

Cancer in the organ donor

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Conflicts of Interest

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Active waiting list (at year-end) in Belgium, by year, by organ

Active waiting list	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
kidney	840	813	866	914	883	791	770	878	871	797
heart	34	43	58	67	59	76	95	89	118	117
lung	52	76	95	90	119	81	85	82	104	122
liver	176	189	191	193	172	181	184	187	188	174
pancreas	37	27	46	39	51	54	60	70	68	65
Total patients	1092	1109	1193	1252	1234	1138	1141	1248	1288	1217

statistics.eurotransplant.org : 3022P_Belgium : 02.01.2017 : patients waiting for multiple organs are counted for each organ

Conflicts of Interest

Waiting list mortality in Belgium, by year, by organ

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
kidney	21	23	30	34	37	30	28	27	43	33
heart	12	21	22	19	23	16	23	19	13	20
lung	5	6	9	7	9	10	16	11	1	7
liver	43	45	53	48	54	52	30	44	62	45
pancreas		1	1		1		2	4	4	2
Total events	81	96	115	108	124	108	99	105	123	107
Total patients	79	95	108	104	115	99	95	96	114	99

statistics.eurotransplant.org : 4512P_Belgium : 12.01.2017 : Reported by year of death. Includes patients with active or non-active urgency at removal. Includes removals while waiting for living or deceased donor transplants.

Tumours in the donor: what is the risk?

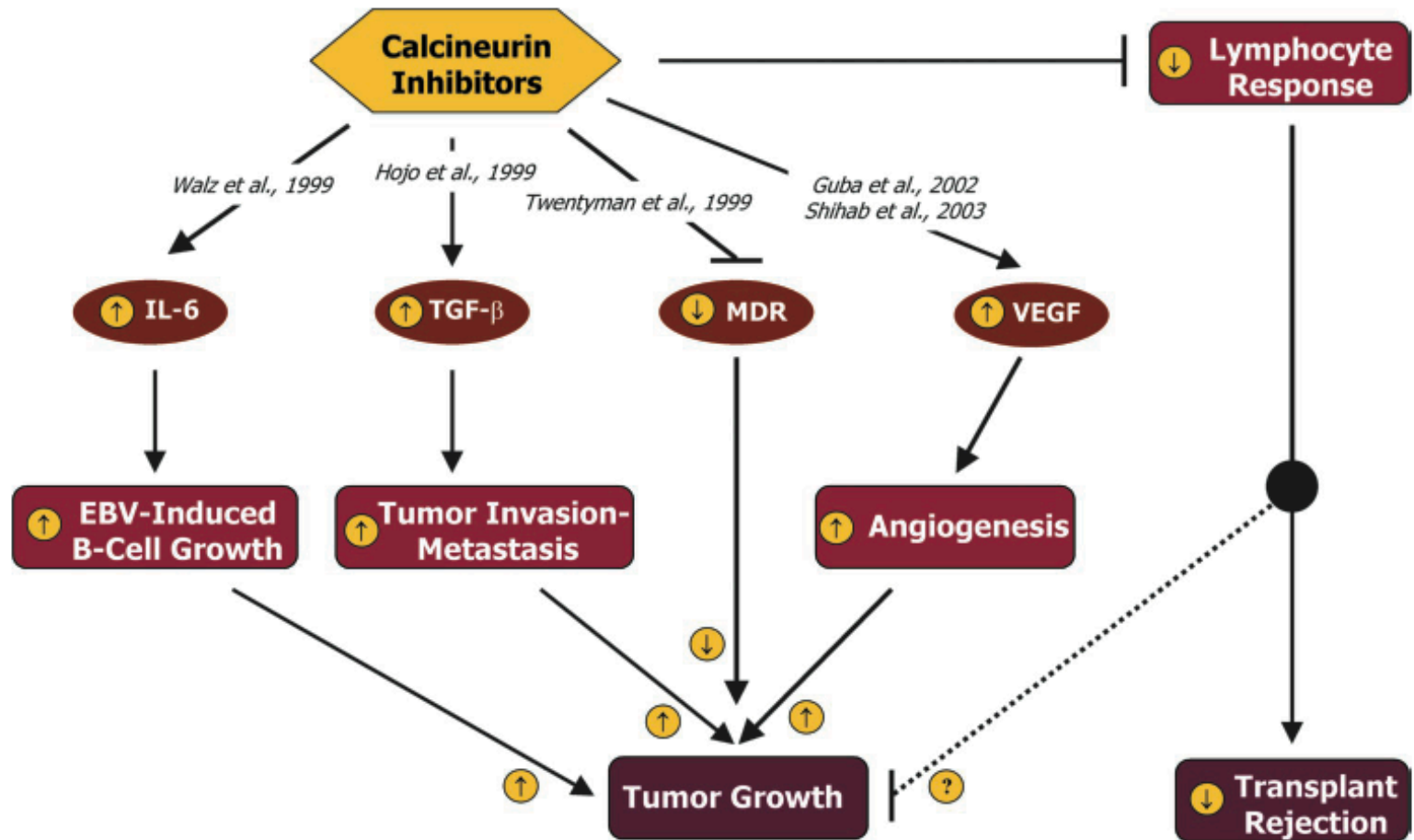
- Cancer can be transmitted by organ transplantation

Tumours in the donor: what is the risk?

- Cancer can be transmitted by organ transplantation

- Cancer can be transmitted otherwise
 - mother-to-fetus
 - fetus to fetus (twins)
 - daughter to mother
 - patient to surgeon

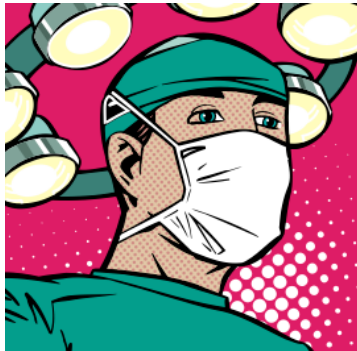
Calcineurin inhibitors



Organ donation & donor cancer

- Patients diagnosed with neoplasia should not be considered for organ donation, except:
 - low grade skin tumours
 - in situ carcinoma of the uterine cervix
 - primary CNS tumours (except high grade)
 - low-malignancy grade kidney tumours

Past tumors in the donor:
what is the risk with Tx?



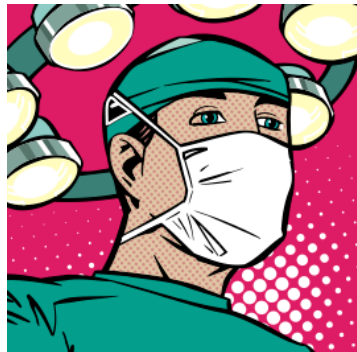
Tx & Cancer Transmission

- Case reports



Cancer Transmission

- Case reports
- Registries
 - Prospective: UNOS, UK, Australia, Italy, Spain
 - Voluntary: IPPTR



2 categories

- Cadaveric donor with past history of non CNS cancer
- Cadaveric donor with past history of CNS cancer

Cadaveric donor with past history of non CNS cancer

- According to several published guidelines & Council of Europe 2011: no organ donation

Cadaveric donor with past history of non CNS cancer

- According to several published guidelines & Council of Europe 2011: no organ donation
- In most (all?) reported cases of non-CNS cancer transmission with organ transplantation in these last 20 years, none were known before donation !

UNOS 1994-1996

- 14,705 deceased donors
- 257 deceased donors with history of cancer
650 organs
- Mean follow-up: 45 months

UNOS 1994-1996

TABLE 1. Organs from donors with cancer history

Site	Total	Kidney	Liver	Heart
Skin	207	128	63	16
Brain	188	105	48	35
Genitourinary	154	96	42	16
<i>Breast</i>	38	26	9	3
<i>Thyroid</i>	11	7	3	1
<i>Lymphoma</i>	9	6	2	1
<i>Throat / tongue</i>	8	4	3	1
<i>Ovarian</i>	5	4	1	
<i>Melanoma</i>	4	2	2	
<i>Iris melanoma</i>	3	2	1	
<i>Prostate</i>	3	2	1	
<i>Testicular</i>	2	2		
<i>Lung</i>	2	2		
<i>Larynx</i>	2	2		
<i>Colorectal</i>	1		1	
Unknown	13	9	2	2
Total	650	397	178	75

Italicized sites = histologically defined malignancies.

UNOS 1994-1996

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No transmission of cancer in the recipients !

UNOS 2000-2005

- 39,455 deceased donors
- 1,069 deceased donors with history of cancer
- 2,508 organs

UNOS 2000-2005

TABLE 1. Deceased donor transplants from donors with a past history of cancer (n=1069), 2000 to 2005

Donor cancer type	Deceased donor transplants							
	Total	Kidney	Liver	Heart	Lung	Heart–lung	Pancreas	Kidney–pancreas
Skin (basal, squamous)	776	383	306	47	28	0	5	7
Melanoma	140	72	45	13	5	0	1	4
CNS: glioblastoma multiforme	175	74	55	24	11	2	3	6
CNS: astrocytoma	152	76	37	20	7	1	5	6
CNS: meningioma	80	40	26	7	5	0	0	2
CNS: pituitary	31	14	7	7	2	0	1	0
CNS: ependymoma	8	4	1	3	0	0	0	0
CNS: oligodendroglioma	31	11	7	6	4	0	0	3
CNS: other	165	75	46	23	11	0	3	7
Uterine cervix	336	178	108	24	8	1	4	13
Breast	126	68	53	3	1	0	0	1
Prostate	66	23	42	1	0	0	0	0
Uterine endometrial	65	34	24	3	3	0	0	1
Bladder	20	8	9	2	1	0	0	0
Ovarian	75	40	28	2	5	0	0	0
Testicular	28	14	9	3	2	0	0	0
Kidney	15	1	9	1	2	0	1	1
Colorectal	38	19	17	2	0	0	0	0
Thyroid	34	22	12	0	0	0	0	0
Tongue/throat	11	7	4	0	0	0	0	0
Lung	10	5	5	0	0	0	0	0
Leukemia/lymphoma	51	28	16	3	1	0	0	3
Other, specify	75	40	25	5	4	0	0	1
Total	2508	1236	891	199	100	4	23	55

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Breast	126	68	53	3	1	0	0	1
Prostate	66	23	42	1	0	0	0	0
Uterine endometrial	65	34	24	3	3	0	0	1
Bladder	20	8	9	2	1	0	0	0
Ovarian	75	40	28	2	5	0	0	0
Testicular	28	14	9	3	2	0	0	0
Kidney	15	1	9	1	2	0	1	1
Colorectal	38	19	17	2	0	0	0	0
Thyroid	34	22	12	0	0	0	0	0
Tongue/throat	11	7	4	0	0	0	0	0
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UNOS 2000-2005

- 2 cases of transmissions of cancer to the recipients:
 - glioblastoma: kidney, liver, lung
 - melanoma: (32 years of follow-up) (unknown at the time of procurement and transplantation)

ATS 2013 Abstract #D1711

UNOS 1987-2009

204,946 organ transplantations

1,360 donors with history of cancer

- 899 living donors

- 561 deceased donors (55% CNS)

No increased risk of cancer in the recipients

2 cases of transmitted cancer from living donation KTx (myeloma & melanoma)

NHS

- NHS 1990-2008

17,639 organ donors

202 donors with history of cancer

High risk cancers in 61 donors (133 recipients)

breast:10, melanoma: 3, lymphoma: 5;
colon: 3; ovary: 2; sarcoma: 4; CNS: 34

NHS

- NHS 1990-2008

17,639 organ donors

202 donors with history of cancer

High risk cancers in 61 donors (133 recipients)

breast:10, melanoma: 3, lymphoma: 5;
colon: 3; ovary: 2; sarcoma: 4; CNS: 34

No transmission of cancer to the recipients

Germany: MALORY study

- 2006-2011
- 248 organ donors, with 254 malignancies
- 702 organs transplanted to 648 recipients
- No transmission when the cancer was known before transplantation
- 7 cases of unknown cancer transmission

Litterature

- Breast cancer:
 - a few (<10 cases) reported case of transmission
- Prostate cancer
 - one reported case of transmission

2 categories

- Cadaveric donor with past history of non CNS cancer
- Cadaveric donor with past history of CNS cancer

Cadaveric donor with past history of CNS cancer

- According to several published guidelines & Council of Europe in 2011:
 - low grade tumour: OK for donation
 - high grade tumour: no donation
- Higher risk if surgery, radiotherapy, VP shunt

UNOS 1992-1999

- 42,340 deceased donors
- 397 deceased donors with history of CNS cancer
- 1,220 organs (293 livers)
- Mean follow-up: 36 months

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No transmission of cancer in the recipients !

UNOS 1992-1999

- 42,340 deceased donors
- 397 deceased donors with history of CNS cancer – **only 19 with High grade Tumours**
- **56 organs** Mean follow-up: 36 months

UNOS 2000-2005

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UNOS 2000-2005

- 2 cases of transmissions of cancer to the recipients:
 - glioblastoma: kidney, liver, lung
 - melanoma: (32 years of follow-up) (unknown at the time of procurement and transplantation)

UNOS 1994-2014

- 58,314 Thoracic SOT
- 337 from donors with CNS malignancy
 - 212 hearts, 122 lungs, 3 heart-lungs

0 transmissions of CNS cancer in thoracic recipients

Other series

- Australia & NZ:
 - 46 donors, 28 High grade, 153 organs, 27 livers
- Czech Republic:
 - 41 donors, 91 recipients
- UK:
 - 177 donors, 495 organs, 72 livers

No transmission of cancer in the recipients !

Tumours in the donor:

??????????



What is the risk?

- Unknown
- Overestimated by publications of case reports
- Liver, Lungs > kidney > heart

What is the risk?

- Donors with active non-CNS cancer: no
- Donors with active CNS cancer: yes
- Donors with past cancer?
interval, tumor aggressiveness
lymphoma, melanoma: no
- In which patient ?
- **Donors with no history of cancer ???**

ATS 2013 Abstract#D1708

- NHS 2001-2010

30,765 organ transplants from 14,986 donors

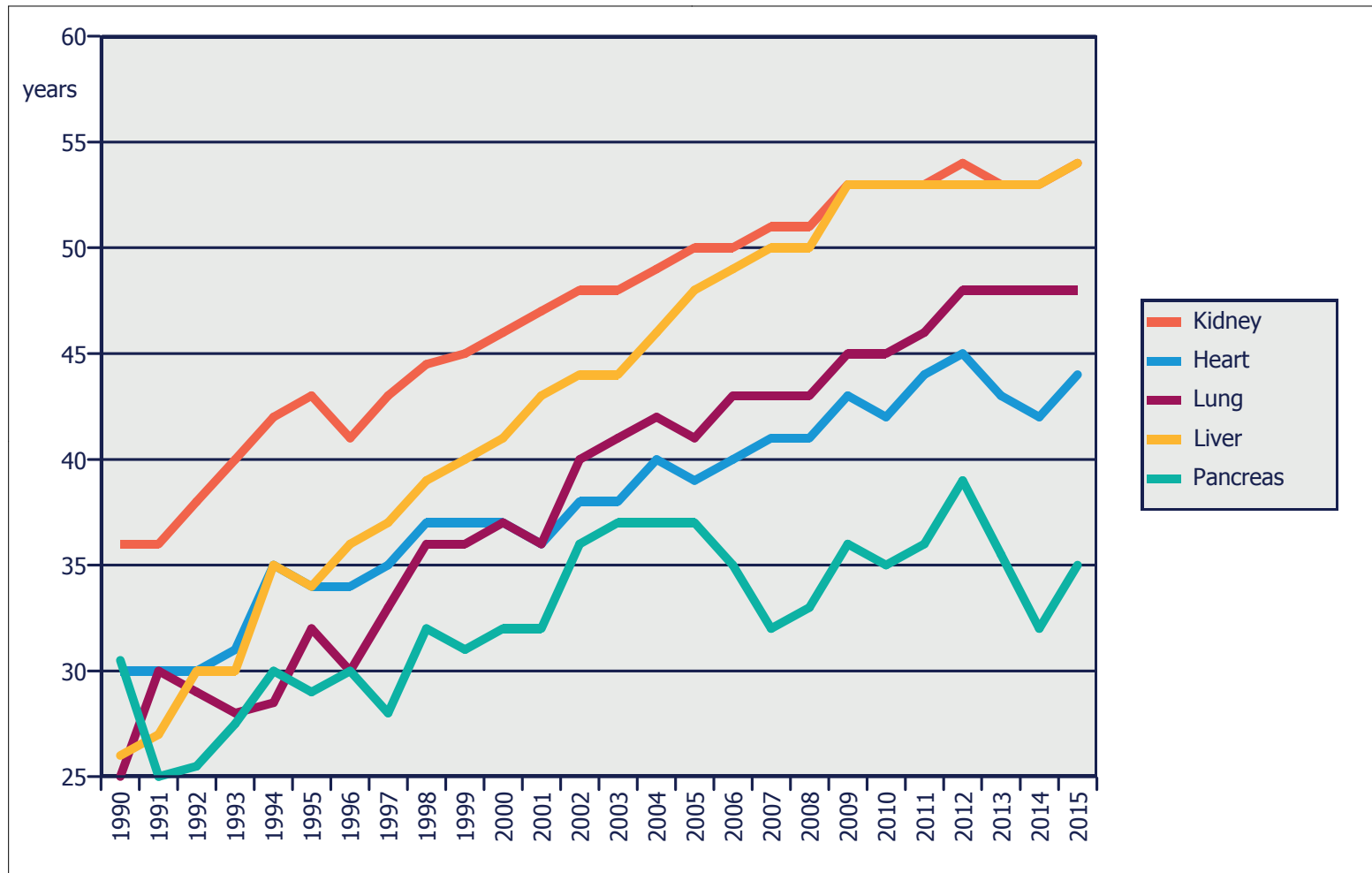
15 donor-transmitted cancer

6 renal K, 5 lungs, 2 lymphoma, 1 NET, 1 colon

None of the donors were known to have cancer

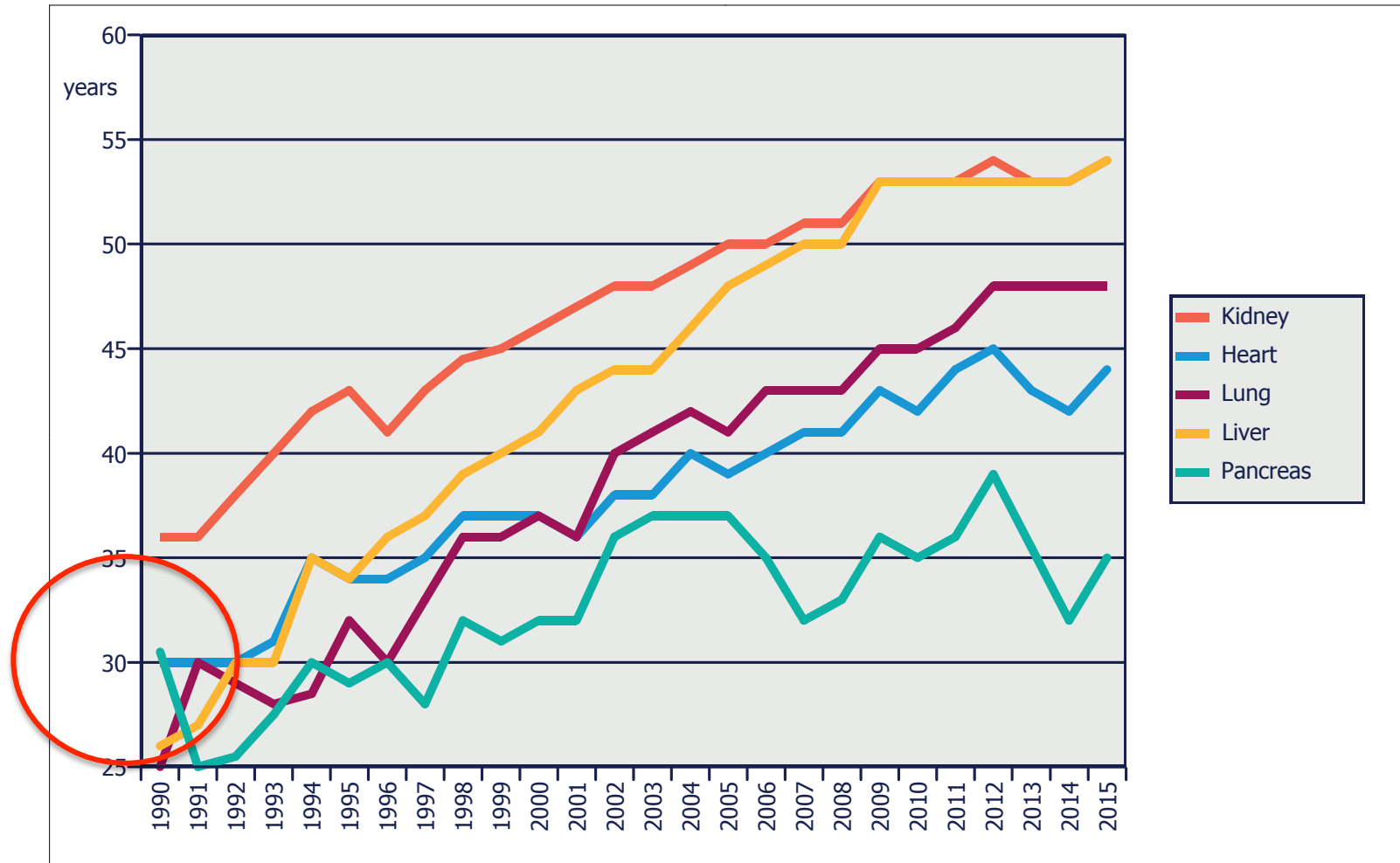
Donor age

Figure 4.2 Median age of deceased donors used for a transplant in Eurotransplant



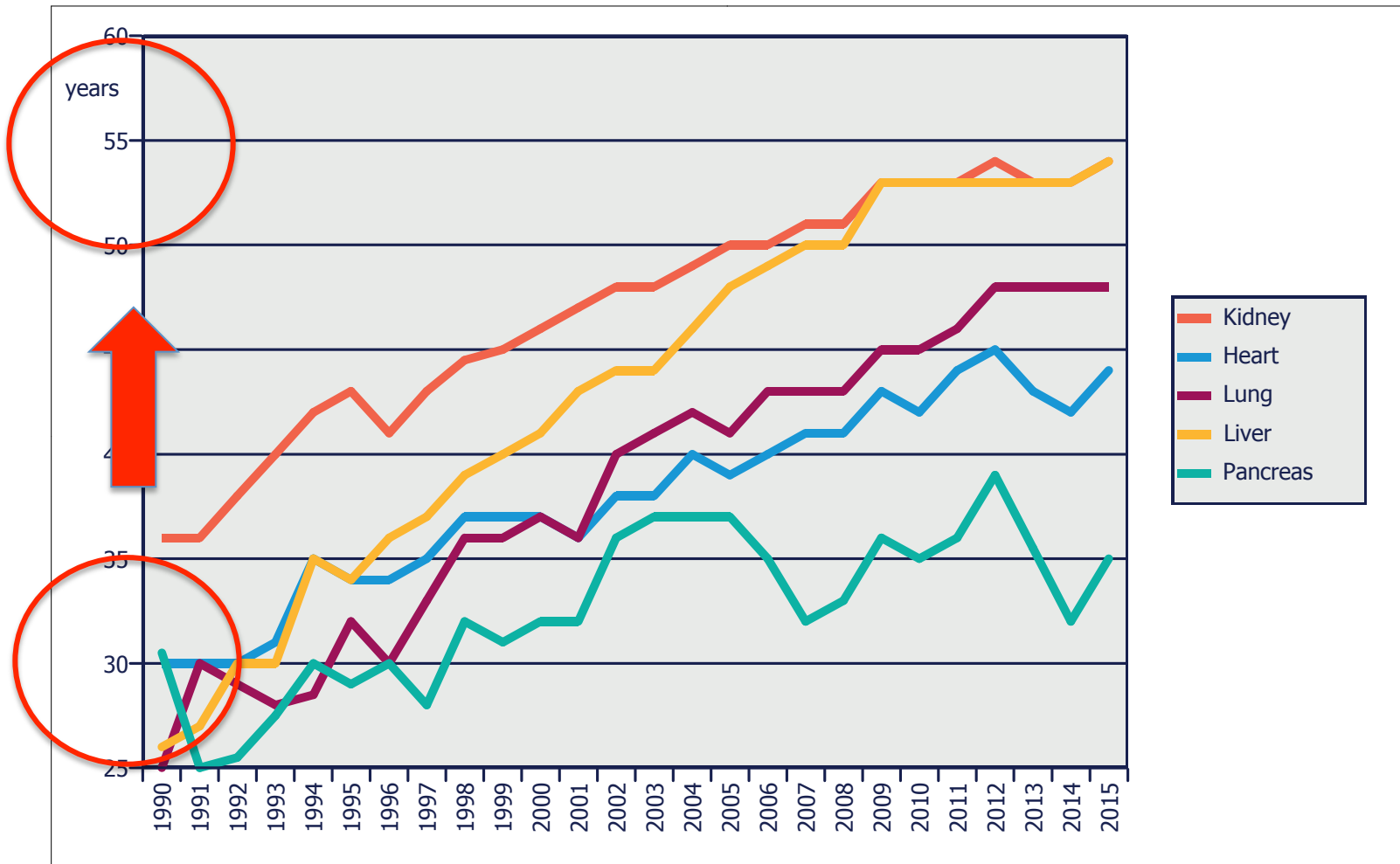
Donor age

Figure 4.2 Median age of deceased donors used for a transplant in Eurotransplant



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Société
canadienne
du cancer
Canadian
Cancer
Society



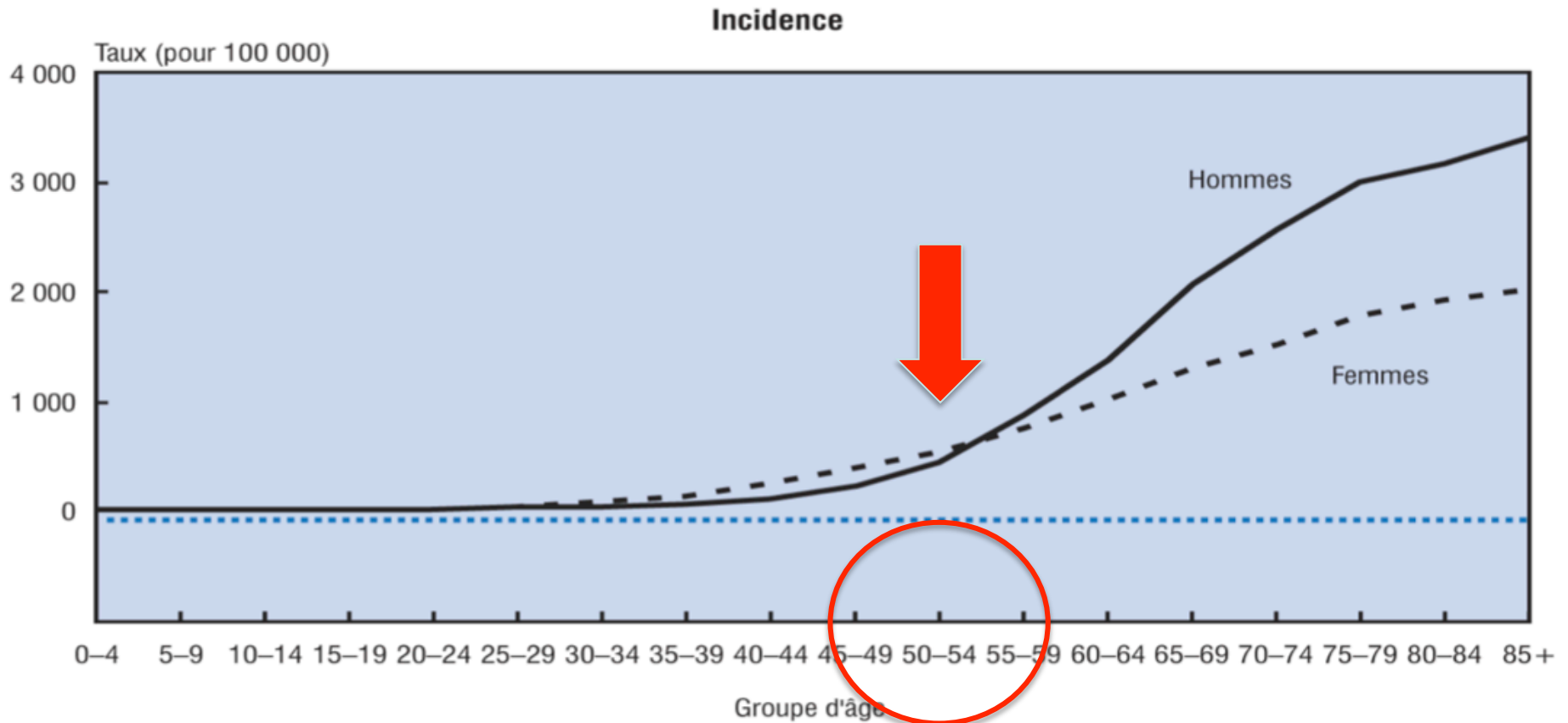
Agence de la santé
publique du Canada

Public Health
Agency of Canada



Statistique
Canada

Statistics
Canada



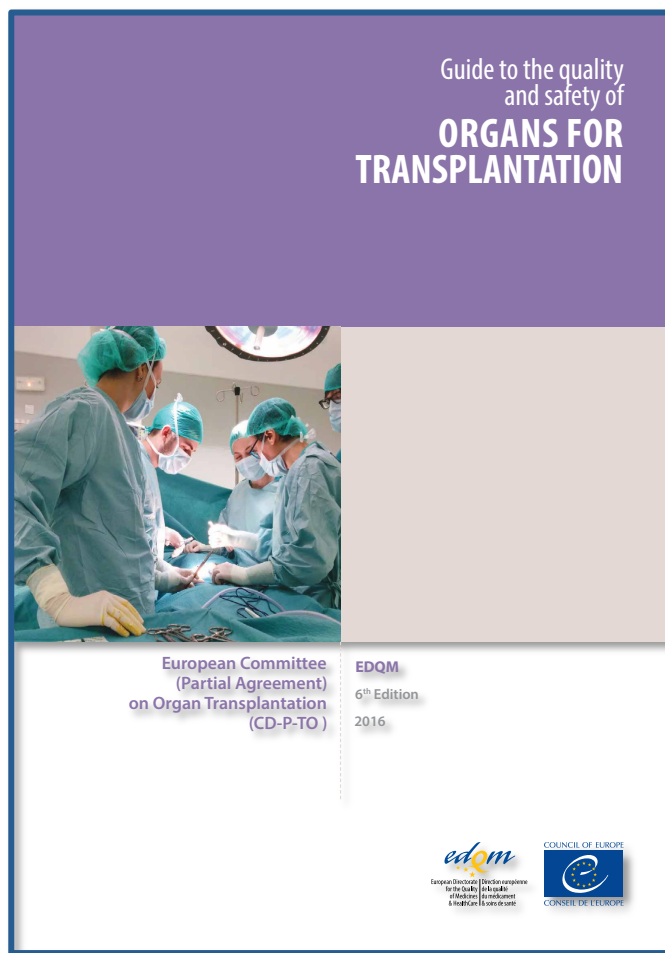
2 categories

- Cadaveric donor with past history of non CNS cancer
- Cadaveric donor with past history of CNS cancer

3 categories

- Cadaveric donor with past history of non CNS cancer
- Cadaveric donor with past history of CNS cancer
- **Cadaveric donor with no history of cancer**

- <https://www.edqm.eu/en/organ-tissues-cells-transplantation-guides-1607.html>



Thank you !

