Europe for Patients

Media workshop

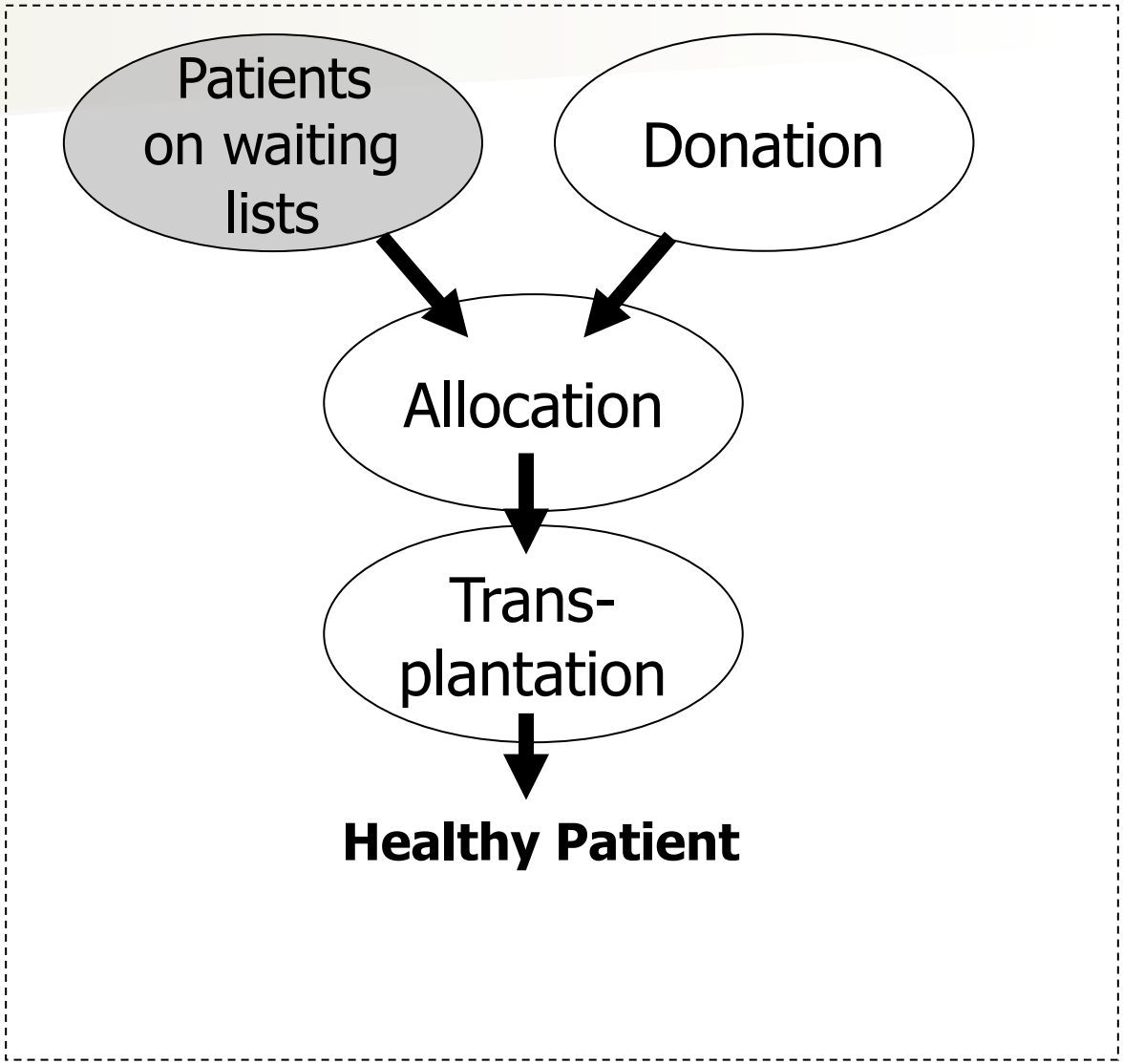
Introduction to organ donation and transplantation

Stefaan van der Spiegel,

On behalf of Axel Rahmel

Brussels, 09.10.2012

ORGANISATION OF ORGAN TRANSPLANTATION

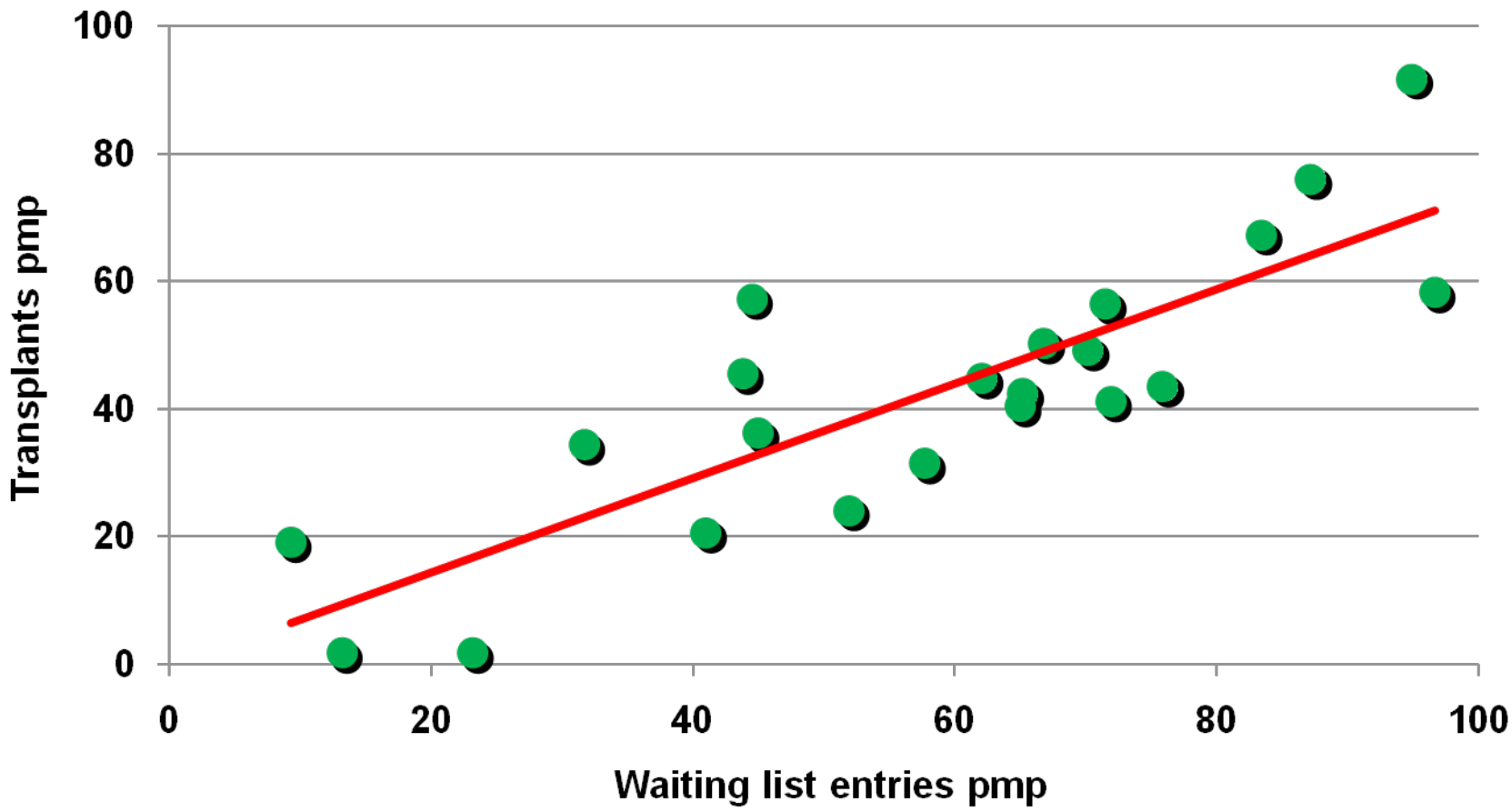


Each day, 10 European citizens die whilst waiting for a suitable organ transplant, that's almost 4,000 people on a yearly basis*

3820 deaths on the waiting list in 2009, Council of Europe data 2010

Waiting list registrations in relation to the number of transplants*

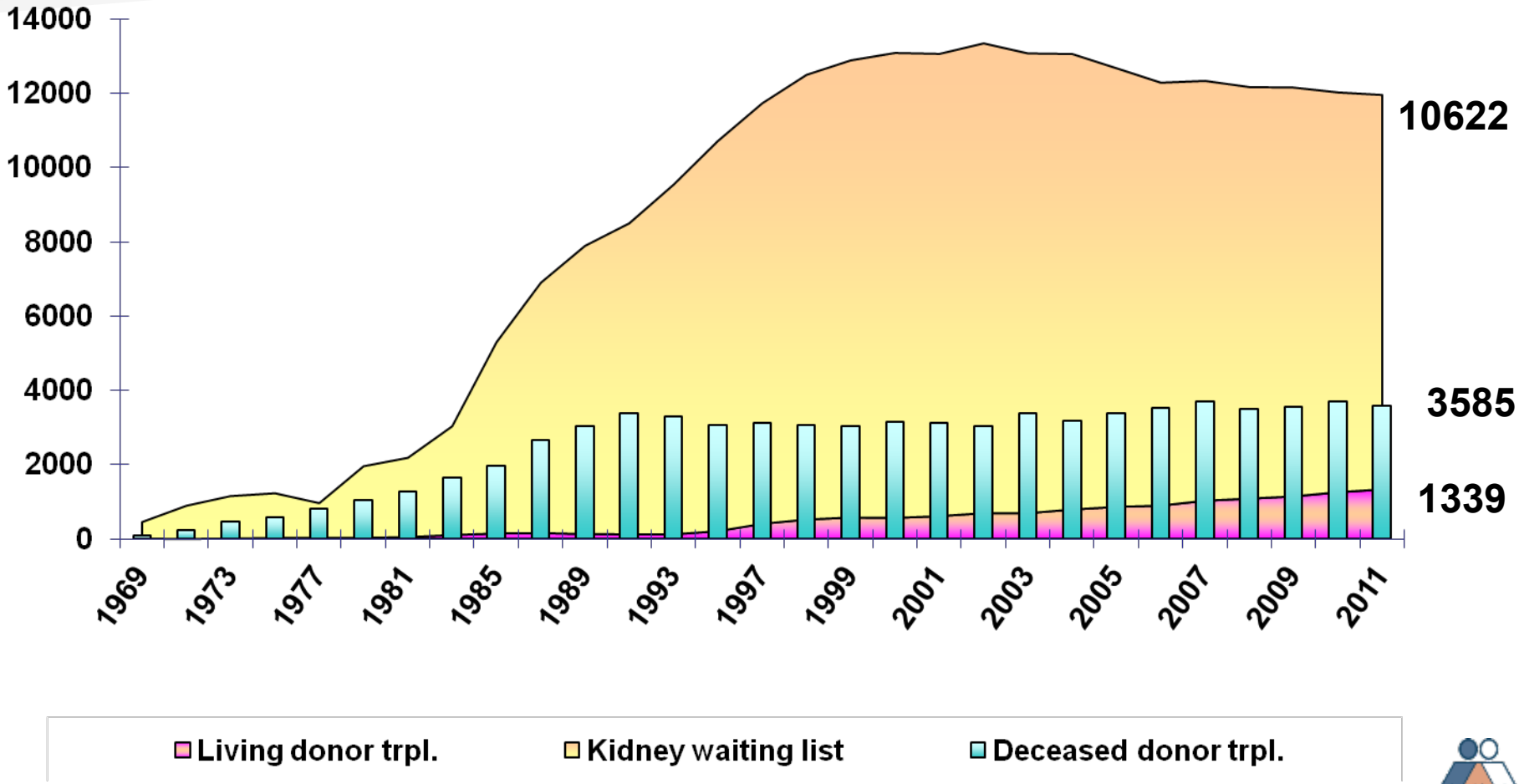
Countries in Europe, Council of Europe data 2005



* The number of transplants is related to the number of donors

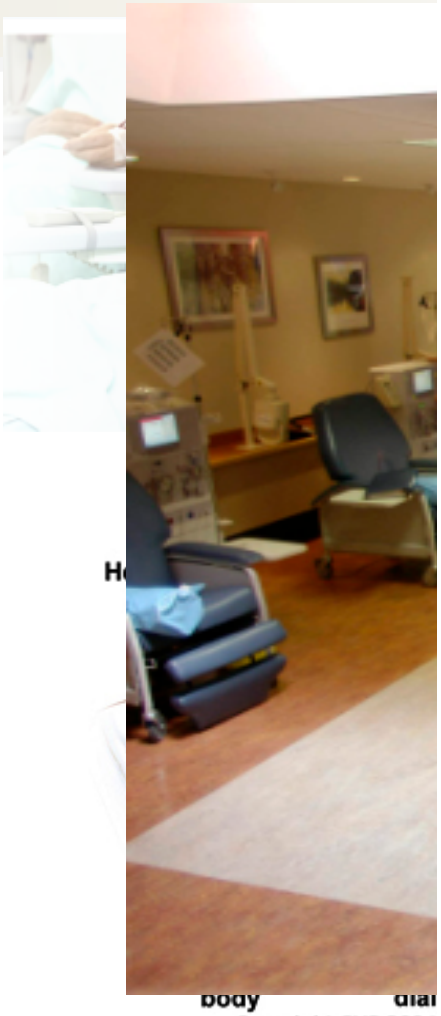
Kidney waiting list and transplants

Eurotransplant 1969-2011



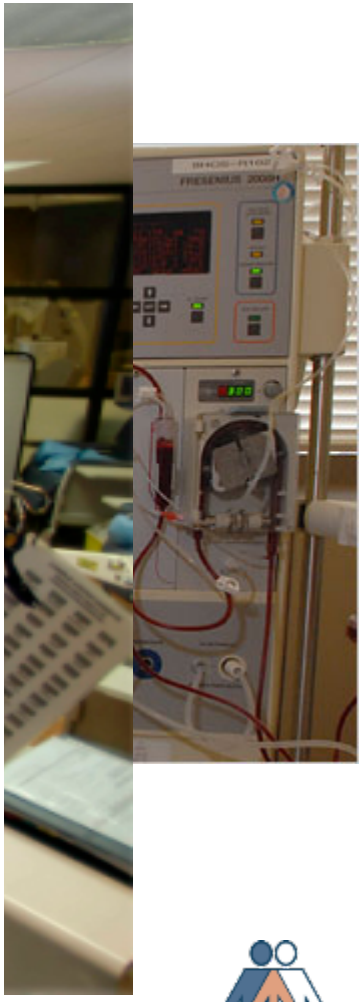
How serious is end-stage kidney disease with dialysis treatment?

Quality of life



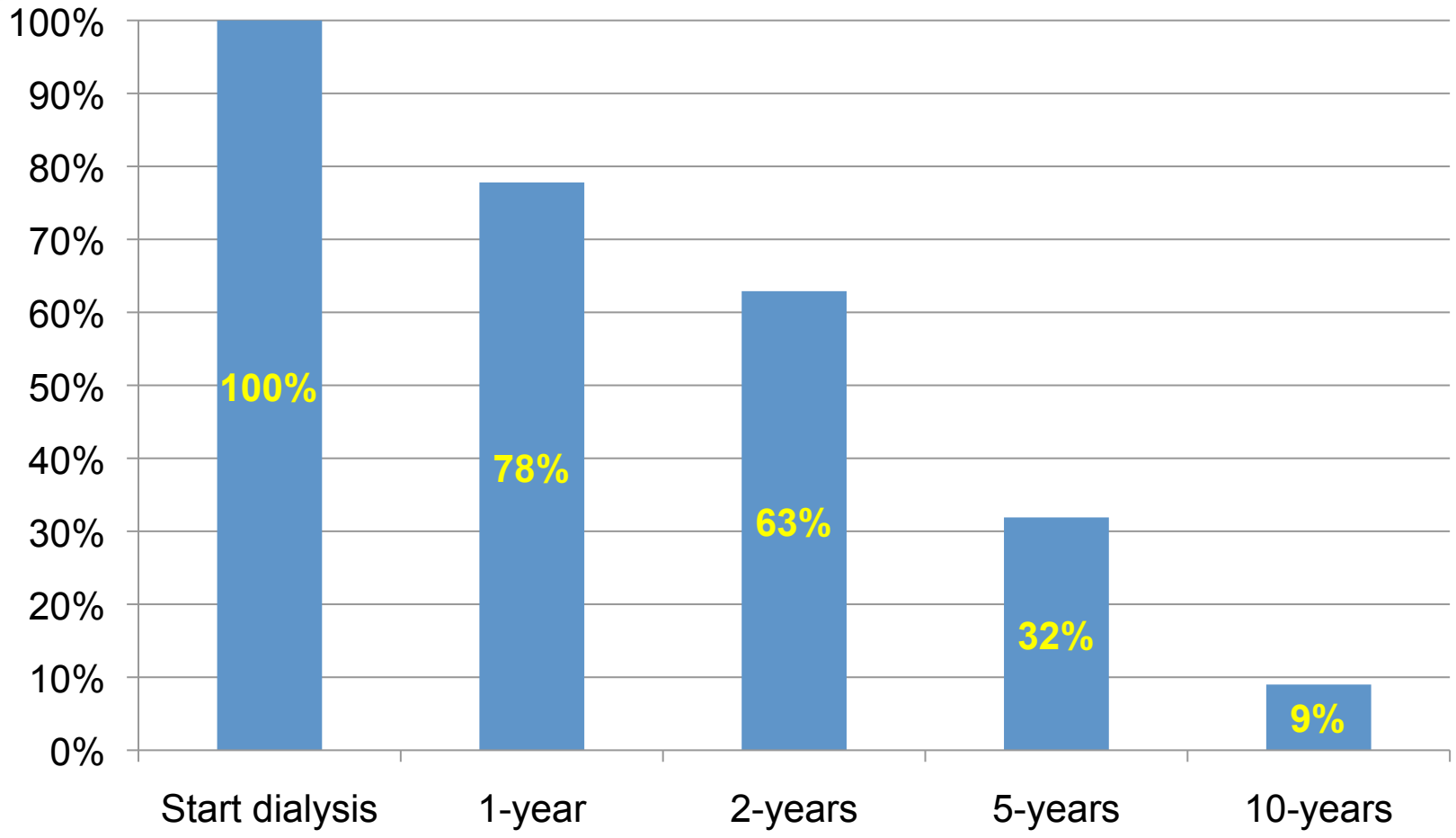
I don't care what day it is.
Four hours is four hours.

Copyright SVS 2004

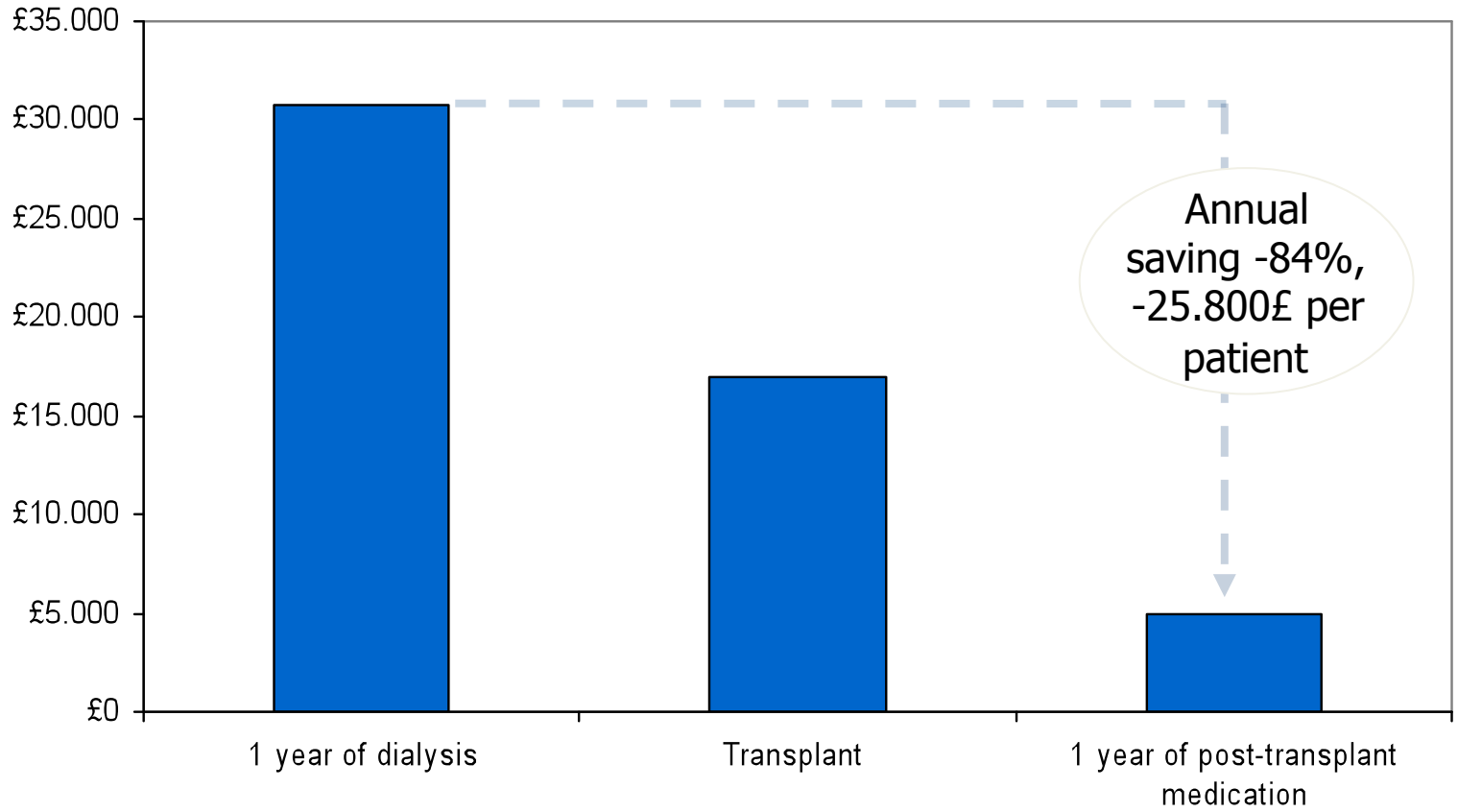


How serious is end-stage kidney disease with dialysis treatment?

Survival on dialysis - UNOS data



Economic benefits

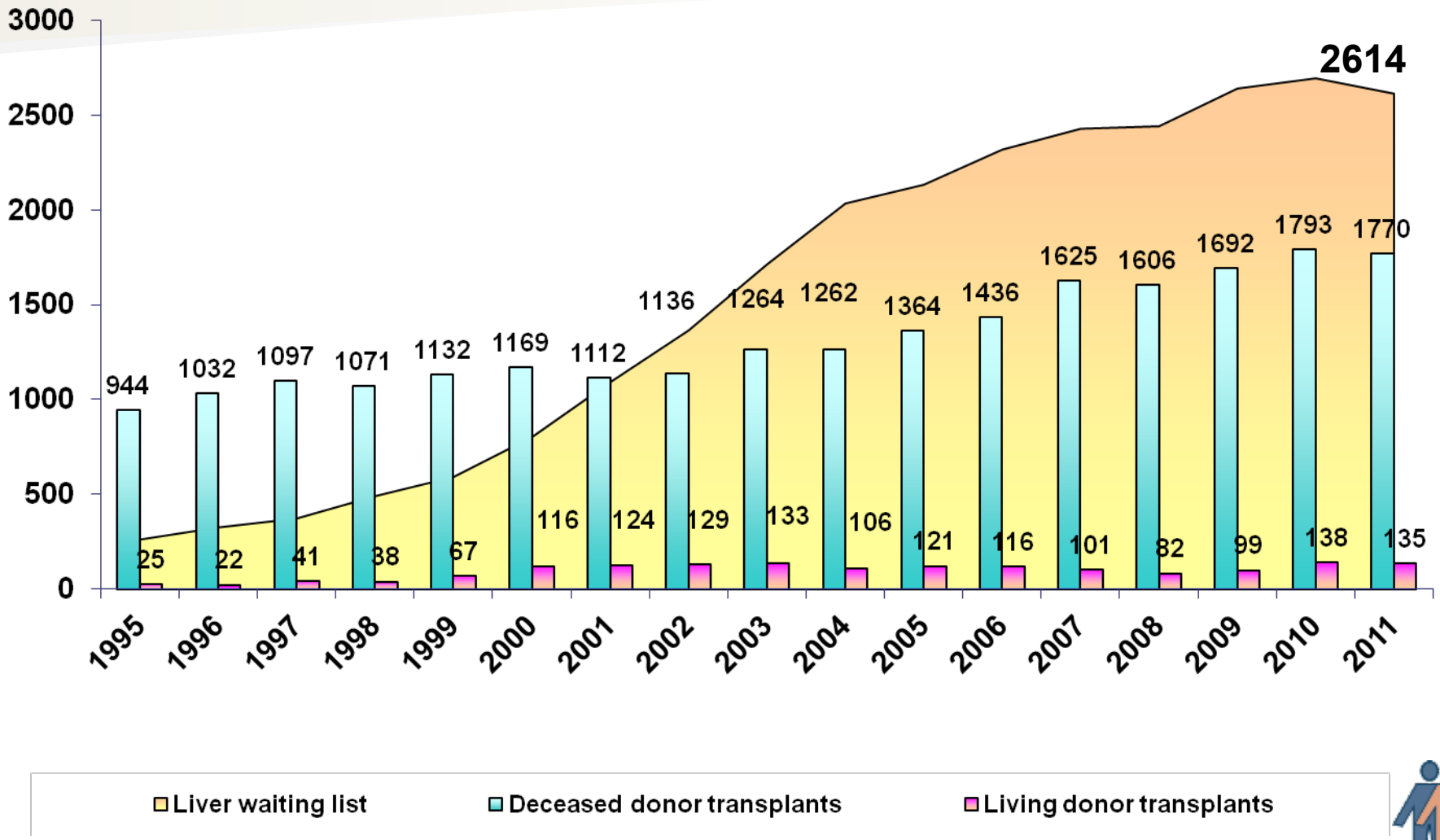


In 2009, 23.000 patients with a functioning kidney transplant were estimated to save 512million£ per year in dialysis costs

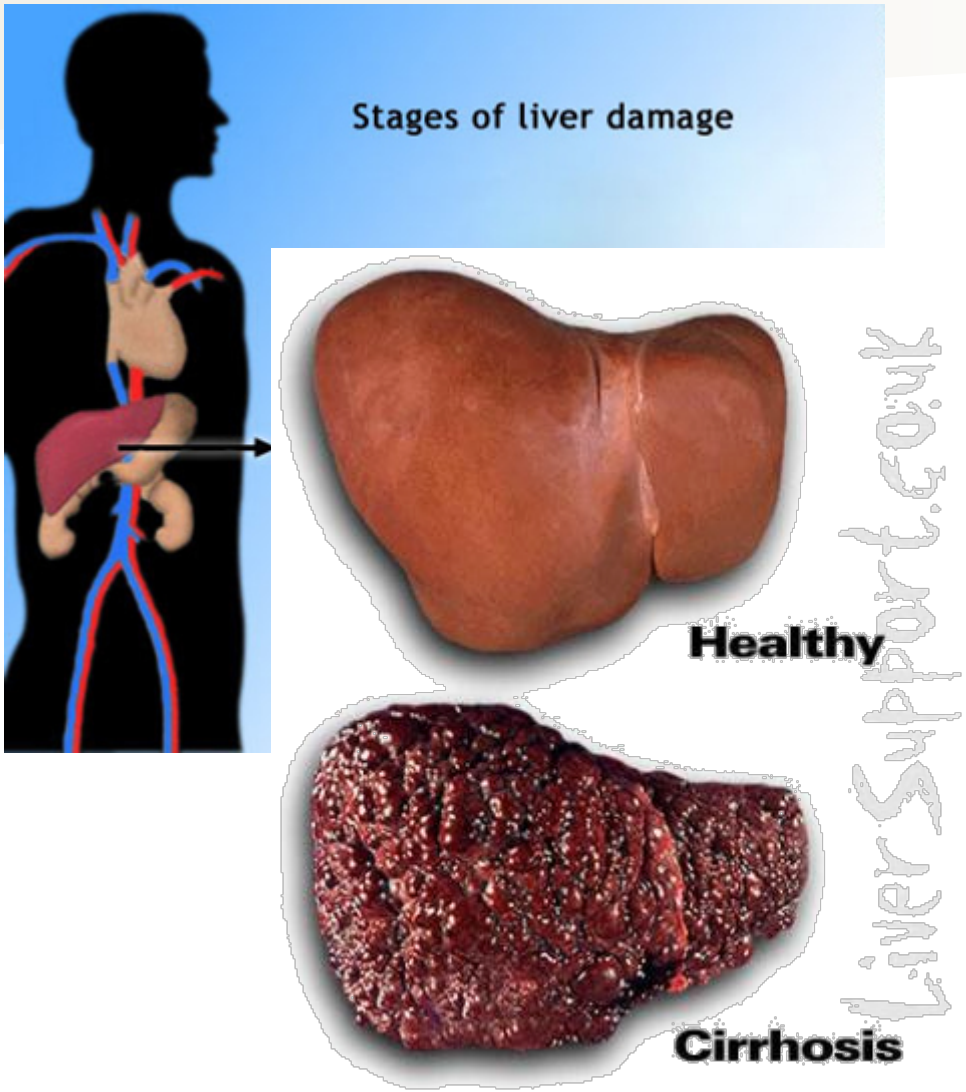
2009 data, British Pounds
DoH Blood and Transplant (UK)

Liver waiting list and transplants

Eurotransplant 1996 - 2011

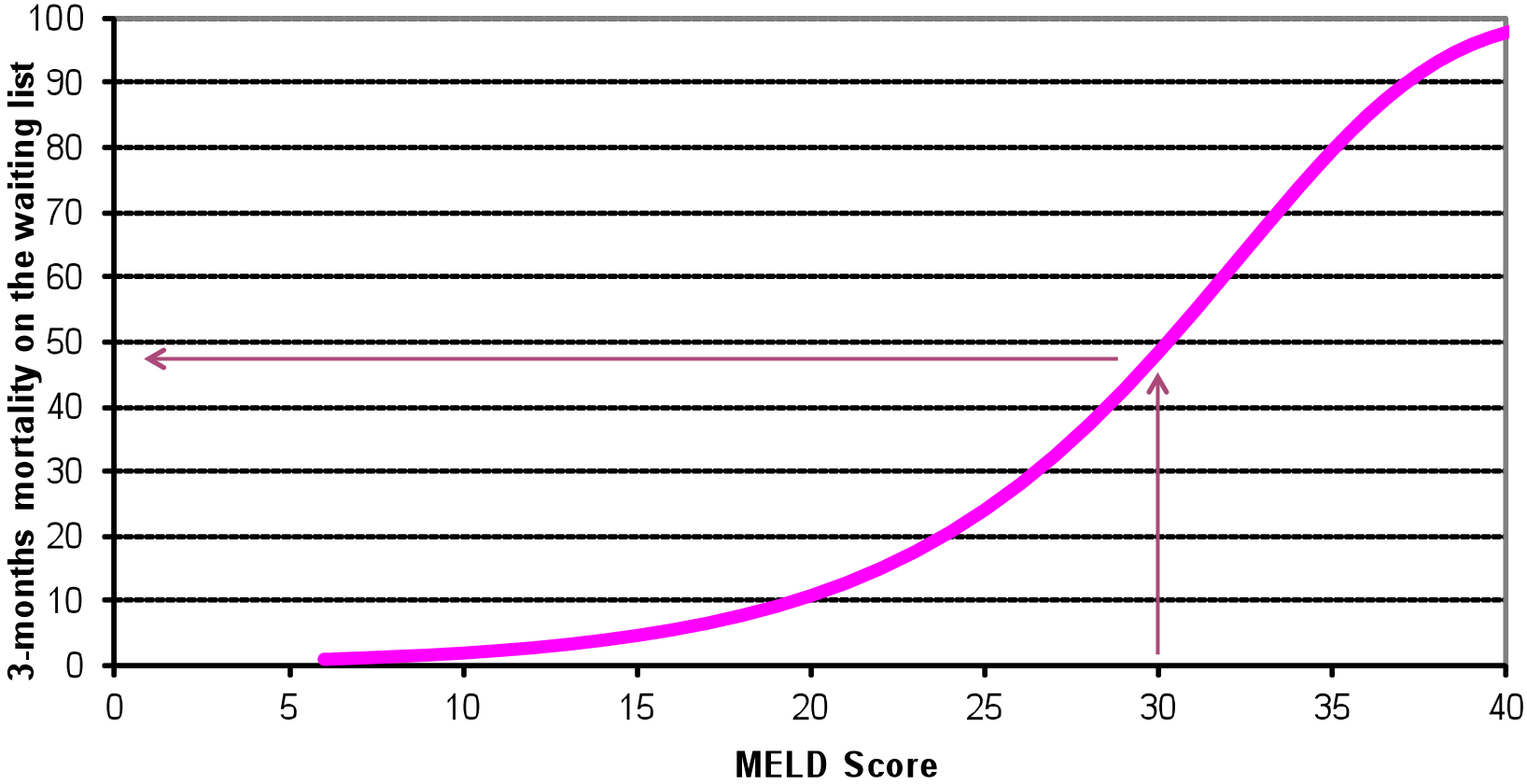


Liver cirrhosis – Clinical situation



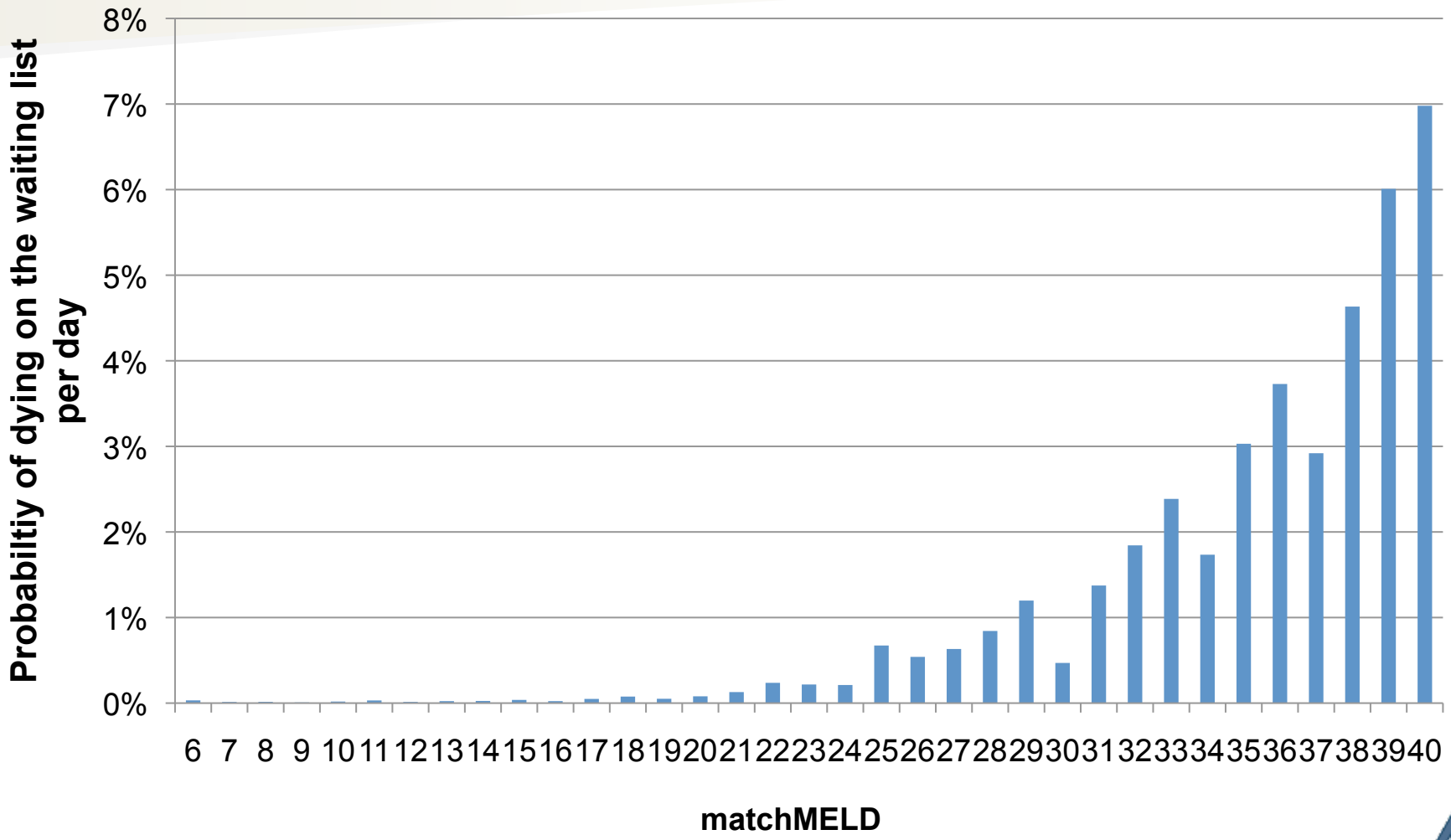
MELD score vs. waiting list mortality

Expected 3-months mortality and MELD score



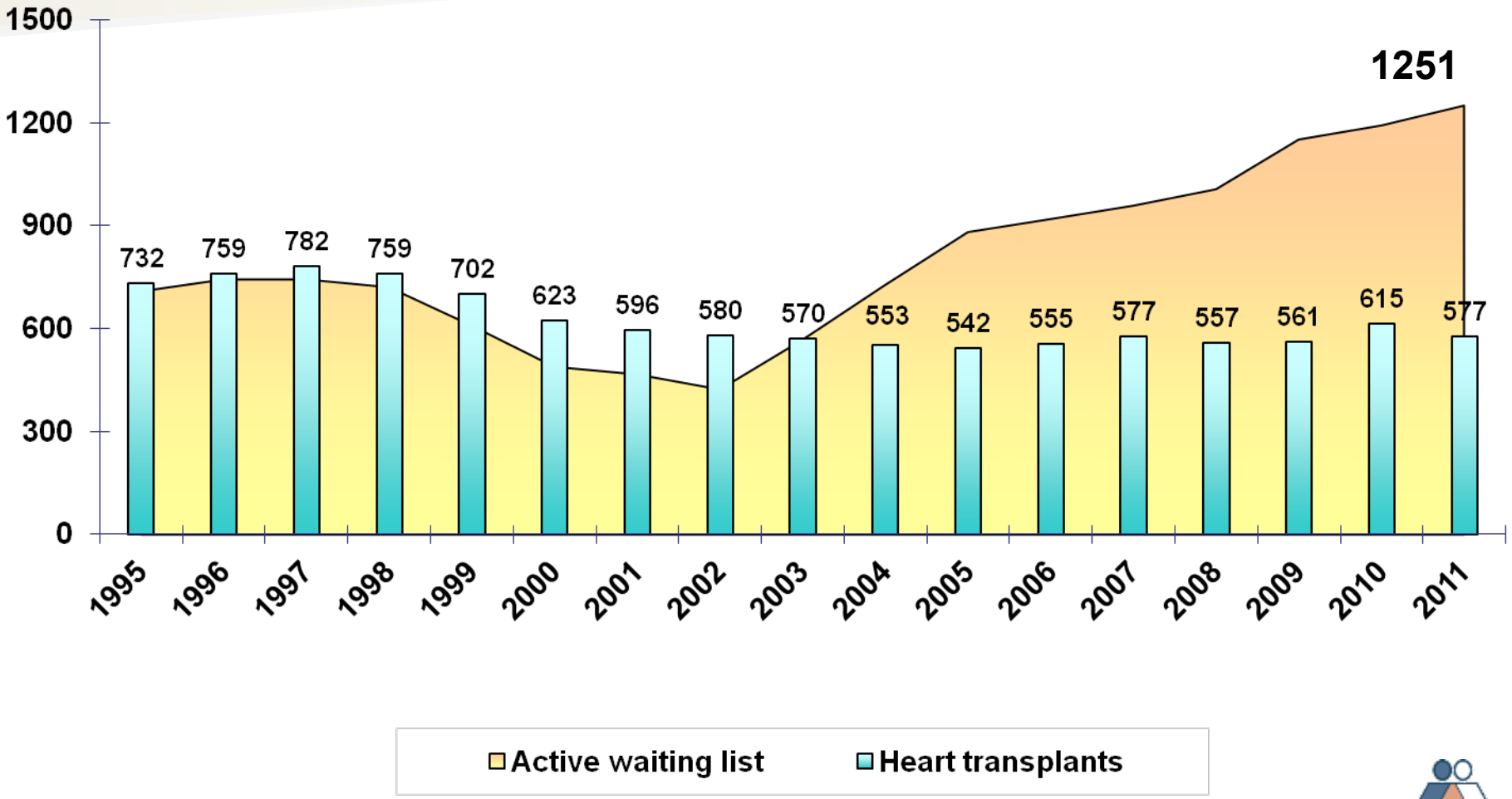
Instantaneous daily risk of dying on the liver transplant waiting list with a specific MELD

Eurotransplant 2009

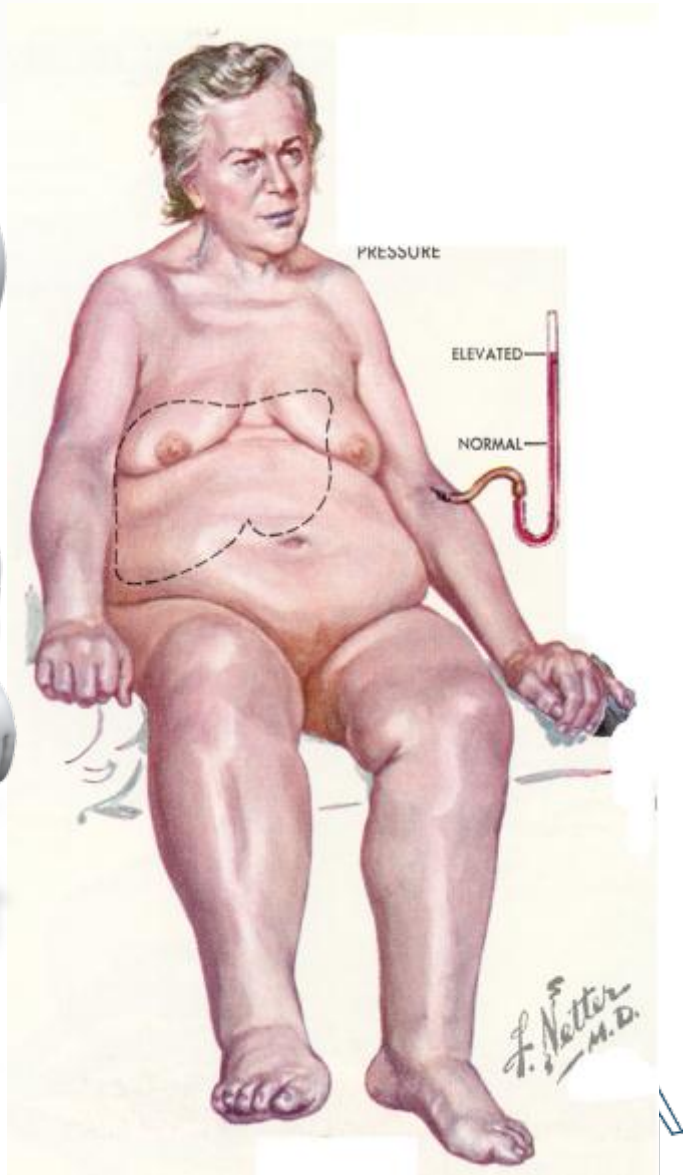


Heart waiting list and transplants

Eurotransplant 1995 - 2011

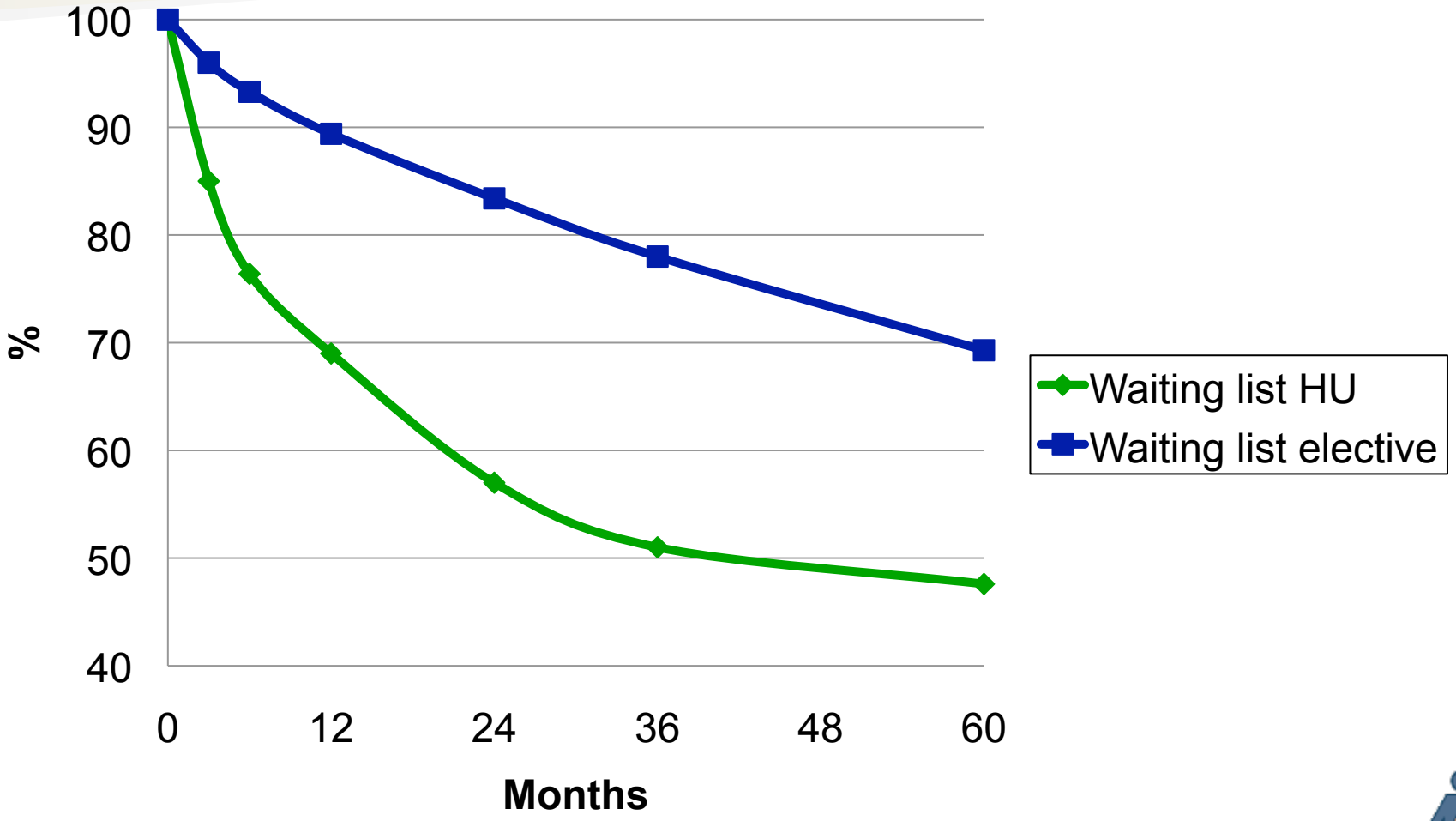


Patients with end-stage heart failure



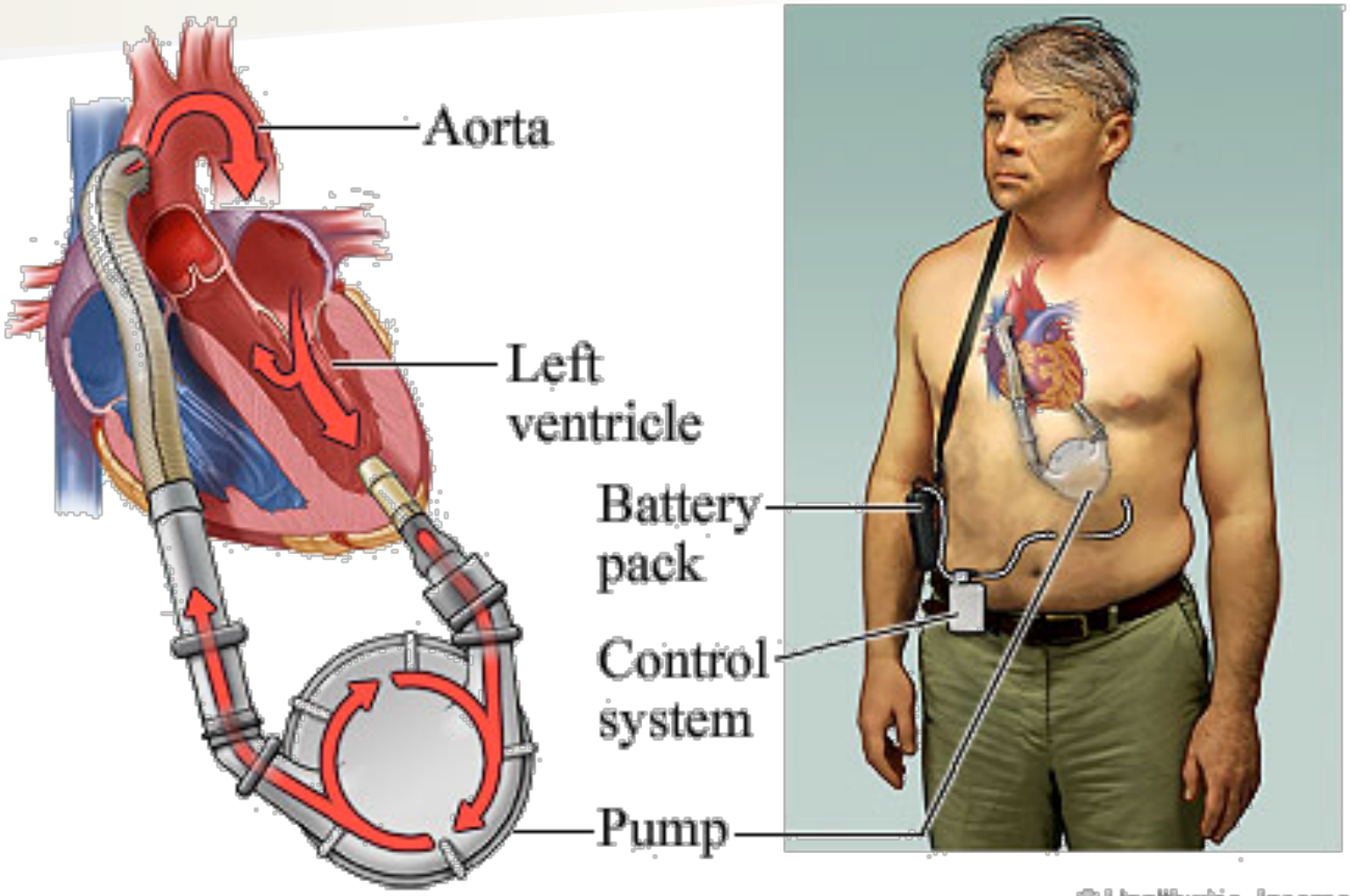
Prognosis of patients on the heart transplant waiting list

High urgent (HU) vs. elective patients



K. Lietz, L.W. Miller, JACC 2007

Left ventricular assist device

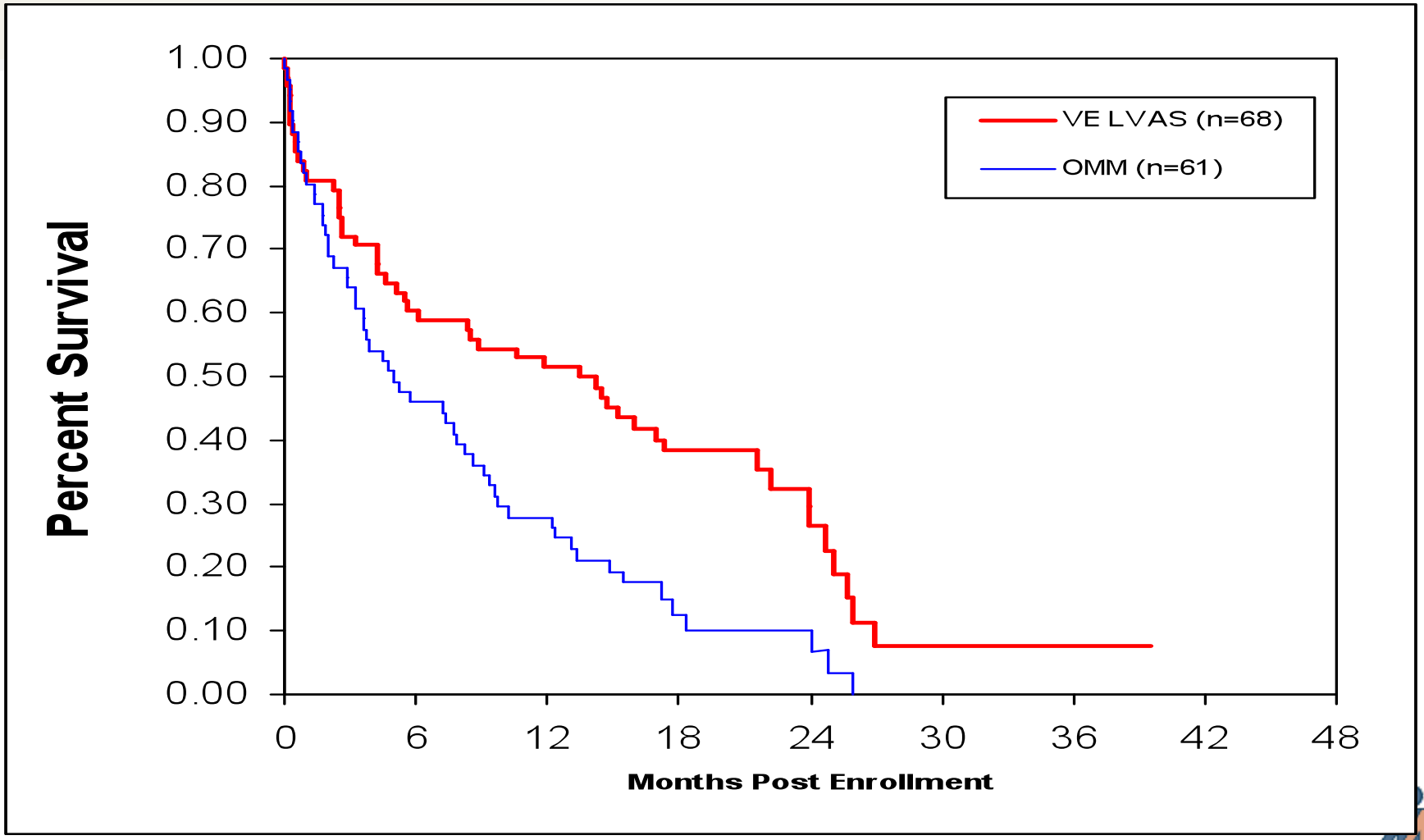


©Healthwise, Incorporated

Extracorporal assist device

Assist device as destination therapy in inotrope-dependent heart failure

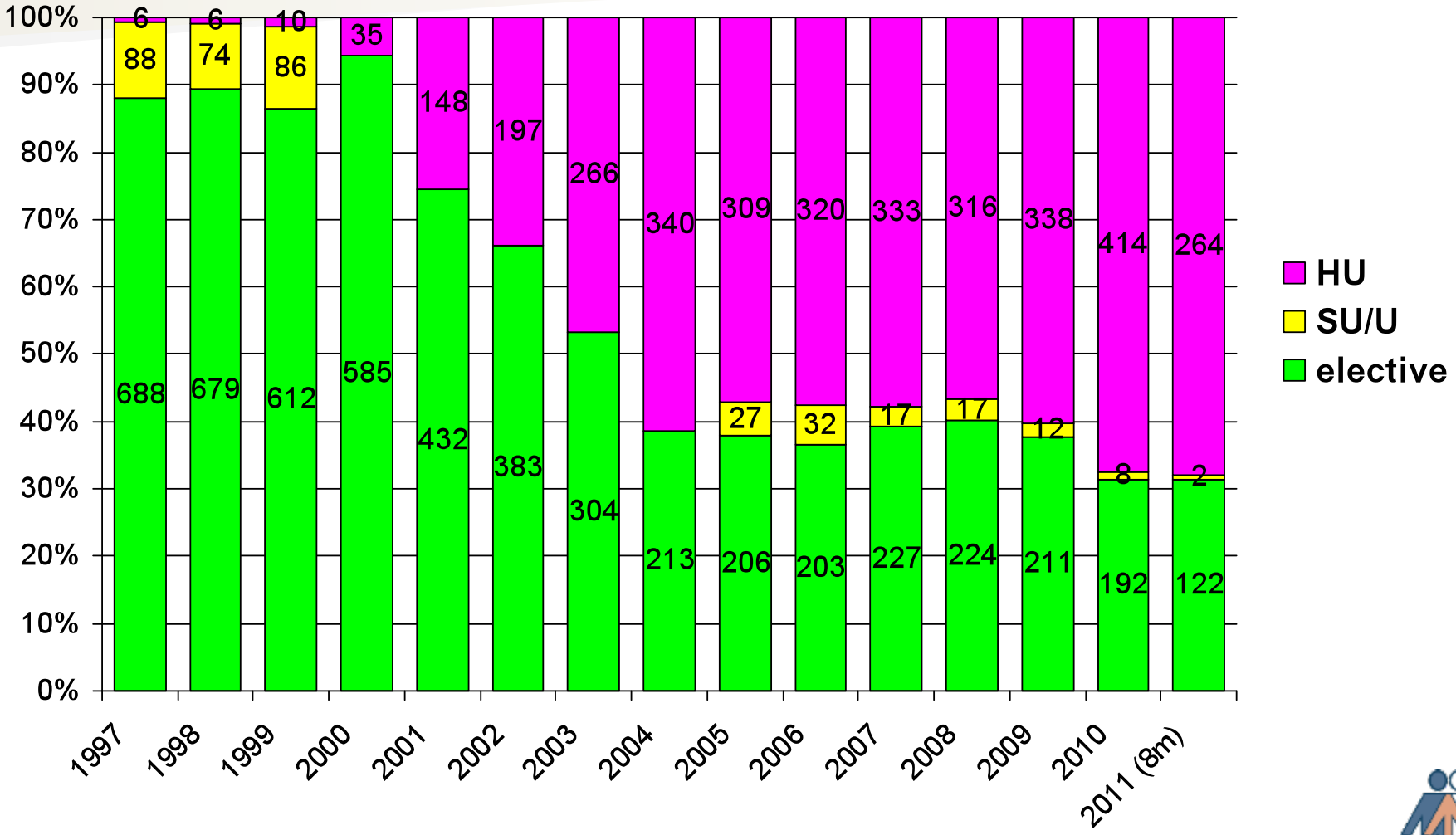
Rematch-Trial – Heartmate VE



Rose et al., NEJM 2001;345: 1435-43

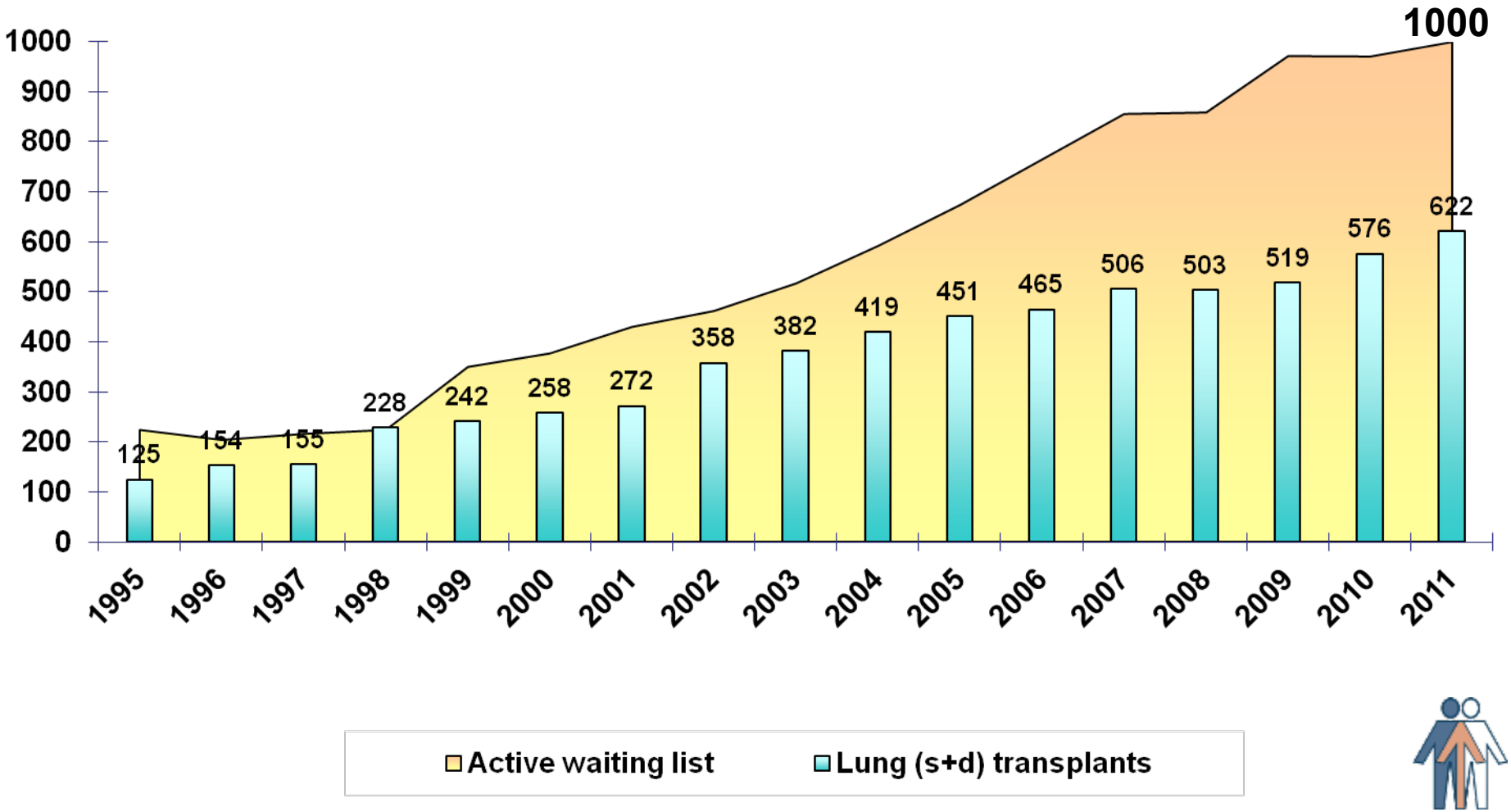
Urgency status heart transplantation

Eurotransplant 1997-2011



Lung waiting list and transplants

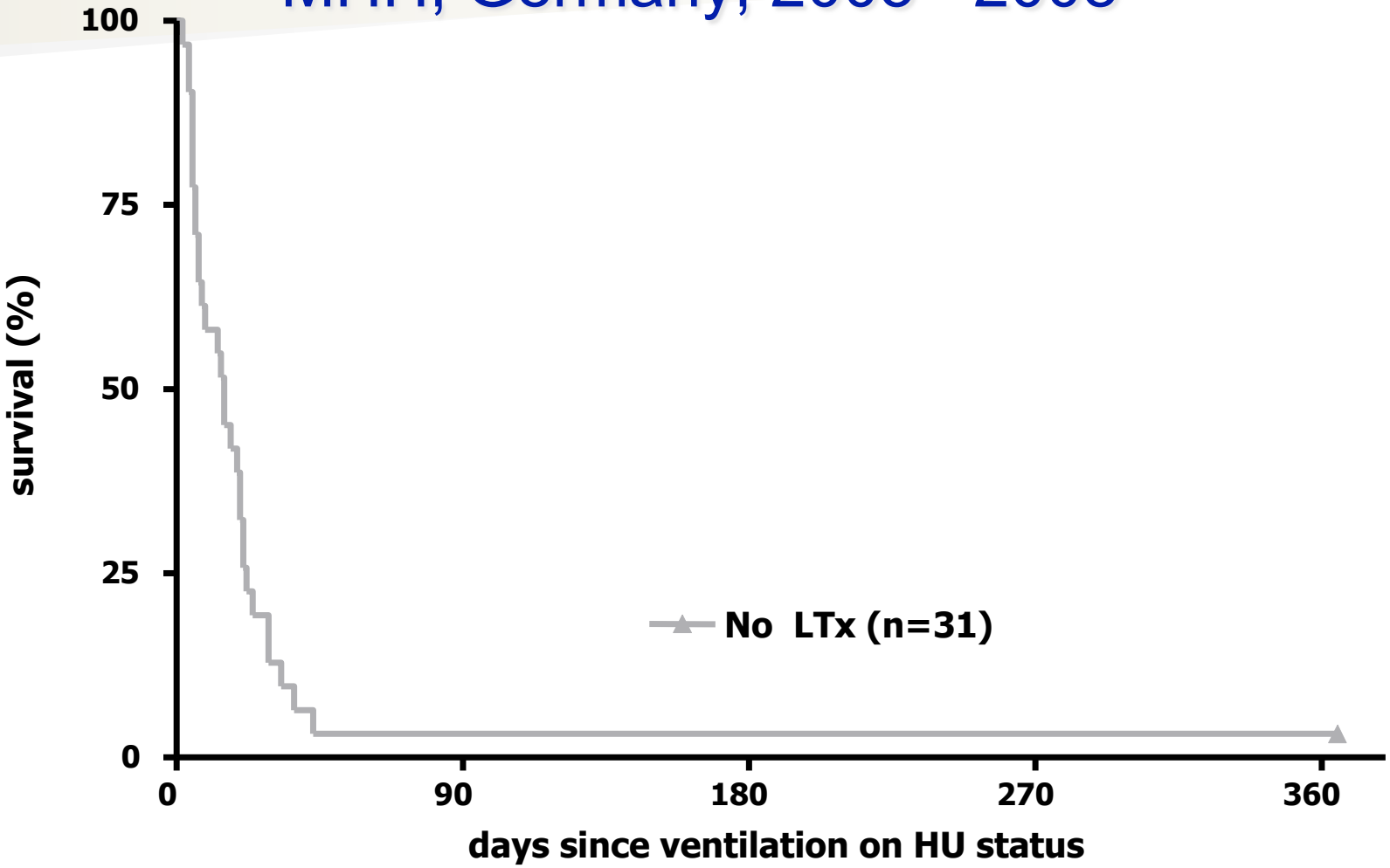
Eurotransplant 1995 - 2011



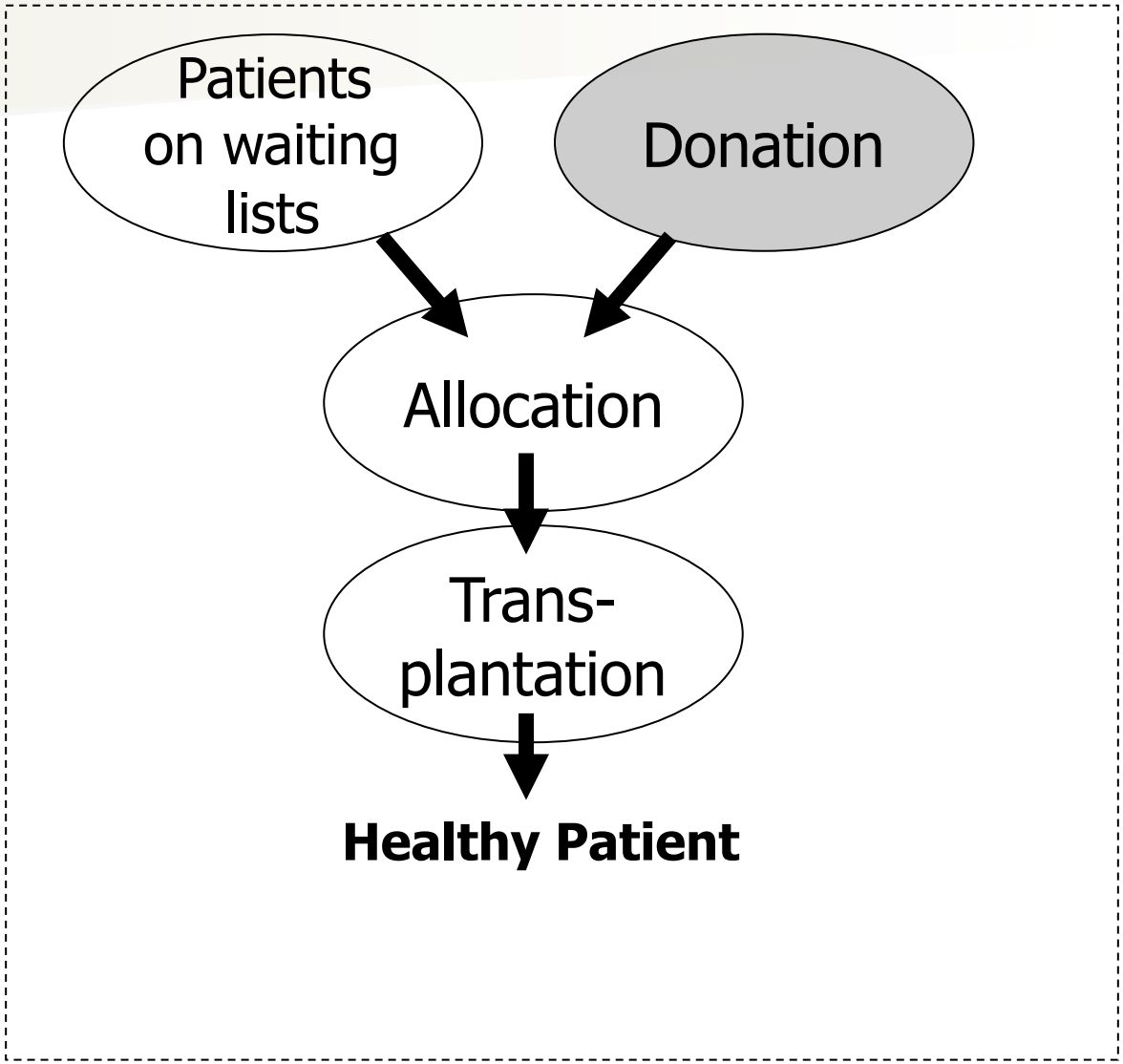
Patients on the waiting list for lung transplantation

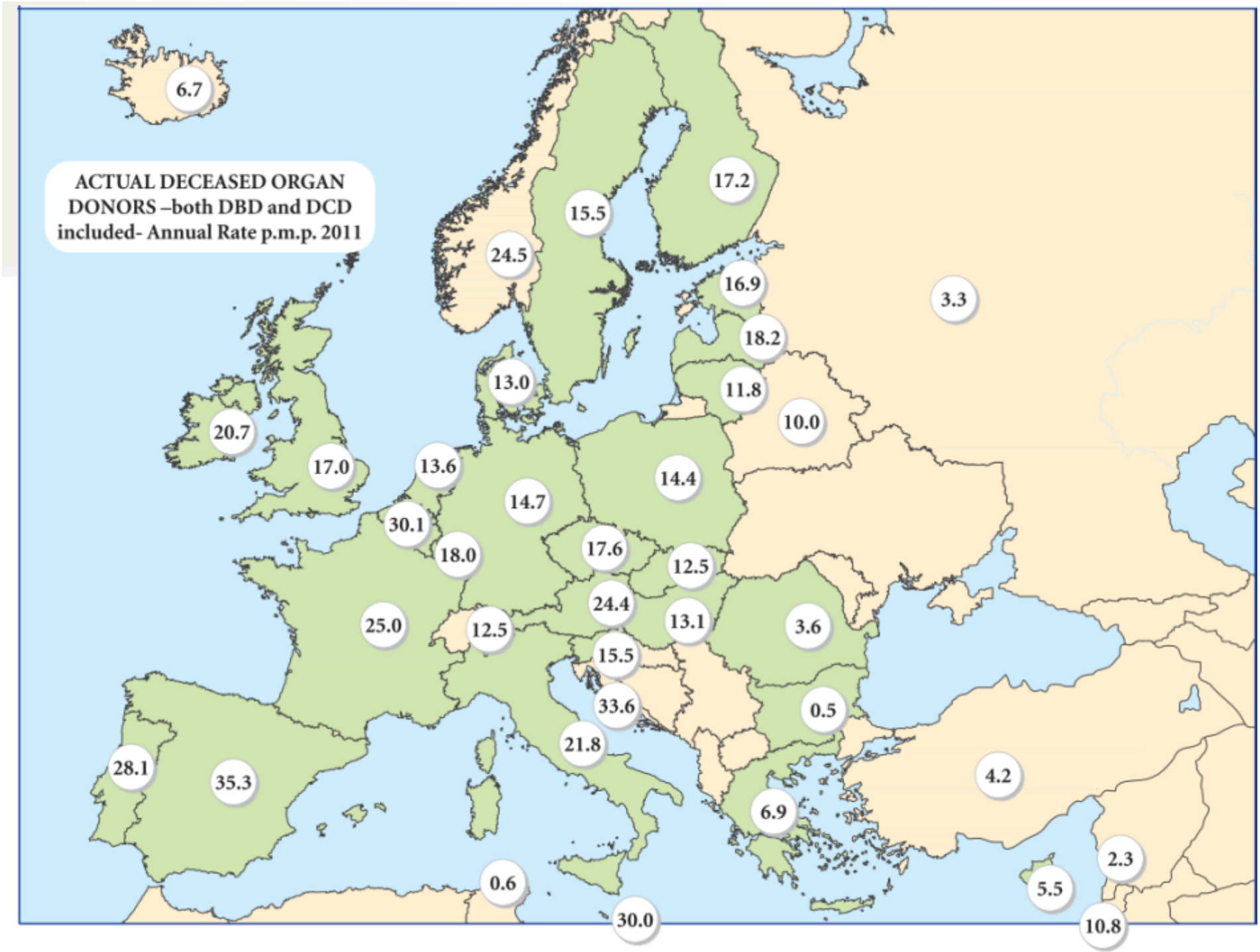
Prognosis of mechanical ventilated patients awaiting lung transplantation

MHH, Germany, 2005 - 2008



ORGANISATION OF ORGAN TRANSPLANTATION

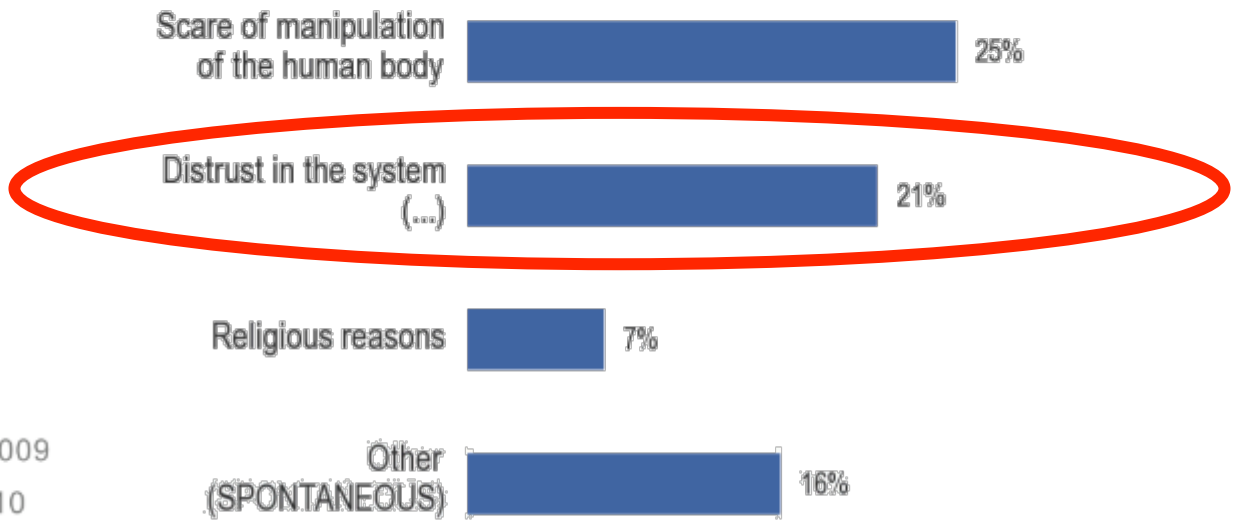



ACTUAL DECEASED ORGAN DONORS –both DBD and DCD included- Annual Rate p.m.p. 2011
6.7
17.2
15.5
24.5
16.9
3.3
18.2
13.0
11.8
10.0
20.7
17.0
13.6
14.4
14.7
30.1
18.0
17.6
12.5
24.4
13.1
3.6
25.0
12.5
15.5
33.6
0.5
21.8
28.1
35.3
4.2
6.9
2.3
5.5
0.6
30.0
10.8

5. REASONS FOR NOT DONATING ORGANS

- Distrust of the system and fear of manipulation of the human body are the dominant reasons for not donating one's own organs or those of a deceased close family member -

QE5. If you would be unwilling to donate your organs or those of a close family member what would these reasons be?



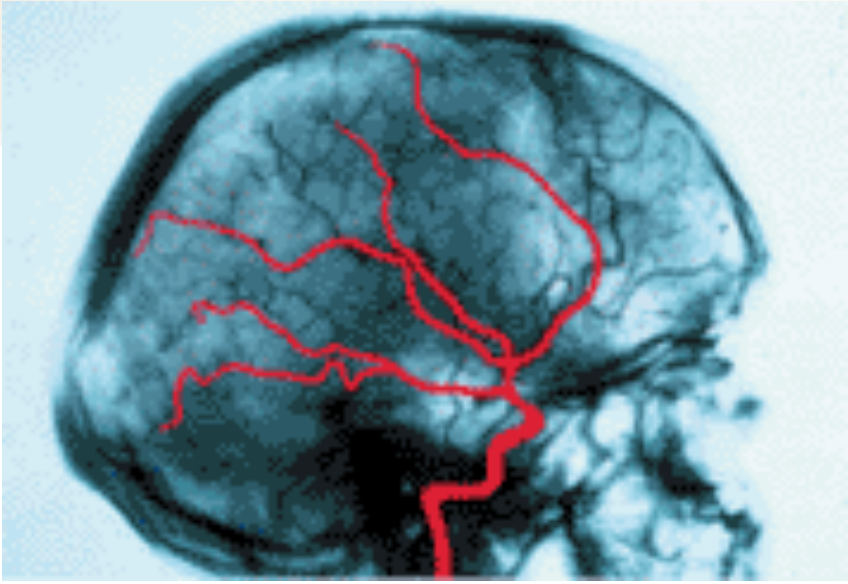
Fieldwork: October 2009
Publication: June 2010

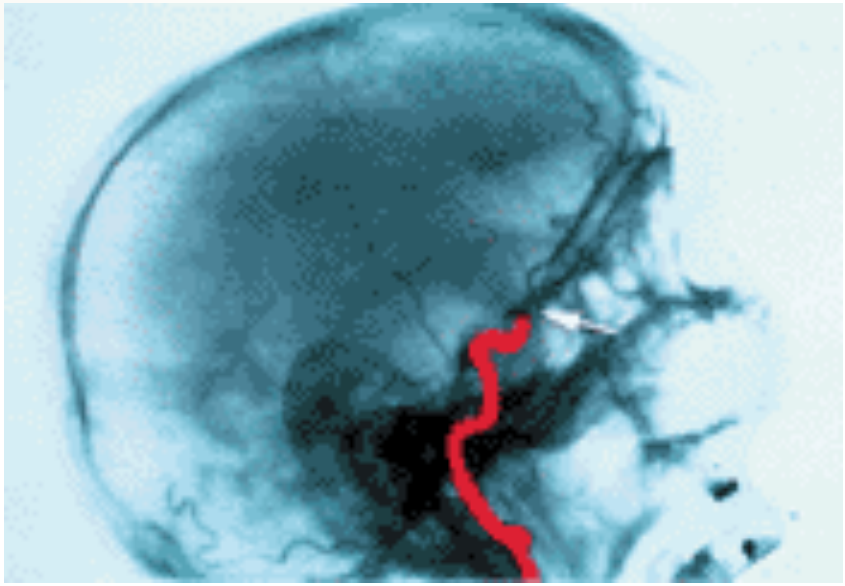
TRUST
Is a fragile thing.
Easy to break,
easy to lose,
and very hard
to get back.

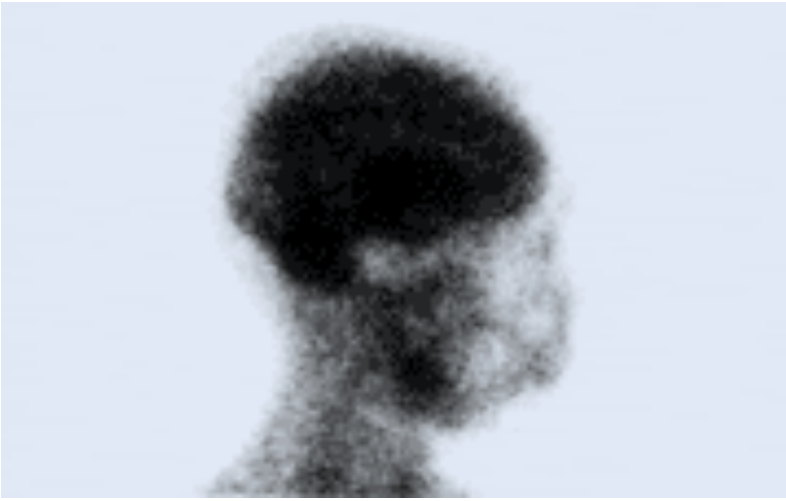
Declaration of death

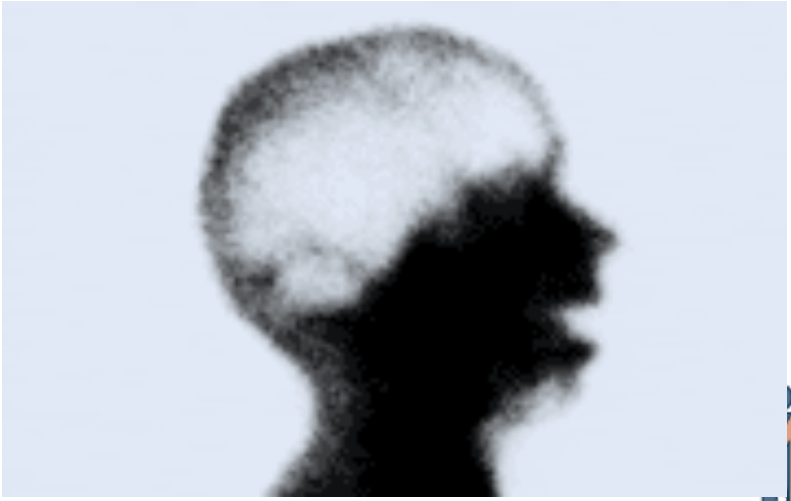
- “Brain death”
  - Death declared on the basis of neurologic criteria
  - Irreversible loss of all functions of the entire brain, including the brain stem

Brain death – No cerebral perfusion





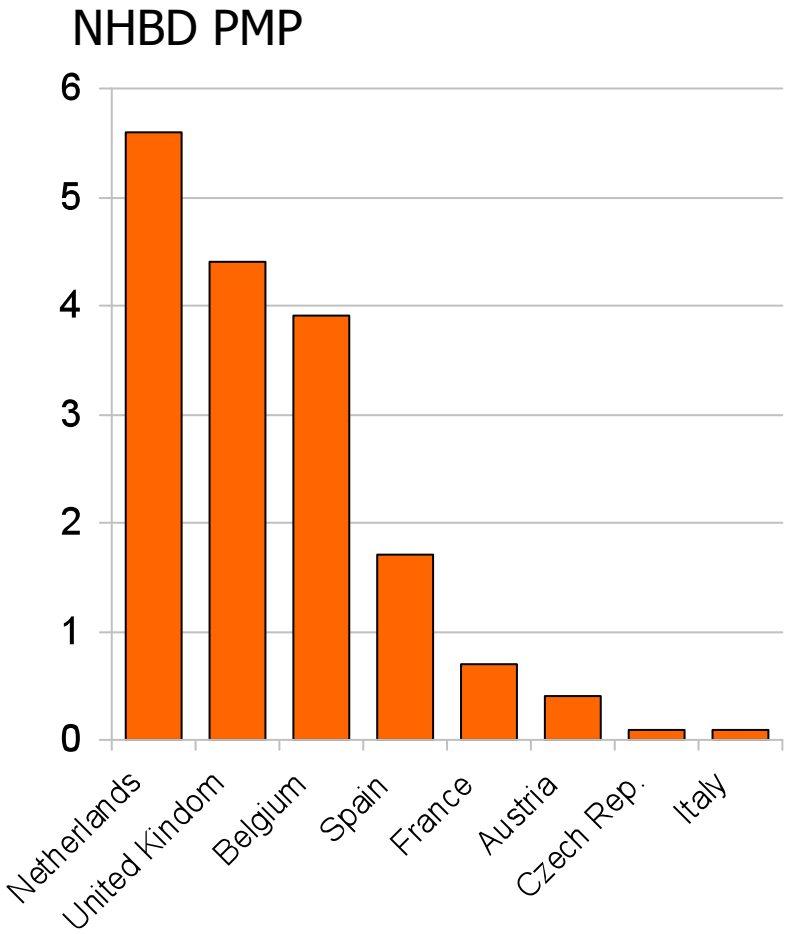


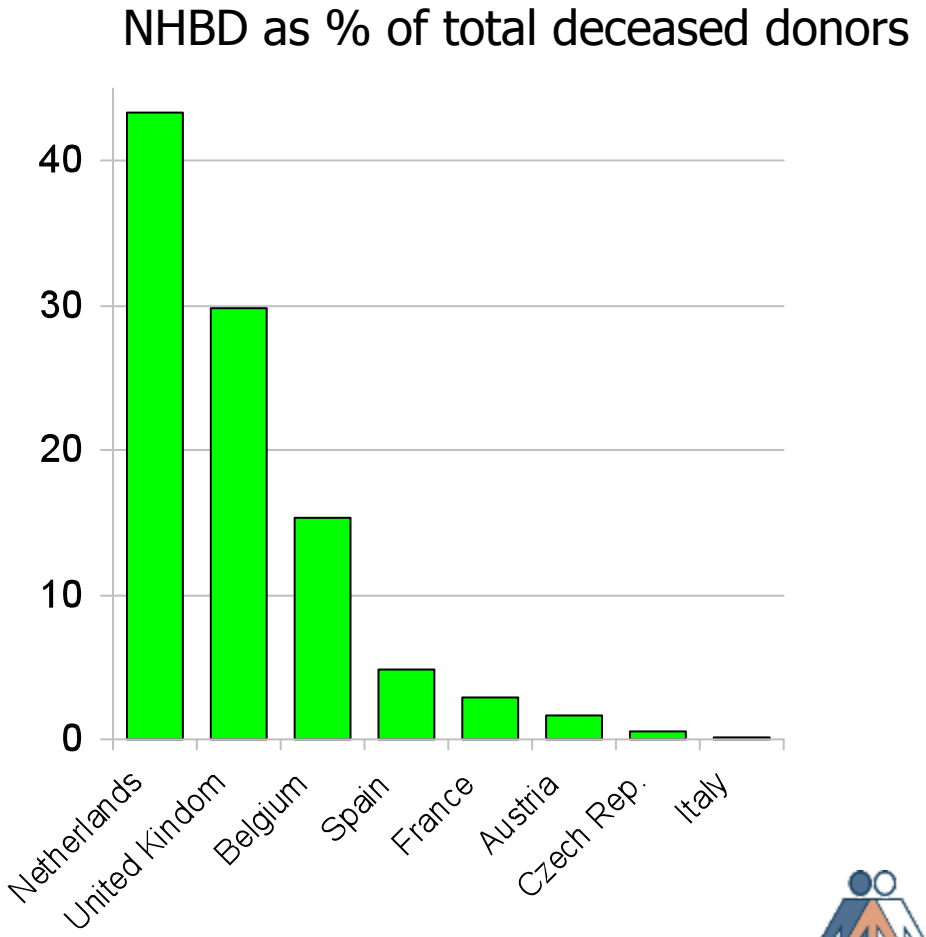


Declaration of death

- “Brain death”
  - Death declared on the basis of neurologic criteria
  - Irreversible loss of all functions of the entire brain, including the brain stem
- “Cardiac death”
  - Death declared on the basis of cardiopulmonary criteria
  - Permanent cessation of circulatory and respiratory function

Donation after cardiac death in different European countries 2008





The critical donation pathway
Donation after brain death

Severe brain damage

Identify potential donor

Diagnose brain death

Refer potential donor

Approach to family

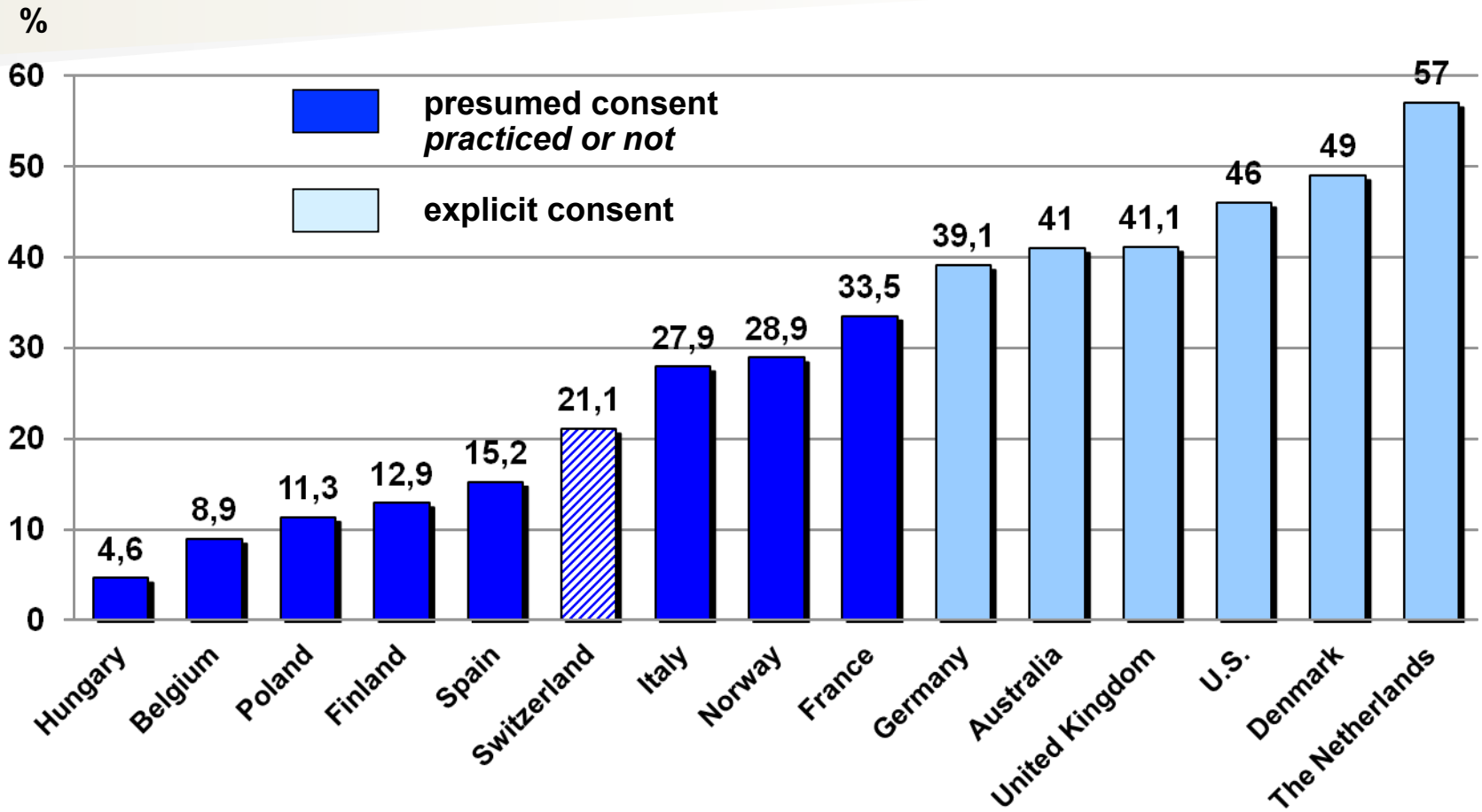
Maintain viability of organs

Retrieve organs

Provide feedback

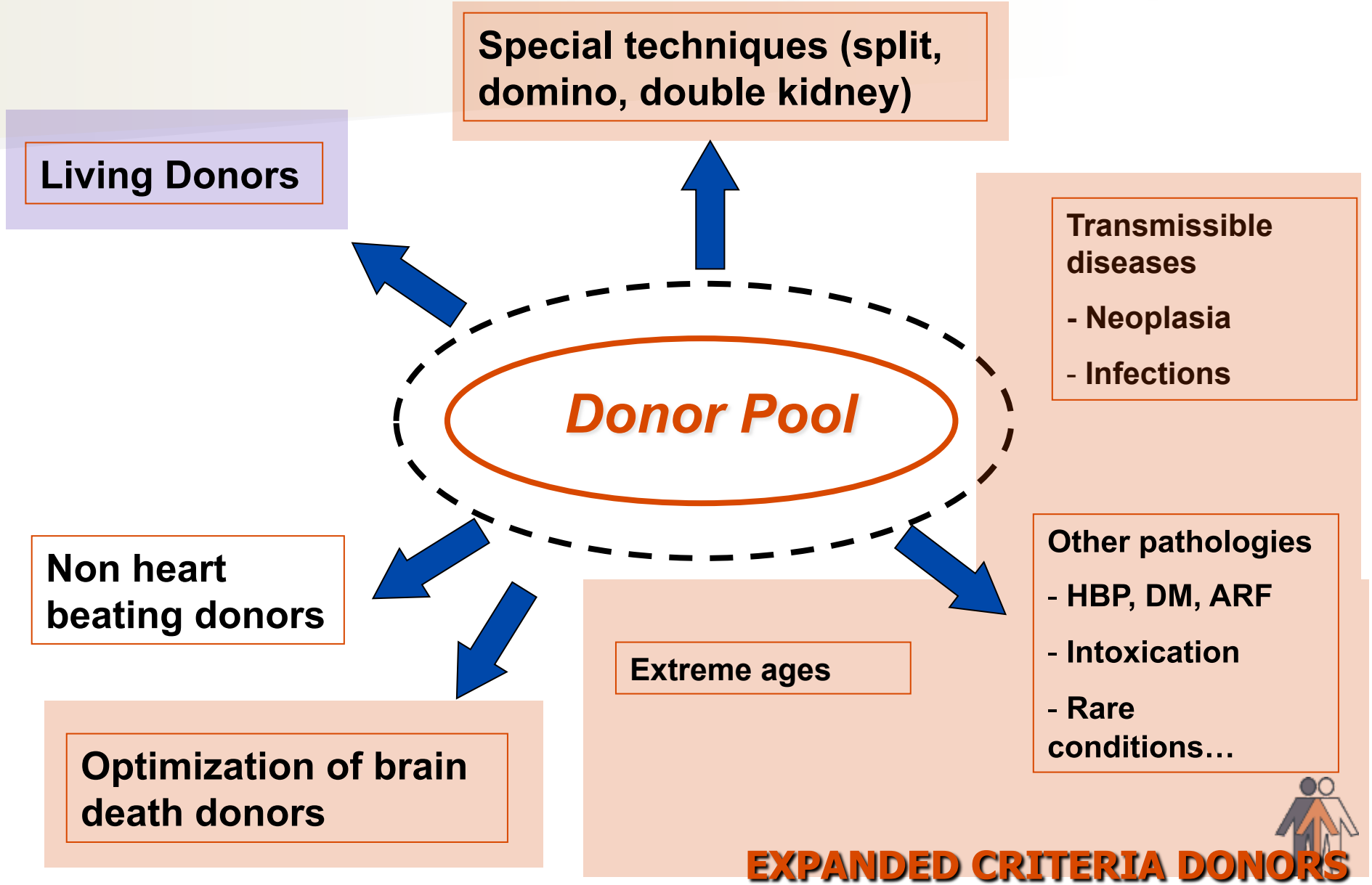
- **Donor detection**
- **Donor referral**
- **Family care & communication**
- **Donor maintenance**
- **Organ retrieval**

Europe - refusal rates - organ donation*



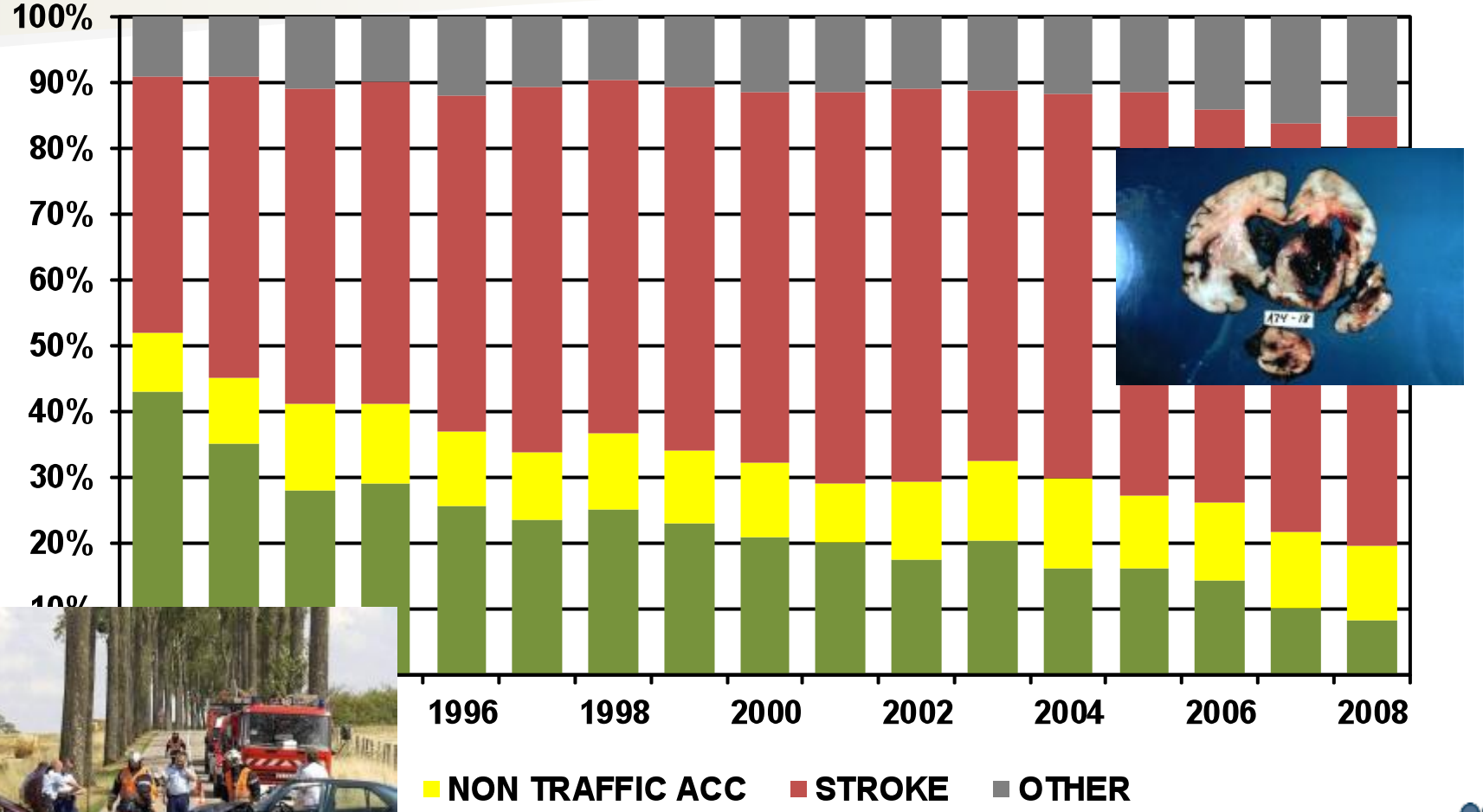
** Council of Europe / DA System Database data/ 2004 AOPO data*

Alliance O – expanding the donor pool



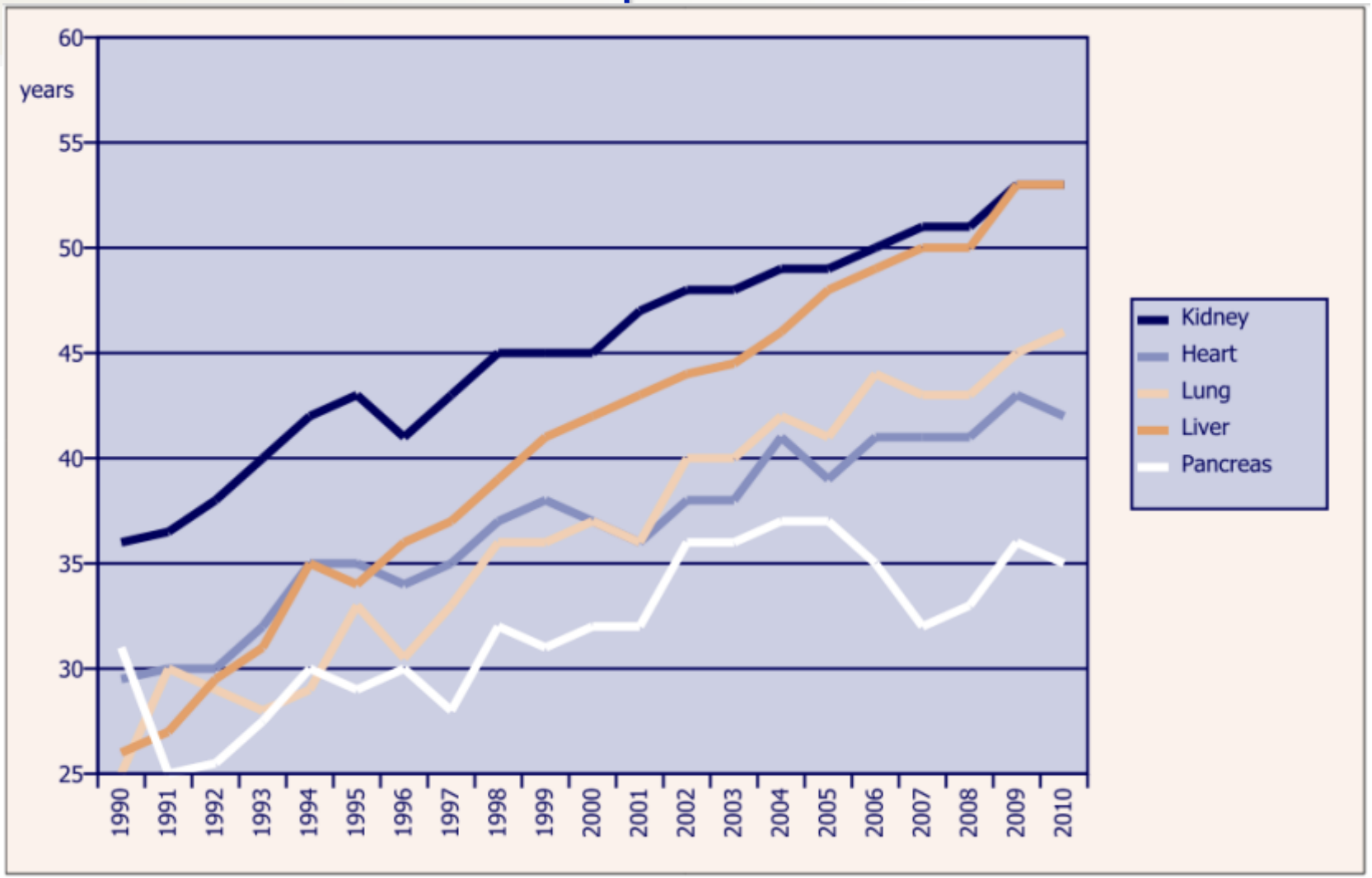
Cause of death of organ donors

Spain 1992-2008

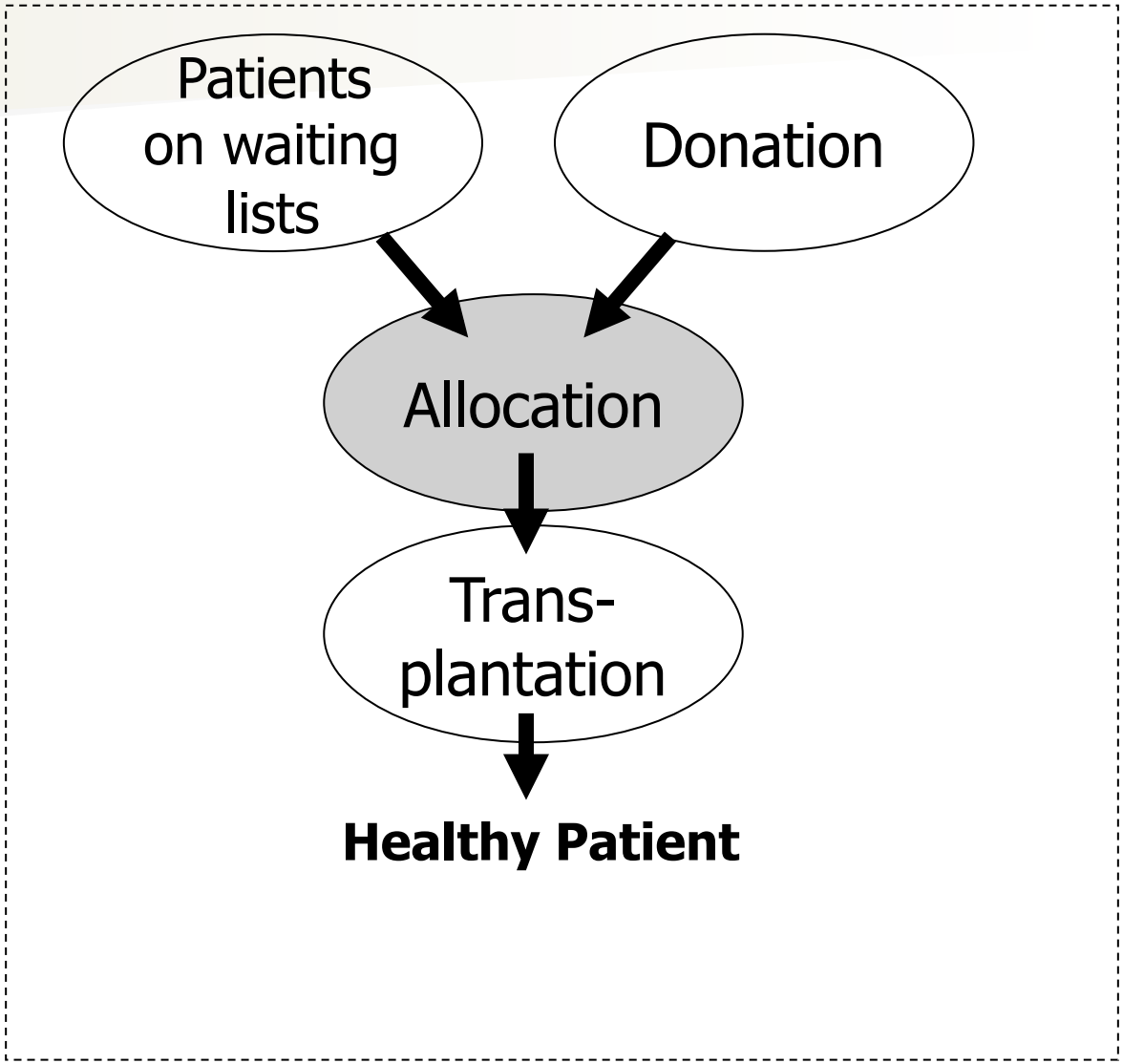


Median donor age utilized deceased donors per organ

Eurotransplant 1990-2010



ORGANISATION OF ORGAN TRANSPLANTATION



WHO GUIDING PRINCIPLES ON HUMAN CELL, TISSUE AND ORGAN TRANSPLANTATION

Guiding Principle 9

- Where donation rates do not meet clinical demand, *allocation criteria should be defined* at national or subregional level by a committee that includes experts in the relevant medical specialties, bioethics and public health…

WHO GUIDING PRINCIPLES ON HUMAN CELL, TISSUE AND ORGAN TRANSPLANTATION

Guiding Principle 9

- The allocation of organs, cells and tissues should be guided by clinical criteria and ethical norms, not financial or other considerations.
- Allocation rules, defined by appropriately constituted committees, should be equitable, externally justified, and transparent.

Kidney allocation – HLA-matching as example for utility based allocation

Role of HLA-matching for graft survival after kidney transplantation

CTS Newsletter 2004:1

	20-Year Estimate	Half-Life (Years)
0 MM	44 %	17.7
1 MM	42 %	17.0
2 MM	40 %	16.4
3 MM	38 %	15.8
4 MM	36 %	14.9
5 MM	34 %	14.0
6 MM	28 %	11.5

6.2 yrs. difference

HLA-matching in kidney transplantation

Eurotransplant 2000-2004, non-ESP patients

No. of mismatches	No. of transplantations	Percentage
0	2176	21,6 %
1	832	8,3 %
2	2679	26,6 %
3	3043	30,2%
4	1055	10,5 %
5	244	2,4 %
6	44	0,4%
total	10073	100%

Balancing urgeny and outcome

Examples of the consequences of allocation trade-offs

Recipient	60 years with Diabetes	20 years without Diabetes	20 years with Diabetes
Lifespan without transplant*	4 years	16 years	9 years
Lifespan with transplant*	9 years	22 years	16 years
Incremantal survival	5 years	6 years	7 years

***Median survival for this specific patient group (US data)**

Examples of the consequences of allocation trade-offs

Recipient	60 years with Diabetes	20 years without Diabetes	20 years with Diabetes
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Allocation to the most urgent patient (maximize waiting list survival)

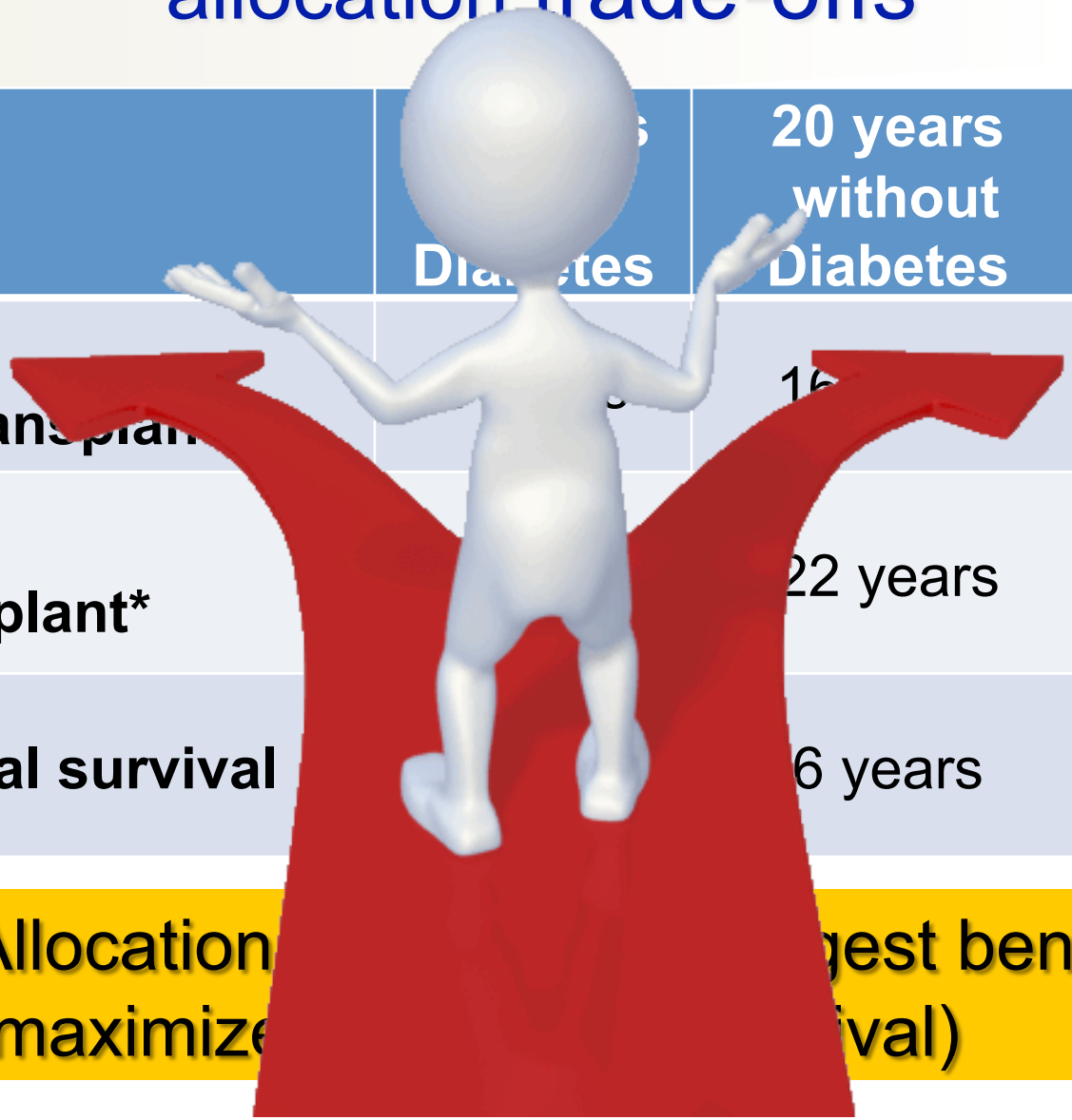
Examples of the consequences of allocation trade-offs

Recipient	60 years with Diabetes	20 years without Diabetes	20 years with Diabetes
Lifespan without transplant*	4 years	16 years	9 years
Lifespan with transplant*	9 years	22 years	16 years
Incremantal survival	5 years	6 years	7 years

Allocation to the patient with best outcome (maximize post transplant survival)

Examples of the consequences of allocation trade-offs

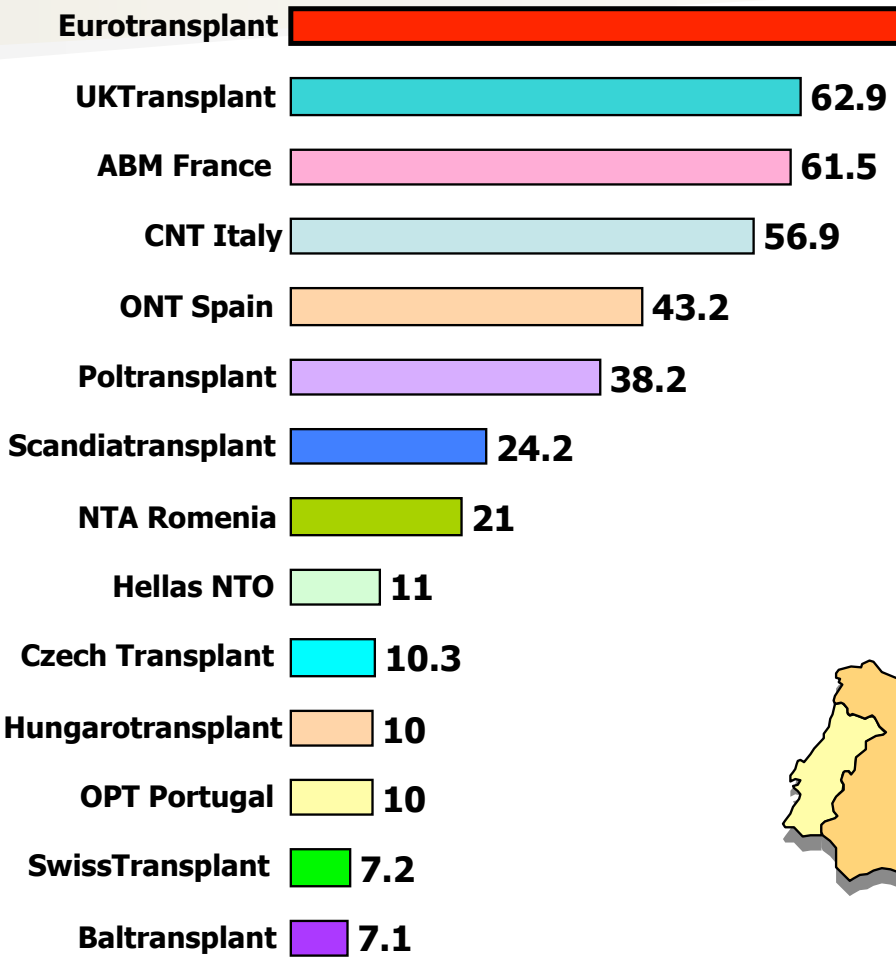
Recipient	[illegible] Diabetes	20 years without Diabetes	20 years with Diabetes
Lifespan without transplant	[illegible]	16 [illegible]	9 years
Lifespan with transplant*	[illegible]	22 years	16 years
Incremantal survival	[illegible]	6 years	7 years

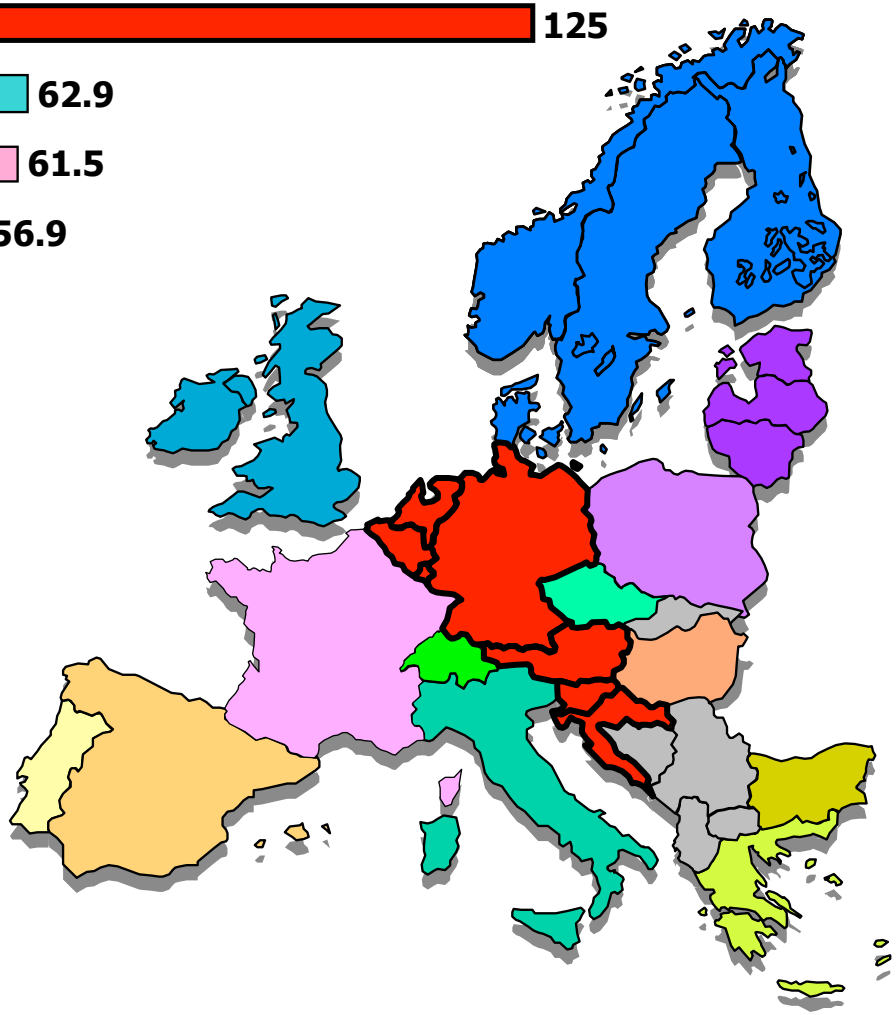


Allocation [illegible] gest benefit (maximize [illegible] ival)

International cooperation in organ transplantation

European OEOs (million pop.)





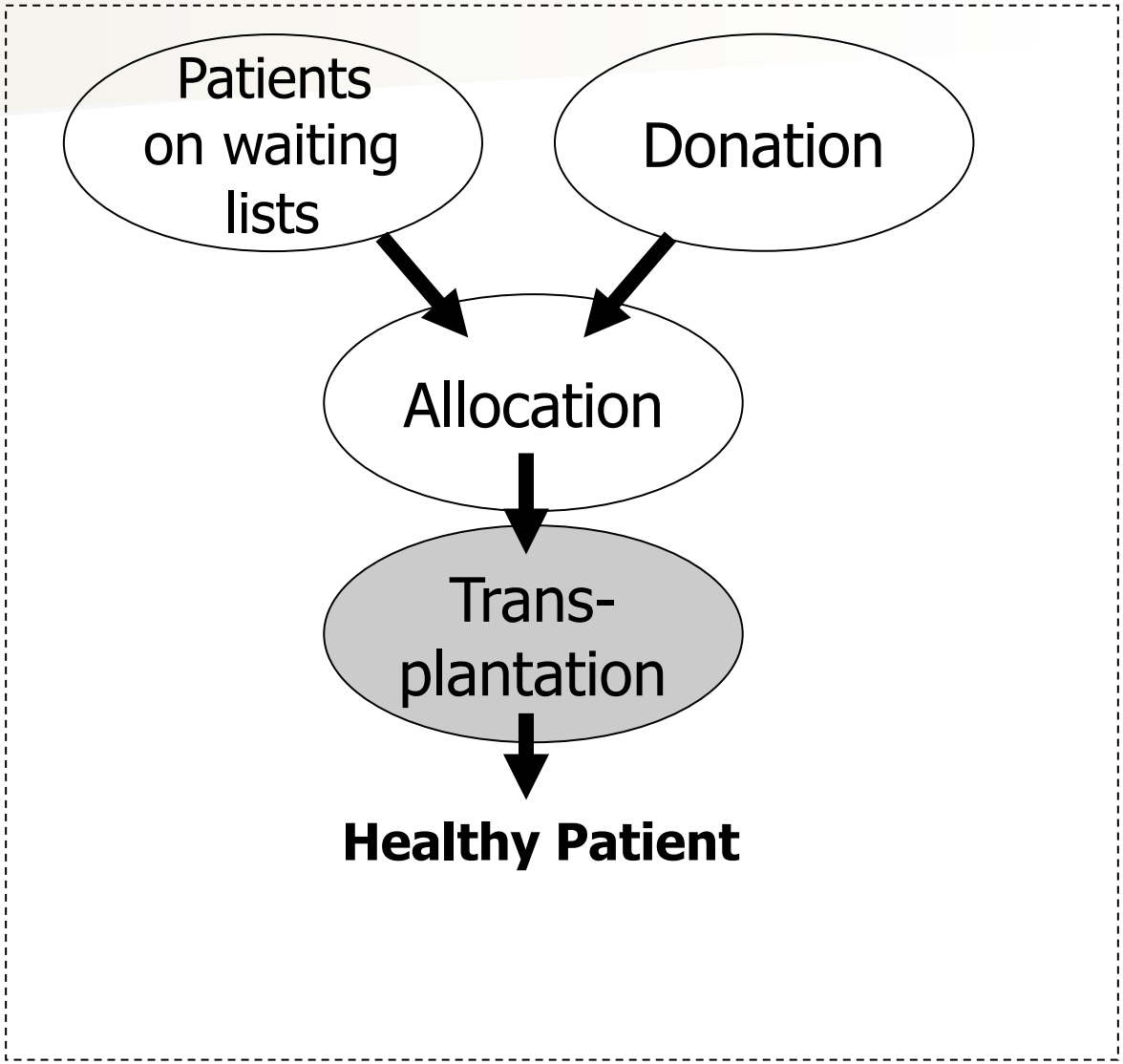
Levels of international cooperation

- No cooperation – Isolation
- Exchange of organs in case there is no suitable recipient in the area/EOEO
- Cooperation for special patient groups
  - Optional organ exchange (without balancing)
  - Mandatory organ exchange (with balancing)
- Common waiting list with harmonized allocation rules
  - With national balancing rules
  - Without national balancing rules

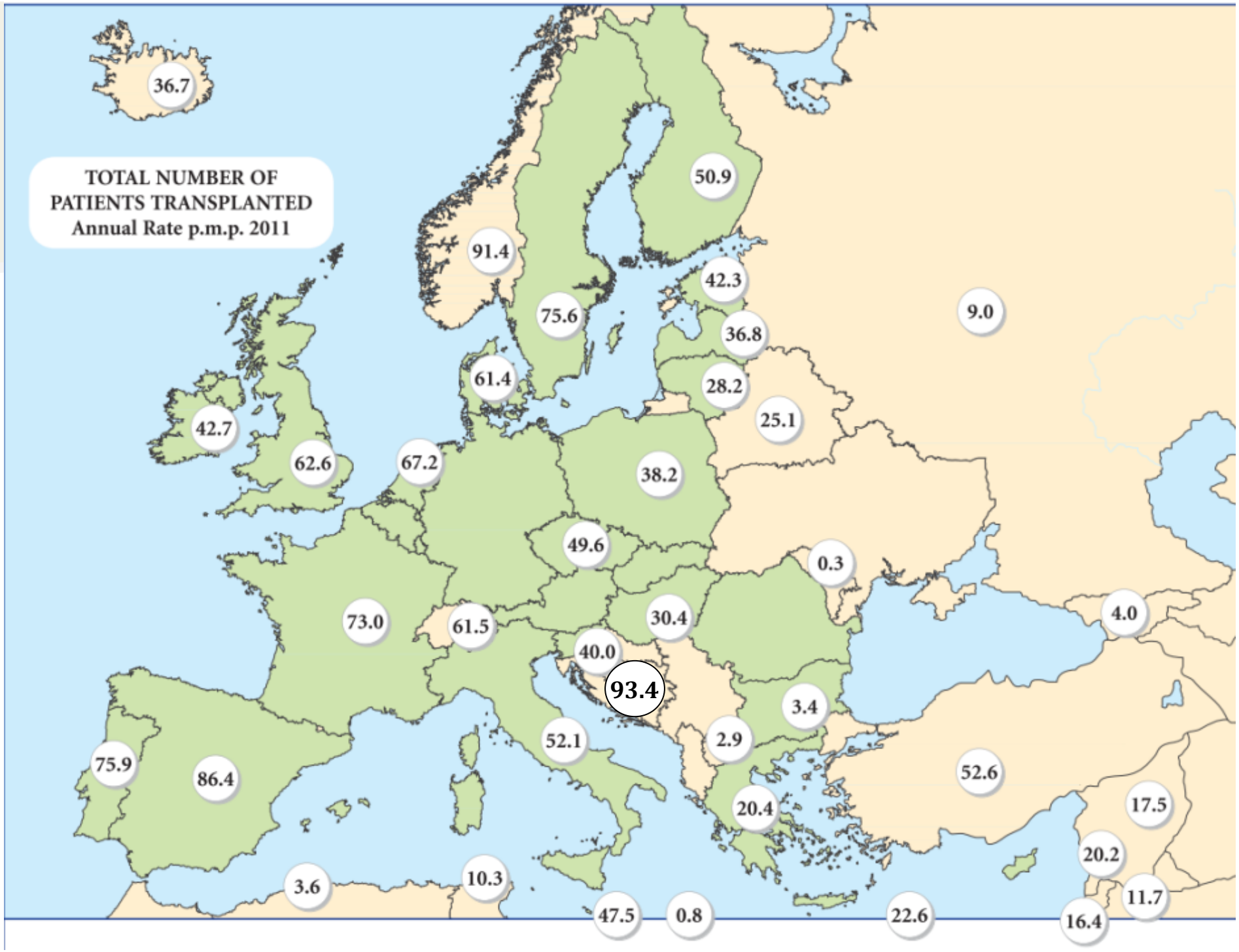
Benefits of international cooperation in organ transplantation

- Preventing organ loss
- Addressing the needs of special patient groups
- Improving the outcome of organ transplantation
- International harmonization of activities in organ donation and transplantation
- Scientific cooperation in the area of transplantation

ORGANISATION OF ORGAN TRANSPLANTATION

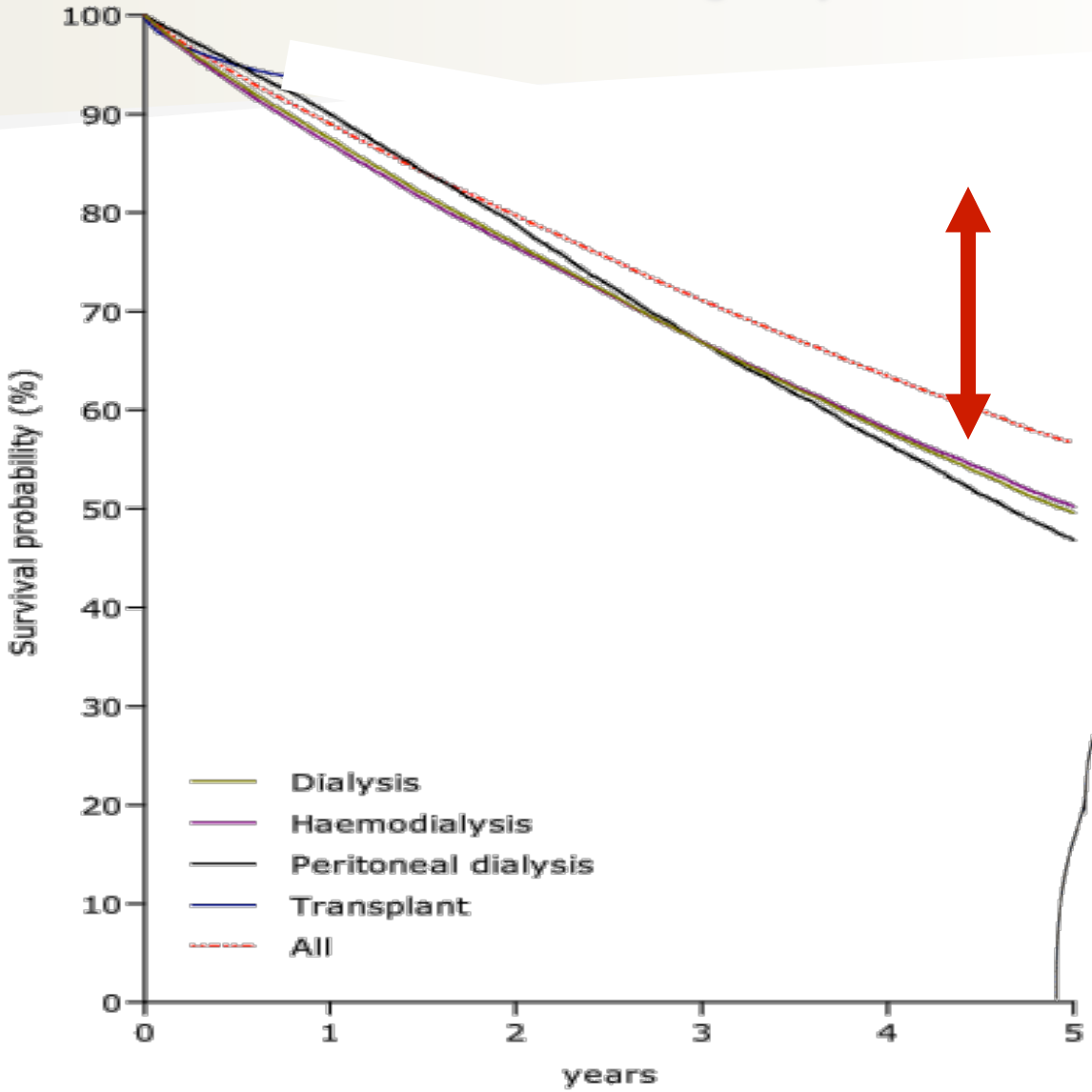


Organ procurement, transport and transplantation


TOTAL NUMBER OF
PATIENTS TRANSPLANTED
Annual Rate p.m.p. 2011
36.7
91.4
50.9
42.3
75.6
9.0
36.8
61.4
28.2
25.1
42.7
62.6
67.2
38.2
49.6
0.3
73.0
61.5
30.4
4.0
40.0
93.4
3.4
52.1
2.9
75.9
86.4
52.6
20.4
17.5
20.2
3.6
10.3
11.7
47.5
0.8
22.6
16.4

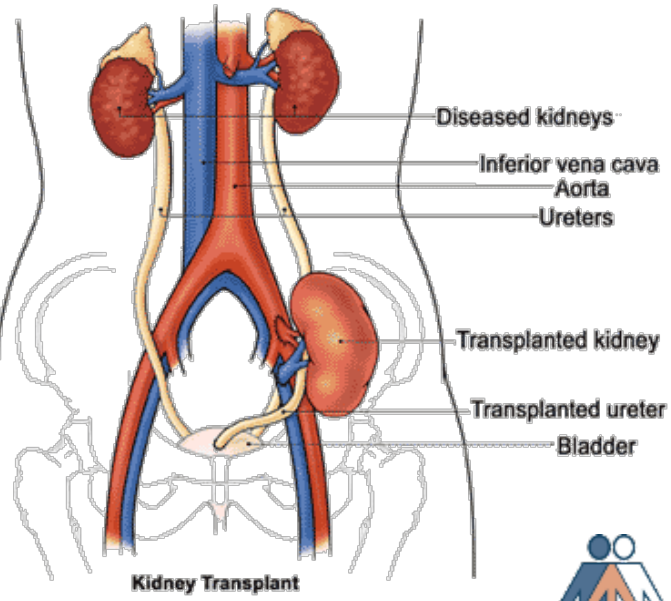
Survival benefit after kidney transplantat

ERA-EDTA-Registry – Annual report 2008



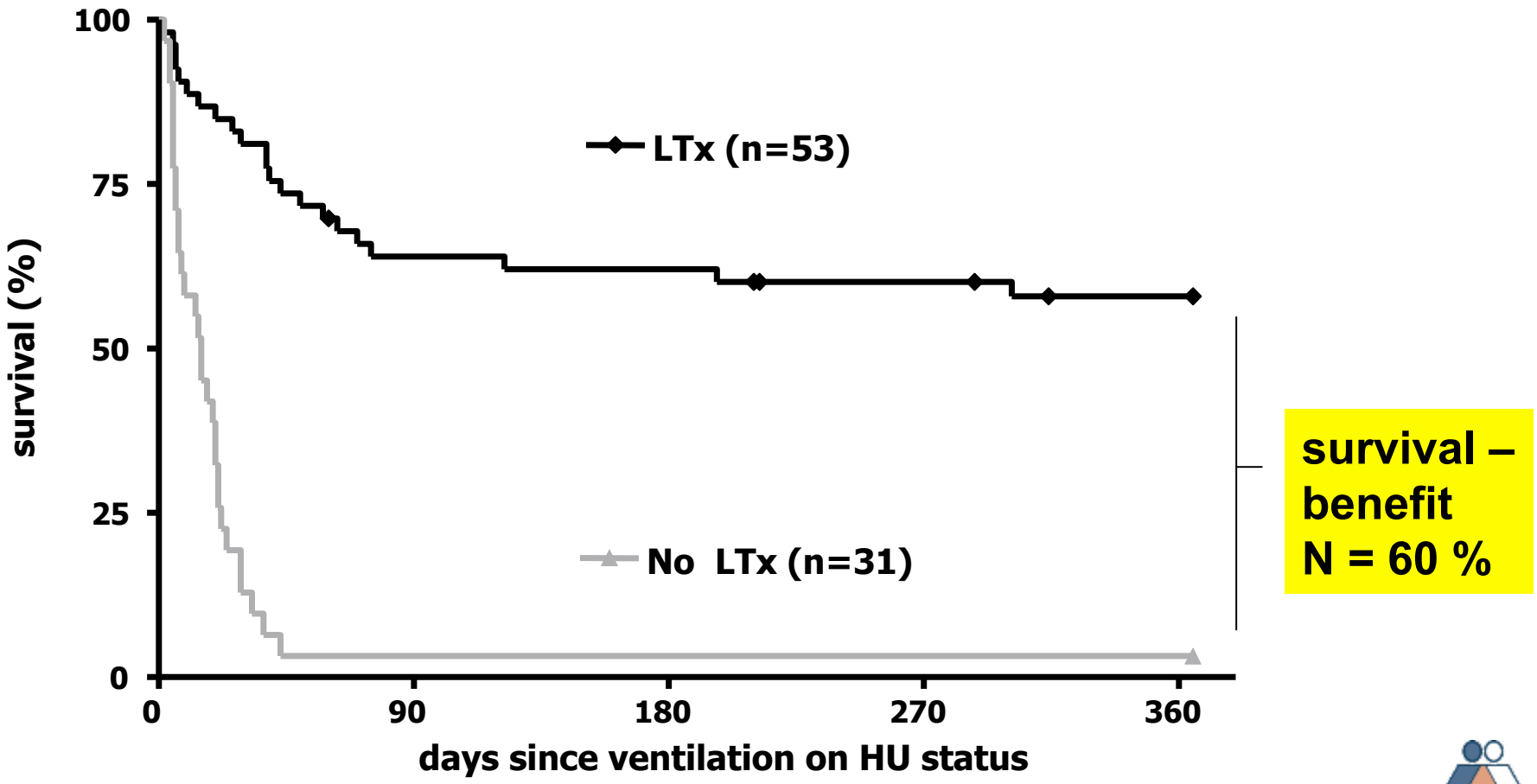
Transplantation

Survival benefit



Survival benefit after lung transplantation in mechanically ventilated patients

MHH, Germany 2005-2008



Quality of life after heart-transplantation

Summary

- Organ transplantation gives huge benefit to the patients both with regard to survival and quality of life
- Main limit to organ transplantation is donor shortage
- Organ donation can be improved by a well organized and structured approach, learning from best practices is important
- Transparent organ allocation based on sound medical and ethical allocation principles is necessary to address the needs of patients on the waiting list and make best use of the available donor organs

Thank you for your attention