



Levende nierdonatie - de beste optie

10/03/2012

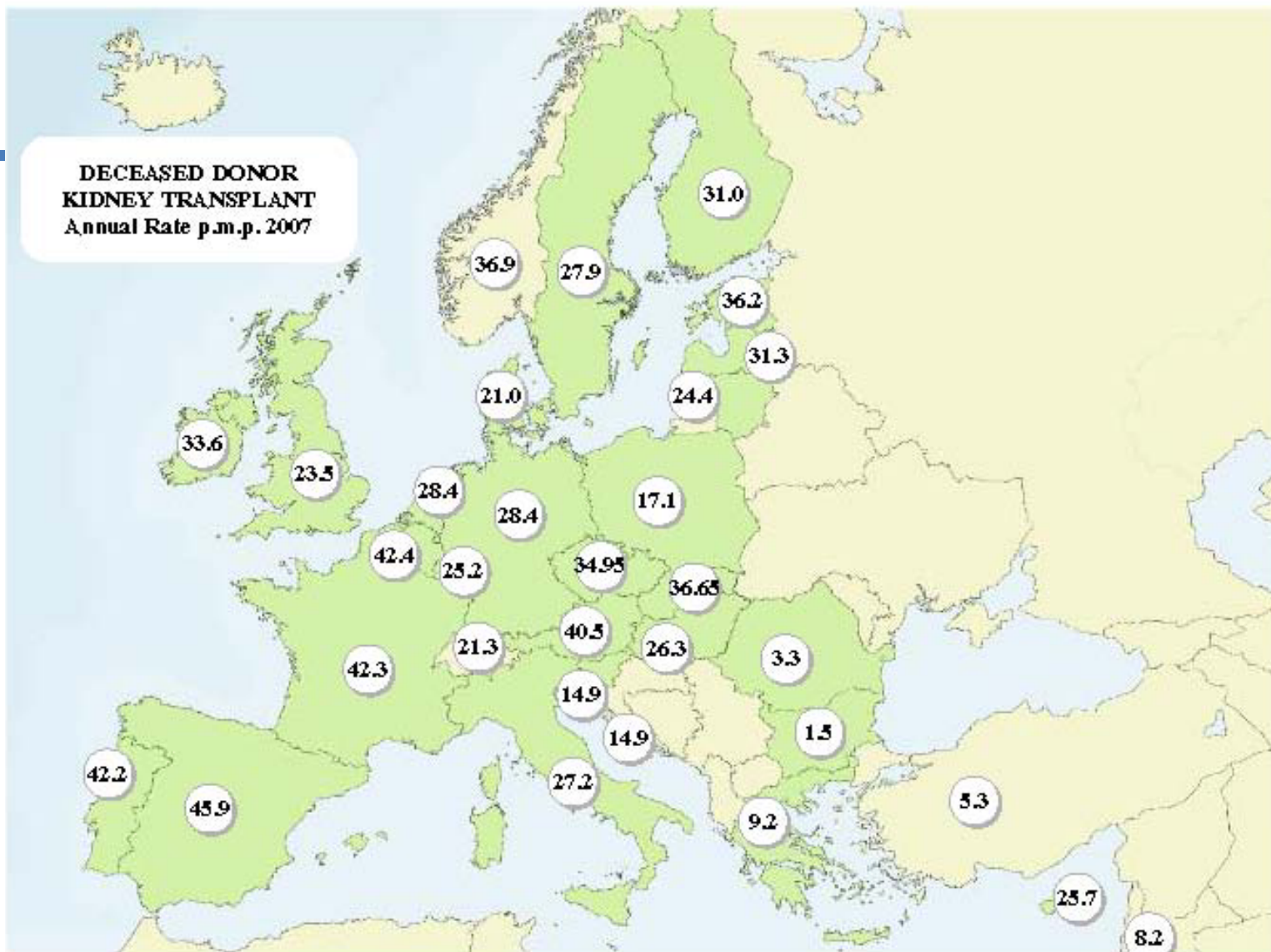
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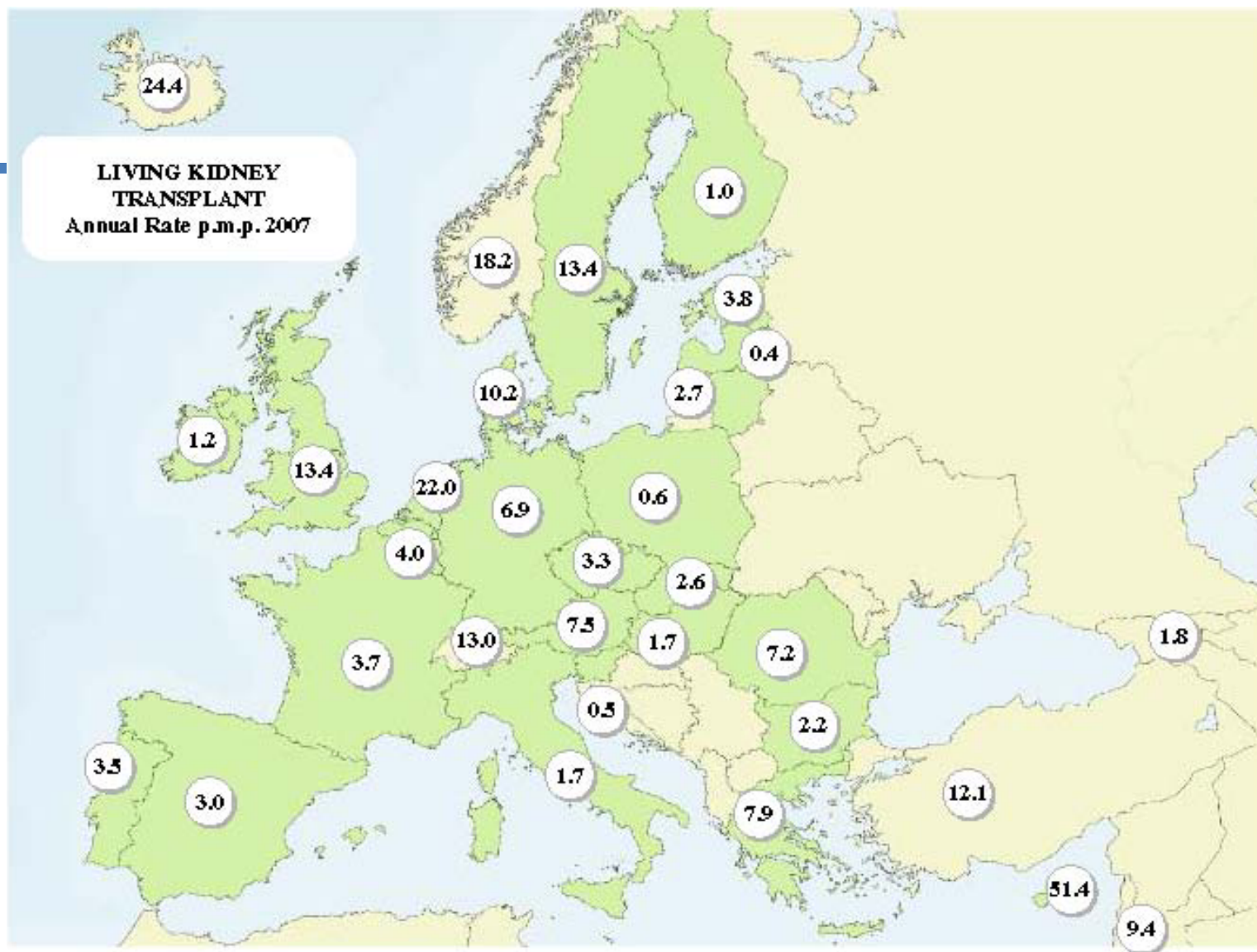
GLOBAL DATA

Kidney Transplants	Liver Transplants	Heart Transplants	Lung Transplants	Pancreas Transplants
65511 (61% from LD)	20366 (10% from LD)	5313	3051	2559

96820 SOLID ORGAN TRANSPLANTS

Global Database on Donation and Transplantation.
2006 data.93 countries





Plan of presentation

1. Advantages of transplantation
2. The main problem
3. Definitions
4. The LRD donor
5. The LRD acceptor

Organ transplantation is

- Most effective
- Life-saving
- Cost-effective

Patient survival

TABLE 3. OUTCOME AMONG RECIPIENTS OF FIRST CADAVERIC TRANSPLANTS, ACCORDING TO CHARACTERISTICS AT THE TIME OF INITIAL PLACEMENT ON THE WAITING LIST, 1991–1997.*

GROUP	RELATIVE RISK 18 MO AFTER TRANSPLANTATION (95% CI)†	P VALUE	TIME AT WHICH RISK OF DEATH EQUALS THAT IN REFERENCE GROUP	TIME AT WHICH LIKELIHOOD OF SURVIVAL EQUALS THAT IN REFERENCE GROUP	PROJECTED YEARS OF LIFE (IN REFERENCE GROUP) WITHOUT TRANSPLANTATION†‡	PROJECTED YEARS OF LIFE WITH TRANSPLANTATION‡
			days after transplantation			
All recipients of first cadaveric transplants	0.32 (0.30–0.35)	<0.001	106	244	10	20
Age						
0–19 yr	0.33 (0.12–0.87)	0.03	3	5	26	39
20–39 yr	0.24 (0.20–0.29)	<0.001	11	57	14	31
40–59 yr	0.33 (0.29–0.37)	<0.001	95	251	11	22
60–74 yr	0.39 (0.33–0.47)	<0.001	148	369	6	10
Sex						
Male	0.34 (0.30–0.38)	<0.001	110	255	10	19
Female	0.30 (0.26–0.34)	<0.001	94	220	11	23

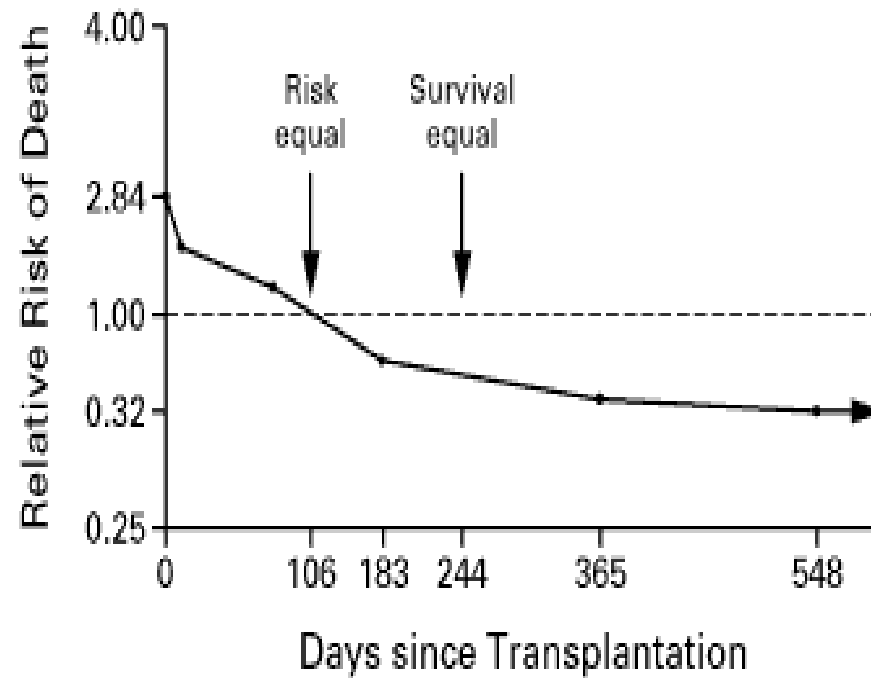
Patient survival

TABLE 3. OUTCOME AMONG RECIPIENTS OF FIRST CADAVERIC TRANSPLANTS, ACCORDING TO CHARACTERISTICS AT THE TIME OF INITIAL PLACEMENT ON THE WAITING LIST, 1991–1997.*

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Cause of end-stage renal disease			days after transplantation			
Diabetes	0.27 (0.24–0.30)	<0.001	57	146	8	19
Glomerulonephritis	0.39 (0.31–0.48)	<0.001	130	360	11	18
Other	0.38 (0.33–0.43)	<0.001	137	353	12	20



Patient survival



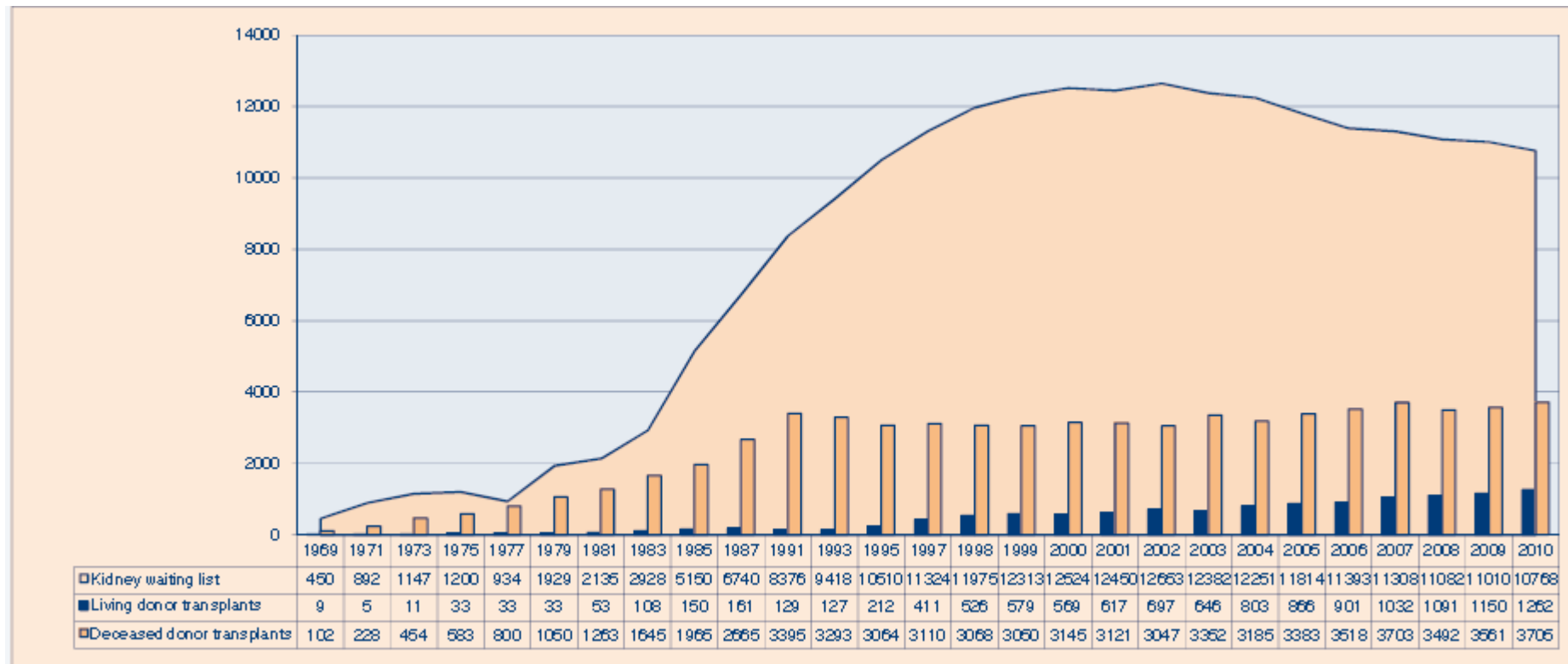
Quality of life

- 90% have an increased quality of life
- 45% go working again as before.

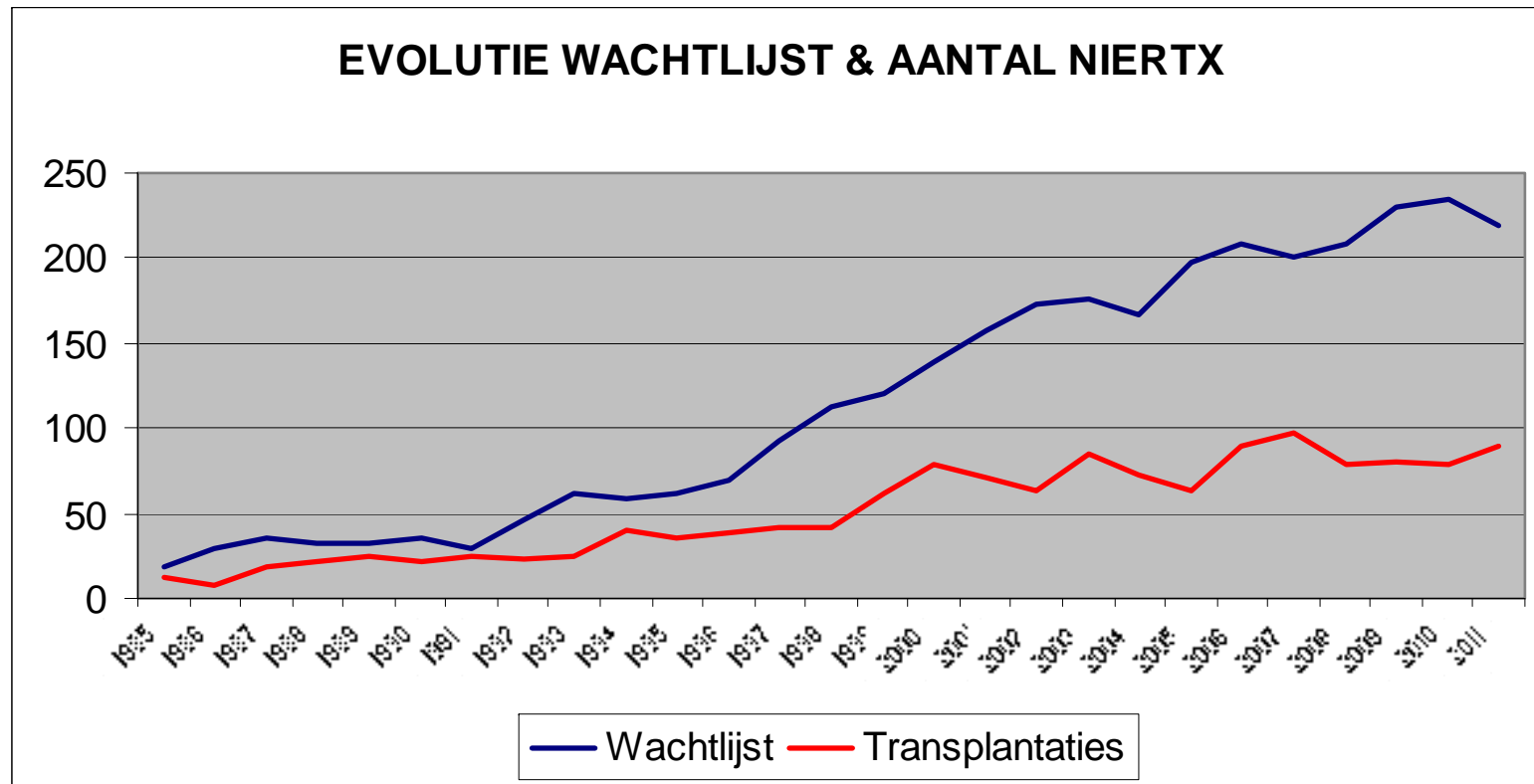
Kidney transplantation

The main problem

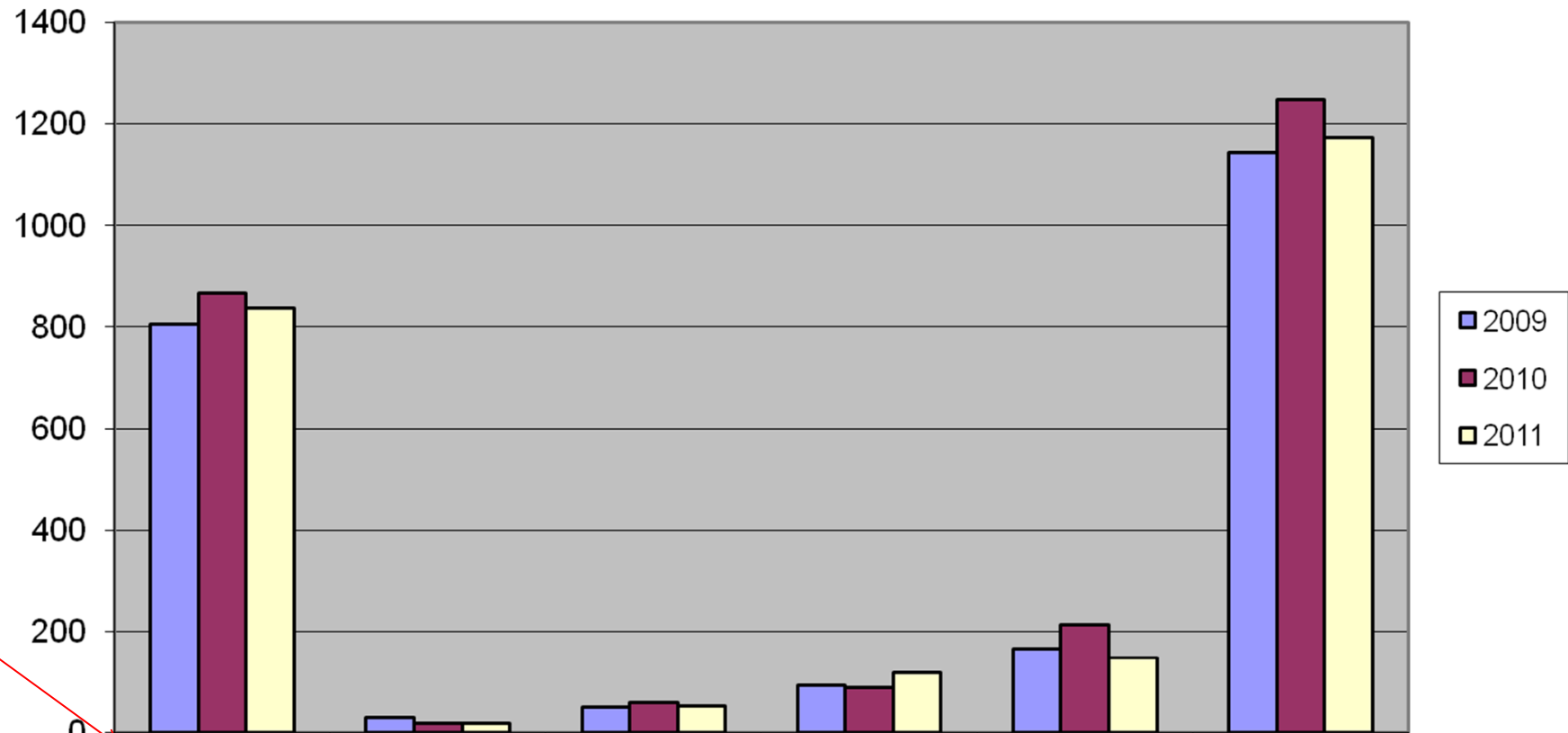
Dynamics of the Eurotransplant kidney waiting list and transplants between 1969 and 2010



EVOLUTIE WACHTLIJST & AANTAL NIERTX

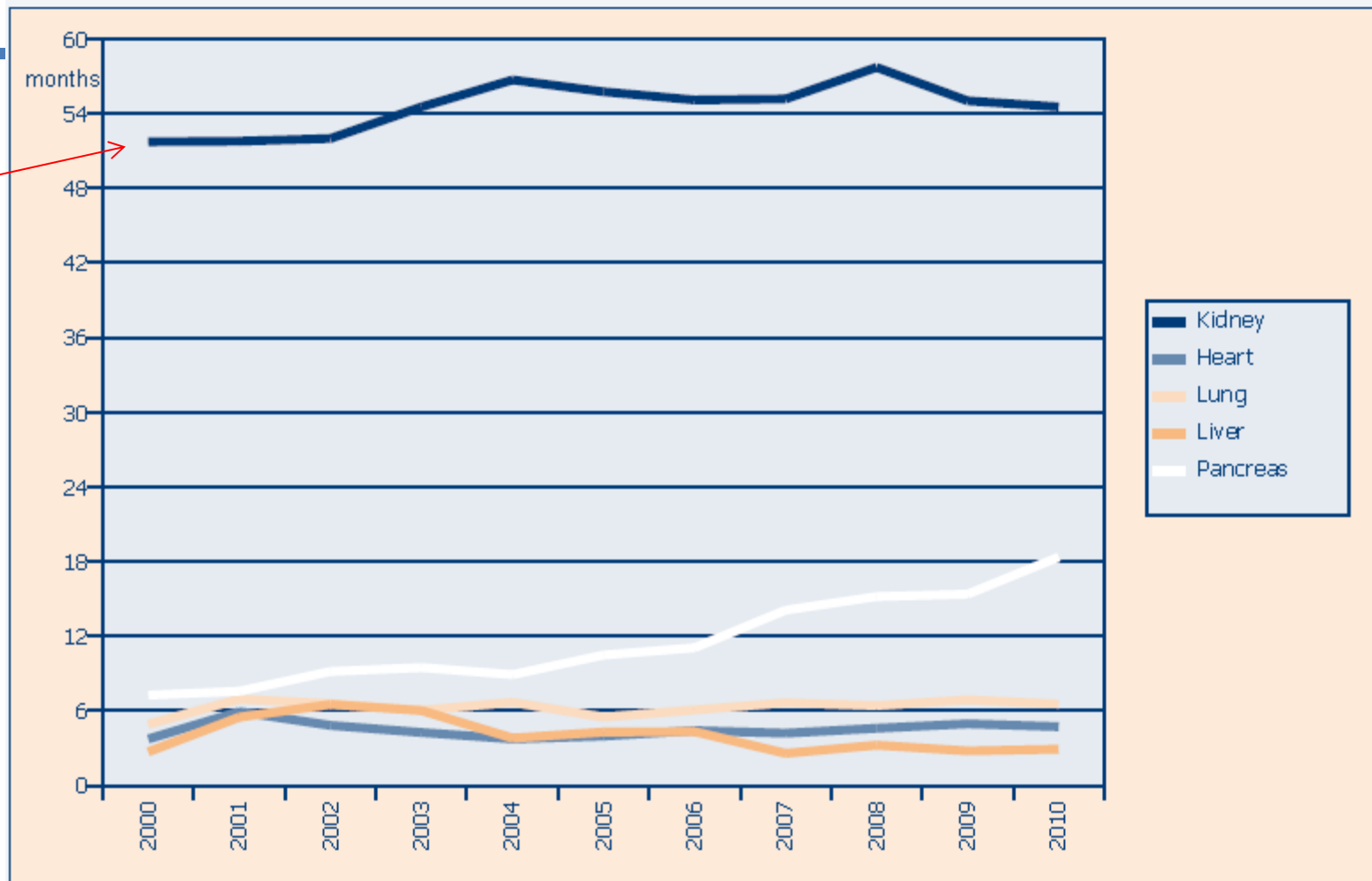


Waiting list Belgium 2010-2011 (-2,5%)



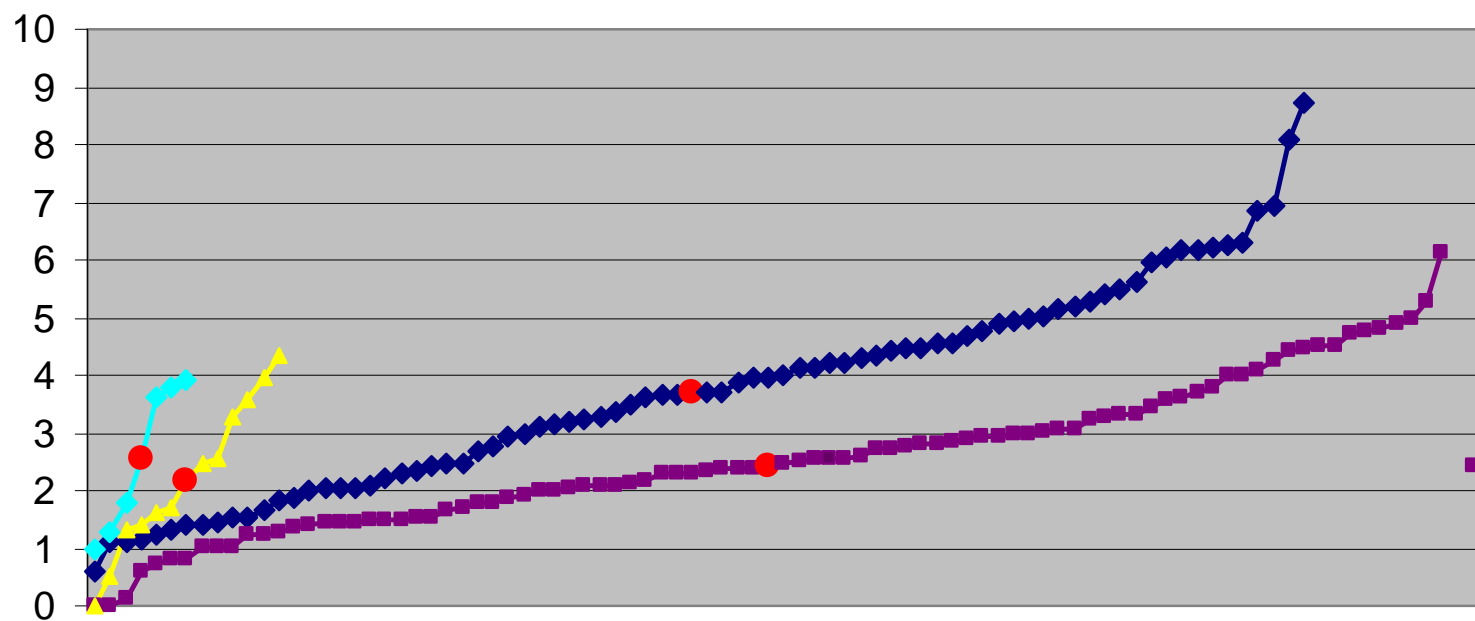
	Nieren	Pancreas	Hart	Longen	Lever	Totaal
■ 2009	806	30	50	92	166	1144
■ 2010	867	19	59	88	214	1247
■ 2011	837	19	53	118	147	1174

Median waiting time to deceased transplant



Wachttijd niertx UZG 2009-2011

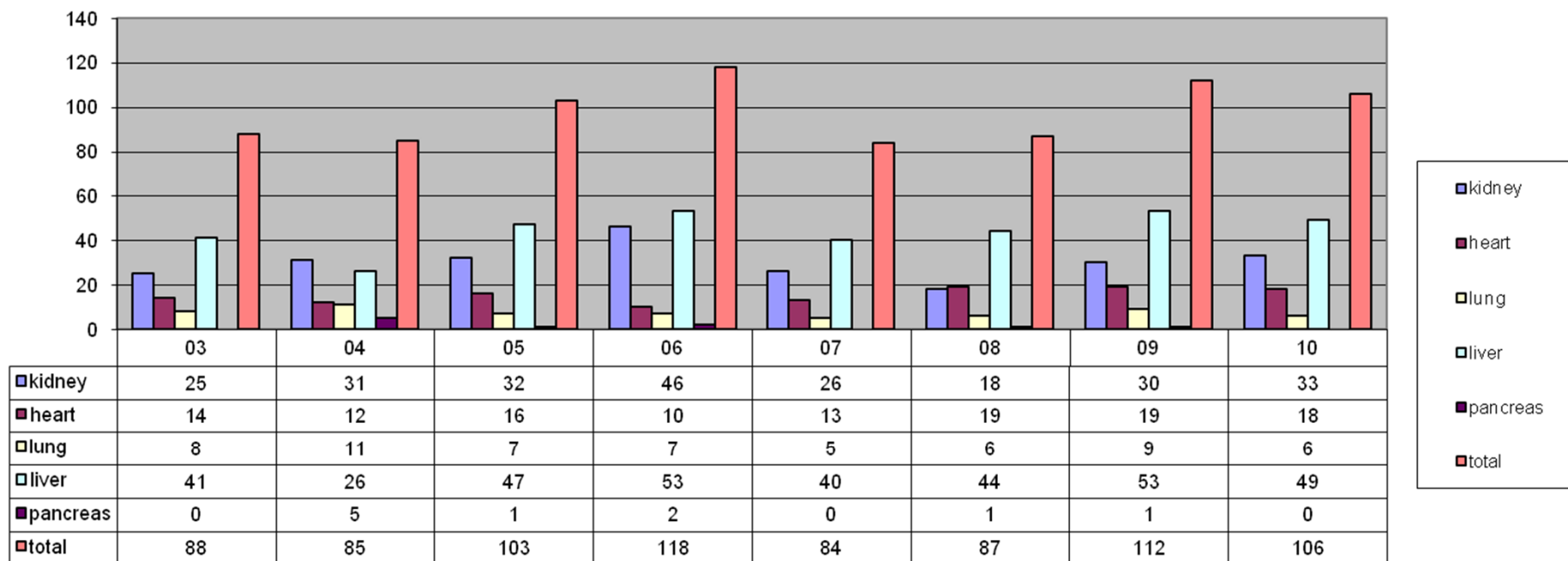
jaren



—◆— O —■— A —▲— B —◆— AB



Death while on the waiting list ± 2/week

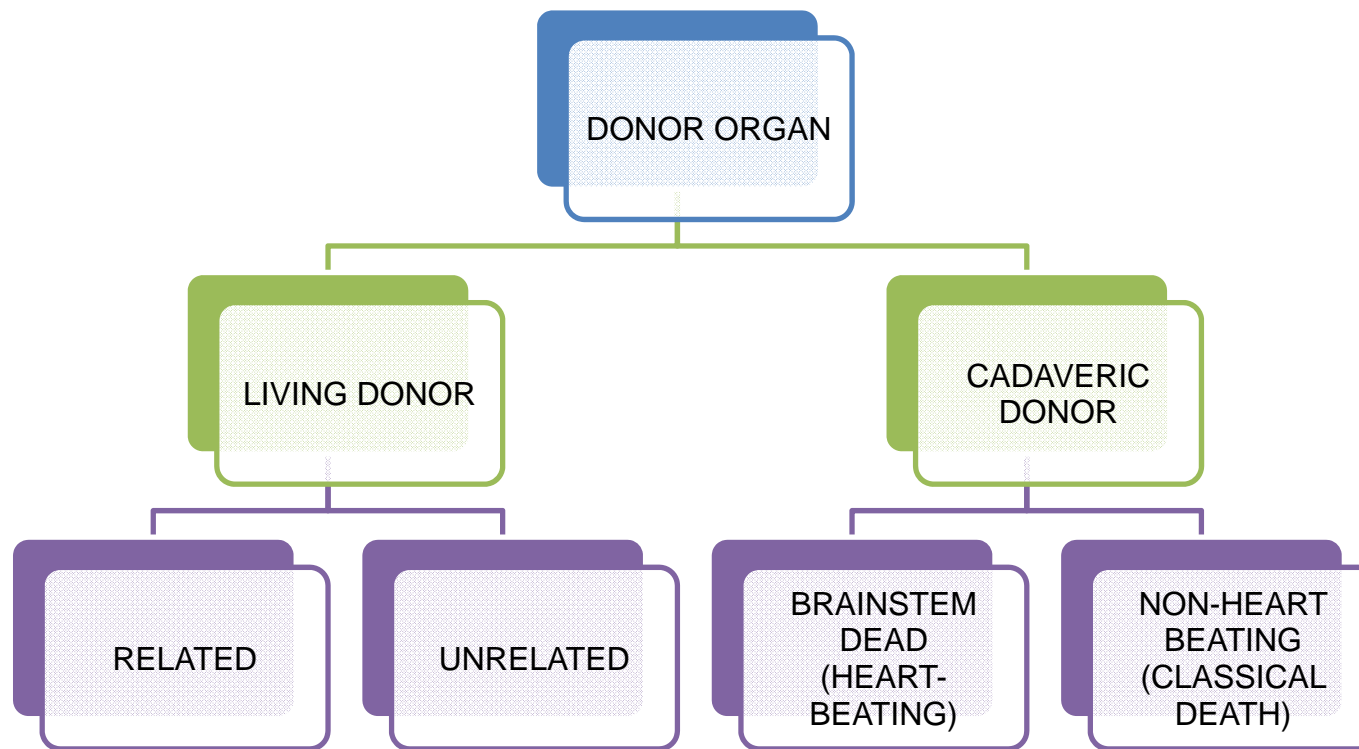


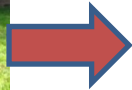
Alternatives

- Try to diminish cadaveric donation refusals
- “Old for Old” Eurotransplant program
- ECD extended criteria donors
 - >60 y
 - >50 y + arterial hypertension / CVA / Screat>1.5 mg/dl
- NHBD non heart beating donation
- (Xenotransplantation)
- LRD/LURD living (un)related donation

-
- One organ, tissue and eye donor might save the lives of 7 and help up to 50 people

Ref: www.lifelineofohio.org/media/story.cfm



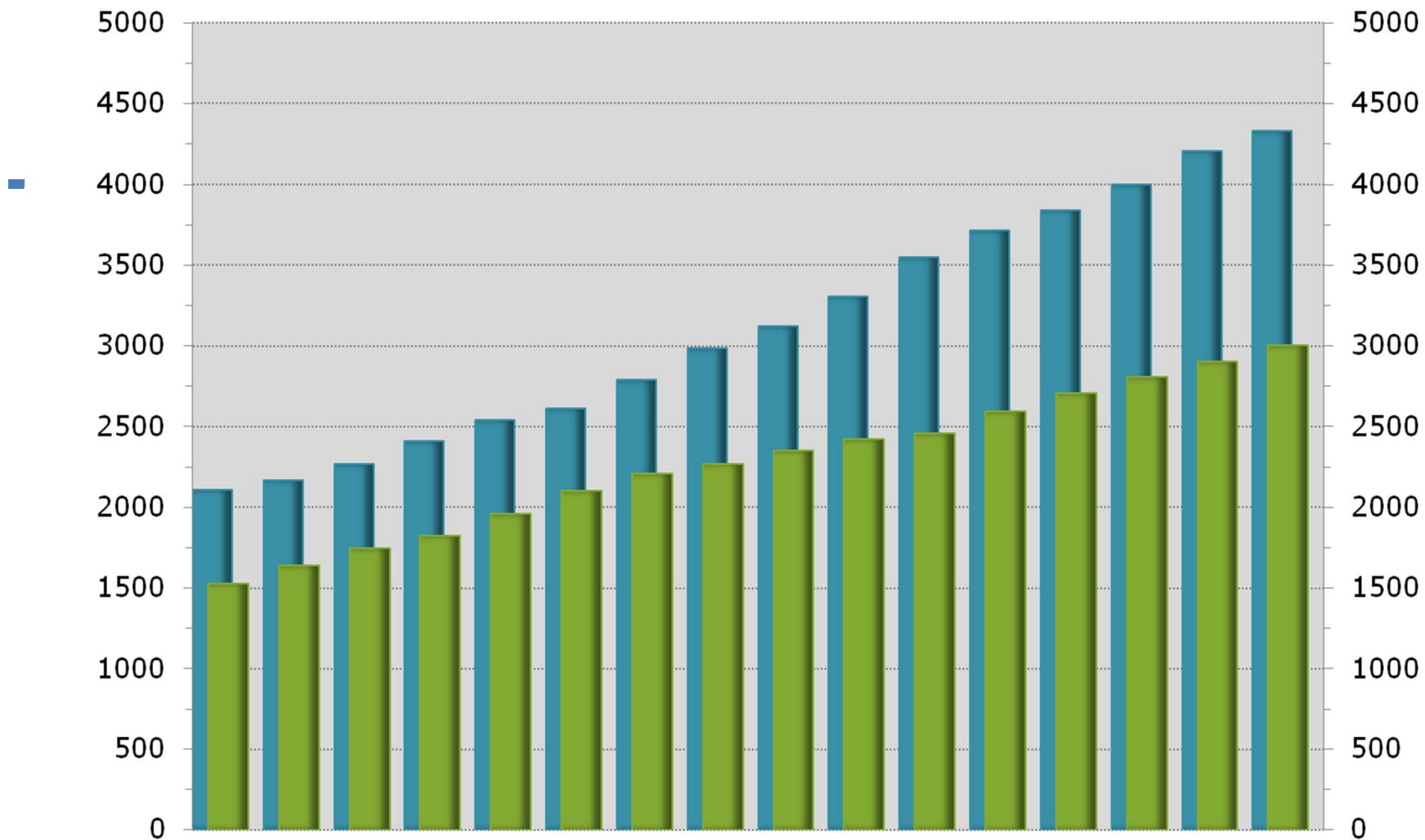


Nearly New Car
by Mercedes-Benz

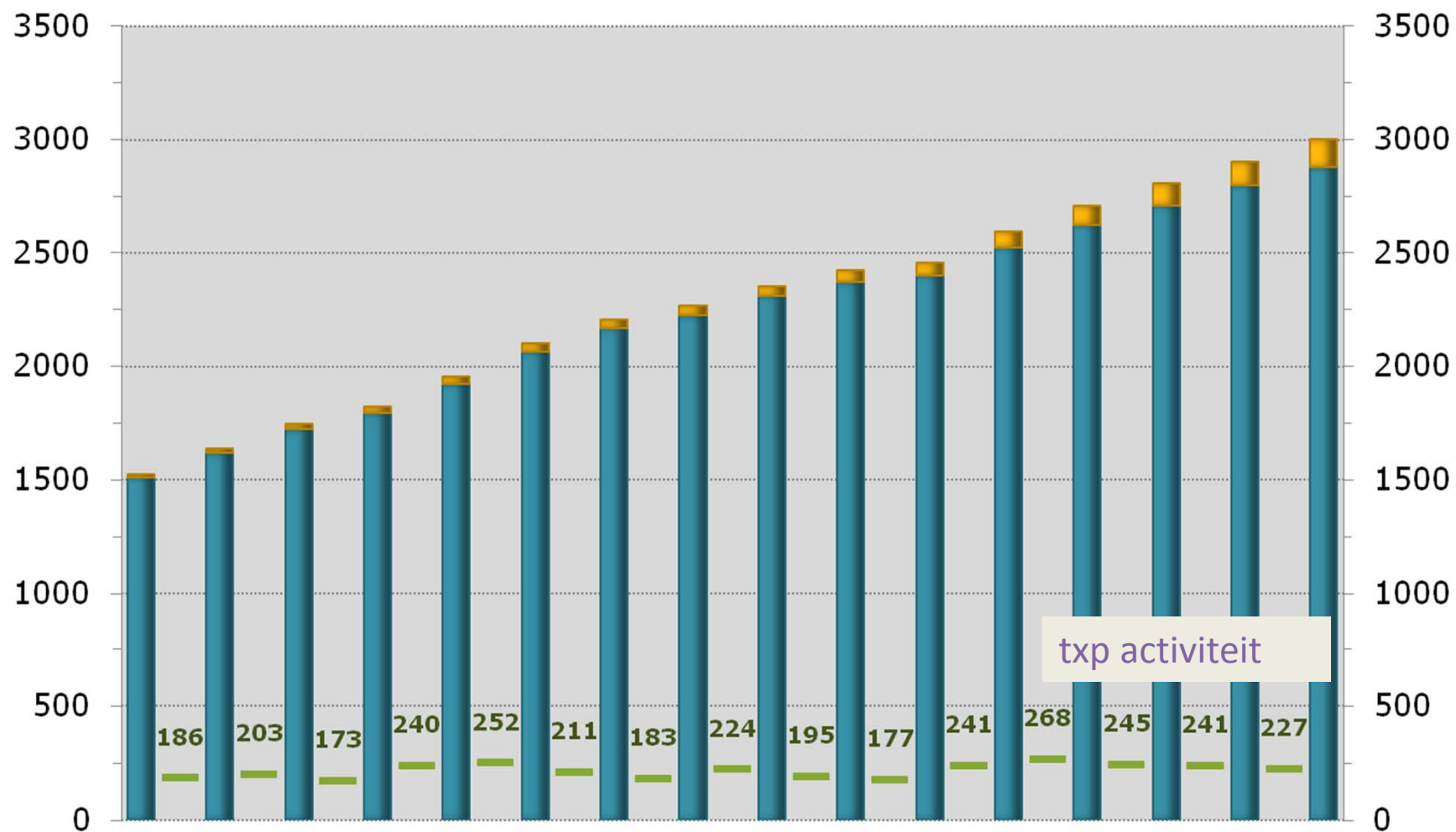


Definitions

- LRD living related donation = genetically related
 - Siblings
 - Parental
- LURD living unrelated donation = emotionally related
 - Spousal
 - Cross-over = paired exchange
 - Friends
 - Non-directed – “good samaritan”
 - Paid donation is legally forbidden and ethically not accepted !!

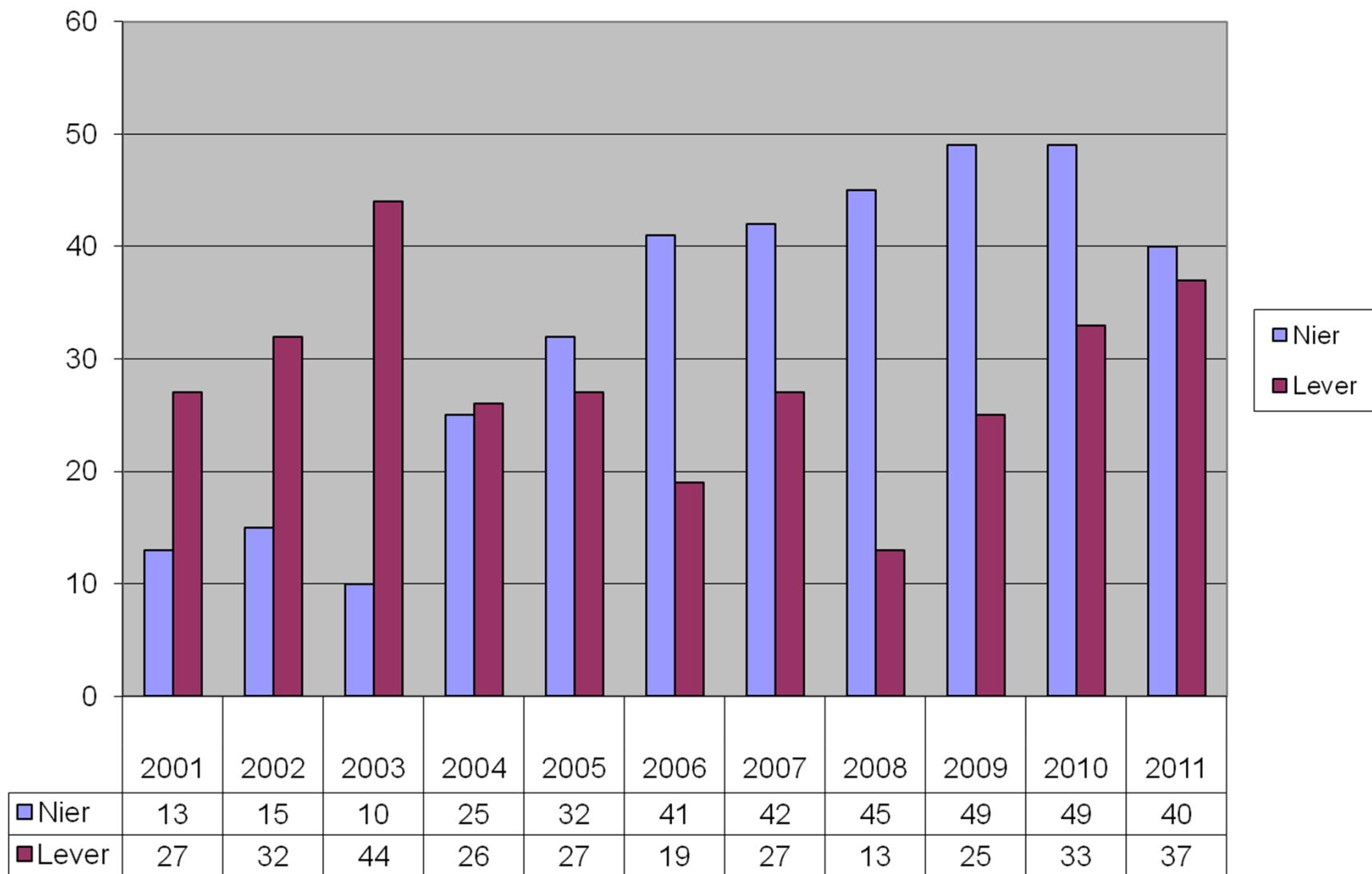


1 januari	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2011
Dialyse	2106	2165	2266	2412	2540	2612	2789	2988	3123	3307	3547	3712	3840	3999	4207	4332	59%
Transplantatie	1526	1637	1746	1823	1958	2102	2206	2269	2352	2425	2458	2593	2709	2808	2904	3002	41%
Totaal	3622	3802	4012	4235	4498	4714	4995	5257	5475	5732	6005	6305	6549	6807	7111	7334	100%



1 januari	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Overleden donor TXP	1511	1619	1726	1797	1923	2064	2168	2227	2311	2375	2400	2524	2624	2711	2798	2879
Levende donor TXP	15	18	20	26	35	38	38	42	41	50	58	69	85	97	106	123
Totaal prevalentie	1526	1637	1746	1823	1958	2102	2206	2269	2352	2425	2458	2593	2709	2808	2904	3002

Levende transplantatie 2009 - 2010 - 2011



The LRD donor - risk

- Donor mortality $3/10000 = 0.03\%$
 - UNOS database: 11/32791 between 1999-2004
- Donor ESRD $4/10000 = 0.04\%$
 - UNOS database since 1988
 - Risk of ESRD of US population = 0.03%
 - FSGS / HUS / diabetic and hypertensive nephropathy most frequent

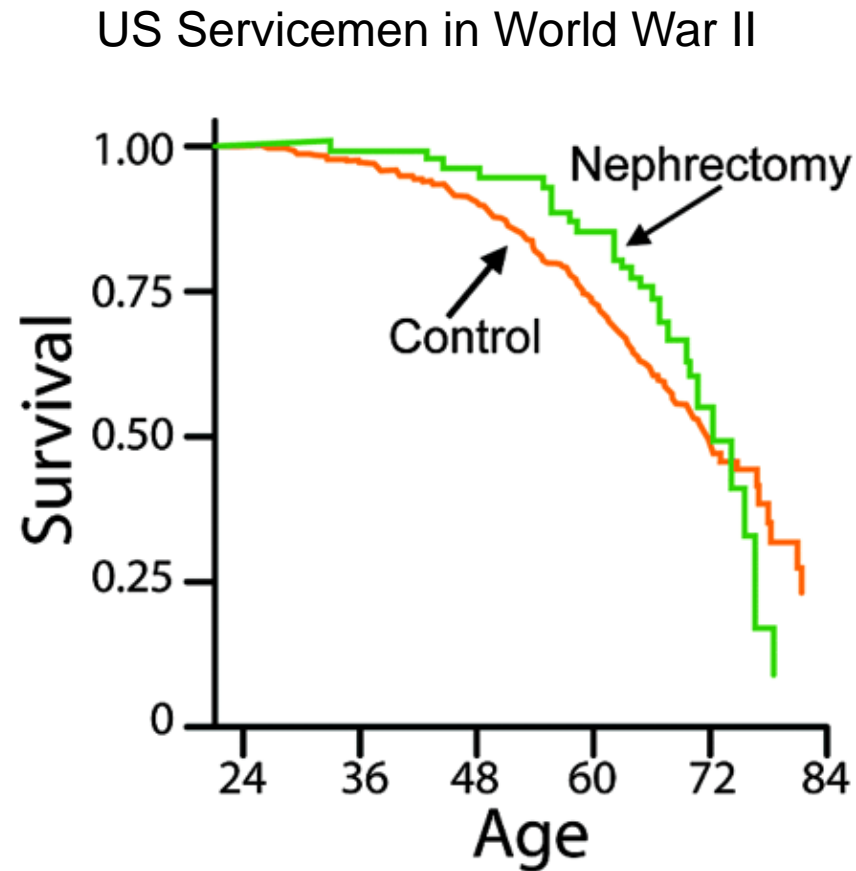
The LRD donor - concerns

- Immediate mortality
- Familial disease – FSGS / HUS
- Development of disease that will cause mortality
 - Cardiovascular disease : Diabetes / hypertension / metabolic syndrome – obesitas
- Development of diseases that will cause ESRD
 - Diabetes, hypertension
 - proteinuria
- Transmission of disease to the recipient

The LRD donor – acceptance criteria

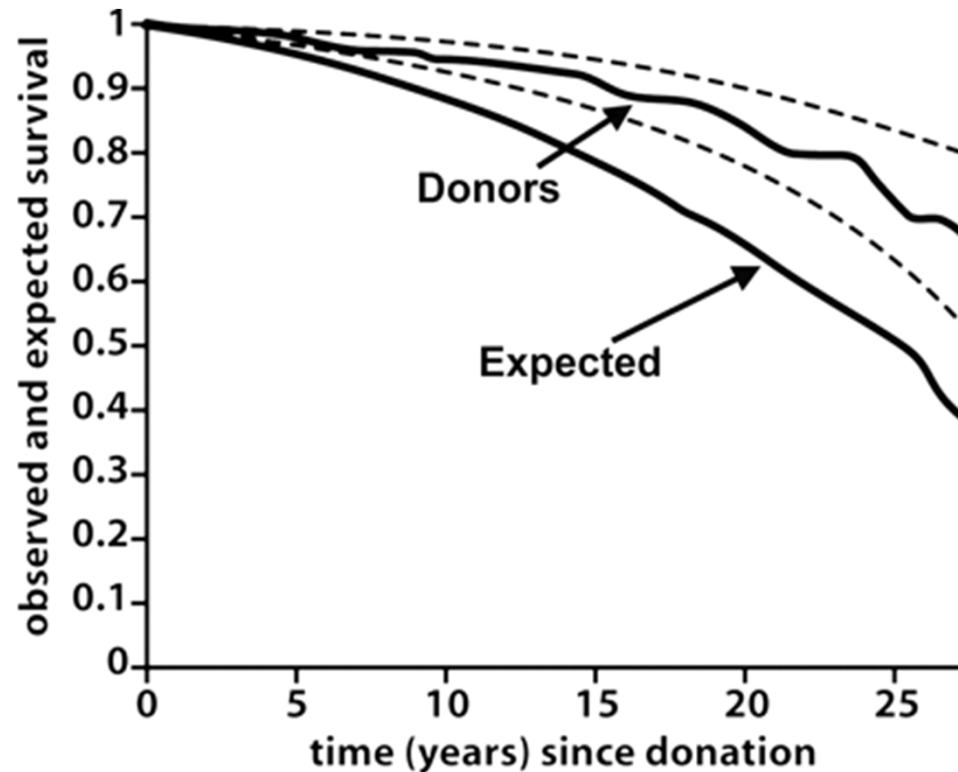
- Age – variable acceptance
- Proteinuria < 100 mg/24h and albuminuria < 30 mg/24h
Kasiske AJKD 1995 Klausen Circulation 2004
- GFR > 80 ml/min/1.73m³
- OGTT normal
- No haematuria
- Normal blood pressure
- BMI < 30
- No infectious or cancer risk
- Correct social / psychological evaluation
- Willingness to donate and follow-up

Safety of Living Kidney Donation



Living donors live longer

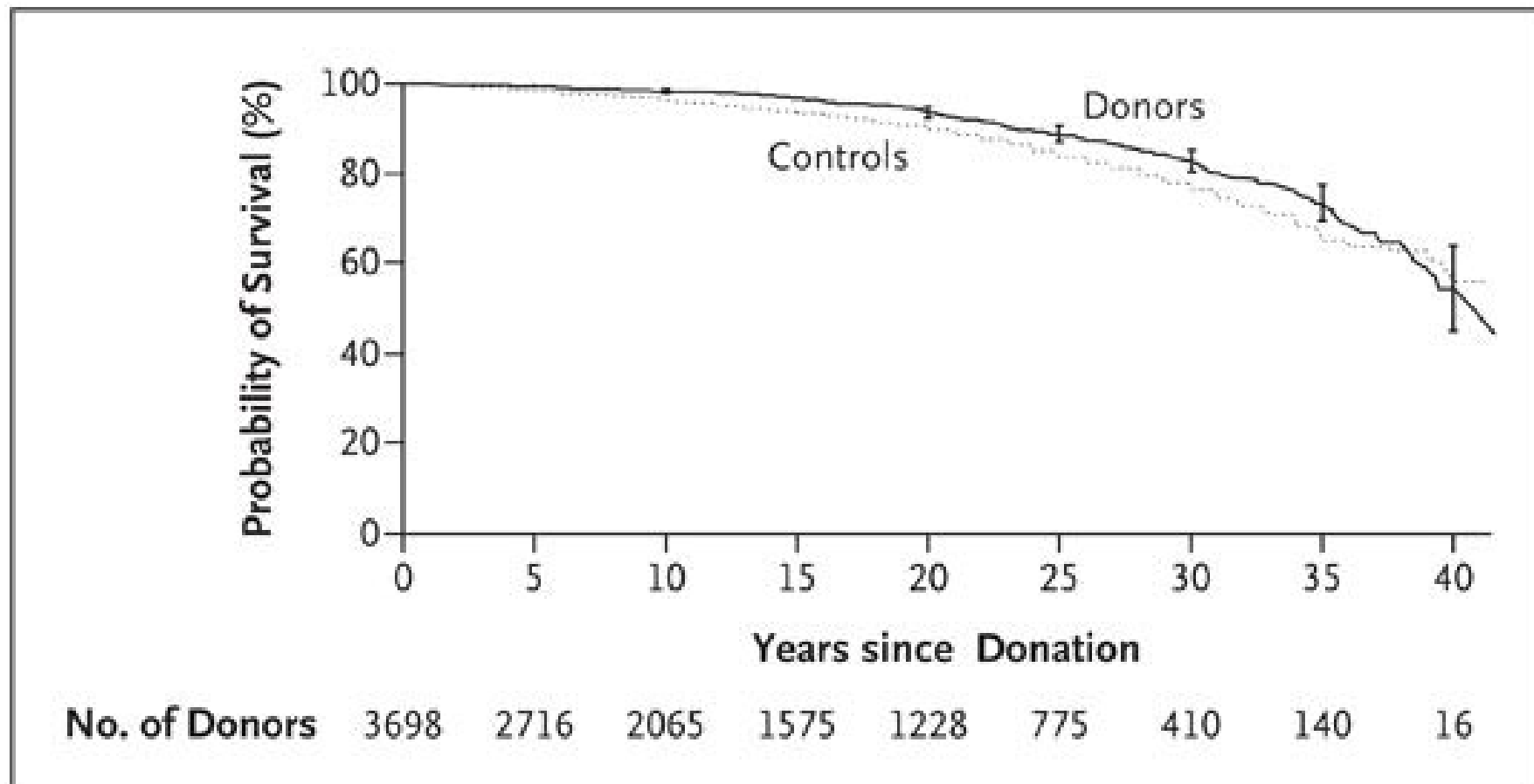
Sweden 1964-94



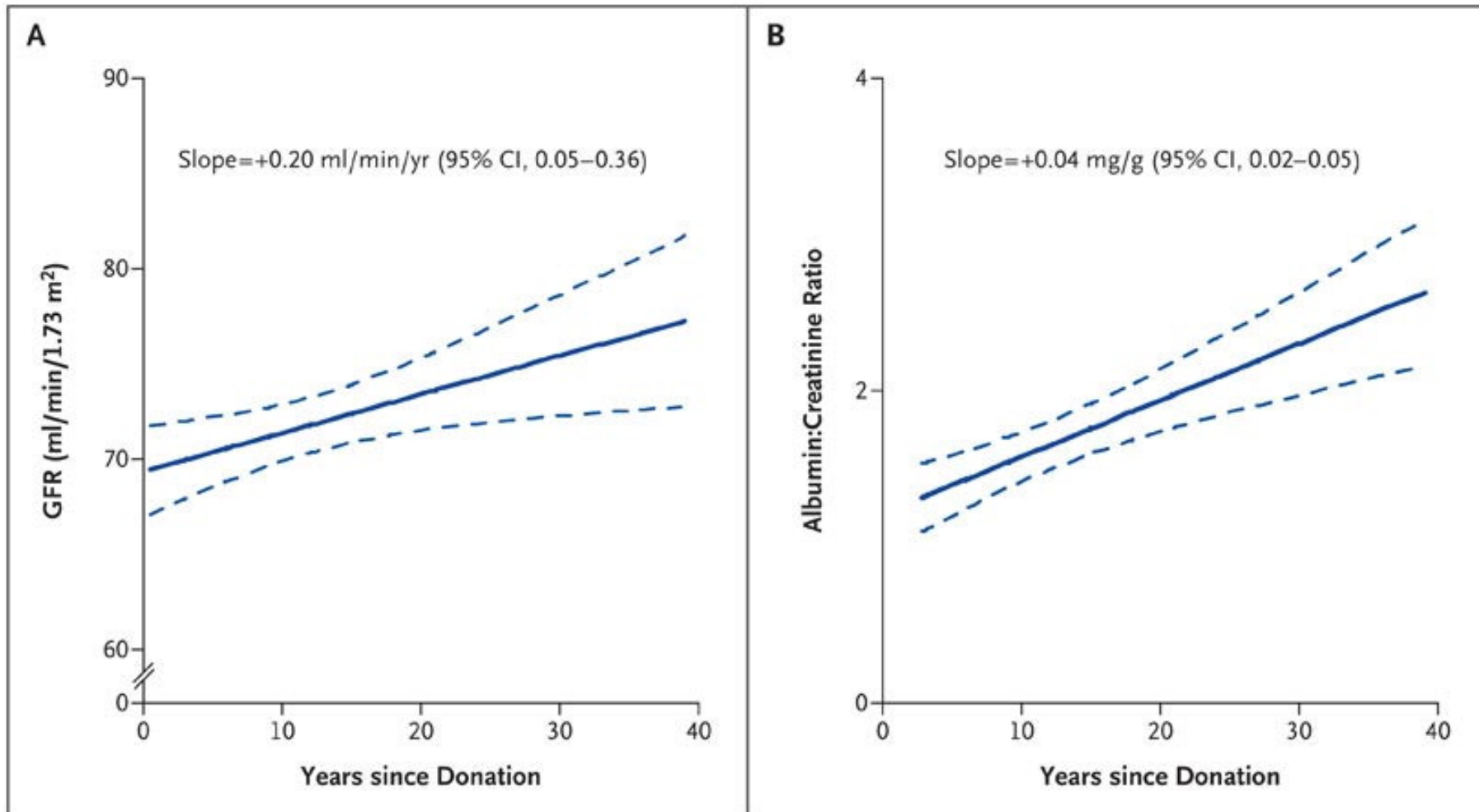
At 20 y : survival 29% better



Survival of Kidney Donors and Controls from the General Population – US experience 2009



Glomerular Filtration Rate (GFR) and Urinary Albumin Excretion According to Time since Donation



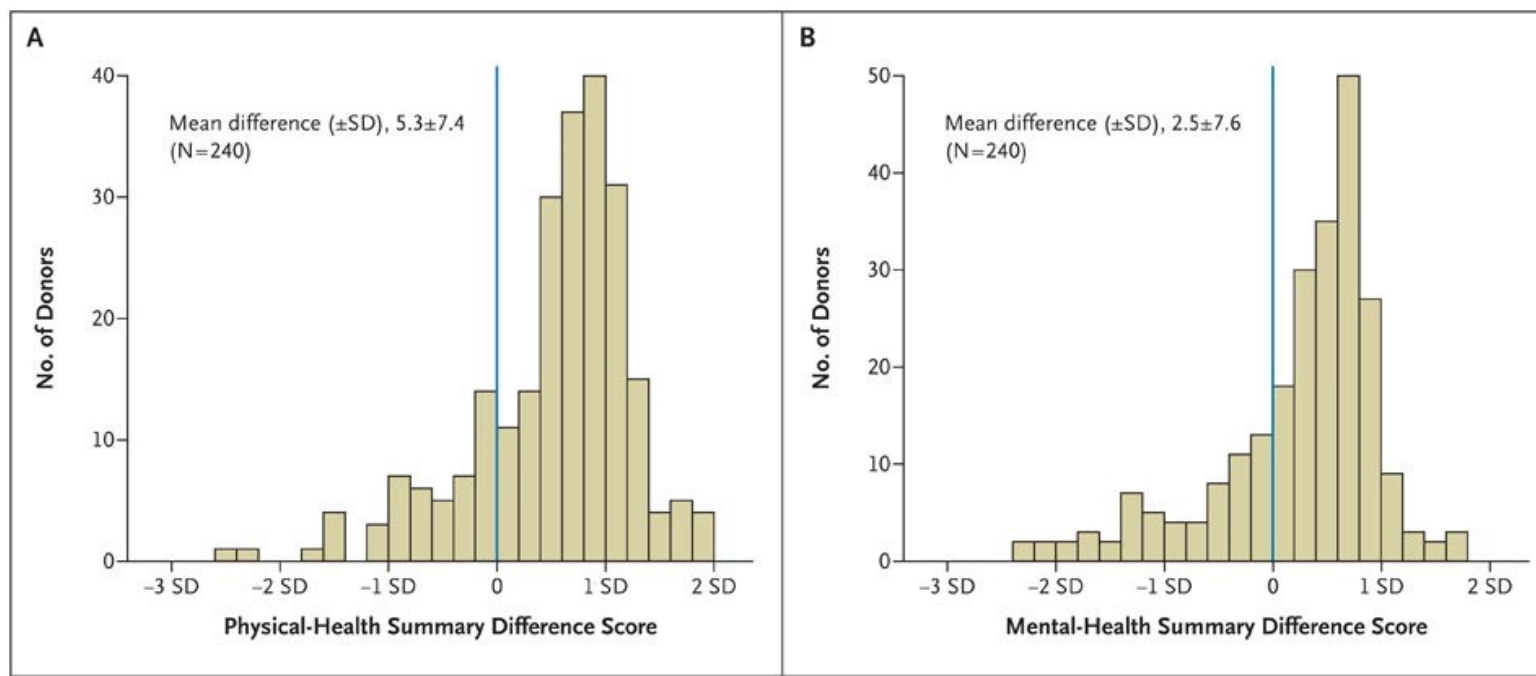
Multivariable Risk of Reduced Iohexol Glomerular Filtration Rate (GFR), Albuminuria, and Hypertension in 255 Kidney Donors

Table 1. Multivariable Risk of Reduced Iohexol Glomerular Filtration Rate (GFR), Albuminuria, and Hypertension in 255 Kidney Donors.*

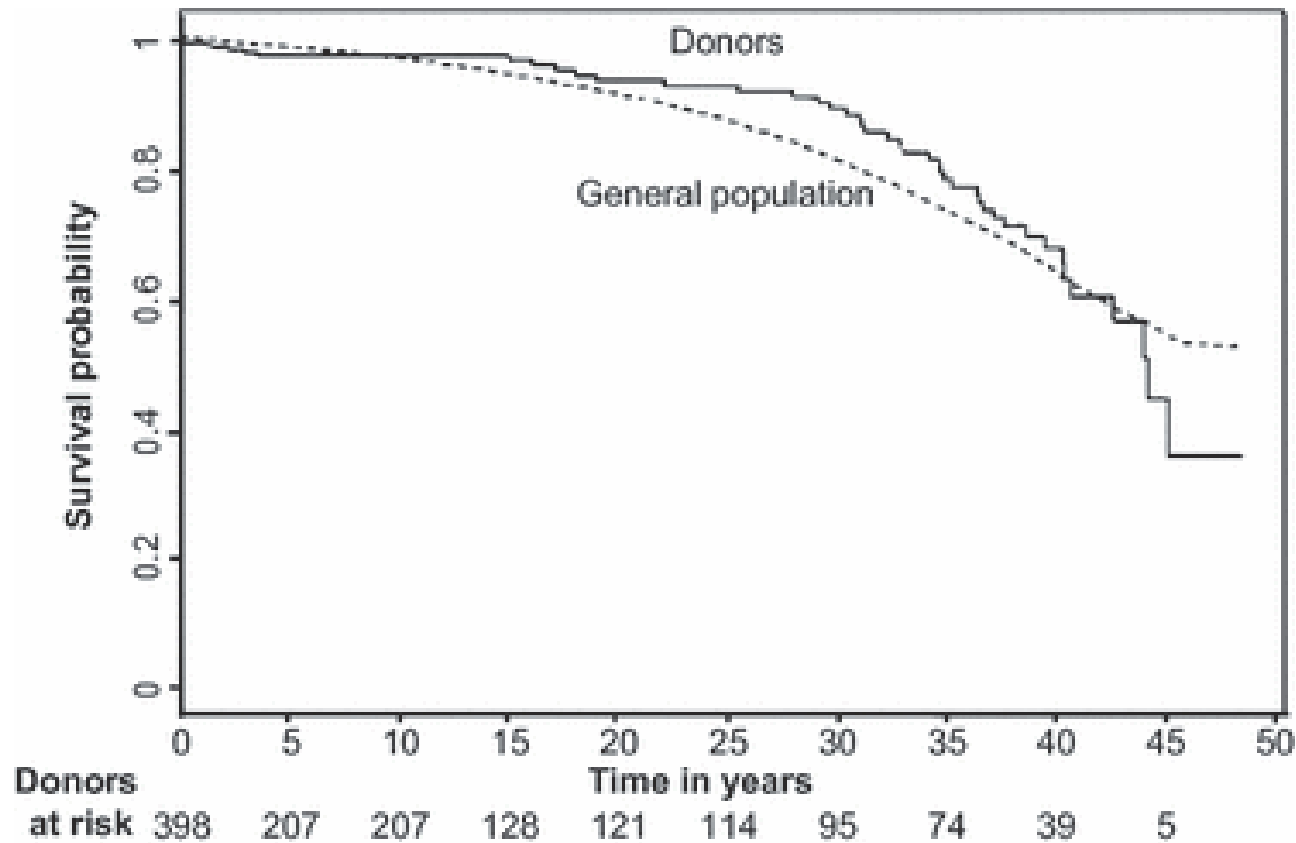
Variable	Odds Ratio (95% CI)	P Value
Iohexol GFR <60 ml/min/1.73m ²		
Age, per year	1.15 (1.08–1.21)	<0.001
Time since donation, per year	0.87 (0.79–0.95)	0.003
Body-mass index, per unit	1.12 (1.02–1.23)	0.02
Current smoker	0.42 (0.17–1.05)	0.06
Female sex	3.11 (1.11–8.67)	0.03
Albuminuria		
Time since donation, per year	1.12 (1.05–1.20)	<0.001
Female sex	0.31 (0.12–0.79)	0.01
Hypertension requiring medication		
Age, per year	1.09 (1.04–1.13)	<0.001
Body-mass index, per unit	1.12 (1.04–1.21)	0.003

* Covariates include age, sex, time since donation, current body-mass index, creatinine level at the time of donation, smoking status, and systolic and diastolic blood pressures.

Quality-of-Life Scores for Kidney Donors.



Very long-term follow-up of living kidney donors – Paris experience 2012

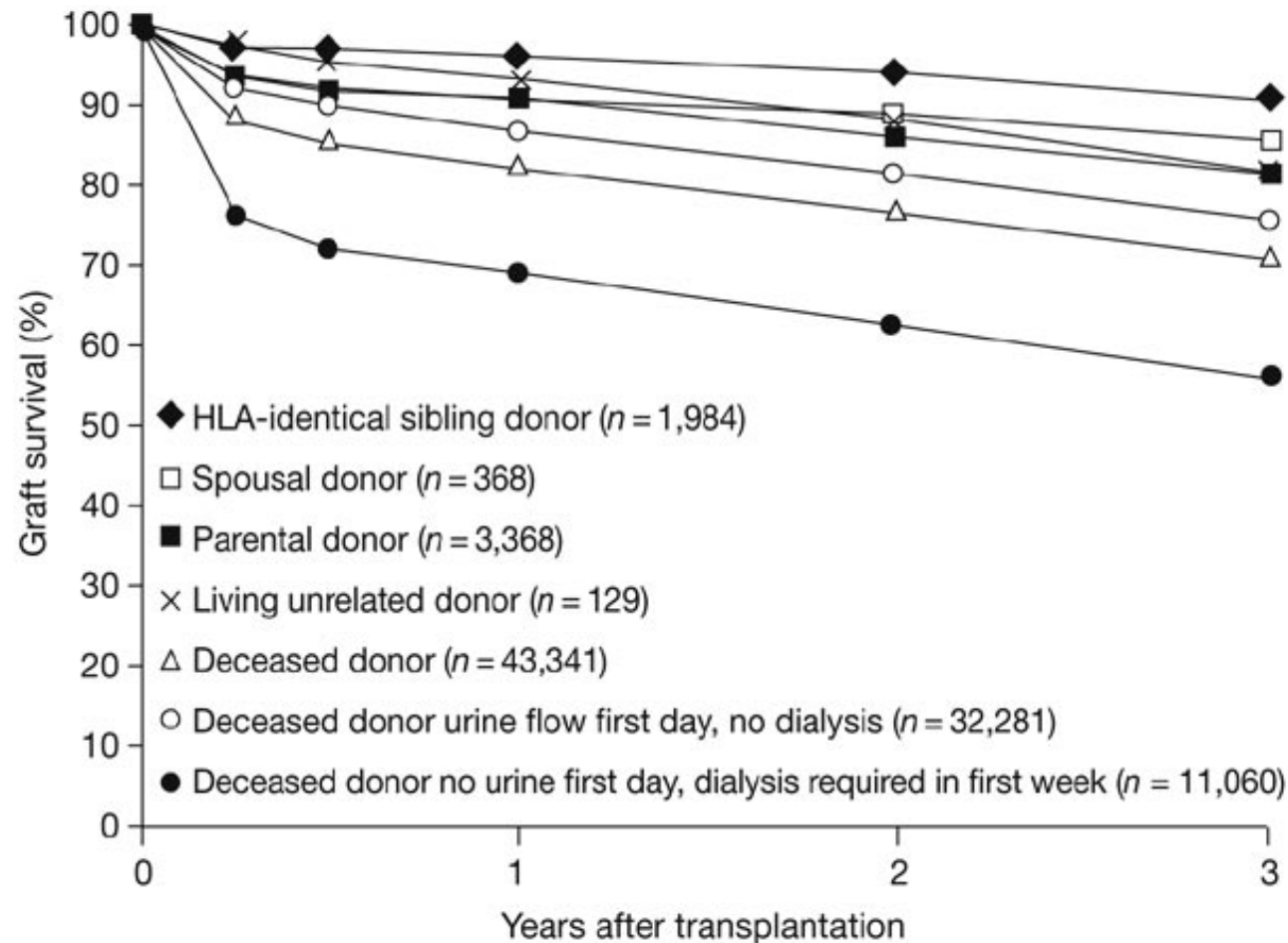


Pregnancies in donors

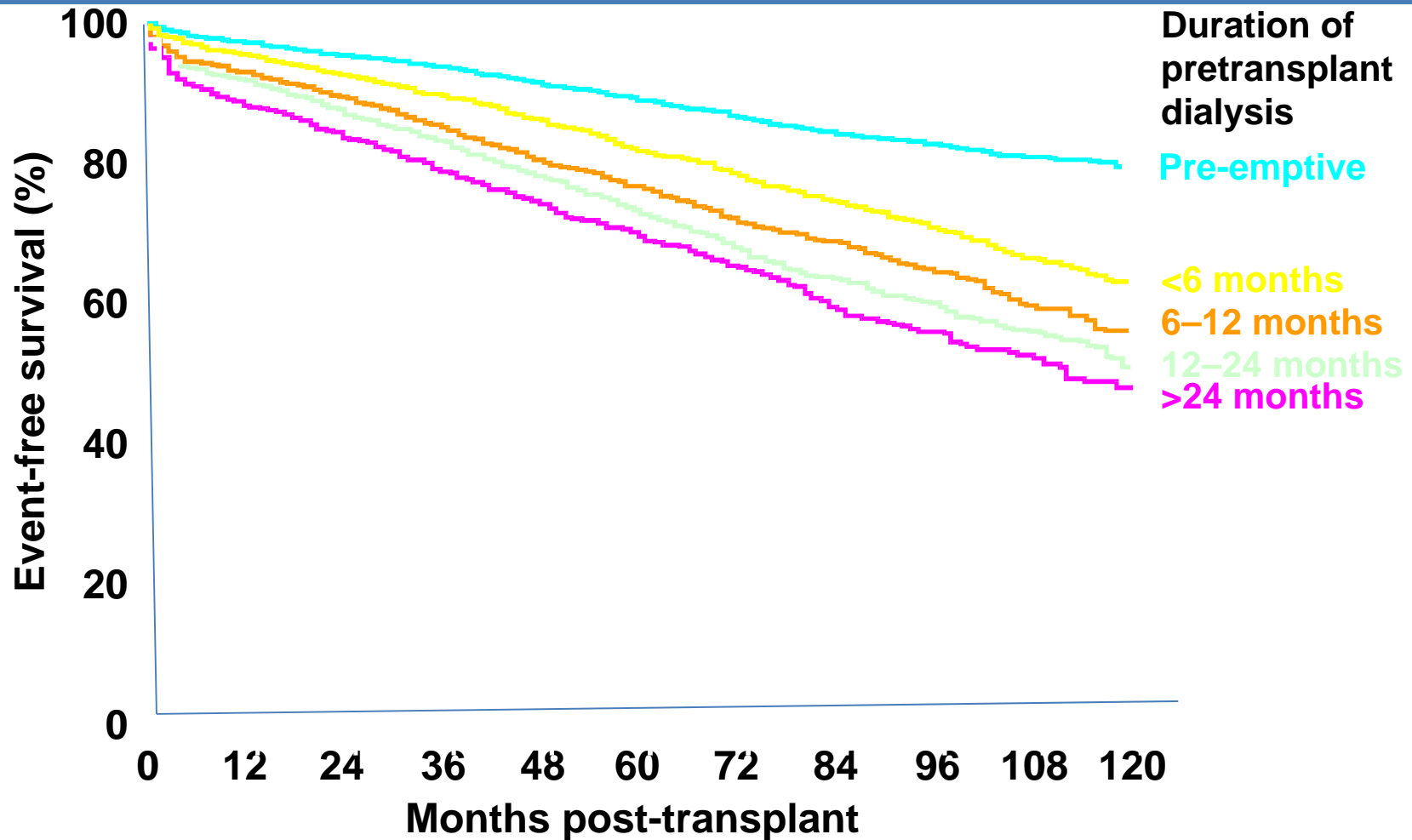
- Postdonation (vs. predonation) pregnancies associated with
 - lower likelihood of full-term deliveries (73.7% vs. 84.6%, $p = 0.0004$)
 - higher likelihood of fetal loss (19.2% vs. 11.3%, $p < 0.0001$)
 - higher risk of gestational diabetes (2.7% vs. 0.7%, $p = 0.0001$)
 - gestational hypertension (5.7% vs. 0.6%, $p < 0.0001$)
 - proteinuria (4.3% vs. 1.1%, $p < 0.0001$)
 - preeclampsia (5.5% vs. 0.8%, $p < 0.0001$)

Acceptor issues

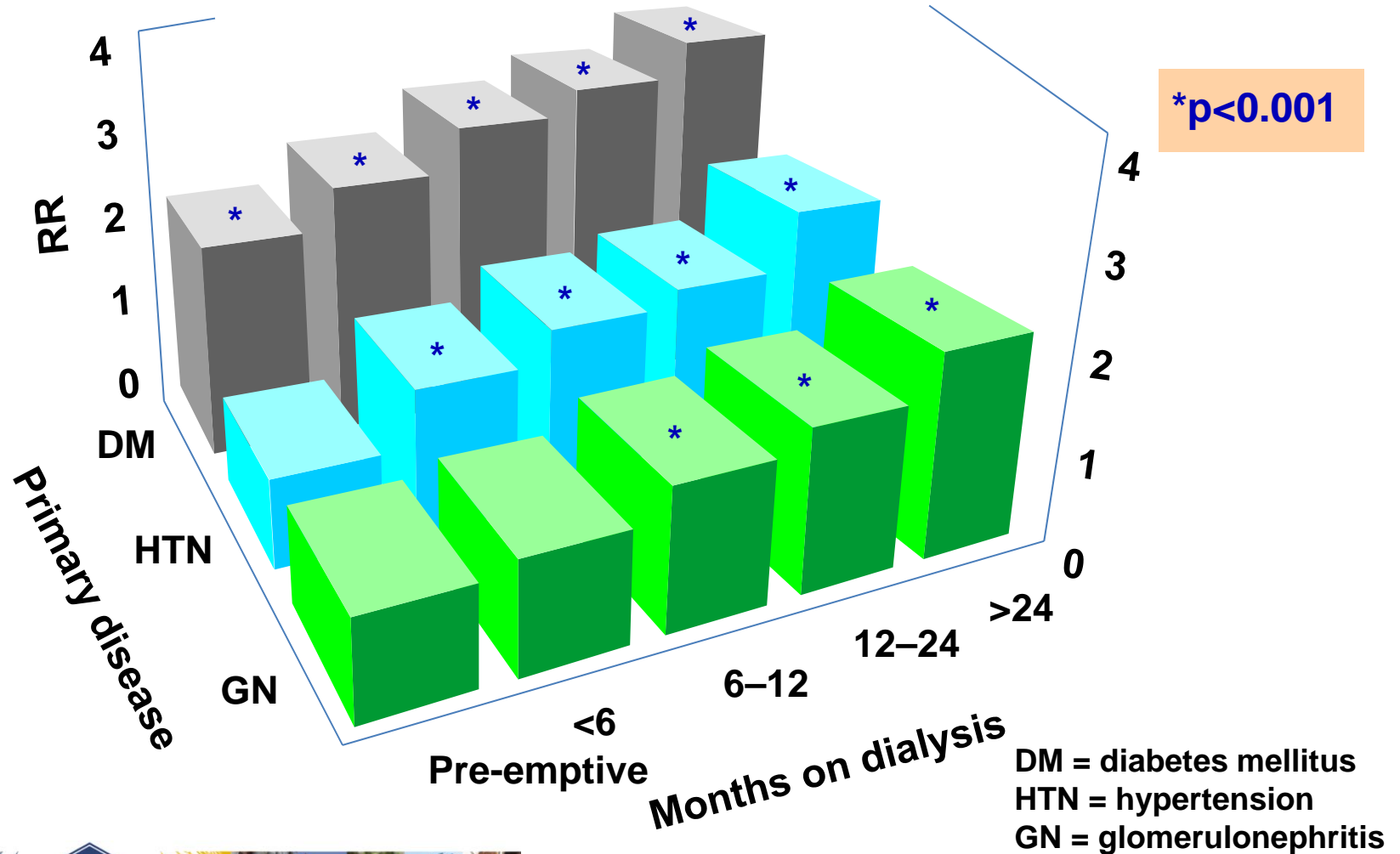
Graft outcome living versus deceased donor transplantation



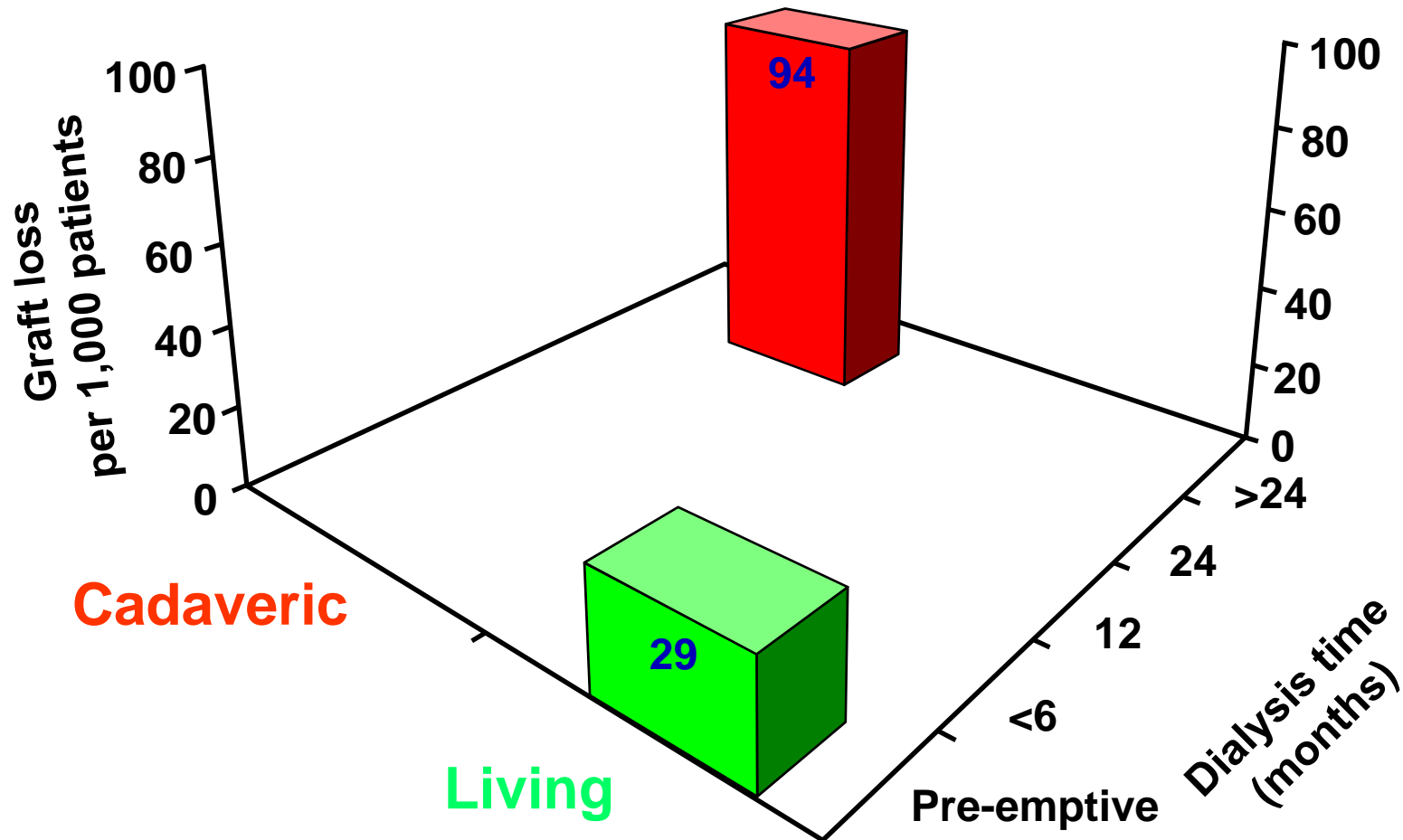
Living donor graft survival



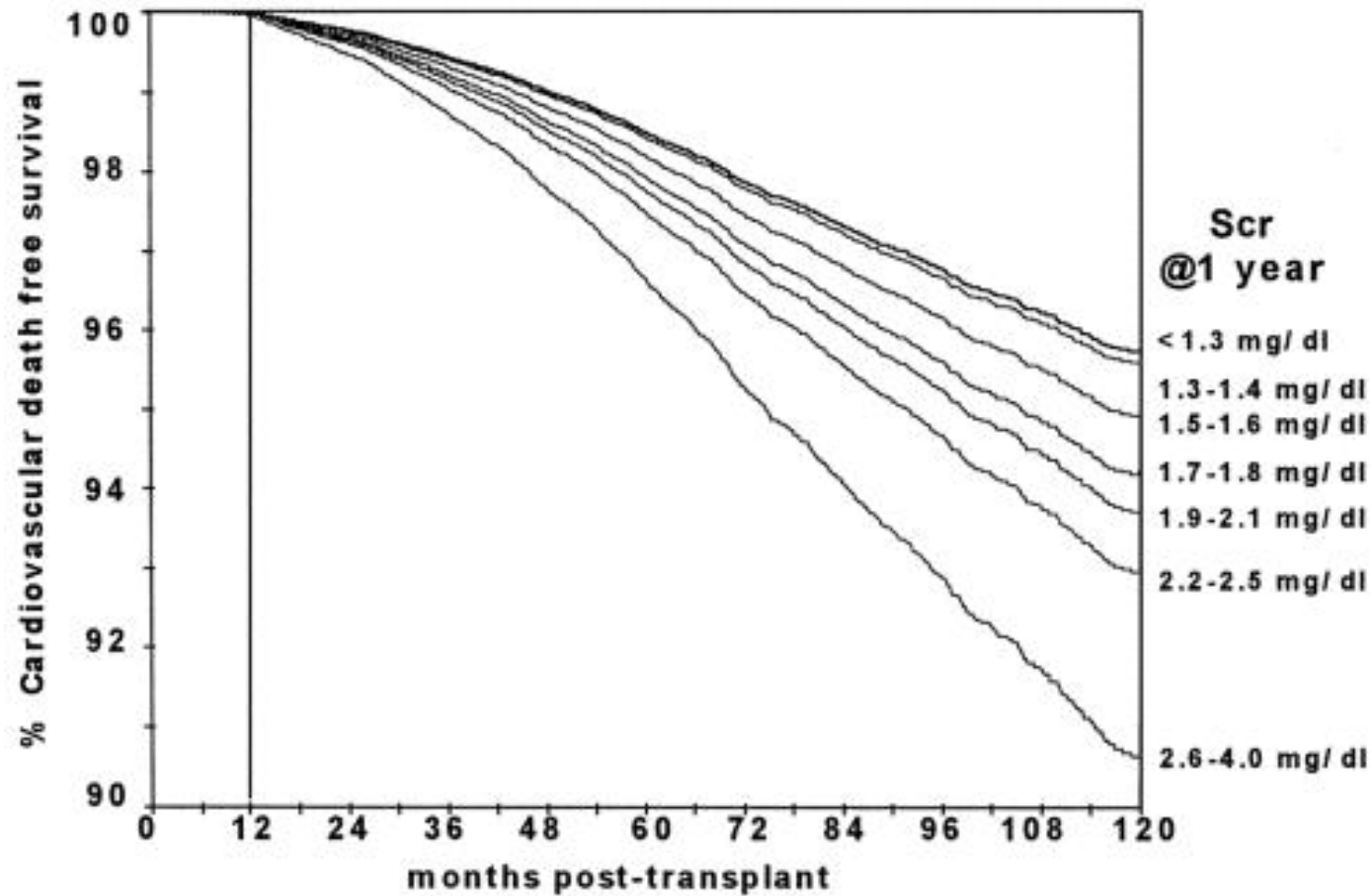
Relative risk for death with a functioning graft by primary disease



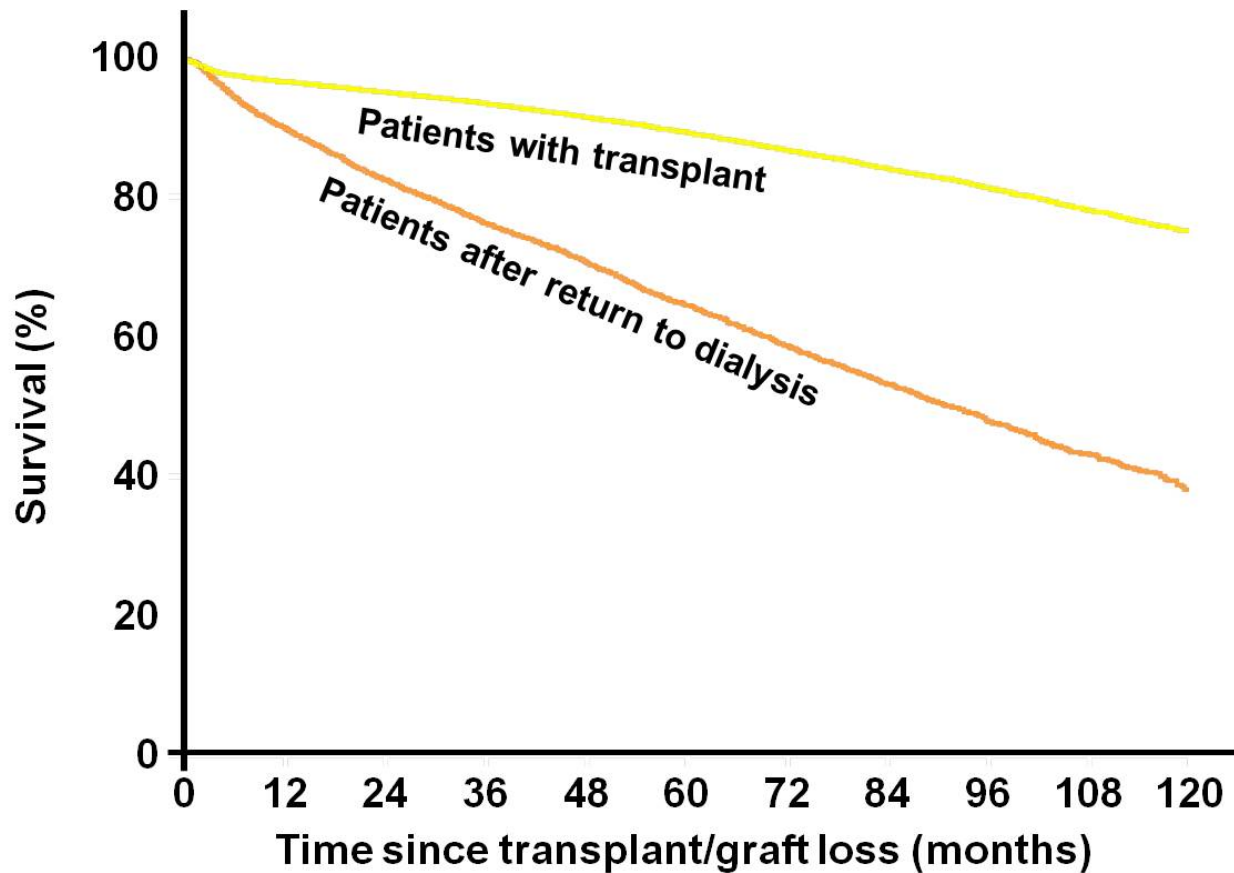
Annual adjusted graft loss rates per 1,000 patients



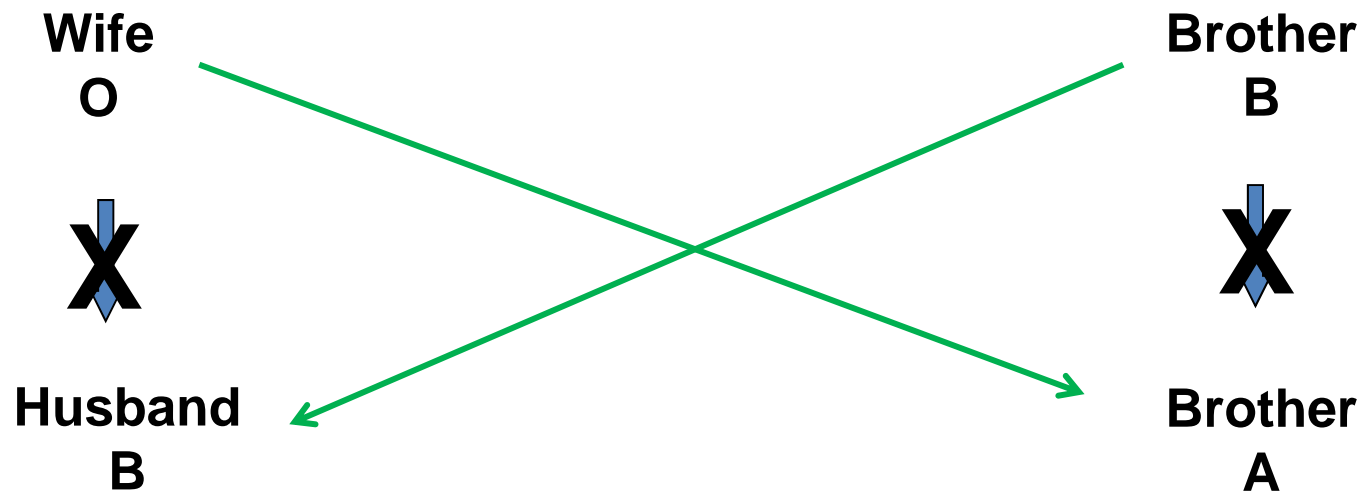
Association between CV death and serum creatinine at 1 year post-transplant



Adjusted patient survival for patients with a transplant and for patients after transplant loss



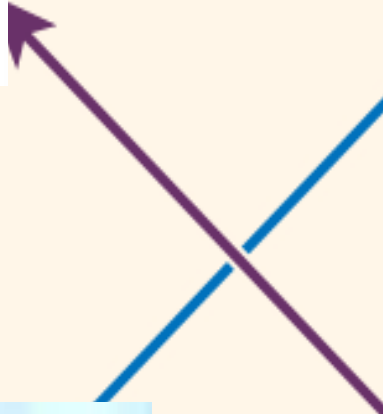
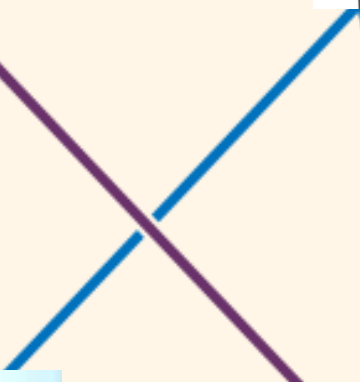
Live donor paired kidney exchange: cross match and ABO incompatibility



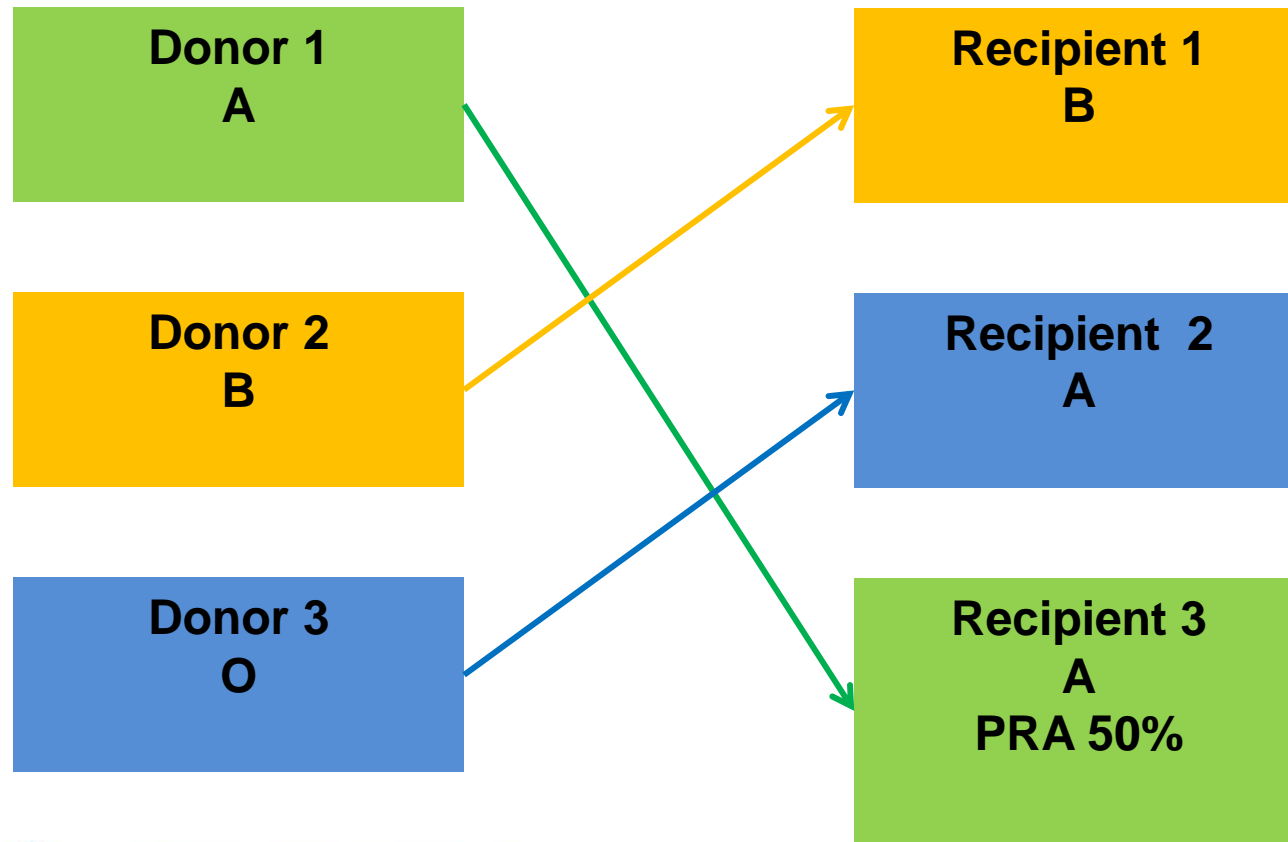


Cross-match
incompatibility

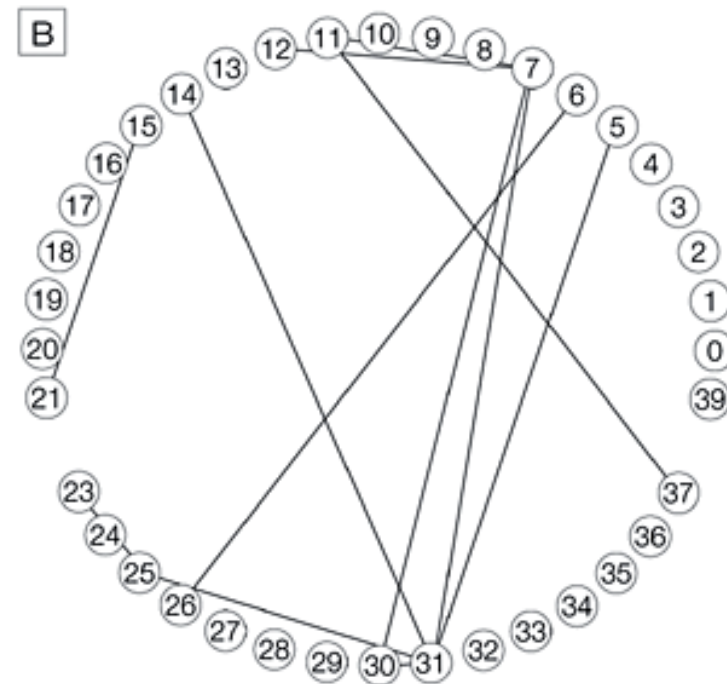
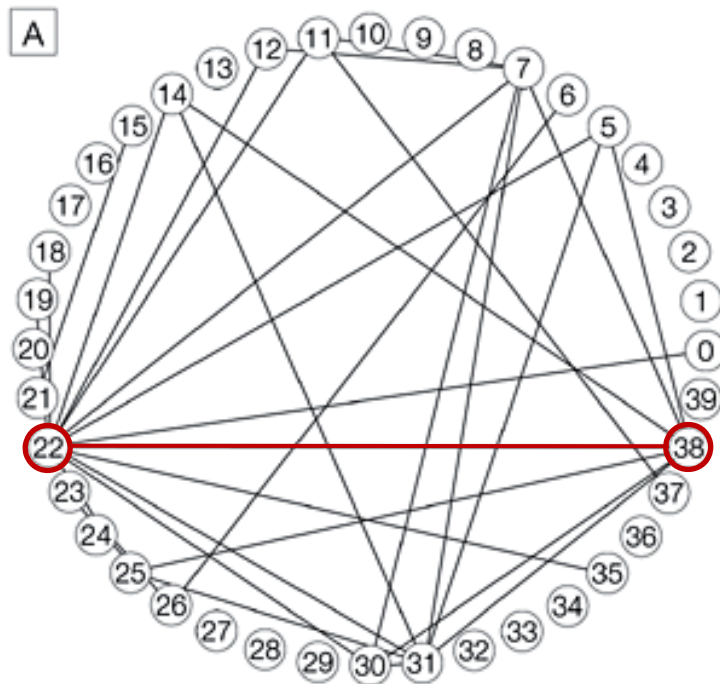
Blood-type
incompatibility



Three pair kidney exchange



Incompatible pairs and potential matches represented as a “Graph”



Advantages of LRD

PRO

- acceptor
 - Shorter waiting time and possibility for preemptive Tx
 - Lower cost
 - Superior graft survival
 - Shorter Cold Ischem Time
 - Less acute rejection
 - Selected donor
 - Optimal surgical conditions
 - Better renal function
 - Pregnancy
 - Acceptor compliance is better
 - Better patient survival

CONTRA

- Risk for the donor
 - Potential mortality
 - Morbidity
 - Pain
 - Physical
 - Financial

Advantages of LRD

PRO

- acceptor
 - Superior graft survival
 - Better patient survival
- donor
 - Higher self esteem
 - Advantage for general health: work-up and follow-up
 - 97% would do it “again”
 - Better Quality Of Life

CONTRA

- Risk for the donor
 - Potential mortality
 - Morbidity
 - Pain
 - Physical
 - Financial

Advantages of LRD

PRO

- Society
 - Lower cost
 - Most efficient procedure
- Pool of patients in dialysis
 - Shorter waiting times

CONTRA

- Risk for the donor
 - Potential mortality
 - Morbidity
 - Pain
 - Physical
 - Financial

Q & A

Health Status of Kidney Donors More Than 20 Years

Table 3. Health Status of Kidney Donors More Than 20 Years after Donation.*

	Kidney Donors with GFR Measurement (N=55)	Controls (N=55)	Kidney Donors without GFR Measurement (N=1035)†	P Value‡
Age (yr)	57.7±9.8	57.7±9.8	61.9±11.6	—
Female sex (%)	64.1	64.1	57.6	—
White race (%)	98	98	98	—
Body-mass index >30 (%)§	32.0	32.0	31.8	—
Blood pressure				
Systolic (mm Hg)	121.3±16.1	128.7±21.3	126.9±15.8	0.02
Diastolic (mm Hg)	72.5±10.5	68.5±17.9	75.8±9.7	0.16
Systolic ≥140 mm Hg or diastolic ≥90 mm Hg (%)	24.5	22.6	23.2	0.80
GFR (ml/min/1.73 m ²)¶	62.7±12.6	76.1±16.5	65.2±9.5	<0.001
Urinary albumin-to-creatinine ratio				
Natural-log-transformed value	2.22±1.7	2.28±1.0	NA	0.81
>0.03 (%)	17.3	11.3	NA	0.36
Hemoglobin (g/dl)	13.8±1.3	14.5±1.3	14.0±1.9	<0.001
Glucose (mg/dl)	90.9±9.8	102.3±16.2	100.6±25.9	<0.001
Cholesterol (mg/dl)	186.4±38.1	205.4±35.1	200.5±41.4	0.01
Triglycerides (mg/dl)	112.7±60.3	153.8±80.3	138.1±93.2	<0.01
High-density lipoprotein cholesterol (mg/dl)	50.3±17.4	54.4±16.4	54.7±17.6	0.12
Clinical conditions (%)				
Diabetes	5.7	11.3	7.1	0.17
Cancer	11.3	15.1	13.4	0.56
Coronary heart disease	3.8	9.4	4.5	0.17
Cerebrovascular accident or transient ischemic attack	1.9	3.8	1.9	0.56
Use of antihypertensive drugs (%)	39.6	37.7	40.4	0.85
Current smoker (%)	15.1	11.3	15.7	0.52

* Plus–minus values are means ±SD. Kidney donors in whom the glomerular filtration rate (GFR) was measured were matched in a 1:1 ratio according to age, sex, race or ethnic group, and body-mass index with participants from the National Health and Nutrition Examination Surveys (NHANES). The paired t-test (for continuous variables) and McNemar's test (for categorical variables) were used for between-group comparisons. NA denotes not available. To convert the values for hemoglobin to millimoles per liter, multiply by 0.6206. To convert the values for glucose to millimoles per liter, multiply by 0.05551; to convert the values for cholesterol to millimoles per liter, multiply by 0.02586. To convert the values for triglycerides to millimoles per liter, multiply by 0.01129.

† Data were available for 391 to 1035 kidney donors. Total numbers of donors whose data were included for each variable are listed in the Supplementary Appendix.

‡ The P value is for the comparison of donors in whom the GFR was measured with controls from NHANES only.

§ The body-mass index is the weight in kilograms divided by the square of the height in meters.

¶ The GFR was estimated with the use of the Modification of Diet in Renal Disease (MDRD) study equation.

|| This variable was self-reported.

Current Health Status of Kidney Donors with Measured Glomerular Filtration Rate (GFR).

Table 2. Current Health Status of Kidney Donors with Measured Glomerular Filtration Rate (GFR).*

Variable	Kidney Donors (N=255)	Controls† (N=255)	P Value
Age (yr)	52.9±9.9	52.9±9.9	
Female sex (%)	62.1	61.8	
White race (%)	99.2	99.2	
Body-mass index >30 (%)‡	29.3	29.3	
Blood pressure			
Systolic (mm Hg)	121.8±14.6	125.9±19.1	0.003
Diastolic (mm Hg)	73.0±8.9	71.0±16.5	0.07
Systolic ≥140 mm Hg or diastolic ≥90 mm Hg (%)	14.4	18.7	0.19
GFR (ml/min/1.73 m ²)§	63.7±11.3	81.6±18.5	<0.001
Urinary albumin-to-creatinine ratio			
Natural-log-transformed value	1.65±1.2	2.10±1.0	<0.001
>0.03 (%)	9.1	8.9	1.00
Hemoglobin (g/dl)	13.7±1.2	14.5±1.2	<0.001
Glucose (mg/dl)	90.9±11.9	102.8±33.1	<0.001
Cholesterol (mg/dl)	186.2±33.1	205.2±41.1	<0.001
Triglycerides (mg/dl)	124.5±95.6	174.3±182.5	<0.001
High-density lipoprotein cholesterol (mg/dl)	50.4±16.5	54.5±16.4	0.001
Clinical conditions (%)¶			
Diabetes	3.1	5.9	0.10
Cancer	8.2	14.5	0.01
Coronary heart disease	4.3	3.9	0.81
Cerebrovascular accident or transient ischemic attack	0.4	1.9	0.10
Use of antihypertensive drugs (%)¶	24.7	28.8	0.83
Current smoker (%)¶	14.5	21.5	0.03

* Plus-minus values are means ±SD. The paired t-test (for continuous variables) and McNemar's test (for categorical variables) were used for between-group comparisons. To convert values for hemoglobin to millimoles per liter, multiply by 0.6206. To convert the values for glucose to millimoles per liter, multiply by 0.05551; to convert the values for cholesterol to millimoles per liter, multiply by 0.02586. To convert the values for triglycerides to millimoles per liter, multiply by 0.01129.

† Kidney donors were matched in a 1:1 ratio according to age, sex, race or ethnic group, and body mass index with non-