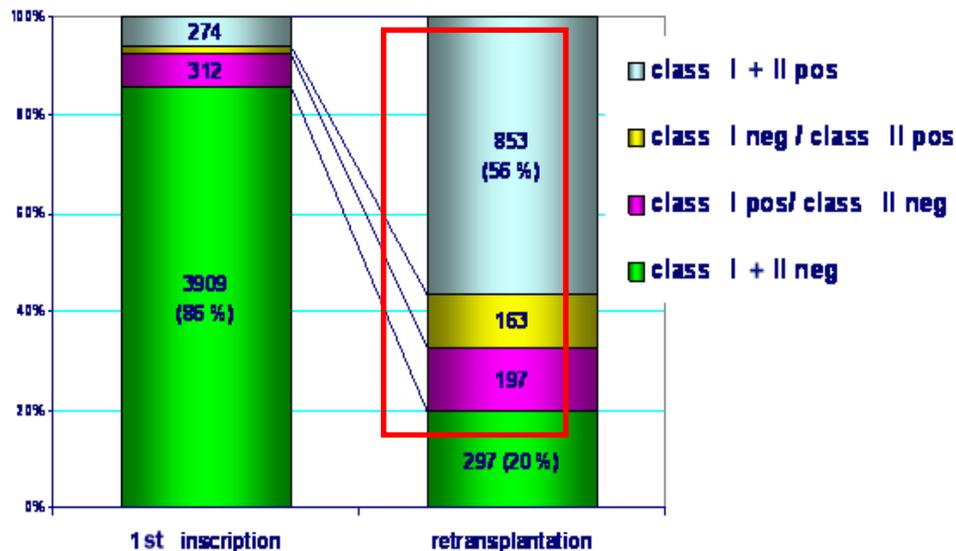
3RD GCC ORGAN TRANSPLANTATION & NEPHROLOGY CONGRESS



Sensitized patients in France



80% of patients on waiting list for retransplant are sensitized



Graft loss
=
1st cause of anti-HLA immunization in France

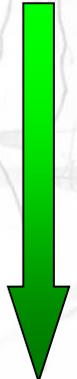
French Agency for Graft Allocation

The new sensitized patient

Definition 2009: 1 Ac IgG anti-allo-HLA

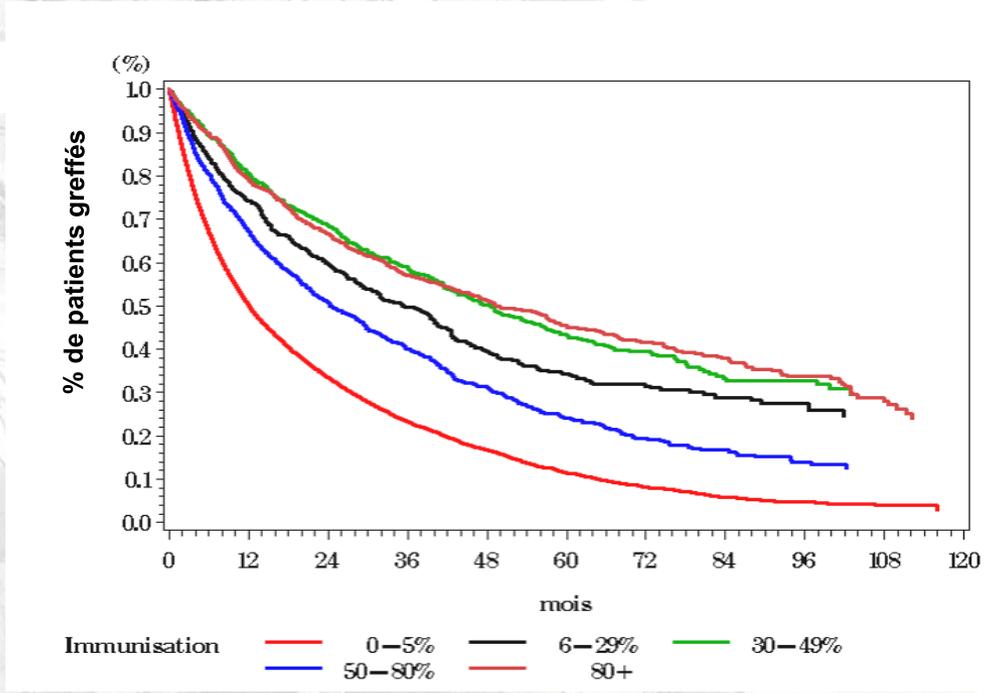
2000

20% sensitized pts



... 2009

50% sensitized pts



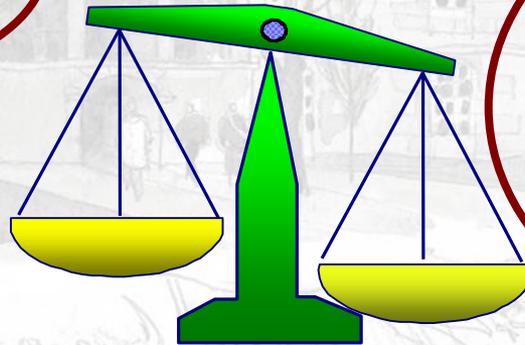
Unequal access to transplant

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

LA COUR CARP
DE
L'HÔPITAL SAINT

Kidney transplantation in sensitized patients awaiting transplants from deceased donors

Increased waiting times
No graft



Efficiency

- Graft survival
- AMR
- CAMR
- Immunosuppression
- High risk (infections, tumors)

Constraints

- Organ scarcity
3.4 potential recipients for each kidney transplant
- Logistical (geographic, cold ischemia)
- Financial

Our main challenge: Defining the risk

Presence/absence of antibody is not enough

- XM: flow crossmatch
- DSA: ELISA/Luminex

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

2005
Nöcke
HERBENSCHMIDT

LA COUR CARP

 DE

 L'HÔPITAL SAINT

Presence/absence of DSA

Impact of a positive flow crossmatch

	Pt (n)	% T+ FXCM	Early graft loss (< 3 mo) FP vs FN	Acute Rej. FP vs FN	1 year Surv. FP vs FN
Iwaki et al. 1987	113	16%	22% vs 4%		
Cook et al. 1987	196	18%	22% vs 7%		
Mahoney et al. 1990	67	18%	33% vs 7%		67% vs 85%
Ogura et al. 1993	841	18%	20% vs 7%		75% vs 82%
Pelletier et al. 1997 *	102	18%		67% vs 51%	86% vs 98%
Kerman et al. 1999 *	97			44% vs 40%	81% vs 83%
Karpinski et al. 2001	143	13%	33% vs 11%	25% vs 5%	

FXCM = flow crossmatch, **FP = flow positive**, **FN = flow negative**

* No significant difference between FP and FN

L'ENTREE

 DU NOUVEAU

 SAINT-LOUIS

2005

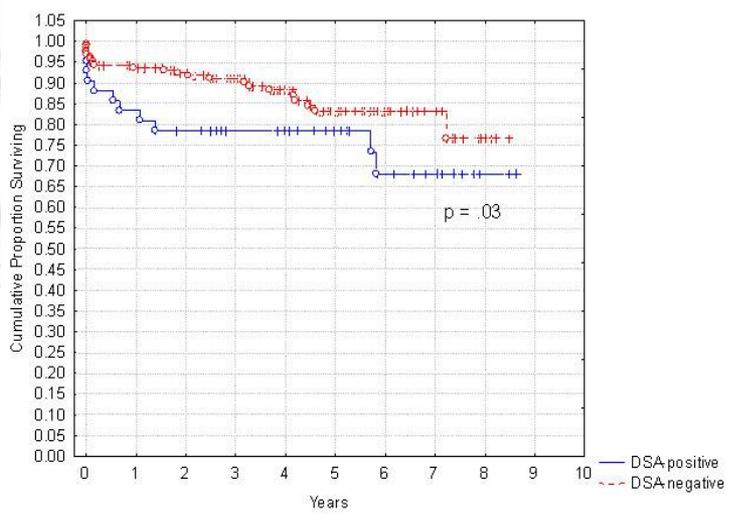
 Nöcke

 HERBENSCHEMOT

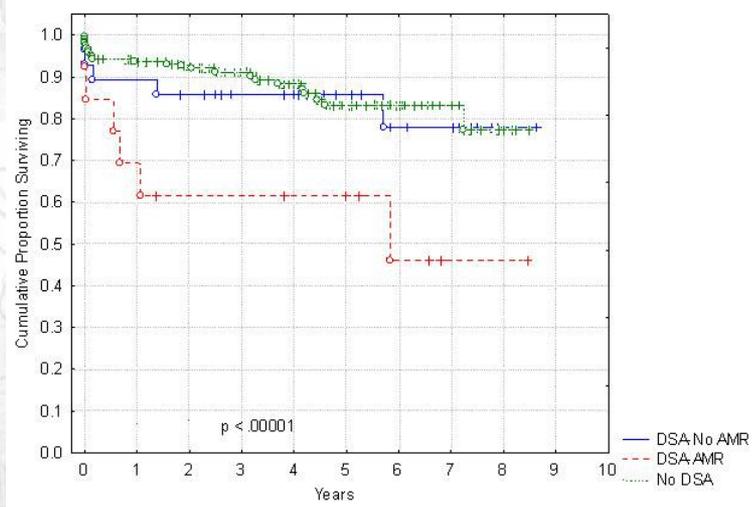
LA COUR CARP
DE
L'HÔPITAL SAINT

Presence/absence of DSA

- 237 pts, CDC-XM -, ELISA on peak
- 43 pts (18%) DSA +, AMR: 35%
- 194 pts (82%) DSA -, AMR: 3%



8 year graft survival curve according to DSA (+/-)

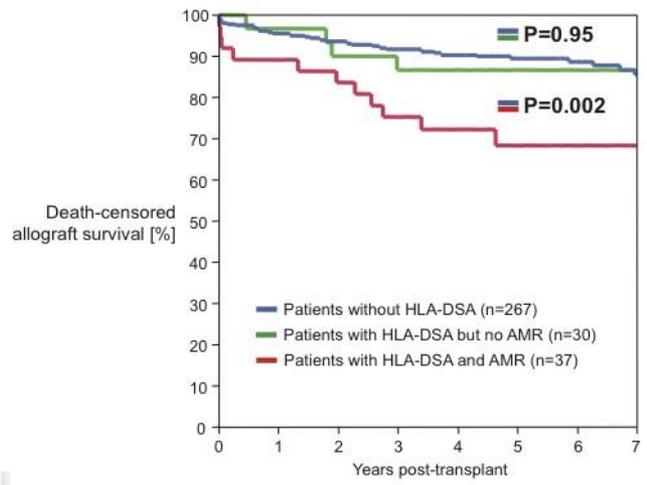
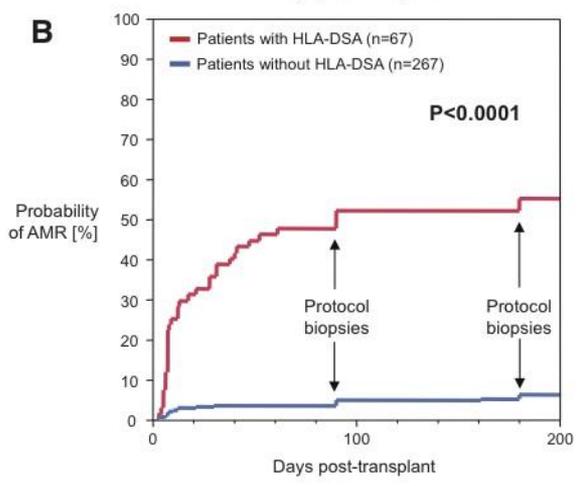


8 year graft survival curve according to DSA (+/-) and AMR (+/-)

LA COUR CARP
DE
L'HÔPITAL SAINT

Presence/absence of DSA

- 334 pts, CDC-XM -, Luminex on D0
- 67 pts (20%) DSA +, AMR: 55%
- 267 pts (80%) DSA -, AMR: 6%



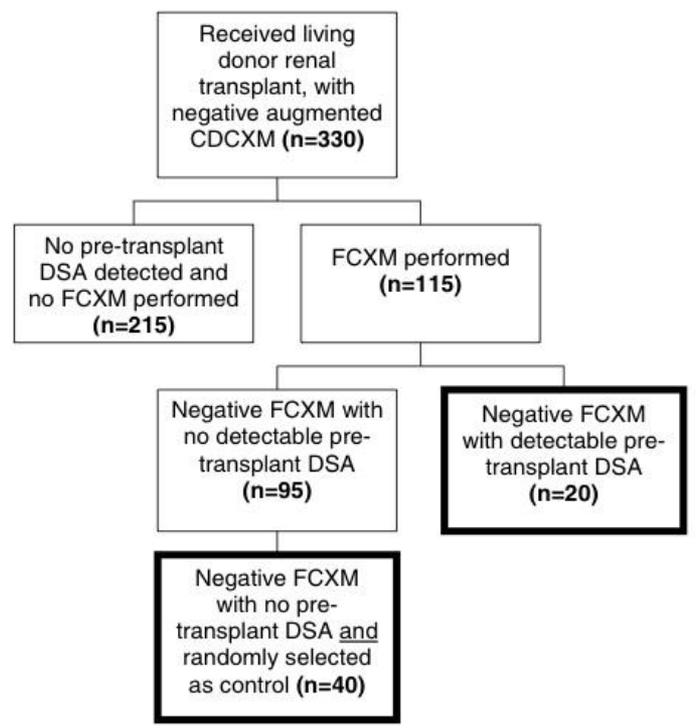
—	267	253	244	236	202	151	114	77
—	30	29	27	26	23	19	18	16
—	37	33	30	27	21	18	13	9
Numbers at risk								

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

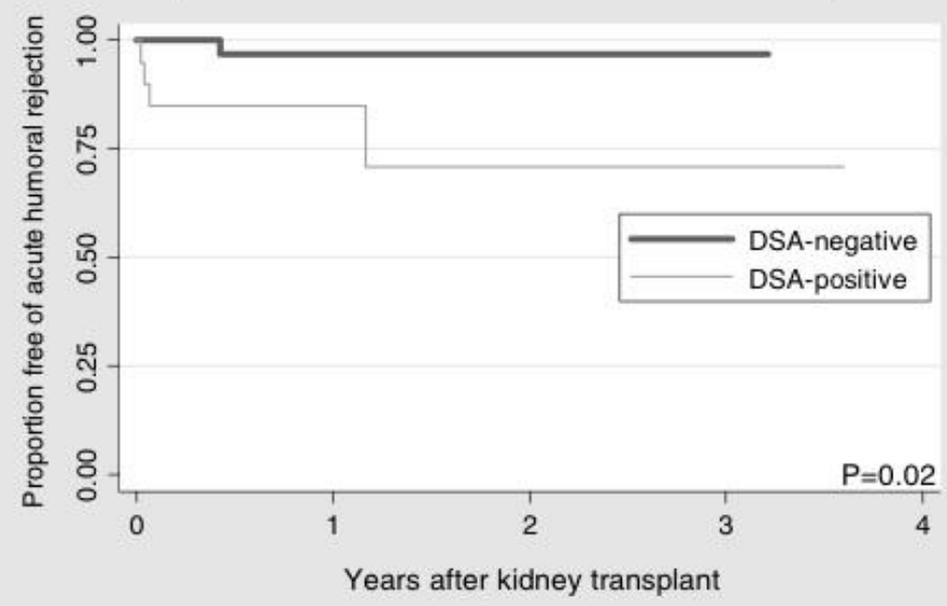
2005
Nöckle
HERBENESCHMOT

LA COUR CARP
DE
L'HÔPITAL SAINT

Patients Flow XM neg, DSA +



Kaplan-Meier curves for acute humoral rejection



L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

2005
Nöckle
Patel, AJT 2007

Our main challenge: Defining the risk

How much is too much ?

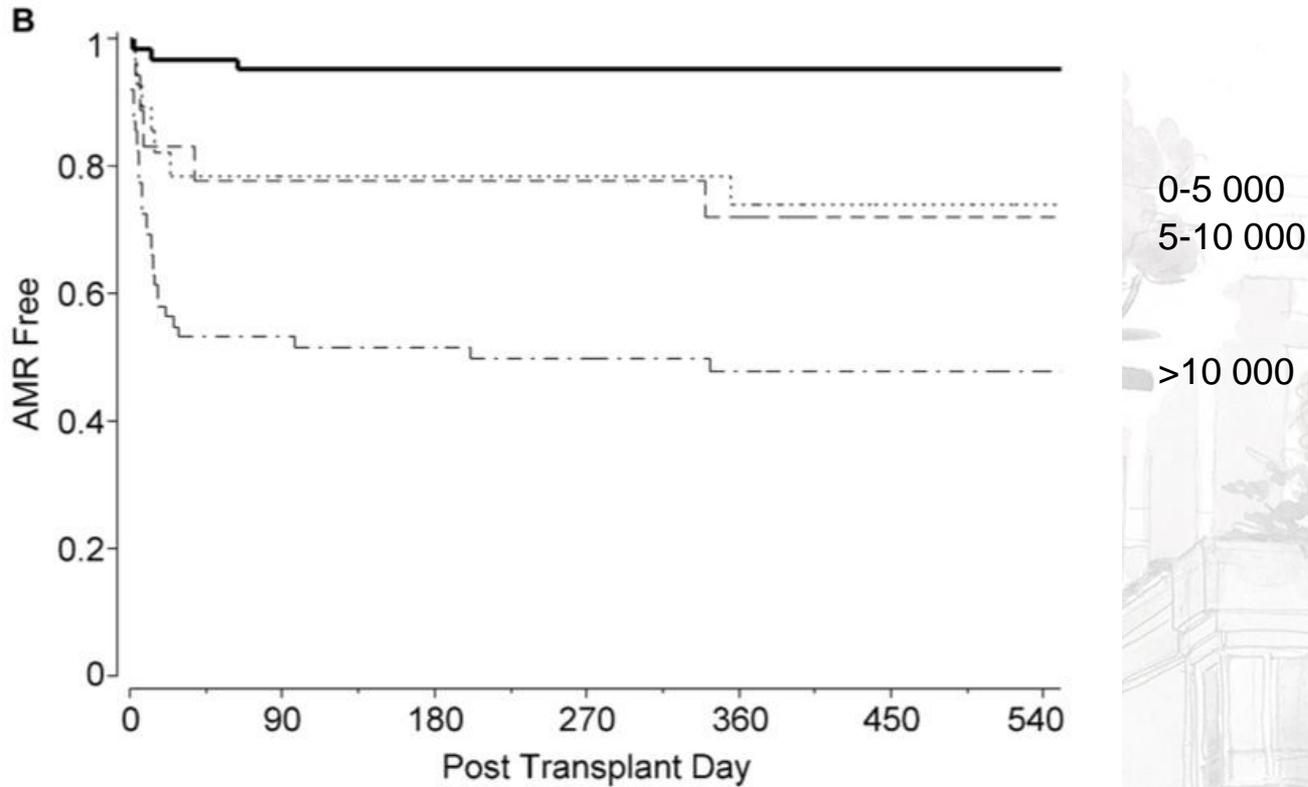
Defining the relevant threshold of

- DSA: MFI in Luminex
- XM: MCS in flow crossmatch

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

2005
Nöcke
HERBENSCHWOT

Relative risk of AMR according to max DSA MFI



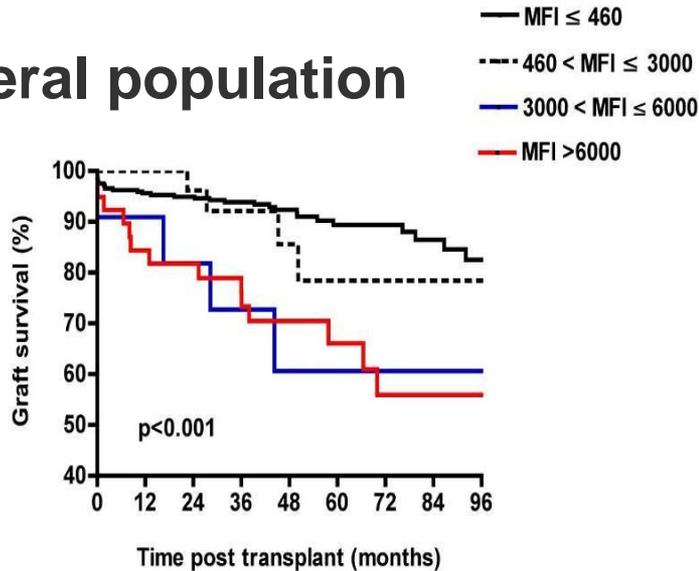
2005
Nérolle
Gloor, AJT 2010

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

Graft survival according to max DSA MFI

LA COUR CARP

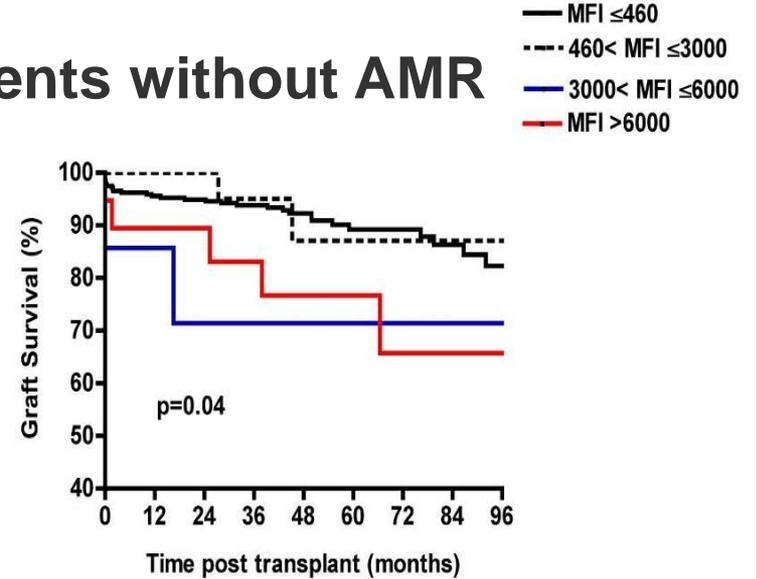
General population



Number at risk

MFI ≤ 460	325	297	285	224	151	103	75	51	33
460 < MFI ≤ 3000	27	27	26	22	13	10	8	7	6
3000 < MFI ≤ 6000	11	11	10	8	4	3	3	2	2
MFI > 6000	39	33	30	28	19	16	12	9	5

Patients without AMR



Number at risk

MFI ≤ 460	322	294	283	222	141	101	74	49	34
460 < MFI ≤ 3000	22	22	22	18	12	10	8	7	6
3000 < MFI ≤ 6000	7	7	6	5	4	3	3	2	2
MFI > 6000	19	17	15	14	11	9	7	5	3

**RR of graft loss in pts with DSA > 3000:
 3.8 (95 CI, 3.5-18.4, p < .0001)**

**RR of graft loss in pts with DSA > 3000:
 2.8 (95 CI, 1.5-16.9, p = .009)**

The paradox.....

- Definition of immunologic risk based on **acellular** assays, e.g. cPRA by Luminex
- Access to Tx based on **cellular** assays: cytotoxic P.R.A., cytotoxic or flow crossmatch

« **Classical** » allocation system must be revisited!

The new Hypersensitized....

NEFG 4000 - NATT 151507 hyper-immunisé

> Patient : [REDACTED]
> Rein - FT7R7

> Sexe : M

Inscription **Immuno.** Coord. attente Suivis Observ.

HLA

A1	A2	B1	B2	DR1	DR2	DQ1	DQ2
2	2	14	44	1	3	1	2

Anticorps - renseignés par Dominique MEUNIER

Taux IgG anti-Ly T ou totaux : 3%

Taux d'anticorps anti-HLA Classe 2 : 5%

Taux de greffons incompatibles : 99% Taux de greffons incompatibles historisé : 100%

Date de dernière recherche Ac anti-HLA validée : 25/01/2010

Données saisies par l'équipe (utilisées pour l'aide au choix)

Transférer automatiquement les Ac de classe I et II saisies par le laboratoire vers les données cliniques : Oui

Spécificités des anticorps Classe 1

A1 A3 A9 A11 A26 A29 A30 A31 A36 A43 A66 A80 B5 B7 B8 B13 B15 B16 B22 B27 B35 B40 B41 B42 B47 B48 B59 B67 B71 B73 B78 B81 B82

Spécificités des anticorps Classe 2

DR2 DR7 DR8 DR9 DQ3 DQ4

Antigènes interdits

Données saisies par le laboratoire

Spécificités des anticorps Classe 1

A1 A3 A9 A11 A26 A29 A30 A31 A36 A43 A66 A80 B5 B7 B8 B13 B15 B16 B22 B27 B35 B40 B41 B42 B47 B48 B59 B67 B71 B73 B78 B81 B82

Spécificités des anticorps Classe 2

DR2 DR7 DR8 DR9 DQ3 DQ4

Antigènes permis

P.R.A. cytotox: 3%..

vP.R.A. 100%

GENECH TUDOT

LA COUR CARP
DE
L'HÔPITAL SAINT

Access to transplant

- Depends on many factors:
 - Blood group
 - HLA typing (rare alleles)
 - Immunization
 - Size of the donor pool
 - Allocation rules

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

2005
Nöcke
HERBENSCHWOT

Tho PI	82078	Mismatch (MM)	nb donneurs ≤ MM	nb donneurs = MM	% donneurs prélevés	Incompatibilités	n	% donneurs prélevés	Identités HLA
REGION	7	0 MM	0	0	-	0	0	-	2DR2B2A
Dept1	• AN PREL1 •	1 MM	0	0	-	1A	0	-	2DR2B1A
Dept2	• AN PREL2 •					1B	0	-	2DR1B2A
Dept3	• Site1 •					1DR	0	-	1DR2B2A
Dept4	• Site2 •	2 MM	0	0	-	2A	0	-	2DR2B
Dept5	• Site3 •					2B	0	-	2DR2A
	0 Site4 •					1A1B	0	-	2DR1A1B
AGE≤	• Site5 •					1DR1A	0	-	1DR2B1A
ABO1	B Site6 •					1DR1B	0	-	1DR2A1B
ABO2	• Site7 •					2DR	0	-	2B2A
ABO3	•	3 MM	0	0	-	1A2B	0	-	2DR1A
ABO4	• POIDS≤ •					2A1B	0	-	2DR1B
PRL ORG	0					1DR2B	0	-	2B1DR
Supertype A1-	1					2A1B	0	-	2A1DR
Supertype A68-	28					1DR1A1B	0	-	1DR1A1B
Supertype B7-	7					2DR1B	0	-	2A1B
Supertype B8-	8					2DR1A	0	-	1A2B
Supertype DR3-	3	4 MM	2	2	2,30	2A2B	0	-	2DR
Supertype DR15-	2					2DR2B	1	1,15	2A
						2DR2A	0	-	2B
						1DR1A2B	0	-	1DR1A
						1DR2A1B	0	-	1DR1B
						2DR1A1B	1	1,15	1A1B
		5 MM	3	1	1,15	1DR2A2B	1	1,15	1DR
						2DR1A2B	0	-	1A
						2DR2A1B	0	-	1B
		6 MM	4*		1,15	2DR2A2B	1	1,15	0 identité
			Donneurs B,*,* prélevés à l'échelon considéré =			87	100,00		
			dont 8 (95%) présentaient des Ag interdits						
			eurs prélevés répondant à tous les critères de la requête						
			es possibilités de greffe si Ton ne tient pas compte de la compatibilité HLA.						
		0 Ag Interdits	4						

A.T.: 0

I.G.S.: >95%

Ue
DU
SAIN

47407

Access to transplant

LA COUR CARP
DE
L'HÔPITAL SAINT

Inscription **Immuno.** Coord. attente Suivis Observ.

▶ HLA

A1	A2	B1	B2	DR1	DR2	DQ1	DQ2
1	31	37	62	9	10	5	9

▶ Anticorps - renseignés par Isabelle DUPUY

Taux IgG anti-Ly T ou totaux :	100%						
Taux d'anticorps anti-HLA Classe 2 :	100%						
Taux de greffons incompatibles :	96%			Taux de greffons incompatibles historisé :		96%	

▶ Date de dernière recherche Ac anti-HLA validée : 16/06/2010

❖ Données saisies par l'équipe (utilisées pour l'aide au choix)

Transférer automatiquement les Ac de classe I et II saisies par le laboratoire vers les données cliniques : Oui

▶ Spécificités des anticorps Classe 1

A2 A3 A11 A24 A25 A28 A32 A66 B5 B7 B17 B27 B35 B38 B48 B49 B53 B56 B59 B60 B63 B67 B77 B78 B81

▶ Spécificités des anticorps Classe 2

▶ Antigènes interdits

❖ Données saisies par le laboratoire

▶ Spécificités des anticorps Classe 1

A2 A3 A11 A24 A25 A28 A32 A66 B5 B7 B17 B27 B35 B38 B48 B49 B53 B56 B59 B60 B63 B67 B77 B78 B81

▶ Spécificités des anticorps Classe 2

▶ Antigènes permis

A26 A29 A34 A36 A43 A74 A80 B8 B12 B13 B39 B41 B44 B45 B46 B47 B50 B72 B76 DR1 DQ2 DQ4 DQ8

▶ Commentaire

❖ Nombre d'incompatibilités acceptables

A : 2 B : 2 DR : 0 Maximum : 4

❖ Accès à la greffe

FAG : 0 FAG A : 0 FAG B : 0 FAG AB : 0 FAG O : 0

LA COUR CARP
DE
L'HÔPITAL SAINT

Access to transplant

- Avoid immunological conflict!
- If impossible, minimize it !

Current

Cytotox XM

Flow CM

DSA

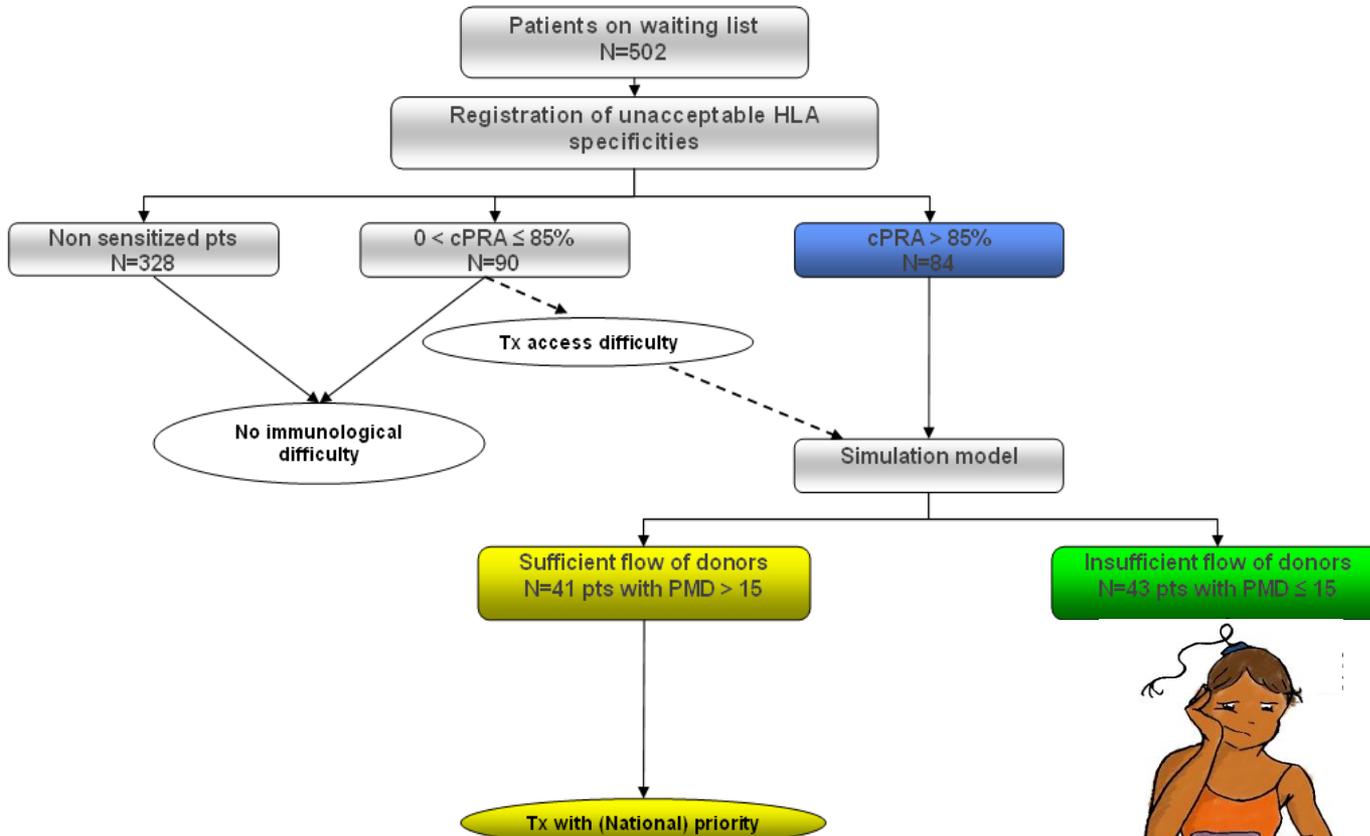
Remote

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

2005
Nöcke
HERBENSCHWOT

Waiting list management

LA COUR CARP
DE
L'HÔPITAL SAINT



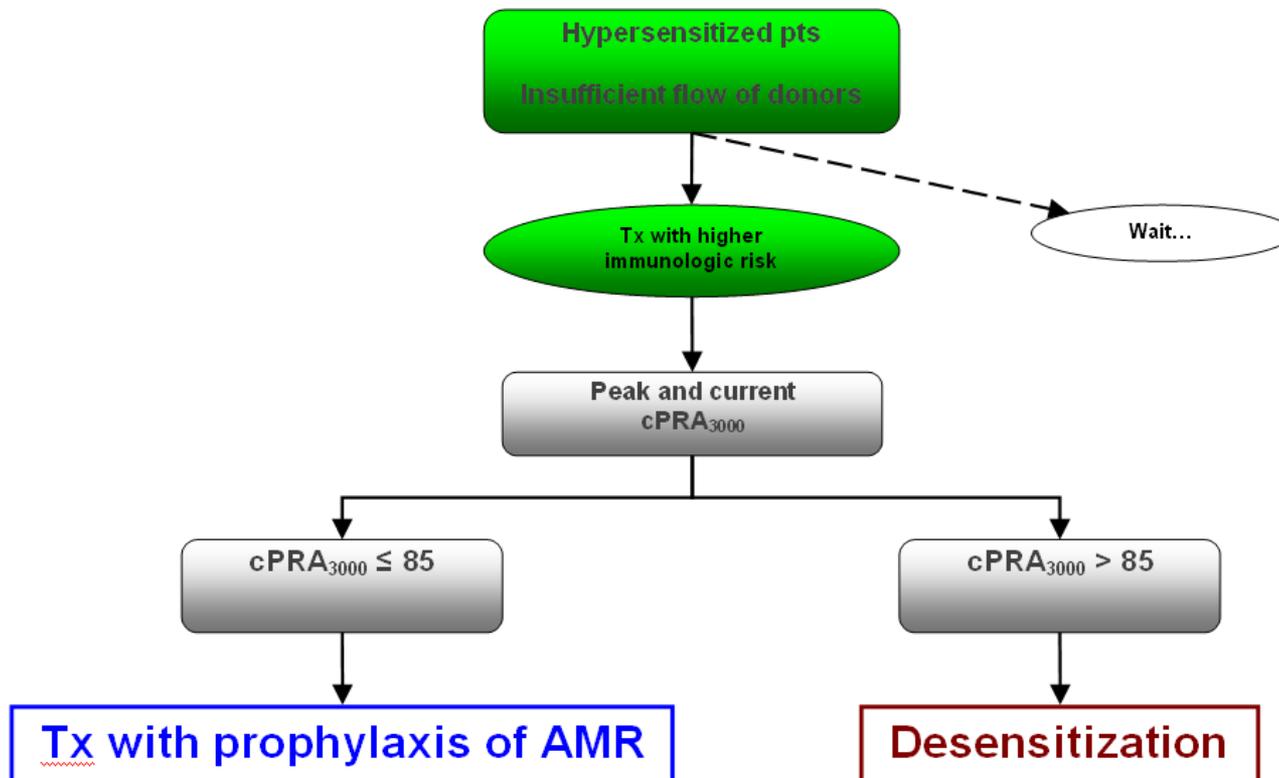
Ue
DU NOUVEAU
SAINT-LOUIS

HERBENEGHNOT

Waiting list management

LA COUR CARP
DE
L'HÔPITAL SAINT

Hypersensitized pts with insufficient flow of donors

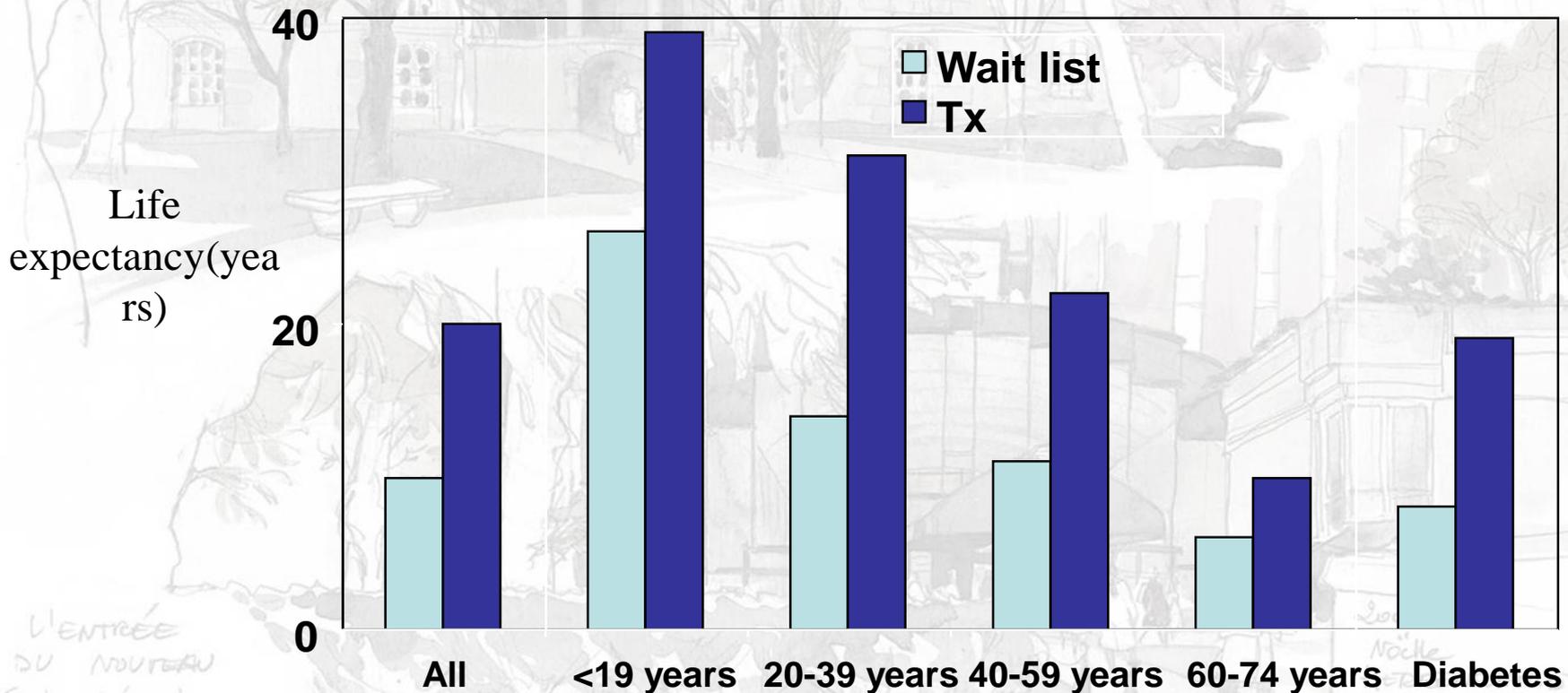


VEN
DU
SAINT-ROU

WIECHTROT

Transplantation and patient survival....

A benefit in all cases!

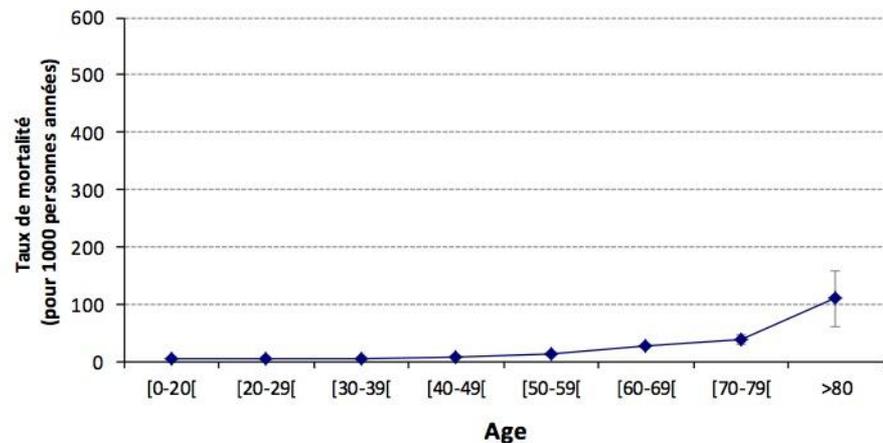
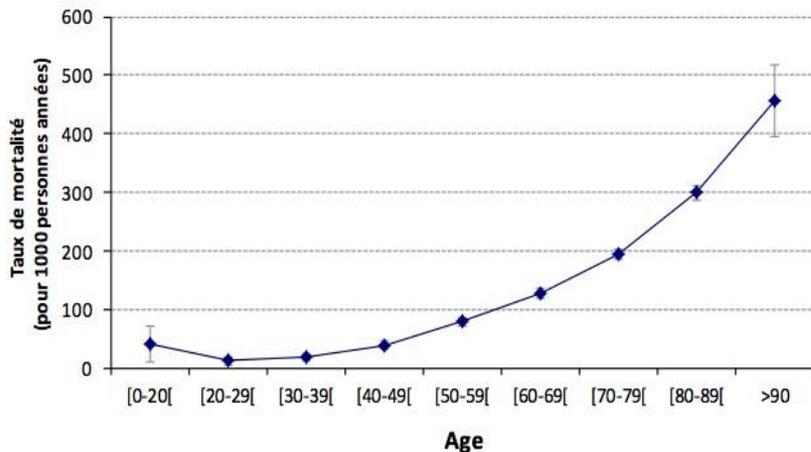


Mortality in dialysis or transplantation

LA COUR CARP
DE
L'HÔPITAL SAINT

Dialysis

Transplantation



Mortality / 1000 pt year

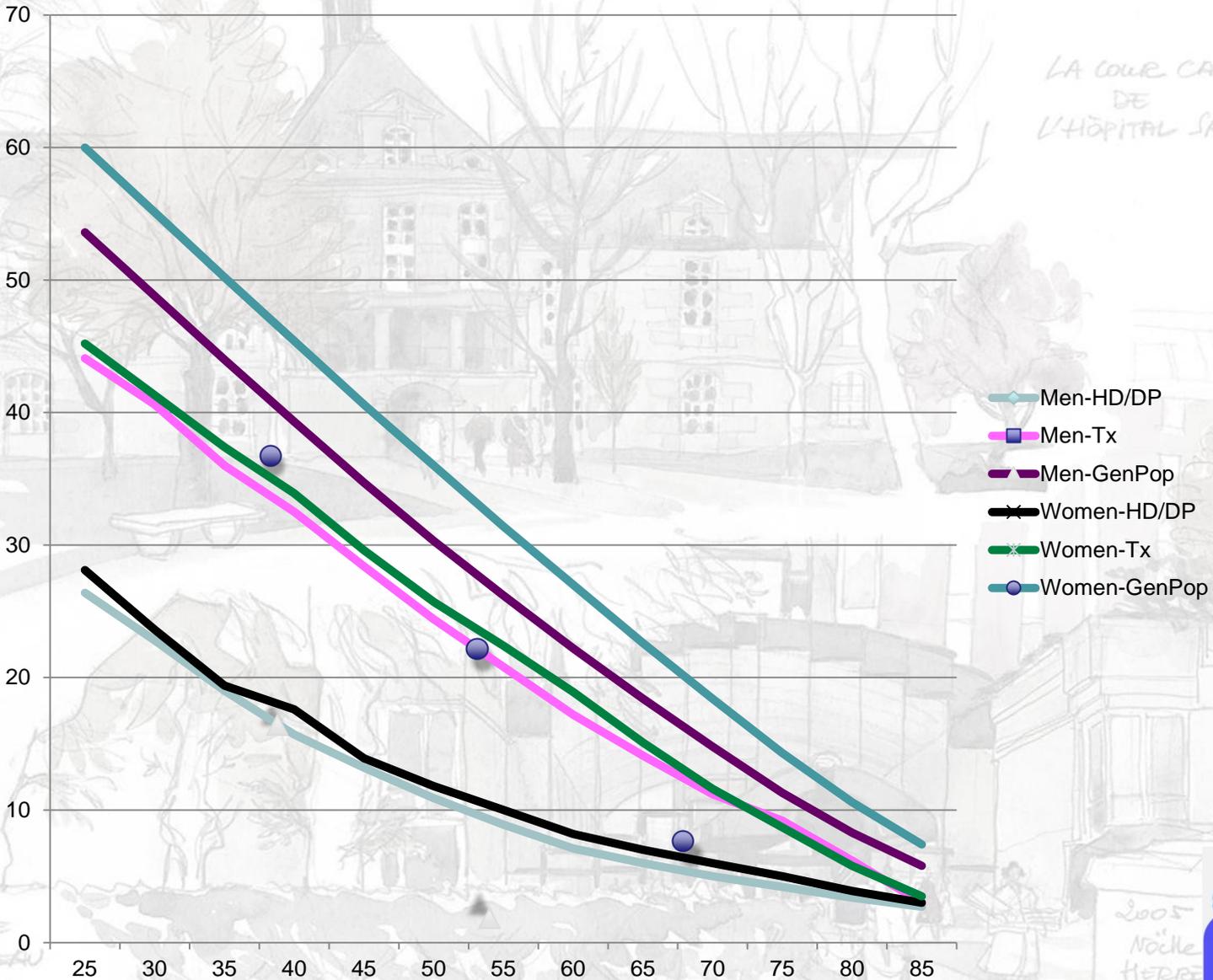
L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

2005
Nöckle
HERRE



The end result....

LA COUR CARP
DE
L'HÔPITAL SAINT

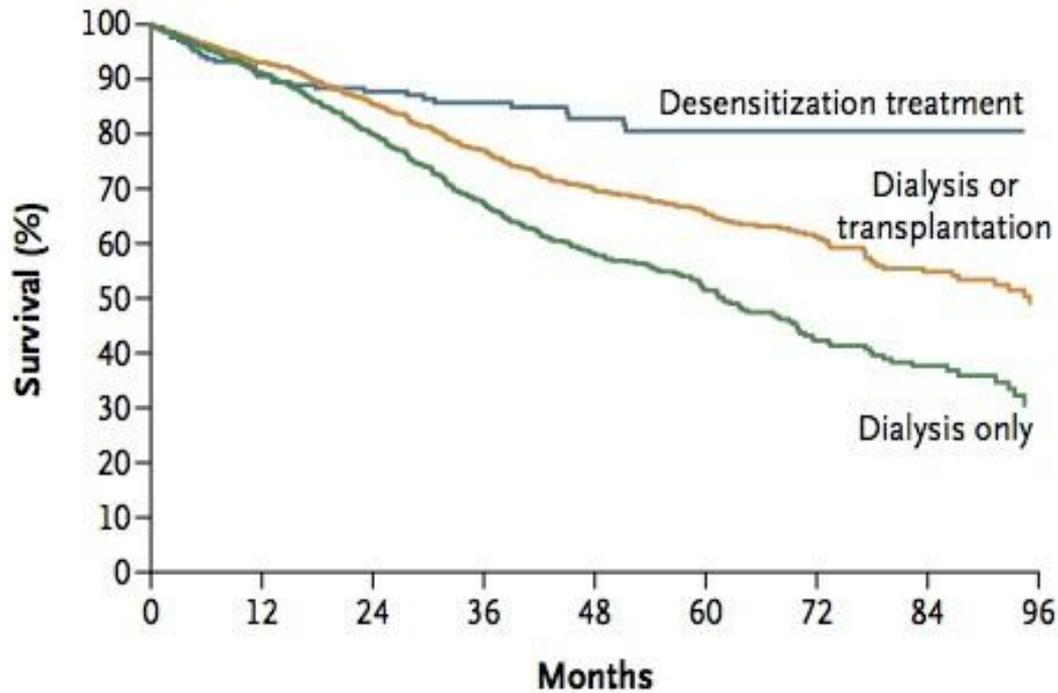


L'ENTRÉE
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SAINT-LOUIS

2005
Nœlle
HERRE



HLA incompatible survival

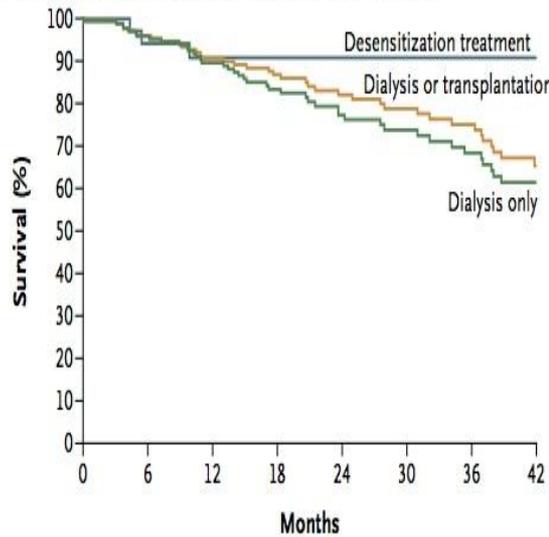


No. at Risk

Desensitization treatment	210	170	143	110	75	58	42	28	14
Dual therapy	1027	854	688	497	321	230	157	96	41
Dialysis only	1012	822	626	419	250	159	93	54	17

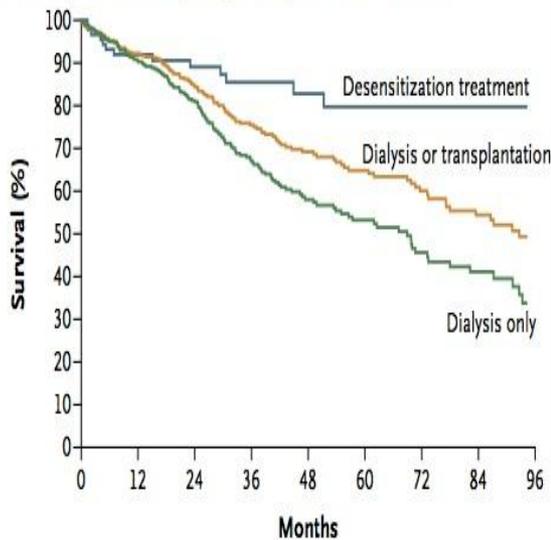
HLA incompatible survival

A Positive Multiplex Bead Assay, Negative Flow-Cytometric Assay



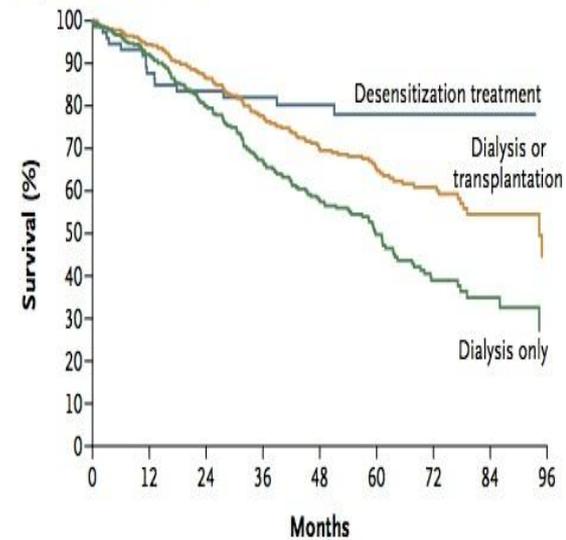
No. at Risk	0	6	12	18	24	30	36	42
Desensitization treatment	38	30	26	23	18	15	14	9
Dual therapy	187	152	129	110	84	66	59	31
Dialysis only	182	147	123	101	74	57	50	27

B Positive Flow-Cytometric Assay, Negative Cytotoxic Cross-Match



No. at Risk	0	12	24	36	48	60	72	84	96
Desensitization treatment	88	71	58	39	27	23	17	16	10
Dual therapy	425	346	276	176	114	94	67	56	27
Dialysis only	420	335	260	154	88	68	43	35	12

C Positive Cytotoxic Cross-Match



No. at Risk	0	12	24	36	48	60	72	84	96
Desensitization treatment	74	63	57	48	38	31	23	11	3
Dual therapy	365	330	281	221	163	115	79	35	9
Dialysis only	360	317	252	184	132	81	48	19	5

Desensitization

- Which protocols ?

Pre-Tx suppression of anti-HLA Abs

IVIg high dose

IVIg/plasmapheresis

Rituximab ?

Rituximab/IVIg

Bortezomib ?

BAFF, TACI...??

LA COUR CARP
DE
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Desensitization

1. High dose IVIg

French protocol: 3 monthly cures of IVIg : 2 g/Kg over 2 days

Inclusion criteria

- DD:
 - Cytotoxic PRA > 50%
- LD:
 - CDCXM pos T IgG

Success criteria

- 50% or more decrease of P.R.A. 3 weeks post infusion
- Negativation of CDCXM for LD

Tx: the kidney ABO compatible with current CDCXM negativ



TRÉE
DU NOUVEAU
SAINT-LOUIS

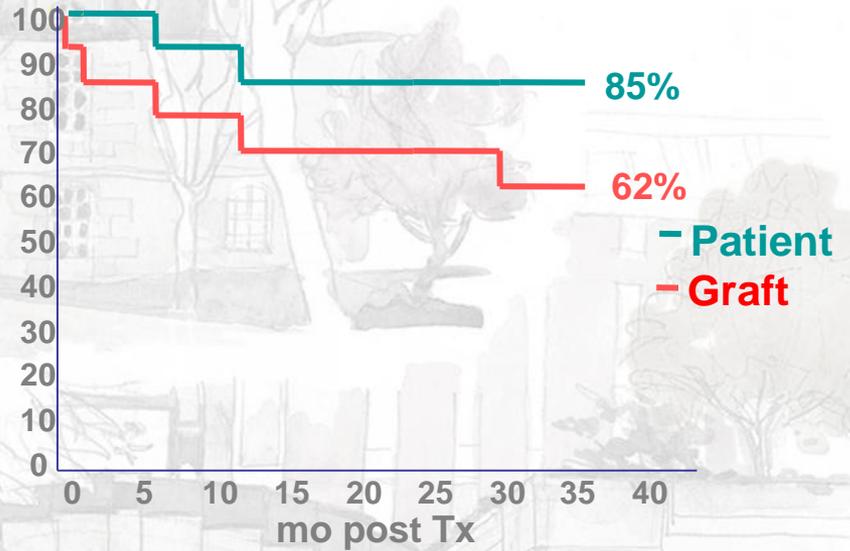
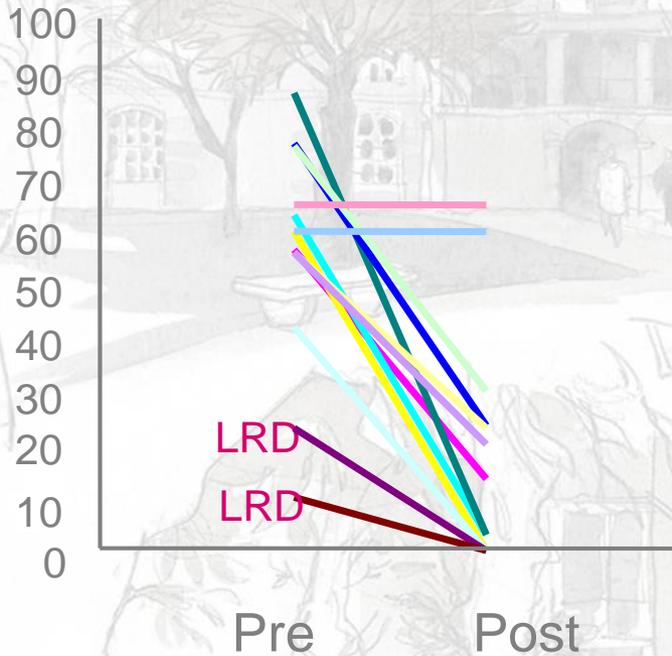
Noche
HERBENEGHNOT

LA COUR CARP
DE
L'HÔPITAL SAINT

1. High dose IVIg

French protocol

Results



- Follow-up 48 months (3-90)
- 1 graft loss to thrombosis day 1
- 1 graft lost to BK infection
- 3 grafts lost to humoral rejection
- 2 deaths (PTLD 6 months, Stroke 12 months)

Glantz D, AJT, 2002

Glantz D, Transplant Int, 2004

L'ENTRÉE
DU
SAINT

1. High dose IVIg

Confirmation ... *Cedars-Sinai Protocol*

- **Inclusion:** waiting time, high P.R.A., pos XM
- 2 to 4 cures 2 gr/Kg
- Both Cadaver and Living-related
- **Success:** neg. Xmatch or P.R.A decrease
- 28% rejections, half requiring OKT3
- Excellent graft and patient survival

Desensitization

2. IVIg/PP

John Hopkins Protocol

- 18 patients
- **Inclusion:** 8 cytotoxic XM +, 10 flow XM + (class I or II)
- Combination of PP and IVIg (0,1 mg/Kg)
- **Success:** negativation of CXM
- 5 acute rejections, C4d positive



... not adapted to DD waiting list

Desensitization

3. Rituximab ...

Work in progress

- 9 patients with 3 dose regimens (50/150/375 mg/m²)
- **Inclusion:** 1 year wait, dialysis, cyto. P.R.A. > 50%
- **Success:** undefined
- 1 definite success (87 to 51% P.R.A.)
- 1 decrease in titer
- Some modifications.....

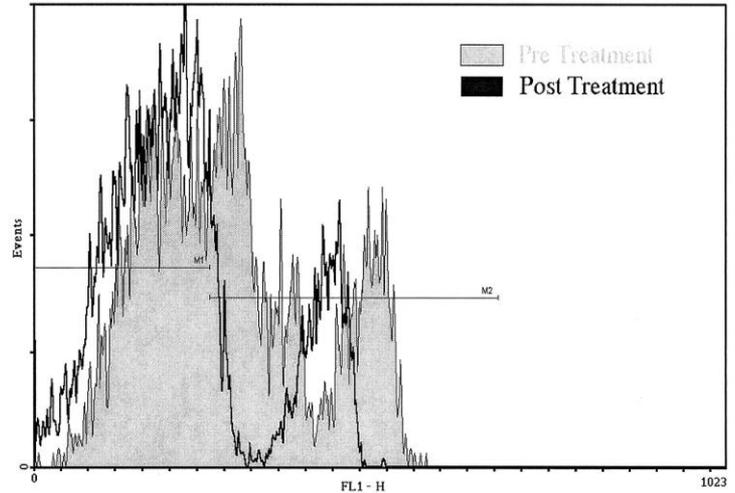


FIGURE 3. Patient 1: Class 1 flow PRA histograms. Overlay of pre-RTX infusion (gray fill) and 6 months post-RTX infusion (black line). Decreased fluorescence intensity and change of architecture evident on this histogram indicate changes in PRA.

L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

Desensitization

4. IVIg/Rituximab

- 20 pts
- **Inclusion:** “highly sensitized” or LD CXM pos
- **Success:** T CDCXM neg at 1:2 or T flow CXM < 250



L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

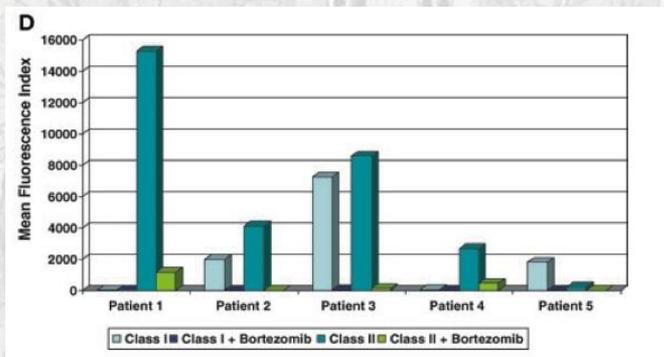
2005
Noëlle
Jordan SC, NEJM, 2008

Desensitization

5. Bortezomib ... ?

... Promise

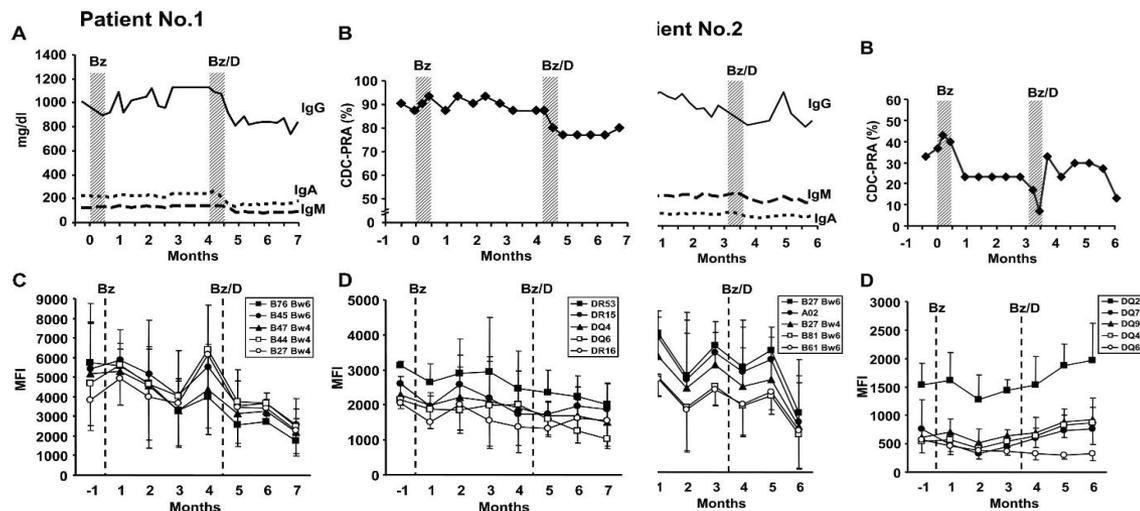
➤ *In vitro*



➤ « Effectively removed DSAs with one cycle pre-Tx and one cycle immediat post-Tx »

Everly MJ, Trivedi HL, Terasaki PI et al., 2009, ATC, abstract LB05

... Reality



L'ENTRÉE
DU NOUVEAU
SAINT-LOUIS

NOT

Desensitization Protocols

Conclusion

LA COUR CARP
DE
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- IVIg high dose (DD) and PP/IVIg (LD)
↪ are the backbone desensitization therapies
- The value of adding Rituximab is still debated
↪ Interesting association: IVIg/Rituximab
- New agents look promising ...

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A new paradigm....

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★★★★★ "Fantastic on the big screen" *Van People*
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Prophylaxis by C5 inhibition

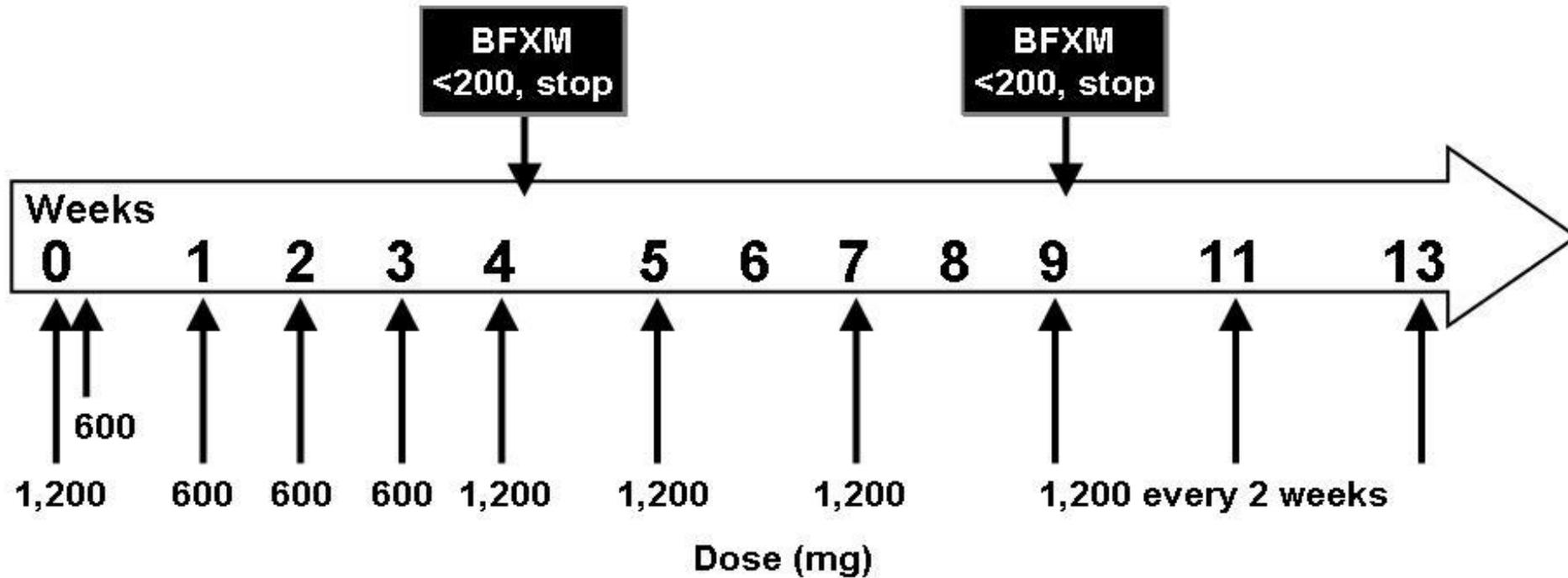
Monoclonal anti C5 Ab: Eculizumab

- 26 patients
- **Inclusion:** positive B cell flow XM
- **Success:** diminution of B cell flow XM
- PP pre-Tx if B cell flow XM > 300
- Eculizumab: D0, weeks 1, 2, 3, 4.... and more
- Only 2 rejections

Historical control group (n=51): 41% AMR

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Anti-C5 Treatment Protocol



**No post-transplant plasmapheresis.
Biopsy on days 4, 7, 14, 28, and 90.**

Stopping Eculizumab

Goal BFXM <200

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- No AMR after stopping eculizumab
- 4 weeks: 8 patients stopped
- 9 weeks: 6 stopped
- >9 weeks: 2 continued
 - 2 stopped at 1 year

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Prophylaxis by C5 inhibition

Monoclonal anti C5 Ab: Eculizumab

- Designed for prevention of early acute AbMR
- Mechanism of the 2 rejections under Ec ????
- Major question: when to stop????
- Less TG at one year post-Tx (1 vs 36 %)

Prevention of Acute Antibody-Mediated Rejection in Sensitized Deceased-Donor Kidney Transplant Recipients: 1-Year Outcomes

D. Glotz,¹ G. Russ,² L. Rostaing,³ C. Legendre,⁴ S. Chadban,⁵ J. Grinyo,⁶
N. Mamode,⁷ G. Tufveson,⁸ L. Couzi,⁹ P. Rigotti,¹⁰ Y. Lebranchu,¹¹
S. Sandrini,¹² W. Marks¹³

¹Saint-Louis Hospital, Paris, France and INSERM U 940; ²Royal Adelaide Hospital, Adelaide, Australia;

³CHU Rangueil, Toulouse, France; ⁴Hopital Necker, Paris, France; ⁵Royal Prince Alfred Hospital,

Camperdown, Australia; ⁶H U de Bellvitge, Barcelona, Spain; ⁷Guy's Hospital, London, United Kingdom;

⁸Uppsala University Hospital, Uppsala, Sweden; ⁹H Pellegrin, Bordeaux, France; ¹⁰Via Giustiniani, Padua, Italy;

¹¹Hopital Bretonneau CHU, Tours, France; ¹²Spedali Cvl di Brescia, Brescia, Italy;

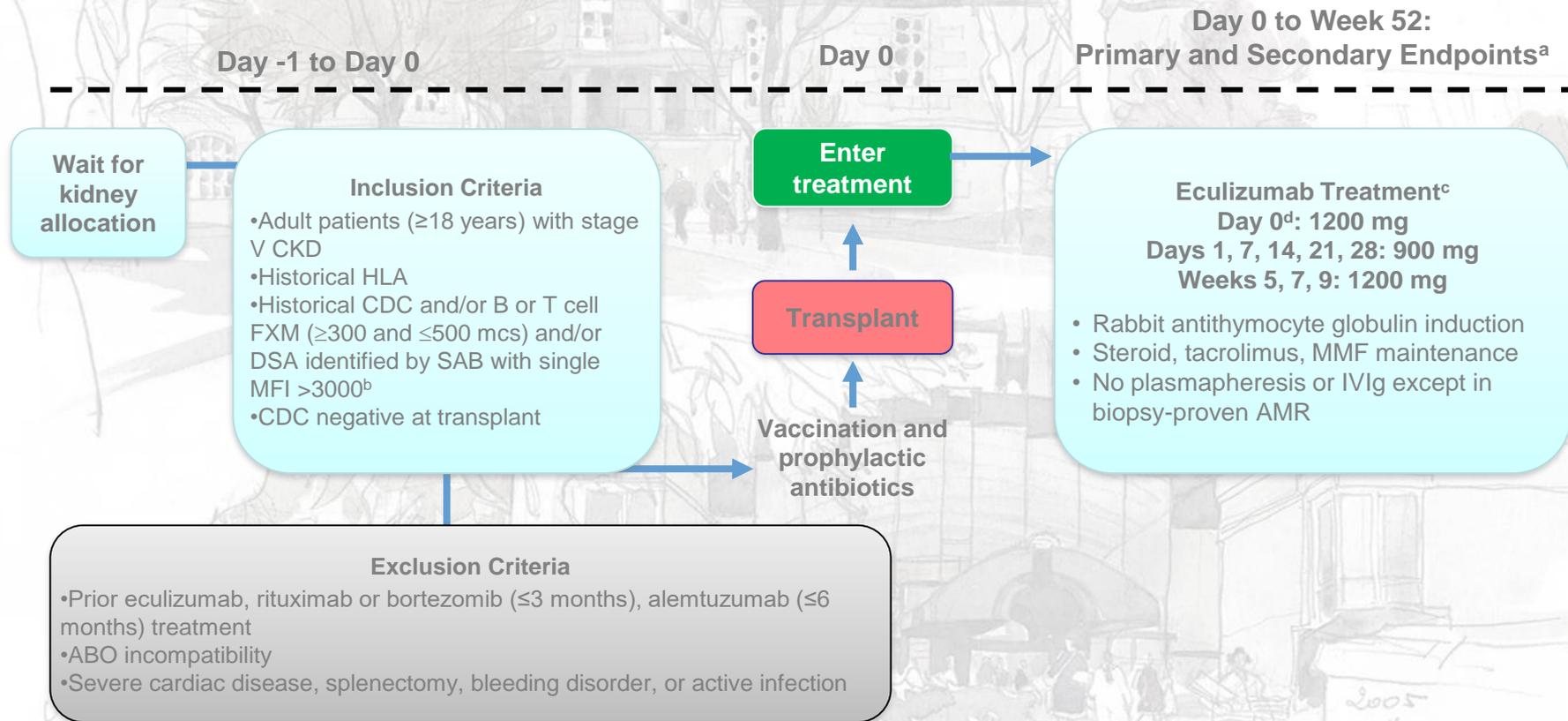
and ¹³Alexion Pharmaceuticals, Inc., Cheshire, CT, United States

Study Design and Objective

Multicenter, open-label, phase 2, single-arm study (N = 80)

Objective: To evaluate the safety and potential efficacy of eculizumab to prevent aAMR in sensitized recipients of deceased-donor kidney transplants

Results based on data transfer of January 16, 2015



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Baseline Demographics and Clinical Characteristics

Characteristic	Patients (N = 80)
Median age, y (range)	52 (24–70)
Time on waiting list ^a , y (range)	5.5 (0.3-33.6)
Sex, n (%) (male / female)	32 (40) / 48 (60)
Current DSA ^b , n (%)	69 (86.3)
Class I only, n (%)	30 (37.5)
Class II only, n (%)	12 (15.0)
Class I and II, n (%)	27 (33.8)
Historical ^c DSA, n (%)	11 (13.8)

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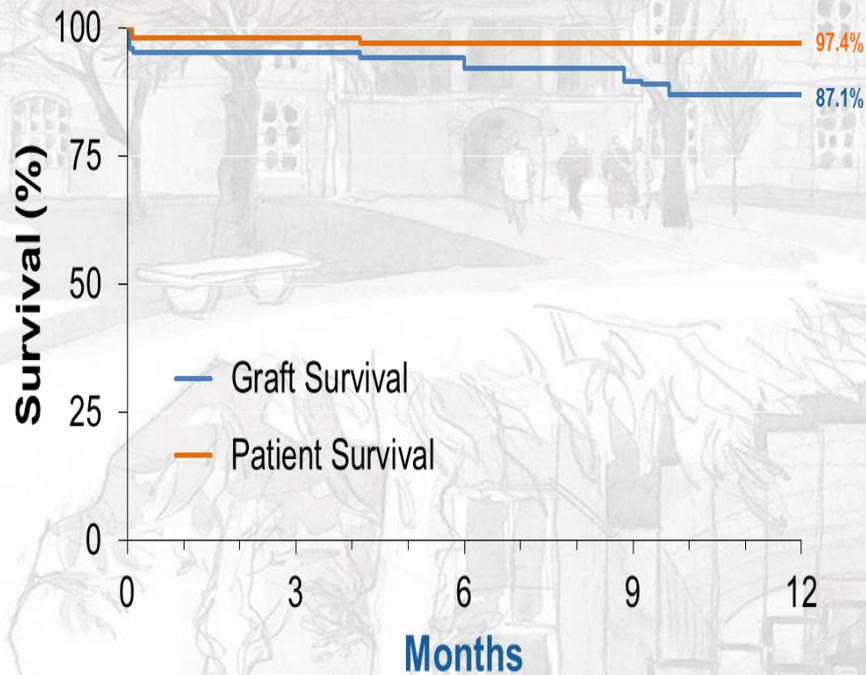
Efficacy Endpoints

Outcome	9 Weeks (N = 80)	1 Year (N = 80)
Post-transplant failure rate, ^a n (%)	10 (12.5) (95% CI: 6.2%, 21.8%)	15 (18.8) (95% CI: 10.9%, 29.0%)
Biopsy-proven AMR, n (%)	6 (7.5)	8 (10.0)
Graft loss, n (%)	4 (5.0)	9 (11.3)
Primary cause		
Renal artery thrombosis	2 (2.5)	
Primary nonfunction	2 (2.5)	
Primary nonfunction	1 (1.3)	2 (2.5)
Death, n (%)	0	6 (7.5)
Lost to follow-up, n (%)		

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Graft and Patient Survival, Renal Function Through 1 Year



Renal Function

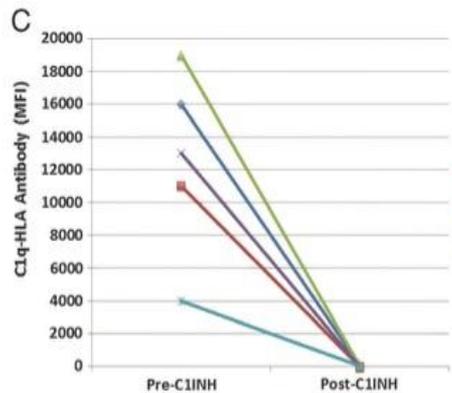
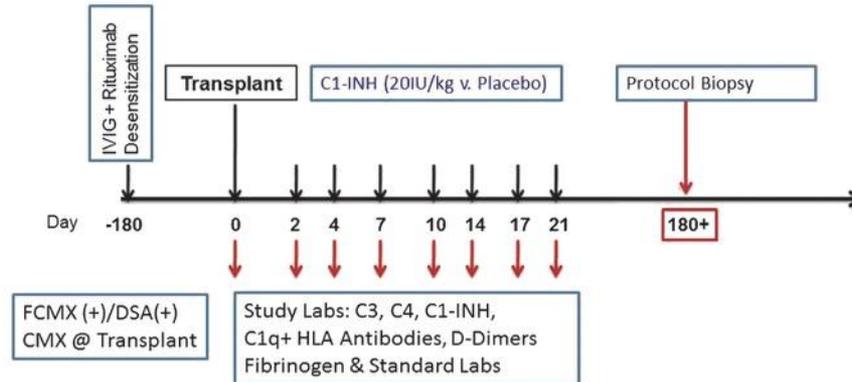
Time Point	Serum Creatinine (mg/dL), mean ± SD (n)	Proteinuria (≥2+), n (%)
0	7.44 ± 2.52 (n=78)	—
1 month	1.86 ± 1.07 (n=74)	9/59 (15.3%)
3 months	1.70 ± 0.09 (n=75)	8/55 (14.5%)
12 months	1.80 ± 1.11 (n=45)	8/36 (22.2%)

Patient Survival #s at risk	80	76	72	51	43
Graft Survival #s at risk	80	76	72	51	43

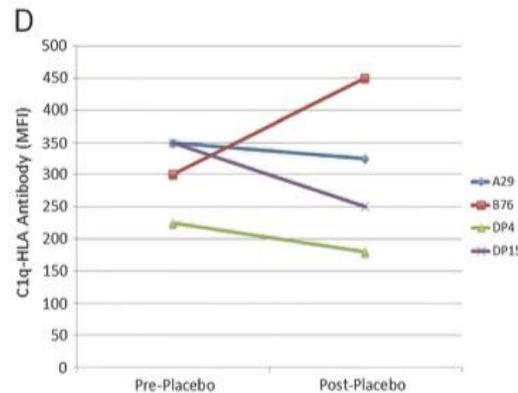
A Phase I/II Placebo-Controlled Trial of C1-Inhibitor for Prevention of Antibody-Mediated Rejection in HLA Sensitized Patients

Ashley A. Vo,¹ Adriana Zeevi,² Jua Choi,¹ Kristen Cisneros,¹ Mieko Toyoda,³ Joseph Kahwaji,¹ Alice Peng,¹ Rafael Villicana,¹ Dechu Puliyaanda,¹ Nancy Reinsmoen,⁴ Mark Haas,⁵ and Stanley C. Jordan¹

C1-INH Study Format



* = Non-DSA



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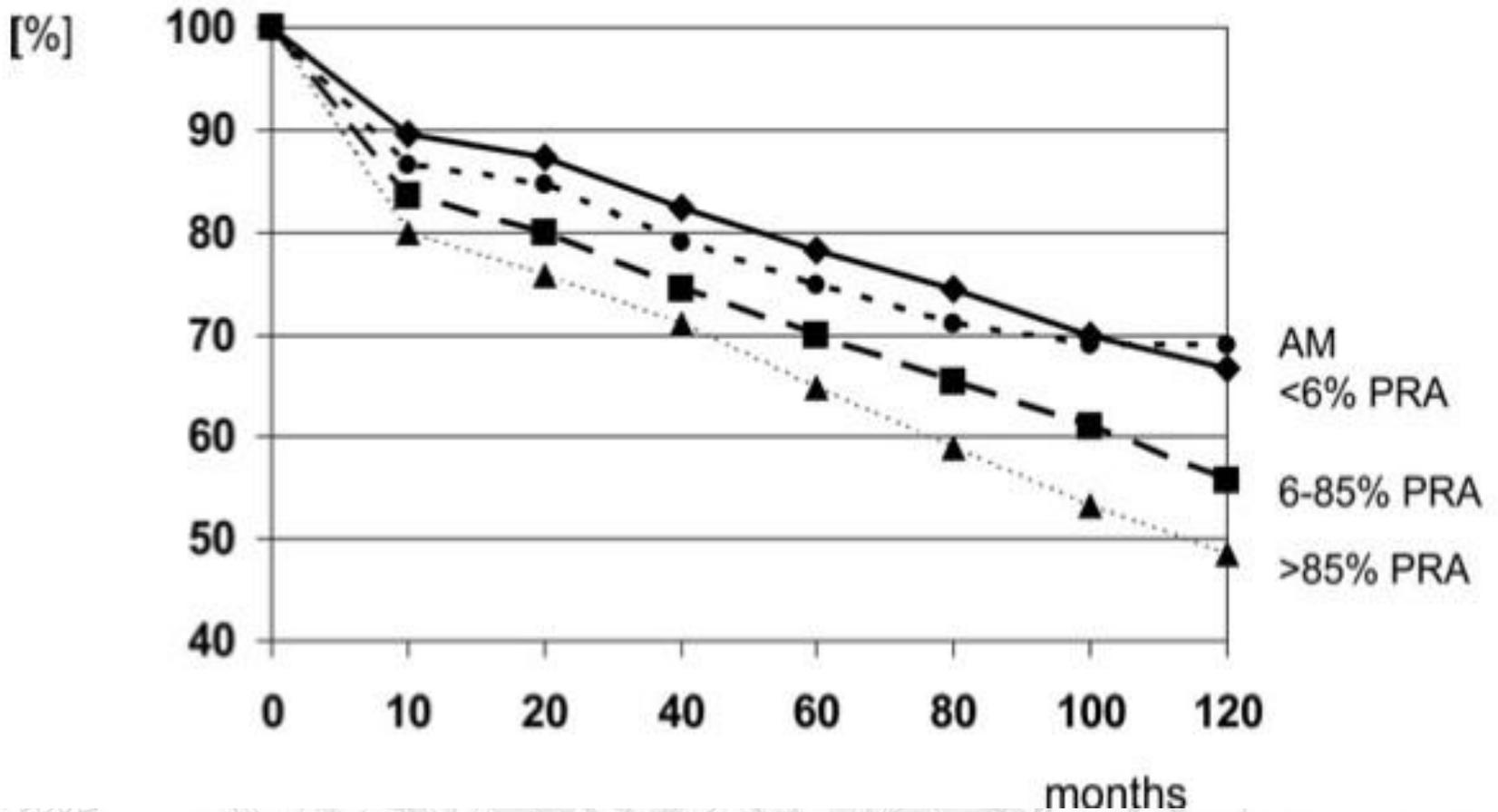
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The Eurotransplant AM program

Based on cellular assays

- Inclusion: $\geq 85\%$ cytotoxicity on at least 2 sera
- Characterization of AM (difficult+++)
1/1/2002-30/6/2002: 129 patients included, 68 transplanted (57 by AM) <6 months
60% of included patients get a transplant

Long term survival

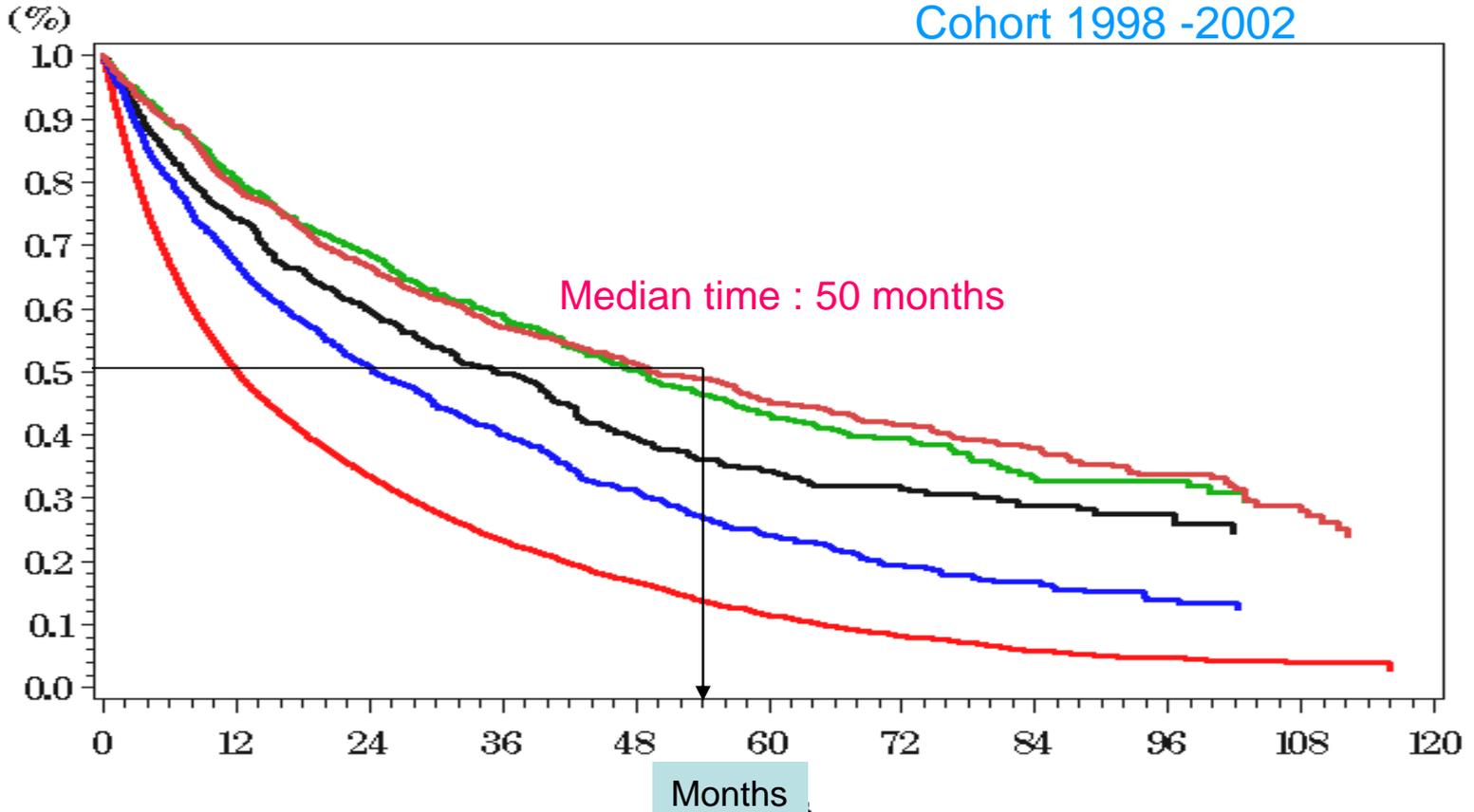


Ue
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Waiting time before transplantation

% of grafted patients

Cohort 1998 -2002



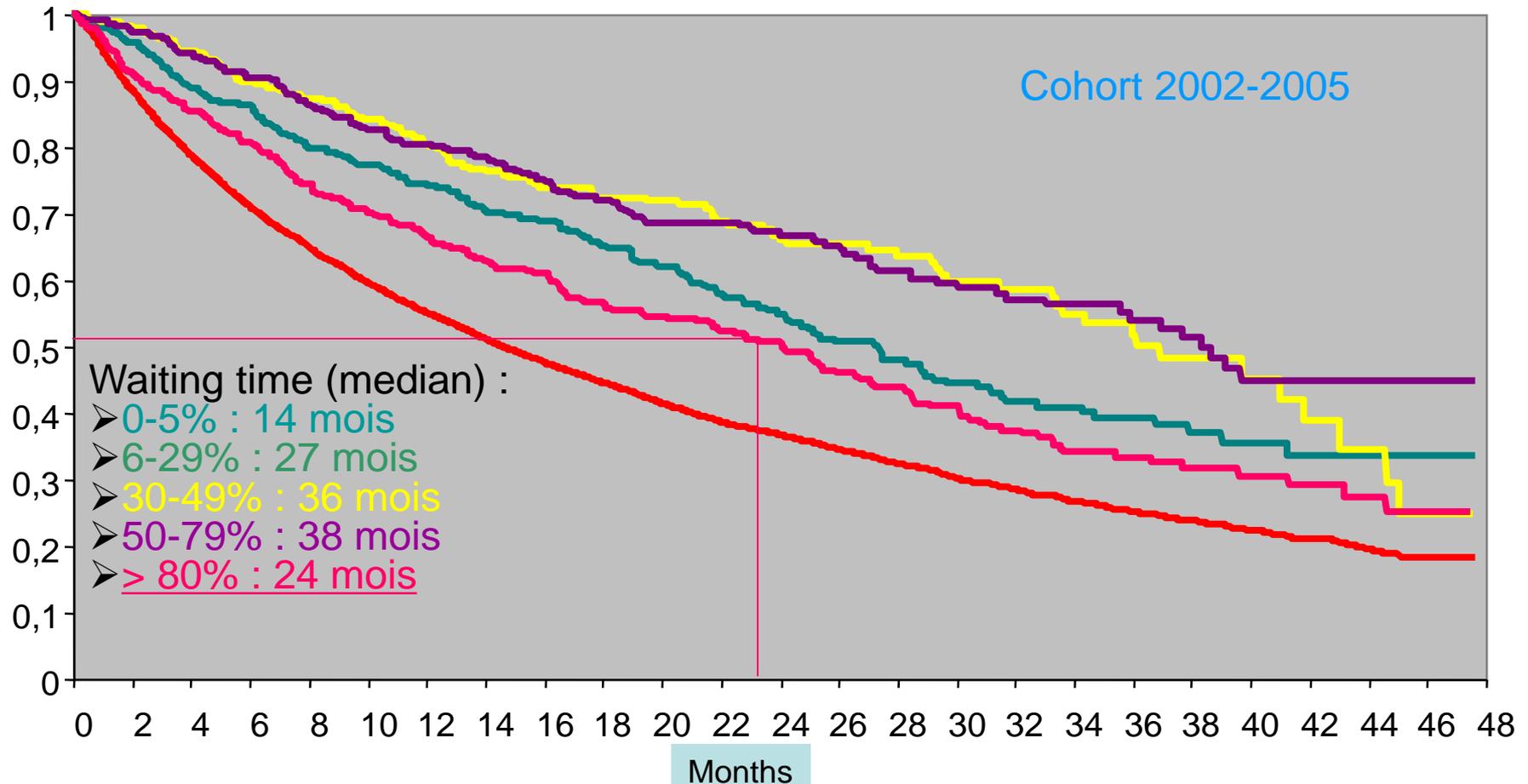
Immunization

- 0-5%
- 6-29%
- 30-49%
- 50-80%
- 80+

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Waiting time before transplantation



Immunization

0-5% 6-29% 30-49% 50-79% 80% et plus

Conclusion

- An improved access to transplantation for hyper-immunized patients
- After 2 years :
 - Majority of pts included in the program are class II hyper-immunized pts waiting for re-Tx
 - High rate of B cells CM + (50 % vs 4 % for ET)
 - With repercussion on cold ischemia time
 - Shipping of nodes and spleen first and then kidney if CM(-)
 - An improved program performance is expected using HD class II techniques
- No difference in 2-years patient and graft survival

There are many ways to Transplant....

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Access to Tx:
cPRA, simulation

easy

difficult

LD

DCD

H R

ABOi

PKE

Desens

H R

Acc
MM

Desens

Transplantation

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Desensitization is part of a strategy...

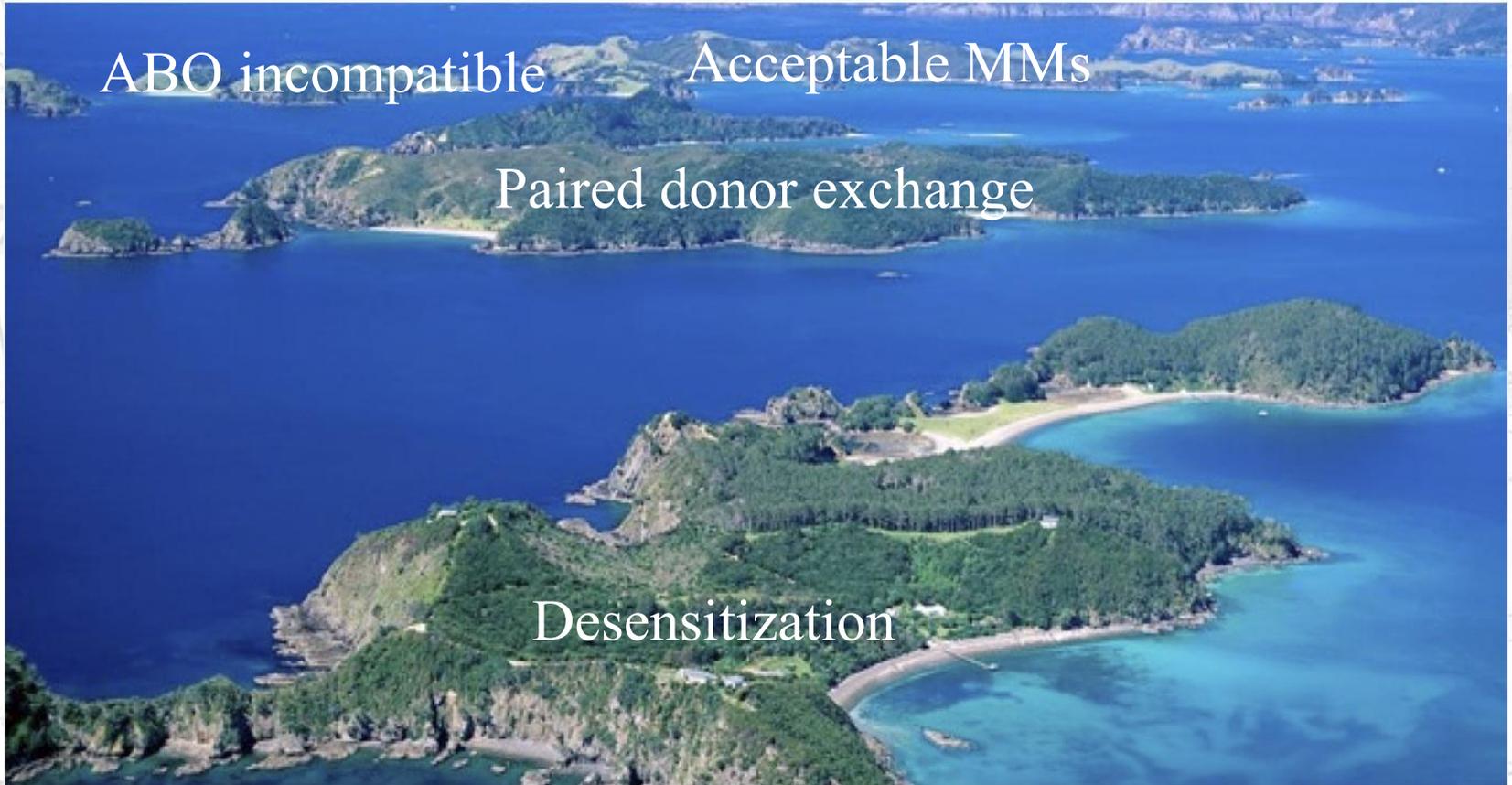
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ABO incompatible

Acceptable MMs

Paired donor exchange

Desensitization



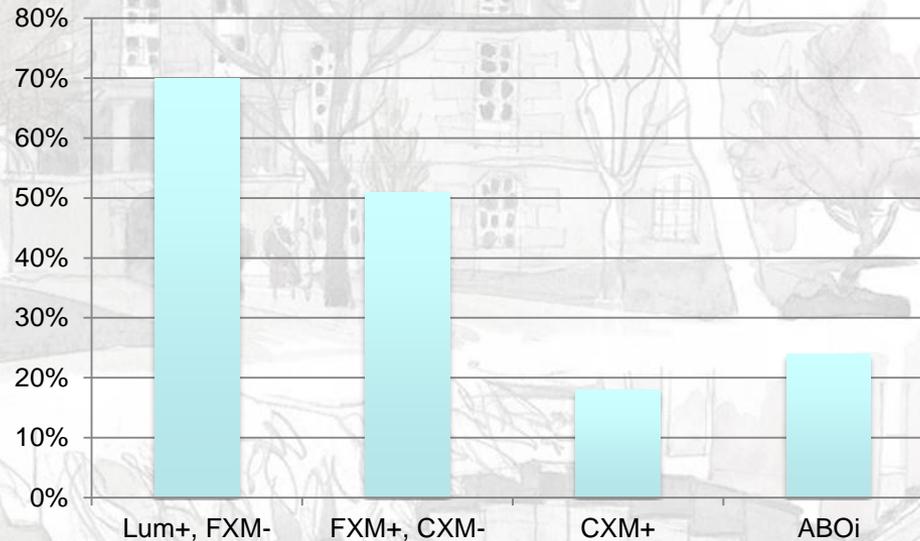
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The team is the limit !

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- USA



- France:

- 43 centers, 4 with HLA incompatible programs

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The team is the limit !

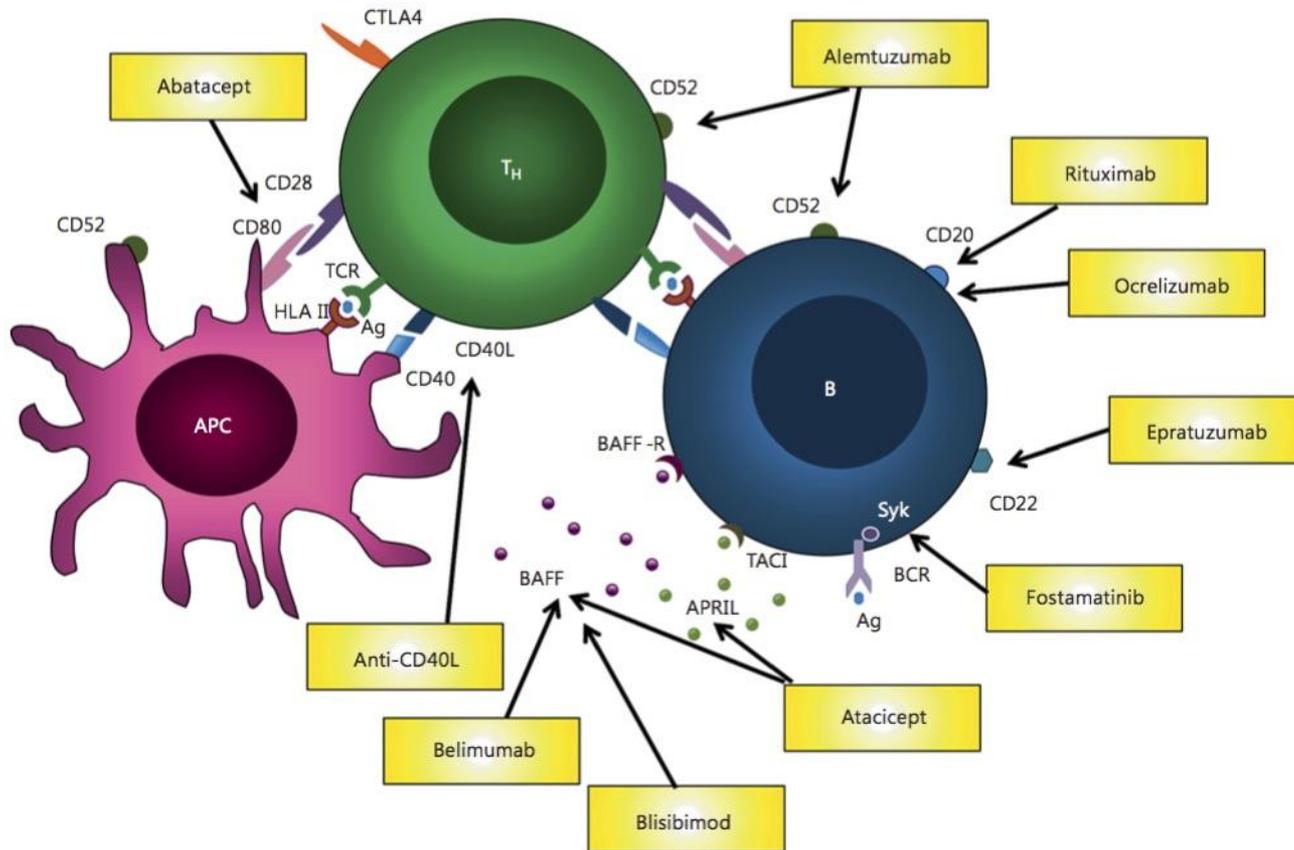
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- Desire and manpower
- Necessary tools:
 - DSA by Luminex SA, Histology with C4d in 48 hours or less
 - Plasmapheresis, Rituximab, IVIg available

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The pipeline (1)...

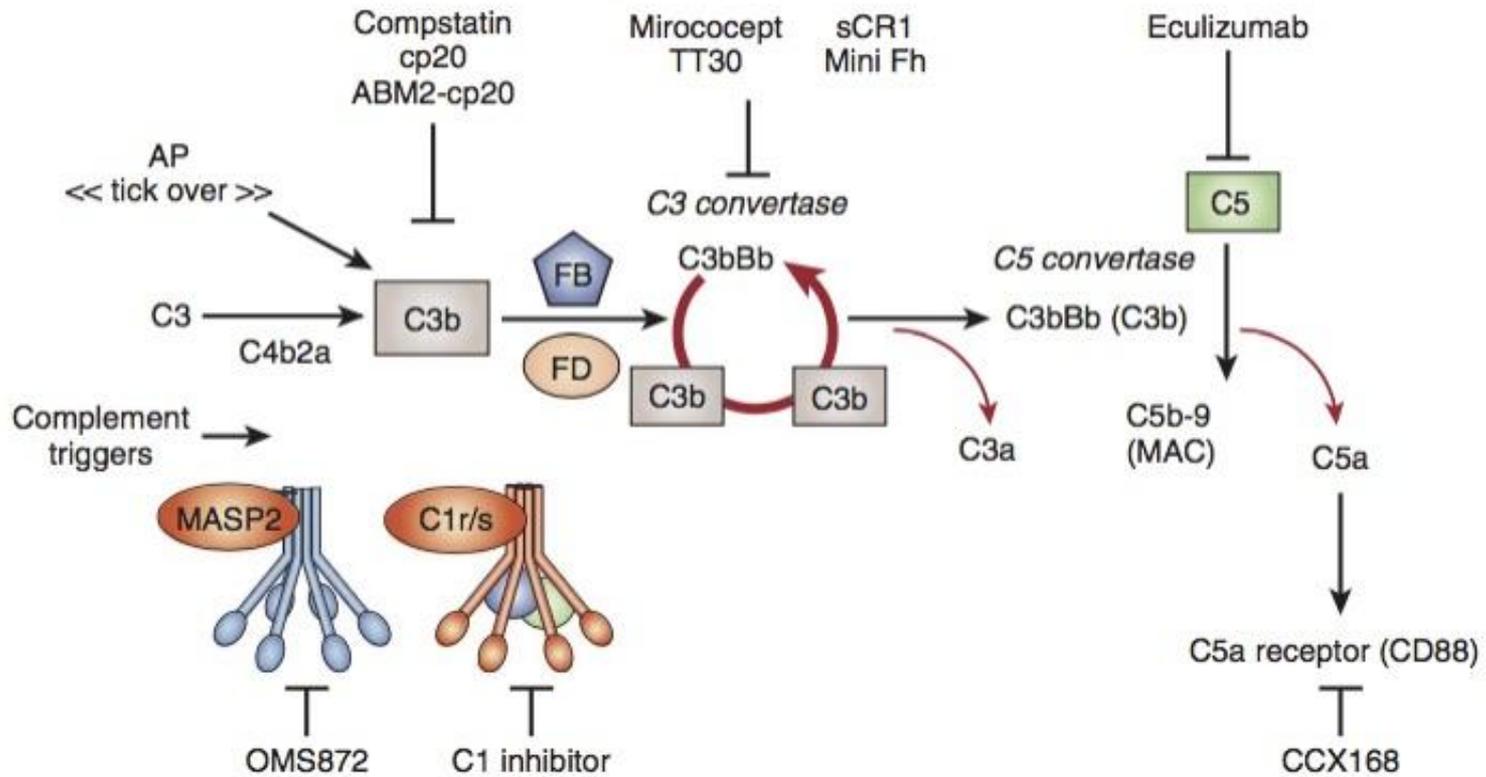


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The pipeline (2)...

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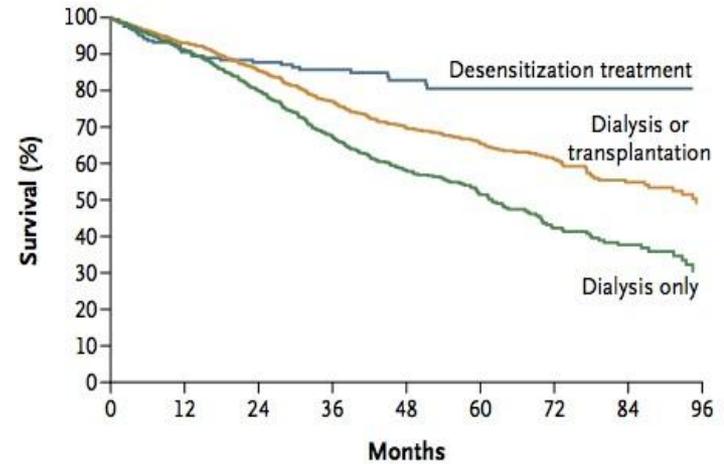
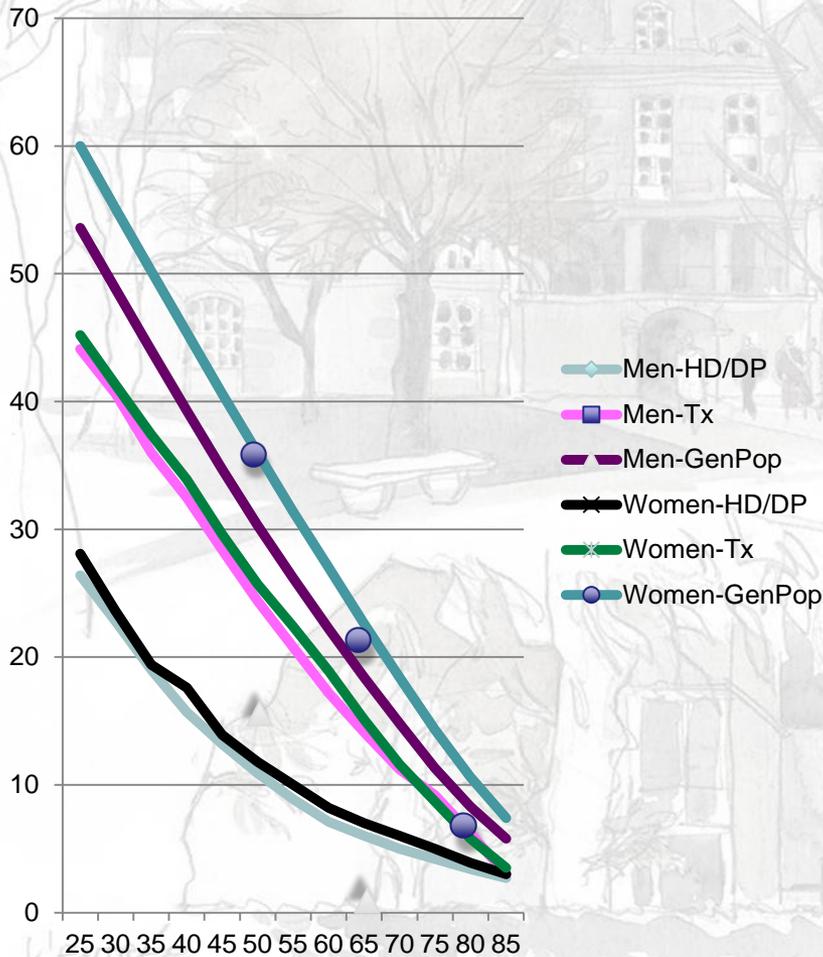


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Transplantation is the best solution....



No. at Risk

	0	12	24	36	48	60	72	84	96
Desensitization treatment	210	170	143	110	75	58	42	28	14
Dual therapy	1027	854	688	497	321	230	157	96	41
Dialysis only	1012	822	626	419	250	159	93	54	17

....with a limit

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- C.A., C.L., M-N.P., I.A., E.P....
- Nephrology and Transplantation
- J-L. T., J. A., M. C., Ch. G.....
- Histocompatibility
- D. N., G. H., J. V.

