

# DANSK NEFROLOGISK SELSKAB



*Landsregister  
Årsrapport 2007*

*Danish National Registry  
Annual Report 2007*

**The Danish Society of Nephrology**



# Forord

DNSL står overfor en række udfordringer i disse år, og store forandringer kan forventes i fremtiden. De væsentligste problemer og ændringer kan rubriceres under følgende overskrifter:

## **Kvalitetsindikatorer**

Som en betingelse for fortsat økonomisk støtte fra Danske Regioner skal DNSLs kvalitetsindikatorer fremover indtastes on-line og kontinuerligt, d.v.s. mindst hver 3. måned. Da dette er en praktisk umulighed for de biokemiske kvalitetsindikatorer som DNSL hidtil har brugt, er der vedtaget et nyt sæt kvalitetsindikatorer, som kan registreres løbende uden betydende øgning i resourceforbruget i afdelingerne.

<b>Gamle Indikatorer</b>	<b>Nr</b>	<b>Nye Indikatorer</b>
Antal Rejektioner (kun transplant patienter)	1	Akut vs. forberedt påbegyndelse af kronisk dialysebehandling
Peritonitisfrekvens (kun PD patienter)	2	Tidsperiode i nefrologisk regi før start af aktiv behandling
B-hæmoglobin	3	Årlig mortalitetsrate for patienter i dialyse
P-albumin	4a	Andel af grefter med funktion 1 år efter transplantation
P-creatinin	4b	Andel af grefter med funktion 5 år efter transplantation
P-calcium-ion (eller total calcium)	5a	Andel af transplanterede patienter i live 1 år efter transplantation
P-phosphat	5b	Andel af transplanterede patienter i live 5 år efter transplantation
P-PTH		

Udvalget har besluttet at beholde de gamle indikatorer som årlige registreringer, under den forudsætning at biokemiske variabler kan indberettes direkte fra de kliniske biokemiske afdelinger til DNSL. Årsagerne hertil er dels at forbedringer af flere af de biokemiske indikatorer er en forudsætning for forbedringer i patientoverlevelsen, dels at de indgår i ERA-EDTAs ny indikator sæt (*vide infra*). Data vedrørende nr. 3-5 i det nye indikatorsæt er allerede tilgængelig (se side 20, 33-36), og data vedrørende nr. 1 & 2 forventes at blive publiceret for første gang i årsrapporten 2009. Det er en betingelse for fortsat økonomisk støtte fra Danske regioner at DNSL angiver muligheder for forbedring af indikatorerne. Disse er angivet i sektionen "Kommentarer".

## **Topica**

Som yderligere en betingelse for fortsat støtte, er DNSL blevet tvunget til at skifte edb-platform fra UNI-Cs Nephrobase til CSCs Topica. Topica har den fordel at den er Internet-baseret, on-line og mere intuitiv at bruge. Programmet og brugerfladen er nu udviklet og betaversionen er blevet testet af DNSs medlemmer i slutningen af 2007. Vi takker for de indkomne kommentar. Nephrobase er blevet lukket for yderligere indtastning i marts 2008, forstået på den måde at yderligere brug af Nephrobase herefter er DNS uvedkommende. Desværre går der noget tid før Topicas betaversion er korrigeret til dets endelige udgave og alle data er overført fra Nephrobase, hvorfor indtastning af forløbsdata forventes derfor først at kunne starte i september 2008. Forløbsdata for januar-september 2008



må derfor indtastes retrospektivt i september 2008. Man skal huske at forløbsregistrering inkluderer to nye punkter i forhold til tidligere: datoen for henvisning til den nefrologisk afdeling og datoen for det første nefrologisk journalnotat.

Det er udvalgets opfattelse at de økonomiske rammer for udviklingen og drift af Topica er for snæver. Udvalget forsøger at løse dette problem i samarbejde med Danske Regioner og Kompetencecenter Syd.

## **Quest**

Quest er betegnelsen for ERA-EDTAs nye indicatorsæt, som forventes at blive vedtaget i 2008. Sættet består dels af et kernesæt, som forventes registreret af de nationale registre, dels et udvidet sæt, som er frivilligt. Udvalgets mandat er at holde det manuelt arbejde forbundet med dataregistrering indenfor de nuværende rammer og udvalget har derfor besluttet at stille implementering af hovedparten af det udvidede sæt i bero.

Implementering af Quest forventes gennemført over en årrække i takt med resourcemulighederne og Topicas videre udvikling. Der planlægges tre stadier:

- 1) Biokemiske værdier. Flere centre har i 2008 benyttet sig af muligheden for automatisk udtræk af biokemiske værdier, og forsøgsresultatet har været tilfredsstillende. Metoden forventes at kunne udvides uden besvær til at inkludere hele Quests biokemiske datasæt, d.v.s. de nuværende seks variabler plus ferritin, jern, transferrin, CRP, total kolesterol, HDL kolesterol, triglyderider. Forventes implementeret i 2009.
- 2) "Kt/V" værdier. Da der bruges flere forskellige metoder til beregning af Kt/V, ønsker ERA-EDTA at registrere de "rå" data:
  - a. HD patienter. Antal timer/uge, antal HD/uge, vaskulær adgang, amputationer, GFR, vægt før og efter HD, p-carbamid før og efter HD, højde
  - b. PD patienter. Kt/V, Total creatinin clearance, GFR, højde vægtDisse data indtastes og beregnes i forvejen. Dette stadium implementeres, når muligheden for automatisk eksport af allerede indtastet data foreligger.
- 3) Andre data
  - a. Komorbiditet. Indtastes kun én gang ved start af aktiv terapi. Følgende registreres: mb. cordis (J/N), hjerteinsufficiens (J/N), apopleksi (J/N), diabetes mellitus (J/N), cancer (J/N), perifer vaskulær sygdom (J/N).
  - b. Årlig registrering af højde, vægt (hvis ikke registreret automatisk), EPO (J/N), amputationer, rygning, blodtryk (før og efter dialyse)Implementeres senere efter nærmere aftale.

## **Udvalget**

Udvalget består af følgende medlemmer:

Overlæge *Anne-Lise Kamper*, Rigshospitalet. Formand for DNSL

Overlæge *James Heaf*, Herlev Hospital. Registeransvarlig

Overlæge *Søren Schwarz Sørensen*, Rigshospitalet

Overlæge *Steen Fugleberg*, Herlev Hospital

Overlæge *Johan Povlsen*, Århus Universitetshospital, Skejby

Overlæge *Niels Løkkegaard*, Holbæk Sygehus

Fra Kompetencecenter Syd:

Informatikkonsulent *Niels Pedersen*

Professor *Anders Green*

## Årsrapport 2007

Med mindre justeringer, har rapporten den samme struktur som tidligere år. Et par ændringer er værd at bemærke:

- 1) Titel. DNSL indeholder en del oplysninger som ligger udenfor dets formelle titel "Landsregister for patienter i aktiv behandling for kronisk nyresvigt", blandt andet oplysning om patientindlæggelser forud for aktiv terapi opstart, og indholdet af den tidligere DANYBIR (Dansk Nyrebiopsi Register). Beskrivelsen af præuræmiforløbet bliver en del af registrets fremtidige arbejde. Det foreslås at registret ændrer navn til "Dansk Nefrologisk Selskabs Landsregister" (DNSL).
- 2) P.g.a de økonomiske begrænsninger nævnt ovenfor, er vi blevet nødsaget til at begrænse trykkeomkostninger. Evt. fejl og mangler forbundet med de forkortede redaktionelle proces undskyldes hermed.
- 3) Da alle data overføres fra UNI-C til CSC i Marts 08, er der ikke foretaget den sædvanlige kvalitetskontrol af indsendt data i år. Kvalitetskontrol vil blive gennemført retrospektivt i forbindelse med indførelsen af Topica, og resultaterne vil være tilgængelig til næste år.
- 4) Indførelsen af registrering af mineral metaboliske markører tillader et studie af disses epidemiologi i Danmark. En sektion er afsat til dette emne.
- 5) Hvert år sender Scandiatransplant indholdet af deres register til DNSL og omvendt. Samkørslen af disse registre tillader rettelser af eventuelle registreringsfejl, og belysning af fælles epidemiologiske problemstillinger. I år præsenteres en opgørelse over ventelisteproblematikken.

Juni 2008

James Heaf  
Registeransvarlig  
National Coordinator



## Påtegning fra Kompetencecenter Syd

I henhold til basiskravene for de nationale kliniske kvalitetsdatabaser skal kompetencecenter Syd fremlægge følgende bemærkninger.

Dansk Nefrologisk Selskabs Landsregister (DNSL) har siden tilknytningen til Kompetencecenter Syd i 2006 været inde i en fundamental omstrukturingsproces, der indebærer omlægning til ny web-baseret inddateringsværktøj såvel som introduktion af et revideret indikatorsæt. Omlægningen finder sted i tæt samarbejde med Kompetencecenter Syd og forventes tilendebragt i efteråret 2008.

De analyser, der er indeholdt i nærværende årsrapport, er foretaget på basis af den hidtidige IT-plattform og er i lighed med de foregående mange år gennemført ved Uni-C (Århus) ved anvendelse af de oprensings- og beregningsalgoritmer som Uni-C har udviklet. Kompetencecenteret har ikke været involveret i dette arbejde.

I rapporten omtales registrerings- og datakomplethed samt de nye og gamle indikatorer (herunder hvad angår overlap mellem de to indikatorsæt). Registreringskompletheden kan ikke kvantificeres objektivt, da det ud fra landspatientregisterets data ikke er muligt at definere det endelige patientunivers (p.g.a. af manglende valid sondring mellem akut – og potentielt reversibel – nyresvigt over for terminal nyresvigt). Der er ikke fremlagt en systematisk opgørelse af kompletheden af data for de registrerede uræmiforløb. I forbindelse med den igangværende omlægningsarbejde for DNSL har Kompetencecenter Syd imidlertid erfaret, at datakompletheden er høj, formentligt over 90%, for de forløb og begivenheder, som til og med år 2007 er registreret i DNSL.

Rapporten indeholder et selvstændigt kapitel, hvori indikatorerne præsenteres. I det omfang, det hidtidige datasæt har muliggjort det, er de nye indikatorer værdisat. Præsentationen er for hver indikator ledsaget af en kommentering. Indikatorerne er værdisat for hver enkelt navngivet behandlingscenter.

Som anført indgår Kompetencecenter Syd i tæt samarbejde med DNSL i den aktuelle omstillingsfase. I medfør heraf vil Kompetencecenteret være den direkte sparringspartner for DNSL ved udarbejdelsen af den næste årsrapport.

Anders Green 11.6.08

# Indholdsfortegnelse

## Indholdsfortegnelse/Table of Contents

- Side 3 Forord/*Preface*  
Side 6 Påtegning fra Kompetencecenter Syd  
Side 9 Dansk nefrologiske centre og befolkning  
*Renal Centres and Population in Denmark*

### **Prævalens/Prevalence**

- Side 10 Prævalens af terminal uræmi 1992-2007  
*Prevalence of ESRD 1992-2007*  
Side 12 Behandlingsformer for nye patienter 1990-2007  
*Treatment modalities of new patients 1990-2007*  
Side 13 Fordeling og ændring af behandling i de nefrologiske centre 2007  
*Patients in treatment at end of 2007 and treatment changes during 2007*  
Side 13 Død, genvunden nyrefunktion og lost to followup 2007  
*Registration of death, recovery or lost to follow-up in 2007*

### **Incidens/Incidence**

- Side 14 Tilkomne patienter 1990-2007 på de enkelte centre  
*Incidence of ESRD*  
Side 15 Tilkomne patienter 1990-2007: regionsfordeling  
*Incidence of ESRD: Regional Variation*  
Side 16 Aldersfordeling 1990-2007/*Age distribution 1992-2007*  
Side 18 Nyrediagnoser 2007/*Renal Diagnoses 2007*  
Side 19 Nyrediagnoser 1990-2007/*Renal Diagnoses 1990-2007*  
Side 20 Dødsrater 1990-2007/*Death rate 1990-2007*

### **Nyretransplantation/Renal Transplantation**

- Side 21 Nyretransplantation 2007/*Renal Transplantation 2007*  
Side 22 Nyretransplantation/*Renal Transplantation 1990-2007*  
Side 22 Levende donorer/*Living donor relationship*  
Side 23 Follow-up transplantationscentre 1990-2007  
*Transplantation follow-up centres 1990-2007*  
Side 25 Tidspunkt for start af nyrefunktion 1990-2007  
*Onset of Graft Function 1990-2007*

### **Kvalitetsindikatorer**

- Side 26 Introduktion og datakomplethed/*Introduktion and data completeness*

### **Det nye indikatorsæt**

- Side 27 Dialyse: Patientoverlevelse/*Dialysis patient survival*  
Side 29 Transplantation: Graftoverlevelse/*Graft Survival*  
Side 30 Transplantation: Patientoverlevelse/*Patient Survival*  
Side 31 Transplantation: Kombineret patient- og graftoverlevelse  
*Combined Graft and Patient Survival*



## Det gamle indikatorsæt

- Side 33 Hæmoglobin 2007/*Hemoglobin 2007*  
Side 35 Plasma Albumin 2007  
Side 37 P-creatinin og estimeret GFR (eGFR) for transplanterede patienter 2000-2007  
*P-creatinine and estimated Glomerular Filtration Rate (eGFR) for transplant patients 2000-2007*  
Side 39 Plasma ioniseret calcium 2007/*Plasma Ionized Calcium 2007*  
Side 40 Plasma fosfat 2007/*Plasma phosphate 2007*  
Side 41 Plasma parathyreoideahormon (PTH) 2007  
*Plasma Parathyroid Hormone (PTH) 2007*  
Side 43 Peritonitisfrekvens ved peritonealdialyse 2000-2007  
*Peritonitis Frequency in Peritoneal Dialysis 2000-2007*  
Side 44 Rejektionsincidens 2000-2007/*Incidence of rejection 2000-2007*

## Analyser/Analyses

- Side 49 Mineralmetabolismens epidemiologi 2007  
*The Epidemiology of Mineral Metabolism Markers 2007*  
Side 55 Scandiatransplant ventelistestatistik 1995-2006  
*Scandiatransplant Waiting List Statistics 1995-2006*



## Renal Centres and Population in Denmark

Transplantation Centre	Region	Dialysis Center	Population	
Skejby	Nordjylland	Aalborg	494.975	
		Midtjylland	661.732	
	Total Skejby	Holstebro	275.813	
		Viborg	235.537	
			1.668.057	
Odense	Syddanmark	Odense	479.349	
		Esbjerg	224.119	
		Sønderborg	252.793	
		Fredericia	362.670	
	Total Odense	1.318.931		
Herlev	Hovedstaden	Herlev	617.913	
	Total Herlev		617.913	
Rigshospitalet RH (State University Hospital)	Hovedstaden	Rønne	43206	
		RH	592195	
		Hillerød	379916	
		Færørene	RH	48350
		Grønland	RH	56901
		Sjælland	Roskilde	242319
	Total RH	Nykøbing F	263363	
		Holbæk	308575	
			1.934.825	
			5.539.726	
Total population 1.1.2007				

Table 1. Population and renal centres in Denmark as of 1.1.2007. Statistical Yearbook 2007.

Health services were reformed on the 1<sup>st</sup> January 2007, with responsibility being transferred from 15 counties, to five newly created regions. Despite this, referral patterns were unchanged until 1.8.2007, and were only marginal after this. Data in this report are therefore based on dialysis centre reports, corresponding to the previous counties. Detailed region-specific data will be available from next year.

## Prevalence of ESRD 1992-2007

Treatment	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
CAPD	329	362	366	372	359	384	380	412	363	351	303	305	287	238	213	200
APD	10	16	29	33	45	66	78	112	161	246	279	319	328	387	392	441
Center-IPD	27	29	18	18	13	10	8	8	8	4	0	4	2	1	2	4
PD+HD								2	7	5	10	8	6	13	13	20
Home-IPD	2	1	0	5	15	12	11	6	3	1	1	1	1	1	0	2
Center-HD	623	711	764	854	936	1043	1165	1280	1438	1562	1681	1683	1736	1750	1737	1822
Lim. Care	38	42	43	52	62	57	68	64	73	72	61	76	76	72	93	101
Home-HD	17	16	17	15	13	9	7	9	11	14	24	33	52	74	97	114
<b>In dialysis</b>	<b>1046</b>	<b>1177</b>	<b>1237</b>	<b>1349</b>	<b>1443</b>	<b>1581</b>	<b>1717</b>	<b>1895</b>	<b>2071</b>	<b>2260</b>	<b>2359</b>	<b>2429</b>	<b>2488</b>	<b>2536</b>	<b>2547</b>	<b>2704</b>
Home	358	395	412	425	432	471	476	543	552	622	617	666	674	713	715	777
PD	341	379	395	410	419	462	469	532	534	603	583	625	616	626	605	643
HD	17	16	17	15	13	9	7	9	11	14	24	33	52	74	97	114
PD+HD								2	7	5	10	8	6	13	13	20
Center	688	782	825	924	1011	1110	1241	1352	1519	1638	1742	1763	1814	1823	1832	1927
Transplant	1005	1073	1137	1154	1218	1230	1257	1308	1346	1387	1469	1558	1649	1703	1774	1854
In Treatment	2051	2250	2374	2503	2661	2811	2974	3203	3417	3647	3828	3987	4137	4239	4321	4558

Table 2. Treatment modalities for ESRD 1992-2007

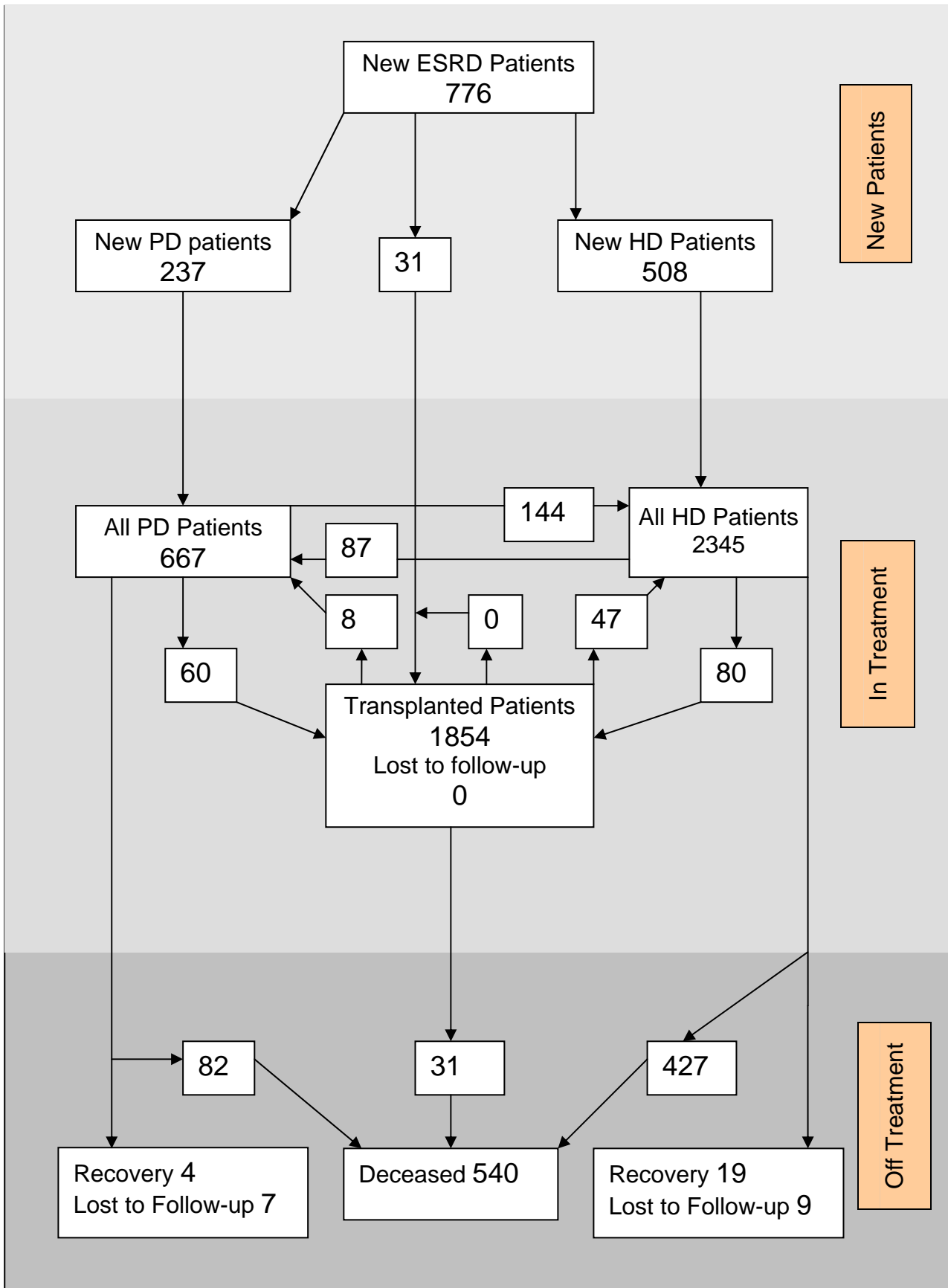


Fig. 1. The figure shows the distribution of ESRD patients starting active therapy in 2007. The number of patients in treatment at the end of the year, as a result of change in treatment modality, death, recovery or lost to follow-up, are shown. Similar calculations for the individual centres are shown in tables 3-5.

## Treatment modalities of new patients 1990-2007

		Number of Patients						
		1990-94	1995-99	2000-04	2005	2006	2007	Total
Esbjerg	HD	30	60	85	14	14	14	217
	PD	39	41	61	7	10	13	171
	TX	0	0	0	0	0	0	0
Fredericia	HD	68	104	153	25	20	30	400
	PD	35	56	84	16	11	19	221
Herlev	HD	71	143	233	46	32	53	578
	PD	127	135	113	20	16	13	424
	TX	21	23	28	7	1	2	82
Hillerød	HD			132	37	25	37	231
	PD			68	9	14	14	105
Holbæk	HD	1	78	138	26	35	34	312
	PD	0	30	47	4	10	8	99
Hosterbro	HD	51	97	135	34	29	23	369
	PD	23	38	25	6	6	7	105
Hvidovre	HD	168	102					270
	PD	44	32					76
Nykøbing F	HD			20	13	18	16	67
	PD			0	5	6	8	19
Odense	HD	93	110	227	40	38	65	573
	PD	97	89	65	20	13	12	296
	TX	40	40	16	4	6	6	112
RH + Rønne	HD	232	510	584	82	85	88	1581
	PD	266	151	149	15	31	27	639
	TX	40	37	31	7	8	9	132
Roskilde	HD	20	71	65	15	20	21	212
	PD	7	29	52	11	6	17	122
Skejby	HD	134	228	311	49	38	41	801
	PD	78	94	221	39	35	44	511
	TX	48	28	28	5	8	14	131
Sønderborg	HD		96	83	19	26	26	250
	PD		34	43	30	24	15	146
	TX		1	0	0	0	0	1
Viborg	HD	86	88	88	13	11	15	301
	PD	16	25	52	12	6	14	125
	TX	0	1	0	0	0	0	1
Aalborg	HD	158	198	240	37	43	45	721
	PD	24	47	48	8	20	26	173
	TX	1	2	1	0	0	0	4
<b>Denmark</b>	HD	1112	1885	2494	450	434	508	6883
	PD	756	801	1028	202	208	237	3232
	TX	150	132	104	23	23	31	463

Table 3. Treatment modality in patients starting treatment 1990-2007

## Patients in treatment at end of 2007 and treatment changes during 2007

Centre	In Treatment			Change in treatment						
	HD	PD	TX	PD→HD	PD→TX	TX→PD	TX→HD	TX→TX	HD→PD	HD→TX
Esbjerg	80	38	9	7	2	0	0	0	2	3
Fredericia	110	65	57	5	2	0	0	0	4	4
Herlev	177	53	268	11	7	1	1	0	5	8
Hillerød	180	41	7	13	3	0	0	0	2	3
Holbæk	102	33	32	10	1	0	0	0	9	5
Holstebro	97	19	83	6	5	2	0	0	8	7
Nykøbing F	82	24	2	1	0	0	1	0	3	3
Odense	230	46	292	18	3	9	1	0	9	10
RH + Rønne	294	73	508	20	13	3	19	0	12	14
Roskilde	59	47	35	0	3	0	0	0	3	2
Skejby	228	88	363	16	12	7	3	0	3	6
Sønderborg	102	52	9	9	2	0	0	0	3	4
Viborg	64	35	65	11	1	4	0	0	10	4
Aalborg	211	53	123	17	6	4	0	0	11	1
<b>Denmark</b>	<b>2016</b>	<b>667</b>	<b>1853</b>	<b>144</b>	<b>54</b>	<b>30</b>	<b>25</b>	<b>0</b>	<b>84</b>	<b>74</b>

Table 4. Treatment modality changes during 2007

## Registration of death, recovery or lost to follow-up in 2007

	Hemodialysis			Peritoneal Dialysis			Transplantation	
	Recovery	LTF	Death	Recovery	LTF	Death	LTF	Death
Esjerg	0	0	12	2	1	3	0	0
Fredericia	2	1	38	1	0	8	0	1
Herlev	0	1	42	0	0	6	0	7
Hillerød	1	0	25	0	0	10	0	0
Holbæk	2	0	30	0	0	2	0	1
Hosterbro	1	0	23	0	0	2	0	0
Nykøbing F	0	0	20	0	0	2	0	0
Odense	2	0	29	0	0	7	0	3
RH + Rønne	1	2	80	0	4	4	0	14
Roskilde	0	1	16	0	0	10	0	3
Skejby	2	1	53	1	2	17	0	1
Sønderborg	2	1	17	0	0	2	0	0
Viborg	1	0	11	0	0	6	0	1
Aalborg	5	2	31	0	0	3	0	0
<b>Denmark</b>	<b>19</b>	<b>9</b>	<b>427</b>	<b>4</b>	<b>7</b>	<b>82</b>	<b>0</b>	<b>31</b>

Table 5. Deaths, recovery of renal function and lost-to-followup 2007. No. patients

## Incidence of ESRD

Centre	1990-94	ppm	1995-99	ppm	2000-04	ppm	2005	ppm	2006	ppm	2007	ppm	1990-2007	ppm
Esbjerg	69	63	101	90	146	130	21	94	24	107	27	120	388	97
Fredericia	103	62	160	93	237	135	41	115	31	85	49	135	621	100
Herlev	219	73	301	99	374	104	73	118	50	81	68	110	1085	99
Hillerød					200	108	46	122	39	103	51	134		
Holbæk					185	124	30	98	45	146	42	136		
Holstebro	74	55	135	99	160	117	40	146	35	127	30	109	474	97
Hvidovre	212	77												
Nykøbing F							18	69	24	91	24	91		
Odense	230	100	239	101	308	130	64	134	57	119	83	173	981	116
Rigshospital	539	104	940	115	784	157	102	157	118	159	124	167	2607	127
Roskilde			100	88	117	100	26	109	26	107	38	157		
Rønne							2		6					
Skejby	260	87	350	111	560	174	93	141	81	122	99	150	1443	127
Sønderborg			131	103	126	100	49	194	50	198	41	162		
Viborg	102	89	114	98	140	119	25	107	17	72	29	123	427	102
Aalborg	183	76	247	100	289	117	45	91	63	127	71	143	898	101
<b>Danmark</b>	2018	77	2818	104	3626	133	675	124	666	120	776	140	10416	107

Table 6. New patients (ppm, patients per million per year) 1990-2007

## Incidence of ESRD: Regional Variation

Centre	1990-94	ppm	1995-99	Ppm	2000-04	Ppm	2005	Ppm	2006	Ppm	2007	ppm
Hovedstad					1069	130	223	136	213	123	243	140
Sjælland					260	122	74	92	95	117	104	128
Syddanmark			631	98	817	126	175	133	162	123	200	152
Midtjylland	436	79	599	105	860	149	158	135	133	113	158	135
Nordjylland	183	76	247	100	289	117	45	91	63	127	71	143
<b>Danmark</b>	2018	77	2818	104	3626	133	675	124	666	120	776	140

Table 7. Regional variation in ESRD incidence. Hovedstad region based on years 2001-7; Sjælland region based on 2001-2007.

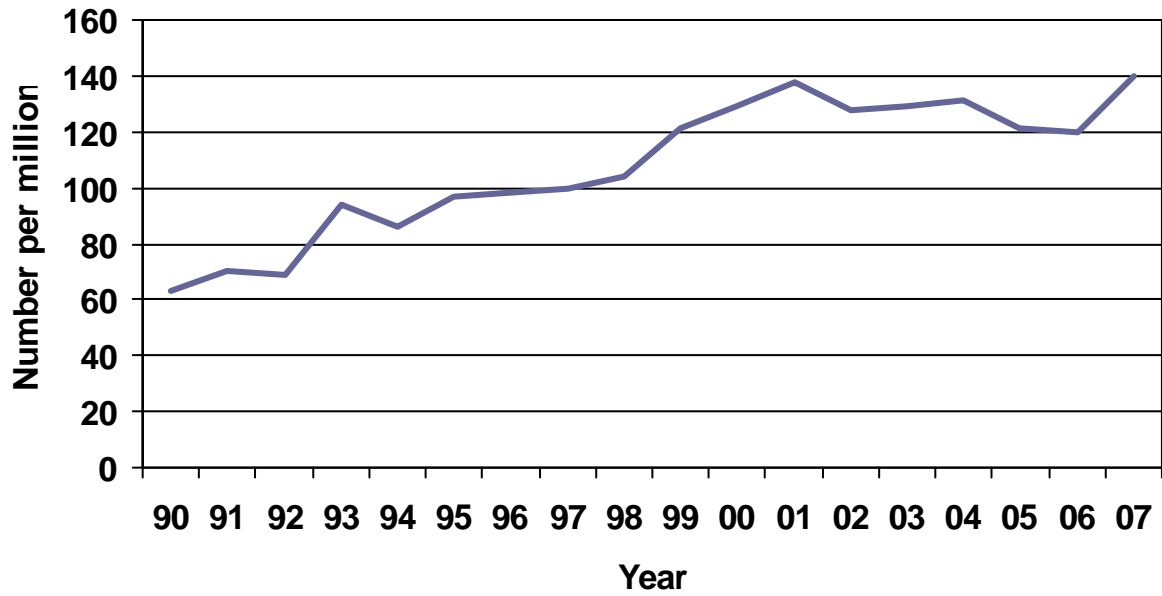


Fig. 2. ESRD incidence 1990-2007

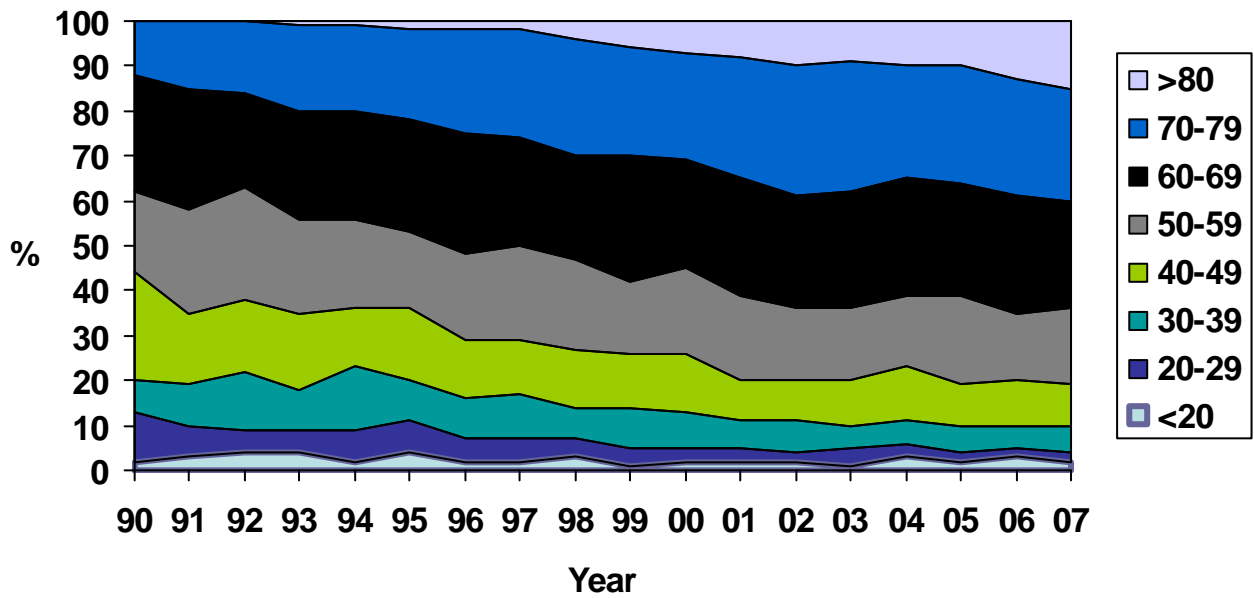


Fig. 3. Age distribution of patients with ESRD





## Age distribution 1992-2007

Year	0-19	20-29	30-39	40-49	50-59	60-69	70-79	>=80
1990-94	3	7	10	17	21	24	16	0
1995-99	2	5	9	13	19	25	23	3
2000-04	2	3	6	11	17	26	27	9
2005	2	2	6	9	20	25	26	10
2006	3	2	5	10	15	26	27	13
2007	2	2	6	9	17	24	24	15
<b>Population</b>	25	11	14	15	13	11	7	4

Table 8. Percentage age distribution of patients starting treatment for ESRD 1992-2007. For comparison the age distribution of the Danish population is also indicated.

## Renal Diagnoses 2007

Age	0-19	20-29	30-39	40-49	50-59	60-69	70-79	>=80	Total
<b>Renal Diagnosis</b>									
ESRD, unknown cause	6	3	6	16	20	22	38	31	142
Glomerulonephritis	3	9	16	10	23	13	6	1	81
Chronic interstitial	5	1	5	3	12	19	21	16	82
Cystic	0	1	2	10	12	11	9	1	46
Alport	0	0	0	0	0	1	0	0	1
Other hereditary	0	0	0	0	0	1	1	1	3
Renal hypoplasia	0	0	2	1	0	0	0	0	3
Renal vascular	0	1	1	7	11	18	41	29	108
Renal vasculitis	0	0	0	2	0	4	4	0	10
Type 1 DM	0	1	11	12	21	17	7	5	74
Type 2 DM	0	0	0	3	13	39	32	10	97
Systemic	1	0	6	3	11	14	7	4	46
Other	1	1	0	4	7	20	17	17	67
<b>Sum</b>	<b>16</b>	<b>17</b>	<b>49</b>	<b>71</b>	<b>130</b>	<b>179</b>	<b>183</b>	<b>115</b>	<b>760</b>

Table 9. Renal diagnoses in patients starting treatment for ESRD in 2007, stratified according to age.

## Renal Diagnoses 1990-2007

Age	1990	%	1995	%	2000	%	2005	%	2006	%	2007	%	Total	%
Renal Diagnosis	-94		-99		-04									
ESRD, unknown cause	347	17,2	536	19	729	20,1	172	25,5	124	18,6	149	19,2	2057	19,4
Glomerulonephritis	343	17	412	14,6	378	10,4	70	10,4	68	10,2	81	10,4	1352	12,8
Chronic interstitial	296	14,7	358	12,7	402	11,1	62	9,2	74	11,1	83	10,7	1275	12,1
Cystic	191	9,5	210	7,5	235	6,5	38	5,6	59	8,9	48	6,2	781	7,4
Alport	13	0,6	7	0,2	14	0,4	1	0,1	1	0,2	1	0,1	37	0,3
Other hereditary	15	0,7	19	0,7	15	0,4	3	0,4	1	0,2	3	0,4	56	0,5
Renal hypoplasia	16	0,8	16	0,6	16	0,4	1	0,1	1	0,2	3	0,4	53	0,5
Renal vascular	227	11,2	352	12,5	526	14,5	97	14,4	88	13,2	111	14,3	1401	13,2
Renal vasculitis	27	1,3	73	2,6	74	2	11	1,6	13	2	10	1,3	208	2
Type 1 DM	316	15,7	390	13,8	403	11,1	88	13	70	10,5	75	9,7	1342	12,7
Type 2 DM	78	3,9	219	7,8	422	11,6	77	11,4	88	13,2	100	12,9	984	9,3
Systemic	107	5,3	159	5,6	182	5	25	3,7	31	4,7	46	5,9	550	5,2
Other	41	2	64	2,4	229	6,3	30	4,4	48	7,2	66	8,5	478	4,5
<b>Sum</b>	2018	100	2818	100	3626	100	675	100	666	100	776	100	10578	100

Table 10. Renal diagnoses in patients starting treatment 1990-2007. Patient numbers and percent of total.

## Death rate 2007

	HD	PD	TX
No. deaths	427	82	31
No. patients	2640	938	1936
Average treatment duration (days)	276	255	342
No. patientyears	1999	656	1813
<b>Death rate (%/year)</b>	<b>21,4</b>	<b>12,5</b>	<b>1,7</b>

Table 11. Death rates for hemodialysis, peritoneal dialysis and renal transplantation patients in 2007

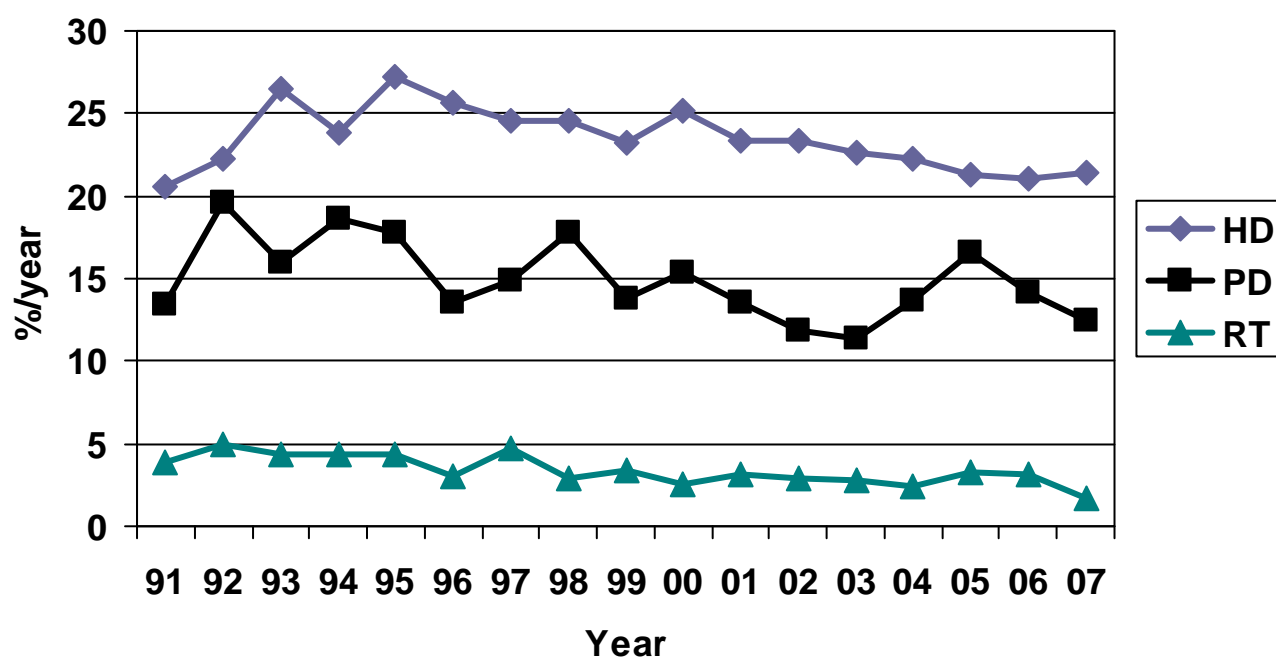


Fig. 4. Death rates 1990-2007

## Renal Transplantation 2007

	Dead donor Transplant number				Living donor Transplant number		Sum
	1	2	3	4	1	2	
Center	1	2	3	4	1	2	
Herlev	11	0	0	0	4	0	15
Odense	23	3	0	0	11	2	39
Rigshospital	29	7	0	1	13	7	57
Skejby	29	5	5	0	16	4	59
Total	92	15	5	1	44	13	170

Table 12. Renal transplantation activity 2007, stratified according to source of donor organ, transplantation number and transplantation centre.

## Renal Transplantation 1990-2007

Year		Dead donor Transplant number				Living donor Transplant number				Sum
		1	2	3	4	1	2	3	4	
1990-94	No./year	<b>104</b>	<b>27</b>	<b>6</b>	<b>1</b>	<b>35</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>183</b>
	%	57	15	3	1	19	4	1	1	
1995-99	No./year	<b>92</b>	<b>19</b>	<b>7</b>	<b>1</b>	<b>39</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>161</b>
	%	57	12	4	1	24	2	0	0	
2000-04	No./year	<b>101</b>	<b>22</b>	<b>5</b>	<b>1</b>	<b>38</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>171</b>
	%	59	13	3	1	22	2	1	0	
2005	No./year	<b>96</b>	<b>18</b>	<b>4</b>	<b>2</b>	<b>42</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>170</b>
	%	56	11	2	1	25	5	0	0	
2006	No./year	<b>95</b>	<b>15</b>	<b>5</b>	<b>1</b>	<b>48</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>173</b>
	%	55	9	3	1	28	5	0	0	
2007	No./year	<b>92</b>	<b>15</b>	<b>5</b>	<b>1</b>	<b>44</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>170</b>
	%	54	9	3	1	26	8	0	0	
1990-2007	No./year	<b>98</b>	<b>22</b>	<b>6</b>	<b>1</b>	<b>39</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>171</b>
	%	57	13	4	1	23	4	1	0	

Table 13. Renal transplantations 1990-2007, stratified according to source of donor organ, transplantation number and year of transplantation.

## Living donor relationship

Year		Parents	Siblings				Other related	Unrelated	Sum
			Shared haplotypes		Identical Twins				
			2	1		0			
<b>1990-94</b>	<b>No./year</b>	<b>22,8</b>	<b>8,8</b>	<b>7,4</b>	<b>1,2</b>	<b>0,4</b>	<b>2,8</b>	<b>1,6</b>	<b>45</b>
	%	50,7	19,6	16,4	2,7	0,9	6,2	3,6	100
<b>1995-99</b>	<b>No./year</b>	<b>25</b>	<b>6</b>	<b>5,6</b>	<b>1</b>	<b>0,47</b>	<b>2,6</b>	<b>2</b>	<b>42,6</b>
	%	58,7	14,1	13,1	2,3	0,9	6,1	4,7	100
<b>2000-04</b>	<b>No./year</b>	<b>21,4</b>	<b>4</b>	<b>6,2</b>	<b>1</b>	<b>0,2</b>	<b>3,6</b>	<b>6,4</b>	<b>42,8</b>
	%	49,9	13,6	14,6	2,5	0,6	7,7	11,2	100
<b>2005</b>	<b>No./year</b>	<b>17</b>	<b>6</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>15</b>	<b>50</b>
	%	34	12	14	0	0	10	30	100
<b>2006</b>	<b>No./year</b>	<b>19</b>	<b>7</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>10</b>	<b>14</b>	<b>57</b>
	%	33,3	12,3	10,5	1,8	0	17,5	24,6	100
<b>2007</b>	<b>No./year</b>	<b>25</b>	<b>4</b>	<b>10</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>12</b>	<b>57</b>
	%	43,9	7	17,5	5,3	0	5,3	21,1	100
<b>Total</b>	<b>No./year</b>	<b>22,6</b>	<b>6,2</b>	<b>6,6</b>	<b>1,1</b>	<b>0,3</b>	<b>3,5</b>	<b>5,1</b>	<b>45,3</b>
	%	49,9	13,6	14,6	2,5	0,6	7,7	11,2	100

Table 14. Transplantation with living donor kidneys 1990-2007, stratified according to donor-recipient relationship and year of transplantation..

## Transplantation follow-up centres 1990-2007

Centre	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Esbjerg	6	6	7	6	5	4	6	4	4	4
Fredericia		1		0	0	44	48	52	52	59
<b>Herlev</b>	222	231	234	235	238	250	255	254	260	267
Hillerød				1	1	1	1	1	1	1
Holbæk	19	19	17	17	19	21	22	29	27	26
Holstebro	33	38	45	50	55	59	62	73	73	83
Nykøbing F	0	0	0	0	0	0	0	0	0	0
<b>Odense</b>	202	202	211	231	259	244	261	276	286	301
<b>Rigshospital</b>	366	387	401	415	426	440	466	490	507	526
Roskilde	24	28	28	26	29	27	30	30	33	32
Rønne	0	0	0	0	0	0	0	0	0	1
<b>Skejby</b>	229	258	254	255	271	294	308	310	340	348
Sønderborg	1	1	3	2	2	2	2	4	4	4
Viborg	58	53	55	53	58	61	66	68	66	73
Aalborg	111	107	107	112	109	110	116	113	115	129
<b>Danmark</b>	1271	1323	1362	1387	1421	1557	1643	1703	1768	1854

Centre	1990	1991	1992	1993	1994	1995	1996	1997
Esbjerg	4	5	6	6	8	8	6	6
Fredericia								
<b>Herlev</b>	169	182	199	202	209	210	225	225
Hillerød								
Holbæk								18
Holstebro					1			7
Nykøbing F						1	1	
<b>Odense</b>	150	164	173	187	198	197	195	198
<b>Rigshospital</b>	268	282	301	327	344	345	371	360
Roskilde				14	20	22	21	23
Rønne								
<b>Skejby</b>	166	184	197	200	210	216	249	240
Sønderborg						1		1
Viborg	34	35	37	40	45	48	46	53
Aalborg	91	90	106	112	115	121	121	115
<b>Danmark</b>	882	942	1019	1088	1150	1169	1235	1246

Table 15. Transplantation follow-up centres. Small errors for 2007 are possible: quality control has not been performed due to conversion to Topica.



## Onset of Graft Function

Days after Tx	1990-94	%	1995-99	%	2000-04	%	2005	%	2006	%	2007	%	Total	%
0-4	76	67,8	610	76	711	83,3	131	77,1	144	83,2	99	58,2	2315	75
5-9	620	9	46	5,7	40	4,7	3	1,8	8	4,6	9	5,3	188	6,1
10-14	82	6,6	45	5,6	22	2,6	6	3,5	4	2,3	4	2,4	141	4,6
15-19	60	3,3	21	2,6	9	1,1	4	2,4	2	1,2	4	2,4	70	2,3
20-50	30	5	32	4	32	3,7	11	6,5	4	2,3	11	6,5	136	4,4
>50	46	0,1	3	0,4	8	0,9	2	1,2	2	1,2	4	2,4	20	0,6
Never	1	8,3	46	5,7	32	3,7	13	7,6	9	5,2	(39)	(22,9)	215	7
Total	915	100	803	100	854	100	170	100	173	100	170	100	3085	100

Table 16. Onset of graft function after transplantation.

## Kvalitetsindikatorer

### Introduktion

Som betingelse for at modtage økonomisk støtte fra Danske Regioner til drift af DNSL, er DNS forpligtet til at publicere årlige kvalitetsindikatorer for danske nefrologiske afdelinger. Disse indikatorer har hidtil været hovedsagelig biokemiske. Som noget nyt, er det et krav at indikatorerne skal registreres løbende, kontinuerlig og on-line. Den nuværende teknologi tillader ikke dette for biokemiske variabler, hvorfor DNS har udarbejdet et nyt sæt kvalitetsindikatorer baseret på forløbsregistrering. Disse nye indikatorer gælder fra 1.1.2008, og skal derfor registreres retrospektivt når Topica bliver tilgængeligt for indtastning i September 2008. Desværre kan biokemiske variabler ikke inkluderes i kvalitetsindikatorsettet; optimering af disse er en væsentlig forudsætning for forbedring i patient morbiditet og mortalitet. På denne baggrund fortsætter DNSL med at publicere begge sæt data. Kvalitetsindikatorer skal tolkes med forsigtighed.

### Datakomplethed

Datakomplethed hvad angår antallet af dialysepatienter og transplanterede patienter kan antages at være tæt på 100%, men der findes ikke objektive måder at dokumentere udsagnet. Centralregistrering af patienter som modtager dialysebehandling kan ikke bruges, da en del af disse behandles for akut, reversibel nyresvigt, som er registreret uvedkomment. Enkelte patienter med kronisk uræmi, kort dialysevarighed og tidlig død kan være blevet fejklassificeret som akut uræmi, og ikke registreret..

Datakomplethed for rejektionsregistrering kan valideres ved sammenligning med Dansk Nyrebiopsi Register og Dansk Patologi Register. Dette arbejde planlægges.

Datakomplethed for peritonitisfrekvens kan valideres ved at sammenligne med et udtræk fra de lokale mikrobiologiske afdelinger. Denne mulighed er endnu ikke tilgængelig.

Et enkelt center har ikke været i stand til at levere biokemiske data for 2007.

Datakomplethed i % for biokemiske data i 2007 er:

	Hæmoglobin	Albumin	Creatinin	Calcium	Phosphat	PTH
HD	96	97	97	97	88	62
PD	88	93	93	90	91	67
Transplant	76	82	87	83	75	28
Ialt	84	89	91	87	81	47

## ***Det Nye Indikatorsæt***

### **1. Akut vs. forberedt påbegyndelse af kronisk dialysebehandling**

Endnu ikke tilgængelig

### **2. Tidsperiode i nefrologisk regi før start af aktiv behandling**

Endnu ikke tilgængelig

### **3. Dialysis Patient Survival**

Se tabel nedenfor.

#### **Kommentar**

Tabellen giver et misvisende billede af forholdene, da antallet af ældre patienter og patienter med multipel komorbiditet er øget i perioden. Alders- og komorbiditets justerede analyser viser forbedringer i observationsperioden. Flere kontrollerede undersøgelser i de senere år har vist negative resultater, hvilket reducerer mulighederne for yderligere forbedring p.t.

Mulige indsatsområder inkluderer:

- 1) Planlagt vs. Ikke-planlagt dialysestart. Det nye indikatorsæt forventes at ville øge antallet af patienter med planlagt dialyseopstart.
- 2) Øget HD dialysefrekvens
- 3) Opfyldelse af K/DOQIs mineralmetaboliske guidelines (*vide infra*).

### 3. Dialysis Patient Survival

Centre	One-year Survival							
	1990-94	1995-99	2000-04	2005	2006	1990-94	1995-99	
Esbjerg	81(68-89)	79(70-86)	83(76-88)	95(72-99)	92(71-98)	35(22-48)	40(30-51)	
Fredericia	75(65-82)	81(74-87)	87(82-91)	84(68-93)	84(66-93)	27(18-37)	33(26-42)	
Herlev	77(70-83)	79(73-83)	75(70-79)	81(69-89)	90(77-96)	28(20-36)	27(12-31)	
Hillerød		97(81-100)	92(87-95)	83(69-91)	90(7596)		39(23-55)	
Holbæk	96(77-99)	73(65-80)	74(68-80)	79(60-90)	74(59-85)	49(27-68)	31(23-40)	
Holstebro	90(80-95)	79(71-85)	79(72-85)	82(66-91)	72(52-84)	25(14-38)	36(26-45)	
Hvidovre	73(66-79)	73(63-81)				16(10-23)	21(12-31)	
Nykøbing F	97(78-100)	81(67-90)	67(56-76)	88(66-96)	85(64-94)	52(31-69)	35(21-50)	
Odense	81(74-86)	85(79-89)	80(75-85)	90(79-95)	82(68-90)	37(27-46)	39(31-48)	
Rigshospital	82(78-86)	75(71-78)	78(75-81)	81(71-88)	87(79-92)	26(21-32)	29(24-33)	
Roskilde	93(79-98)	74(64-82)	79(71-86)	88(67-96)	73(51-86)	27(13-45)	28(18-38)	
Skejby	83(77-87)	84(80-88)	88(85-90)	78(68-86)	79(67-87)	23(17-31)	54(47-61)	
Sønderborg	88(67-96)	83(74-88)	79(71-85)	85(70-92)	76(61-85)	37(18-56)	36(27-45)	
Viborg	80(70-87)	80(71-86)	85(77-90)	80(58-91)	67(40-83)	32(19-46)	26(16-36)	
Aalborg	83(76-88)	77(71-82)	79(73-83)	85(70-93)	89(77-94)	32(22-41)	38(31-45)	
Danmark	81(79-83)	79(77-80)	81(80-82)	83(80-86)	82(79-85)	28(26-31)	34(32-37)	

Table 17. Dialysis survival 2000-2007 (confidence interval in brackets)

#### 4. Transplantation: Graft Survival

		One-year Survival						Five-year Survival	
		1990-94	1995-99	2000-04	2005	2006	1990-94	1995-99	
<b>Live Donor</b>	<b>Denmark</b>	<b>87</b> (80-91) 23/176	<b>92</b> (87-95) 15/195	<b>93</b> (88-96) 12/191	<b>98</b> (84-100) 1/42	<b>100</b> 0/48	<b>69</b> (61-76) 50/176	<b>78</b> (72-84) 40/195	
	Herlev	<b>69</b> (50-82) 10/32	<b>93</b> (79-98) 3/40	<b>95</b> (81-99) 2/38	<b>100</b> 0/5	<b>100</b> 0/4	<b>46</b> (28-62) 17/32	<b>85</b> (69-93) 6/40	
	Odense	<b>87</b> (72-95)	<b>97</b> (83-100)	<b>98</b> (84-100)	<b>100</b>	<b>100</b>	<b>57</b> (40-71)	<b>76</b> (59-87)	
	Rigshospital	<b>89</b> (73-96) 4/45	<b>91</b> (80-96) 6/69	<b>95</b> (85-98) 3/64	<b>94</b> (63-99) 1/16	<b>100</b> 0/9	<b>77</b> (59-88) 8/45	<b>82</b> (70-90) 11/69	
	Skejby	<b>93</b> (83-97) 4/58	<b>90</b> (77-96) 5/48	<b>87</b> (74-94) 6/48	<b>100</b> 0/10	<b>100</b> 0/17	<b>84</b> (72-91) 9/58	<b>70</b> (54-81) 14/48	
	<b>Denmark</b>	<b>85</b> (81-87) 79/518	<b>86</b> (83-89) 62/459	<b>94</b> (91-95) 32/503	<b>92</b> (84-96) 8/96	<b>98</b> (92-99) 2/95	<b>71</b> (66-75) 139/518	<b>77</b> (73-81) 100/459	
<b>Dead Donor</b>	Herlev	<b>85</b> (77-91) 14/96	<b>90</b> (81-95) 7/74	<b>89</b> (78-95) 7/64	<b>91</b> (51-99) 1/11	<b>100</b> 0/11	<b>72</b> (61-80) 25/96	<b>83</b> (72-90) 12/74	
	Odense	<b>85</b> (76-91) 12/82	<b>88</b> (79-93) 11/89	<b>97</b> (90-99) 3/95	<b>83</b> (56-94) 3/13	<b>92</b> (57-99) 1/13	<b>55</b> (43-66) 34/82	<b>72</b> (61-80) 9/38	
	Rigshospital	<b>82</b> (75-87) 32/181	<b>86</b> (80-91) 20/49	<b>94</b> (89-97) 10/163	<b>95</b> (80-99) 2/37	<b>97</b> (82-100) 1/36	<b>73</b> (65-79) 46/181	<b>79</b> (72-85) 29/149	
	Skejby	<b>87</b> (80-91) 21/159	<b>84</b> (76-89) 24/147	<b>93</b> (89-96) 12/181	<b>85</b> (78-90) 2/30	<b>93</b> (78-98) 0/35	<b>76</b> (69-83) 34/159	<b>75</b> (67-82) 35/147	

Table 18. Graft Survival in percent (confidence interval in brackets)

## 5. Transplantation: Patient Survival

		One-year Survival						Five-year Survival	
		1990-94	1995-99	2000-04	2005	2006	1990-94	1995-99	
<b>Live Donor</b>	<b>Denmark</b>	<b>98</b> (95-99) 3/176	<b>98</b> (94-99) 4/195	<b>99</b> (96-100) 2/191	<b>100</b> 0/42	<b>98</b> (86-100) 1/48	<b>88</b> (82-92) 20/176	<b>95</b> (90-97) 10/195	
	Herlev	<b>100</b> 0/32	<b>95</b> (81-99) 2/40	<b>97</b> (83-100) 1/38	<b>100</b> 0/5	<b>100</b> 0/5	<b>91</b> (74-97) 3/32	<b>93</b> (79-98) 3/40	
	Odense	<b>95</b> (82-99) 2/41	<b>100</b> 0/38	<b>100</b> 0/41	<b>100</b> 0/11	<b>94</b> (67-99) 1/18	<b>83</b> (67-91) 7/41	<b>97</b> (83-100) 1/38	
	Rigshospital	<b>98</b> (85-100) 1/45	<b>100</b> 0/69	<b>98</b> (88-100) 1/64	<b>100</b> 0/16	<b>100</b> 0/9	<b>87</b> (70-94) 5/45	<b>97</b> (88-99) 2/69	
	Skejby	<b>100</b> 0/58	<b>96</b> (84-99) 2/48	<b>100</b> 0/48	<b>100</b> 0/10	<b>100</b> 0/17	<b>91</b> (81-96) 5/58	<b>92</b> (79-97) 4/48	
	<b>Denmark</b>	<b>89</b> (86-91) 58/518	<b>95</b> (92-97) 23/459	<b>96</b> (94-97) 20/503	<b>98</b> (92-99) 2/96	<b>93</b> (85-96) 7/95	<b>73</b> (69-76) 140/518	<b>84</b> (81-87) 71/459	
<b>Dead Donor</b>	Herlev	<b>94</b> (87-97) 6/96	<b>96</b> (88-99) 3/74	<b>94</b> (84-98) 4/64	<b>91</b> (51-99) 1/11	<b>91</b> (51-99) 1/11	<b>68</b> (57-76) 31/96	<b>81</b> (70-88) 14/74	
	Odense	<b>93</b> (84-97) 6/82	<b>97</b> (90-99) 3/89	<b>96</b> (89-98) 4/95	<b>94</b> (67-99) 1/18	<b>85</b> (51-96) 2/13	<b>82</b> (72-89) 15/82	<b>88</b> (79-93) 11/89	
	Rigshospitalet	<b>87</b> (81-91) 23/181	<b>92</b> (86-95) 12/149	<b>94</b> (89-97) 9/163	<b>100</b> 0/37	<b>92</b> (76-97) 3/36	<b>71</b> (64-77) 51/181	<b>80</b> (72-85) 30/149	
	Skejby	<b>86</b> (79-90) 23/159	<b>97</b> (92-99) 5/147	<b>98</b> (95-99) 3/181	<b>100</b> 0/30	<b>97</b> (81-100) 1/35	<b>73</b> (65-79) 43/159	<b>89</b> (83-93) 16/147	

Table 19. Patient Survival in percent (confidence interval in brackets)

## 4 & 5. Transplantation: Combined Graft and Patient Survival

		One-year Survival						Five-year Survival	
		1990-94	1995-99	2000-04	2005	2006	1990-94	1995-99	
<b>Live Donor</b>	<b>Denmark</b>	<b>85(79-89)</b>	<b>91(85-94)</b>	<b>93(88-96)</b>	<b>98(84-100)</b>	<b>98(86-100)</b>	<b>63(55-70)</b>	<b>76(69-81)</b>	
	Herlev	<b>69(50-82)</b> 10/32	<b>90(76-96)</b> 4/40	<b>95(81-99)</b> 2/38	<b>100</b> 0/5	<b>100</b> 0/4	<b>43(26-59)</b> 18/32	<b>80(64-89)</b> 8/40	
	Odense	<b>83(67-91)</b> 7/41	<b>97(83-100)</b> 1/38	<b>98(84-100)</b> 1/41	<b>100</b> 0/11	<b>94(67-99)</b> 1/18	<b>51(35-65)</b> 20/41	<b>74(57-85)</b> 10/38	
	Rigshospital	<b>87(71-94)</b> 5/45	<b>91(80-96)</b> 6/69	<b>93(83-97)</b> 4/64	<b>94(63-99)</b> 1/16	<b>100</b> 0/9	<b>70(53-82)</b> 11/45	<b>81(69-89)</b> 12/69	
	Skejby	<b>93(83-97)</b> 4/58	<b>85(72-93)</b> 7/48	<b>87(74-94)</b> 6/48	<b>100</b> 0/10	<b>100</b> 0/17	<b>78(65-86)</b> 13/58	<b>67(51-78)</b> 16/48	
	<b>Denmark</b>	<b>79(75-82)</b> 111/518	<b>83(79-86)</b> 78/459	<b>91(88-93)</b> 45/503	<b>89(81-94)</b> 10/96	<b>92(84-96)</b> 8/95	<b>57(53-61)</b> 220/518	<b>68(63-72)</b> 146/459	
<b>Dead Donor</b>	Herlev	<b>83(74-89)</b> 16/96	<b>88(78-93)</b> 9/74	<b>88(77-94)</b> 8/64	<b>82(45-95)</b> 2/11	<b>91(51-99)</b> 1/11	<b>57(46-66)</b> 41/96	<b>68(56-77)</b> 24/74	
	Odense	<b>84(74-90)</b> 13/82	<b>85(76-91)</b> 13/89	<b>92(85-96)</b> 7/95	<b>78(51-91)</b> 4/18	<b>77(44-92)</b> 3/13	<b>47(36-57)</b> 43/82	<b>66(55-75)</b> 30/89	
	Rigshospitalet	<b>76(69-81)</b> 44/181	<b>80(72-85)</b> 29/149	<b>89(83-93)</b> 17/163	<b>95(80-99)</b> 2/37	<b>92(76-97)</b> 3/36	<b>59(52-66)</b> 73/181	<b>68(59-74)</b> 48/149	
	Skejby	<b>76(69-82)</b> 38/159	<b>82(74-87)</b> 27/147	<b>93(88-96)</b> 13/181	<b>93(76-98)</b> 2/30	<b>97(81-100)</b> 1/35	<b>60(51-67)</b> 63/159	<b>70(62-77)</b> 44/147	

Table 20. Combined graft and patient survival in percent (confidence interval in brackets)

## 4 & 5. Transplantation Graft- og Patientoverlevelse

Se ovenstående tabeller. Som det fremgår, har de sidste to årtier været præget af fremgang i graft- og patientoverlevelse. Man kan forvente at anvendelse af flere marginale organer, og udvide transplantationsindikation til flere ældre patienter vil medføre en forværring i statistikken, Dette vil ikke være udtryk for dårligere patientbehandling.

Indsatsområder inkluderer

- 1) Reduktion i rejektionsincidensen (*vide infra*)
- 2) Reduktion i incidensen af forsinket graftfunktion (se side 29)
- 3) Reduktion i risikoen for kronisk allograft nefropati, f. eks ved at anvende ikke nefrotoksisk immunosuppression
- 4) Reduktion i kardiovaskulær mortalitet, ved at optimere blodtryksregulering, anvende statiner, rygestop, og minimere risikoen for posttransplant DM.
- 5) Reduktion i cancerincidensen ved minimering af immunosuppression, optimere dermatologisk kontrol og undgå onkogene vira (vaccination/profylakse).



**Det Gamle Indikatorsæt  
B-Hæmoglobin 2007**

Centre	HD			PD			TX		
	Mean (SD)	Median (IQ range)	%<6.5	Mean (SD)	Median (IQ range)	%<6.5	Mean (SD)	Median (IQ range)	%<6.5
Esbjerg				7,4(0,8)	7,4(6,7-8,1)	18			
Fredericia	7,5(0,8)	7,6(7,0-8,0)	14	7,4(0,7)	7,5(7,0-7,8)	3	8,0(1,0)	8,1(7,2-8,7)	2
Herlev	6,8(0,8)	6,7(6,2-7,5)	34	7,2(0,6)	7,2(6,8-7,5)	5	8,1(1,2)	8,0(7,3-9,0)	4
Hillerød	7,4(0,9)	7,5(6,8-7,9)	12	7,5(0,7)	7,5(7,3-7,8)	10			
Holbæk	7,2(0,9)	7,2(6,6-7,8)	22	7,6(0,9)	7,7(7,0-8,1)	6			
Holstebro	7,6(0,8)	7,6(7,2-8,0)	10	8,0(1,1)	7,8(7,2-8,6)	26	8,1(1,0)	8,0(7,4-8,7)	1
Nykøbing F	7,4(0,7)	7,4(6,9-7,8)	15	7,8 (0,6)	7,9(7,4-8,1)	0			
Odense	7,2(0,8)	7,3(6,8-7,8)	17	7,1(0,8)	7,1(6,8-7,5)	14	7,8(1,1)	7,9(7,0-8,4)	10
Rigshospital	7,2(0,9)	7,2(6,5-7,8)	21	7,4(0,9)	7,3(6,8-7,9)	14	8,1(1,0)	8,1(7,4-8,8)	4
Skejby	7,4(0,8)	7,5(7,0-7,9)	9	7,5(1,0)	7,5(6,9-8,1)	13	8,1(1,1)	8,2(7,4-8,9)	6
Sønderborg	7,3(0,9)	7,3(6,7-7,9)	17	7,4(0,7)	7,4(6,9-7,8)	10			
Viborg	6,9(0,7)	7,0-(6,4-7,3)	28	7,5(0,7)	7,3(6,9-7,7)	0	8,3(1,1)	8,3(7,7-9,2)	8
Aalborg	7,1(0,8)	7,1(6,6-7,7)	19	7,6(0,7)	7,6(7,1-8,1)	6	8,3(1,1)	8,2(7,5-9,0)	2
<b>Danmark</b>	7,2(0,8)	7,3(6,7-7,8)	17	7,4(0,8)	7,4(6,9-7,9)	9	8,1(1,1)	8,1(7,3-8,8)	5

Table 21. Hæmoglobin level for 2007 in mmol/l. Mean (standard deviation, median (inter-quartile range) and Percentage <6.5 mmol/l

### **B-Hæmoglobin: Kommentar**

Se ovenstående tabel. Næsten alle centre lever op til de internationale krav om et hæmoglobin niveau på  $>6,5$  mmol/l hos  $>85\%$  af patienter. Nylig forskning tyder på skadelige effekter af overbehandling af nefrogen anæmi, således at det terapeutiske vindue for denne indikator er indsnævret.



## Plasma Albumin 2007

Centre	HD			PD			TX		
	Mean (SD)	Median (IQ range)	%<35	Mean (SD)	Median (IQ range)	%<35	Mean (SD)	Median (IQ range)	%<35
Esbjerg	35(6)	35(30-41)	45	35(5)	36(33-38)	43	40(4)	40(38-42)	
Fredericia	38(4)	39(36-41)	14	37(5)	38(35-40)	23	43(3)	43(40-44)	2
Herlev	37(5)	37(33-40)	35	36(5)	36(33-39)	39	42(4)	42(40-45)	4
Hillerød	39(4)	39(36-41)	13	36(4)	37(35-38)	24			
Holbæk	35(5)	35(32-38)	50	34(5)	34(32-39)	56			
Holstebro	39(4)	40(37-42)	10	36(3)	36(34-38)	26	42(2)	42(41-44)	1
Nykøbing F	38(5)	38(36-41)	21	38(5)	38(35-40)	19			
Odense	40(6)	40(37-43)	12	35(6)	36(32-39)	44	42(4)	43(40-45)	5
Rigshospital	38(5)	39(35-41)	25	37(4)	37(35-40)	27	43(4)	43(41-45)	4
Skejby	37(5)	37(34-41)	33	33(6)	35(31-38)	55	40(5)	41(38-43)	13
Sønderborg	38(4)	38(36-41)	16	35(5)	37(33-39)	35			
Viborg	37(5)	38(34-40)	28	35(5)	35(32-38)	43	41(4)	42(39-43)	5
Aalborg	39(4)	39(36-42)	13	36(5)	38(34-39)	29	42(4)	42(40-44)	14
<b>Danmark</b>	37(5)	37(34-40)	32	35(5)	36(32-38)	43	42(4)	42(38-44)	9

Table 22. Plasma albumin level for 2007 in g/l. For  $\mu\text{mol/l}$ , multiply by 15.2. Mean (standard deviation, median (interquartile range) and Percentage below 35 g/l

## **P-Albumin: Kommentar**

Se ovenstående tabel Hypoalbuminæmi er højt korreleret til mortalitet i ESRD. Den har dog forskellige ætiologier, dels umodificerbare, f. eks. komorbiditet, dels modificerbar, f. eks. underernæring og inflammation. PD patienter har lavere albuminværdier grundet tab af albumin i dialysevæsken. Tilgængelige metoder til øgning af albumin er intensivning af dialysekvalitet, og øget ernæringsterapi, enten enteralt eller parenteralt. Medicinsk behandling af hypoalbuminæmi, f. eks væksthormon og antiinflammatoriske præperater er i øjeblikket eksperimentel.



## P-Creatinine in Transplanted Patients 2000-2007

	Herlev		Odense		Rigshospitalet		Skejby		Danmark	
	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)
<b>2000</b>	184 (119)	127 (105-245)	206 (131)	165 (127-243)	160 (90)	136 (113-178)	207 (166)	164 (126-231)	186 (129)	151 (119-206)
<b>2001</b>	186 (175)	110 (97-232)	204 (151)	163 (125-220)	155 (86)	138 (113-171)	190 (138)	159 (121-207)	180 (126)	149 (118-198)
<b>2002</b>	181 (108)	157 (116-205)	202 (146)	159 (128-217)	149 (61)	134 (110-169)	171 (93)	154 (119-200)	172 (102)	148 (117-196)
<b>2003</b>	180 (103)	155 (119-209)	193 (135)	158 (126-206)	152 (73)	134 (109-173)	174 (108)	147 (115-196)	173 (107)	147 (116-196)
<b>2004</b>	201 (148)	172 (126-228)	176 (120)	150 (123-186)	146 (83)	128 (100-170)	181 (127)	144 (115-199)	175 (122)	145 (113-192)
<b>2005</b>	177 (87)	158 (116-212)	173 (116)	148 (121-188)	148 (78)	129 (101-173)	169 (115)	142 (110-180)	166 (102)	142 (111-186)
<b>2006</b>	185 (98)	164 (123-211)	162 (98)	141 (114-178)	148 (71)	129 (101-171)	162 (107)	133 (104-178)	163 (96)	139 (109-183)
<b>2007</b>	182 (83)	165 (128-218)	152 (62)	138 (115-172)	153 (92)	131 (103-171)	158 (104)	131 (101-177)	160 (92)	137 (108-183)
<b>All</b>	184 (108)		181 (122)		150 (80)		170 (108)		170 (108)	

Table 23. P-creatinine for transplanted patients in  $\mu\text{mol/l}$ .

## Estimated Glomerular Filtration Rate (eGFR) for Transplanted Patients 2000-2007

	Herlev		Odense		Rigshospitalet		Skejby		Danmark	
	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)	Mean (SD)	Median (IQ)
<b>2000</b>	42,1 (18)	48,2 (26-57)	38,4 (22)	35,5 (24-48)	45,4 (19)	44,5 (33-56)	37,7 (18)	36,0 (24-48)	41,2 (20)	40,1 (27-53)
<b>2001</b>	48,1 (21)	51,8 (27-68)	39,5 (23)	37,2 (26-49)	48,0 (26)	44,3 (34-58)	40,2 (20)	38,1 (27-51)	43,1 (23)	40,3 (29-53)
<b>2002</b>	39,6 (19)	36,4 (26-52)	40,0 (24)	36,2 (27-49)	48,1 (21)	46,1 (35-58)	41,8 (19)	38,8 (28-53)	42,9 (21)	40,2 (29-54)
<b>2003</b>	39,6 (19)	35,7 (26-50)	41,1 (24)	37,6 (29-49)	49,4 (24)	45,8 (34-59)	41,8 (19)	40,0 (28-3)	43,1 (22)	40,3 (29-54)
<b>2004</b>	36,5 (19)	34,1 (23-47)	43,4 (22)	40,9 (31-52)	52,2 (24)	49,6 (36-64)	41,6 (19)	40,4 (28-52)	43,8 (22)	41,2 (29-55)
<b>2005</b>	38,8 (19)	35,9 (26-47)	43,3 (21)	40,7 (30-52)	51,5 (24)	48,7 (34-65)	44,6 (21)	43,1 (31-55)	45,1 (22)	42,0 (30-56)
<b>2006</b>	37,2 (34)	34,2 (26-47)	46,4 (27)	42,4 (32-54)	50,7 (25)	47,6 (34-62)	46,3 (21)	44,2 (32-58)	45,8 (23)	42,5 (30-57)
<b>2007</b>	36,8 (17)	34,2 (25-46)	45,6 (21)	43,6 (33-54)	49,7 (24)	47,6 (33-62)	48,1 (24)	44,3 (31-62)	46,3 (23)	43,4 (31-58)
<b>All</b>	38,1 (18)	35,0 (25-48)	42,5 (23)	39,5 (29-51)	49,6 (24)	46,9 (34-61)	43,4 (20)	41,1 (29-55)	44,2 (23)	

Table 24. Estimated glomerular filtration rate in ml/min for transplanted patients calculated from age, sex and plasma creatinine (MDRD GFR). Mean (standard deviation, median (interquartile range)). All patients are assumed to be Caucasian.

### P-creatinin: Kommentar

Se ovenstående tabeller. Creatinin er kun af værdi som indikator hos transplanterede patienter. Et mere validt sammenligningsgrundlag dannes ved at konvertere tallene til eGFR. Mulighederne for forbedring i GFR er de samme som for rejektionsincidensen og grafttab (*vide supra*).

## Plasma Ionized Calcium in 2007

Centre	HD				PD			
	Mean (SD)	Median (IQ )	% <1.15	% >1.25	Mean (SD)	Median (IQ)	% <1.15	% >1.25
Esbjerg	1,23(0,09)	1,21(1,19-1,30)			1,23(0,08)	1,22(1,18-1,29)	8	38
Fredericia	1,18(0,07)	1,18(1,14-1,22)	28	8	1,21(0,07)	1,21(1,16-1,25)	18	21
Herlev	1,18(0,10)	1,16(1,11-1,23)	38	17	1,21(0,09)	1,20(1,15-1,26)	23	31
Hillerød	1,13(0,08)	1,14(1,08-1,18)	61	4	1,21(0,09)	1,19(1,14-1,26)	28	28
Holbæk	1,17(0,09)	1,17(1,11-1,23)	41	18	1,20(0,12)	1,19(1,14-1,27)	35	30
Holstebro	1,21(0,09)	1,22(1,16-1,27)	18	30	1,20(0,07)	1,19(1,14-1,25)	26	21
Nykøbing F	1,21(0,10)	1,21(1,15-1,25)	23	21	1,22(0,07)	1,22(1,17-1,26)	14	34
Odense	1,20(0,10)	1,19(1,14-1,25)	25	21	1,20(0,09)	1,22(1,16-1,25)	16	21
Rigshospital	1,19(0,08)	1,19(1,14-1,25)	27	22	1,22(0,08)	1,21(1,17-1,28)	14	34
Skejby	1,18(0,08)	1,19(1,13-1,23)	31	17	1,18(0,09)	1,19(1,13-1,24)	34	19
Sønderborg	1,20(0,08)	1,19(1,15-1,23)	23	23	1,20(0,07)	1,20(1,15-1,25)	22	22
Viborg	1,18(0,09)	1,17(1,12-1,24)	38	16	1,18(0,10)	1,19(1,13-1,22)	27	19
Aalborg	1,19(0,10)	1,19(1,13-1,24)	33	19	1,23(0,10)	1,22(1,17-1,27)	13	39
<b>Danmark</b>	1,18(0,09)	1,18(1,13-1,24)	32	18	1,21(0,08)	1,21(1,15-1,26)	22	27

Table 25. Plasma ionized calcium in mmol/l in 2007. Two centres have measured total or albumin-corrected calcium; their values have been multiplied by 0.5

## Plasma phosphate 2007

Centre	HD				PD			
	Mean (SD)	Median (IQ)	% <1.1	% >1.8	Mean (SD)	Median (IQ)	% <1.1	% >1.8
Esbjerg	1,42(0,4)	1,40(1,19-1,68)	17	17	1,49(0,4)	1,36(1,22-1,75)	8	18
Fredericia	1,48(0,40)	1,45(1,24-1,63)	16	16	1,55(0,5)	1,54(1,30-1,71)	11	18
Herlev	1,64(0,5)	1,57(1,27-1,97)	14	36	1,73(0,5)	1,76(1,37-1,95)	8	35
Hillerød	1,58(0,4)	1,55(1,30-1,77)	9	22	1,70(0,4)	1,62(1,39-1,98)	0	41
Holbæk	1,73(0,5)	1,72(1,47-2,01)	11	41	1,63(0,4)	1,69(1,46-1,88)	12	35
Holstebro	1,57(0,5)	1,50(1,28-1,81)	15	26	1,70(0,4)	1,78(1,39-1,98)	5	47
Nykøbing F	1,66(0,4)	1,68(1,36-1,97)	10	39	1,55(0,4)	1,56(1,36-1,84)	19	29
Odense	1,58(0,5)	1,57(1,29-1,88)	12	30	1,57(0,5)	1,52(1,23-1,92)	18	36
Rigshospital	1,51 (0,5)	1,42(1,13-1,79)	23	24	1,74(0,5)	1,73(1,36-1,99)	8	44
Skejby	1,60(0,4)	1,59(1,28-1,86)	12	29	1,55(0,4)	1,55(1,28-1,83)	16	28
Sønderborg	1,57(0,4)	1,52(1,26-1,78)	12	23	1,62(0,4)	1,60(1,38-1,85)	4	31
Viborg	1,62(0,5)	1,61(1,26-1,98)	12	38	1,55(0,3)	1,61(1,24-1,78)	11	22
Aalborg	1,53(0,5)	1,47(1,20-1,83)	18	25	1,65(0,4)	1,66(1,37-1,93)	6	37
<b>Danmark</b>	1,58(0,5)	1,54(1,25-1,86)	15	28	1,62(0,4)	1,60(1,32-1,89)	10	31

Table 26. Plasma phosphate in mmol/l.



## Plasma Parathyroid Hormone (PTH) in 2007

Centre	HD				PD				TX	
	Mean (SD)	Median (IQ)	% <150	% >300	Mean (SD)	Median (IQ)	% <150	% >300	Mean (SD)	Median (IQ)
Esbjerg					33(23)	27(21-40)	21	41		
Fredericia	32(23)	28(16-43)	24	44	28(20)	23(13-36)	37	37		
Herlev	29(32)	21(8-43)	41	32	28(39)	16(8-33)	50	26	13(11)	10(6-16)
Hillerød	32(26)	24(14-45)	32	38	36(30)	27(10-47)	33	43		
Holbæk	31(28)	22(11-38)	36	33	30(36)	15(5-43)	50	31		
Holstebro	20(17)	15(8-28)	52	22	19(11)	15(10-32)	58	21	17(13)	14(8-25)
Nykøbing F	18(18)	13(5-23)	56	16	19(12)	16(12-25)	43	10		
Odense	32(57)	20(10-38)	40	29	24(27)	12(5-32)	58	25	17(19)	10(6-18)
Rigshospital	34(36)	23(11-42)	36	37	28(21)	24(15-34)	30	31	16(17)	11(6-18)
Skejby	26(23)	19(10-35)	43	26	19(16)	14(7-27)	56	18	37(68)	14(8-36)
Sønderborg	22(20)	16(10-29)	49	22	19(15)	16(11-24)	29	20	13(9)	11(7-17)
Viborg	39(30)	24(11-46)	33	34	29(22)	23(13-35)	30	35	14(10)	12(7-19)
Aalborg	27(29)	18(8-36)	45	29	23(21)	15(8-30)	52	23		
<b>Danmark</b>	29(33)	20(10-37)	40	31	25(24)	20(10-33)	27	43	16(22)	11(7-18)

Table 27. Plasma parathyroid hormone in pmol/l for 2007. For ng/l, multiply by 9.5.

## **P-calcium, phosphat og parathyreoideahormon (PTH): Kommentar**

Se ovenstående tabeller, samt side 49 "Mineralmetabolismens epidemiologi 2007". Plasma værdierne for dialysepatienter udenfor de K/DOQI guidelines er associerede med øget mortalitet hos dialysepatienter, og den nuværende konsensus er at denne sammenhæng er kausal. De foreliggende data viser at området er en stor udfordring for nefrologer. Mulige indsatsområder inkluderer:

- 1) Øget dialyseintensitet og frekvens
- 2) Øget brug af nye mineralmetaboliske præperater, f. eks. calciumfrie phosphatbindere, calcimimetika, og aktiv D-vitamin præperater
- 3) Øget parathyreoidektomifrekvens



## Peritonitis Frequency in Peritoneal Dialysis

Centre	2000	2001	2002	2003	2004	2005	2006	2007
Esbjerg	7	57	84	33	36	76	62	71
Fredericia	23	16	16	22	11	5	27	34
Herlev	51	51	45	28	35	54	70	71
Hillerød	93	24	52	110	53	63	35	29
Holbæk	63	62	48	33	38	28	61	33
Holstebro	18	41	34	20	25	39	18	5
Nykøbing F			61	28	49	117	38	
Odense	54	53	79	80	49	71	62	70
Rigshospital	66	51	71	79	52	37	13	21
Roskilde	133	40	53	44	64	63	42	52
Skejby		57	56	50	37	37	43	36
Sønderborg	7	16	20	19	38	36	23	70
Viborg	16	29	34	66	41	26	41	32
Aalborg	55	77	33	86	77	36	52	19

Table 28. Peritonitis frequency in number per 100 patient-years.

### Peritonitisfrekvens: Kommentar

Se tabel 33. Peritonitisfrekvensen varierer meget fra år til år, hvorfor det enkelte center kun kan vurderes over en årrække. Stort set alle centre lever op til de internationale re-kommandationer om en peritonitisfrekvens på <67%/år (se Årsrapport 2006 for detaljerne). Patienter som praktiserer assisteret PD må *á priori* forvente en højere frekvens uden at dette er udtryk for dårligere behandling. Den store variation centrene imellem tyder på forbedringsmuligheder. Indsatsområderne inkluderer:

- 1) Tidlig planlægning af PD, med rutine opstart.
- 2) Optimeret optræning med efterfølgende hjemmebesøg.
- 3) Mulighed for patient genoptræning, enten rutinemæssigt, eller i forbindelse med peritonitisepisoder.
- 4) Øget brug af APD (se årsrapport 2006).
- 5) Audit

## Renal Graft Rejections 2000-2007

### Rigshospitalet

Year	Donor	No. of rejections						% without rejections	No. rejections /transplant
		0	1	2	3	4	All		
2000	Live	7	4				11	64	0,36
	Dead	27	10	3	1		41	66	0,46
	Total	34	14	3	1		52	65	0,44
2001	Live	14	2				16	88	0,12
	Dead	29	9	1	1		40	73	0,35
	Total	43	11	1	1		56	77	0,29
2002	Live	8	2	1			11	73	0,36
	Dead	35	3				38	92	0,08
	Total	43	5	1			49	88	0,14
2003	Live	14					14	88	0,00
	Dead	34	1		1		36	94	0,06
	Total	48	1		1		50	96	0,11
2004	Live	16	1	1	1		19	84	0,32
	Dead	34	2		1	1	38	89	0,24
	Total	50	3	1	2	1	57	88	0,39
2005	Live	13	2		1	2*	18	72	0,78
	Dead	34	7	2	1		44	77	0,34
	Total	47	9	2	2	2*	62	76	0,45
2006	Live	12					12	100	0,00
	Dead	40	2				42	95	0,05
	Total	52	2				54	96	0,04
2007	Live	19	1				20	95	0,05
	Dead	32	4			1	37	86	0,22
	Total	51	5			1	57	89	0,16
2000-2007	Live	103	12	2	2	2*	121	85	0,26
	Dead	265	38	6	5	2	316	84	0,23
	Total	368	50	8	7	4*	437	84	0,24

Table 29. Number of rejections at Rigshospitalet 2000-2007.

\*: One patient with 5 rejections

## Herlev

Year	Donor	0	1	2	3	4	All	% without rejections	No. rejections /transplant
2000	Live	2	1				3	67	0,33
	Dead	9	4				13	69	0,31
	Total	11	5				16	69	0,31
2001	Live	6	2				8	75	0,25
	Dead	10	2				12	83	0,17
	Total	16	4				20	80	0,20
2002	Live	6	2				8	75	0,25
	Dead	10	2				12	83	0,17
	Total	16	4				20	80	0,20
2003	Live	11	1	1			13	85	0,23
	Dead	11	1				12	92	0,08
	Total	22	2	1			25	88	0,16
2004	Live	9					9	100	0,00
	Dead	19	3	1			23	83	0,22
	Total	28	3	1			32	88	0,16
2005	Live	6	1				7	86	0,14
	Dead	10	1				11	91	0,09
	Total	16	2				18	89	0,11
2006	Live	2	1	1			4	50	0,75
	Dead	10	1				11	91	0,09
	Total	12	2	1			15	80	0,27
2007	Live	3	1				4	75	0,25
	Dead	7	3	1			11	64	0,45
	Total	10	4	1			15	67	0,40
2000-2007	Live	45	9	2			56	80	0,25
	Dead	86	17	2			105	82	0,20
	Total	131	26	4			161	81	0,21

Table 30. Number of rejections at Herlev 2000-2007.

## Odense

Year	Donor	0	1	2	3	4	All	% without rejections	No.rejections /transplant
2000	Live	7	3				10	70	0,30
	Dead	12	6	1			19	63	0,42
	Total	19	9	1			29	66	0,38
2001	Live	7	5				12	58	0,42
	Dead	22	3				25	88	0,12
	Total	29	8				37	78	0,22
2006	Live	15	5	1			21	71	0,33
	Dead	12	3				15	80	0,20
	Total	27	8	1			36	75	0,28
2007	Live	11	2				13	85	0,15
	Dead	25	1				26	96	0,04
	Total	36	3				39	92	0,08
2000-2007*	Live	40	15	1			56	71	0,30
	Dead	71	13	1			85	83	0,18
	Total	111	28	2			141	79	0,23

Table 31. Number of rejections at Odense 2000-2007.

## Skejby

Year	Donor	0	1	2	3	4	All	% without rejections	No.rejections /transplant
2000	Live	6	2				8	75	0,25
	Dead	38	10				48	79	0,21
	Total	44	12				56	79	0,21
2001	Live	5					5	100	0,00
	Dead	39	4	2			45	87	0,18
	Total	44	4	2			50	88	0,16
2002	Live	10					10	100	0,00
	Dead	40	3	2			45	89	0,16
	Total	50	3	2			55	91	0,13
2003	Live	8	1				9	89	0,11
	Dead	44	8				52	85	0,15
	Total	52	9				61	85	0,15
2004	Live	4	1				5	80	0,20
	Dead	13	1				14	93	0,07
	Total	17	2				19	89	0,11
2005	Live	11	3				14	79	0,21
	Dead	31	7				38	82	0,18
	Total	42	10				52	81	0,19
2006	Live	18	2				20	90	0,10
	Dead	45	2	1			48	94	0,08
	Total	63	4	1			68	93	0,09
2007	Live	18	2				20	90	0,10
	Dead	35	3	1			39	90	0,13
	Total	53	5	1			59	90	0,08
2000-2007	Live	80	11				91	88	0,12
	Dead	285	38	6			329	87	0,15
	Total	365	49	6			420	87	0,15

Table 32. Number of rejections at Skejby 2000-2007.

## Danmark

Year	Donor	0	1	2	3	4	All	% without rejections	No.rejections /transplant
2000	Live	22	10				32	69	0,31
	Dead	86	30	4	2		122	70	0,36
	Total	108	40	4	2		154	70	0,35
2001	Live	32	9				41	78	0,22
	Dead	100	18	3	1		122	82	0,22
	Total	132	27	3	1		163	81	0,22
2002 <sup>§</sup>	Live	24	4	1			29	83	0,21
	Dead	85	8	2			95	89	0,13
	Total	109	12	3			124	88	0,15
2003 <sup>§</sup>	Live	33	2	1			36	92	0,11
	Dead	89	10				99	90	0,10
	Total	122	12	1			135	90	0,10
2004 <sup>§</sup>	Live	39	5	2	1		47	83	0,25
	Dead	84	18	2	1	1	106	79	0,27
	Total	123	23	4	2	1	153	80	0,27
2005 <sup>§</sup>	Live	30	6		1	2*	39	77	0,46
	Dead	75	15	2	2		94	80	0,27
	Total	105	21	2	3	2*	133	79	0,32
2006	Live	47	8	2			57	82	0,21
	Dead	107	8				115	93	0,07
	Total	154	16	2			172	90	0,12
2007	Live	51	6				57	89	0,11
	Dead	99	11	2		1	113	88	0,17
	Total	150	17	2		1	170	88	0,15
2000-2007	Live	278	50	6	2	2*	338	82	0,23
	Dead	725	118	15	6	2	866	84	0,20
	Total	1003	168	21	8	4*	1204	83	0,21

Table 33. Number of rejections in Denmark 2000-2007.

§ Odense excluded. \*:One patient with 5 rejections.

### Graftrejektion: Kommentar

Se ovenstående tabeller. Det optimale immunosuppressionsniveau er ikke afgjort. Lavere rejektionsincidens kan forventes at medføre forbedret graftoverlevelse, men kan også være udtryk for overbehandling, med øget risiko for infektioner og cancer til følge. En række nye immunosuppressiva er p.t. under afprøvning, med håb om en forbedret effekt/bivirkning profil til følge.



# The Epidemiology of Mineral Metabolism Markers

*James Heaf, Herlev Hospital, Denmark*

Since 2006, all centers in Denmark have reported plasma calcium ion, phosphate and parathyroid hormone (PTH) in all patients. Two centres have reported total or albumin-corrected calcium; these values have been approximated to calcium ion by multiplying by 0.5. The present study investigates the epidemiology of these values. DNS has adopted the K/DOQI guidelines as therapeutic aim for these values; the guideline limits are included in the illustrations, and the reference limit for the normal population where relevant.

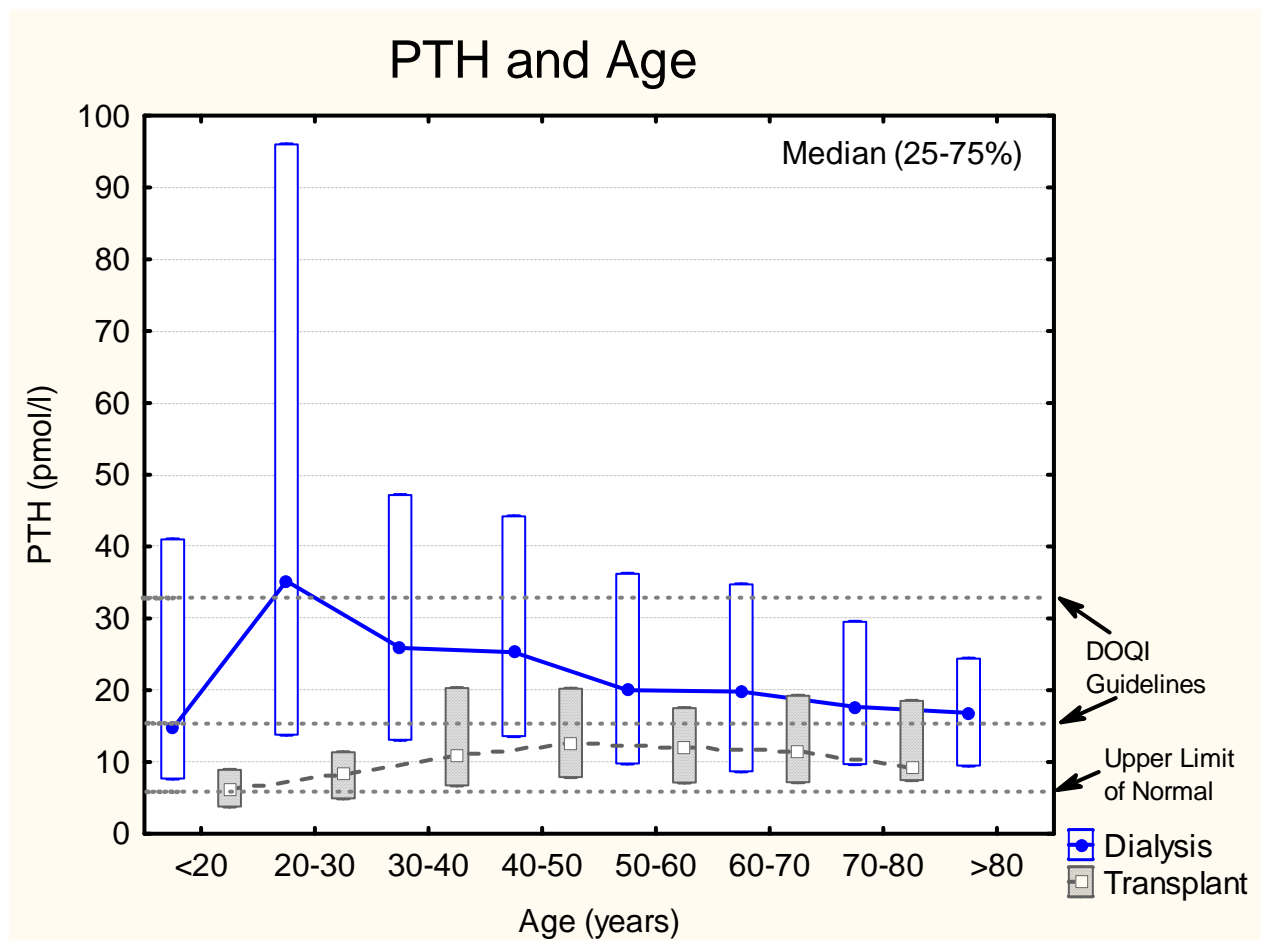


Fig. 1. PTH and age. PTH is very difficult to control in young dialysis patients. Transplant patients often have ongoing hyperparathyroidism despite normalisation of renal function.

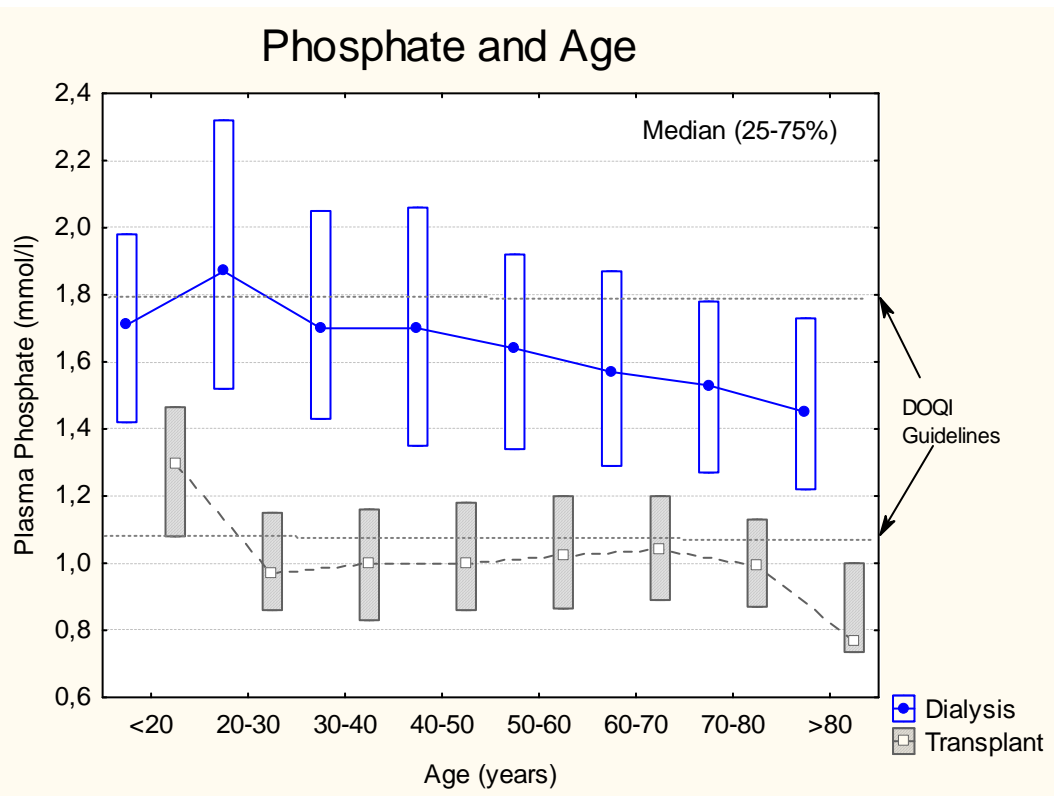


Fig. 2. P-Phosphate and age. Similarly, phosphate is difficult to control in young dialysis patients. In all age groups, a significant minority exceed the K/DOQI guidelines.

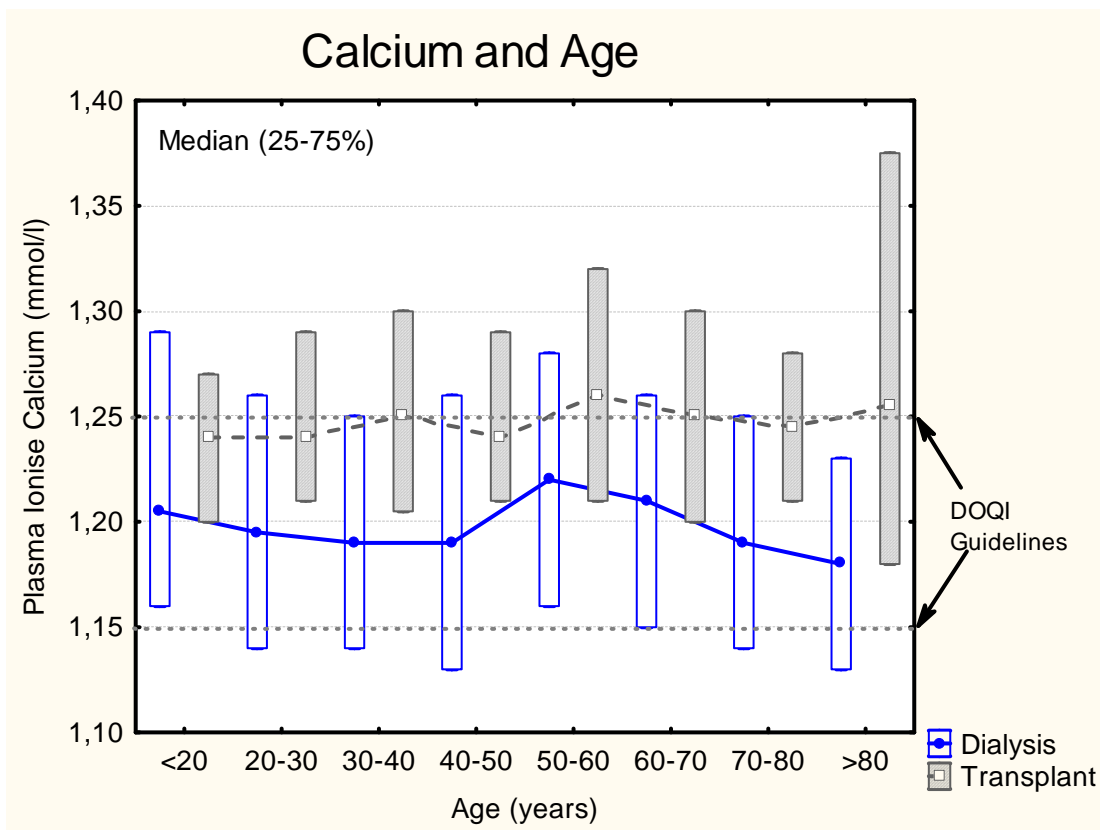


Fig. 3. P-Calcium-ion and age. There is no relationship between age and calcium ion. At any age, approximately 25% of dialysis patients exceed the K/DOQI guidelines, and 25% lie below.



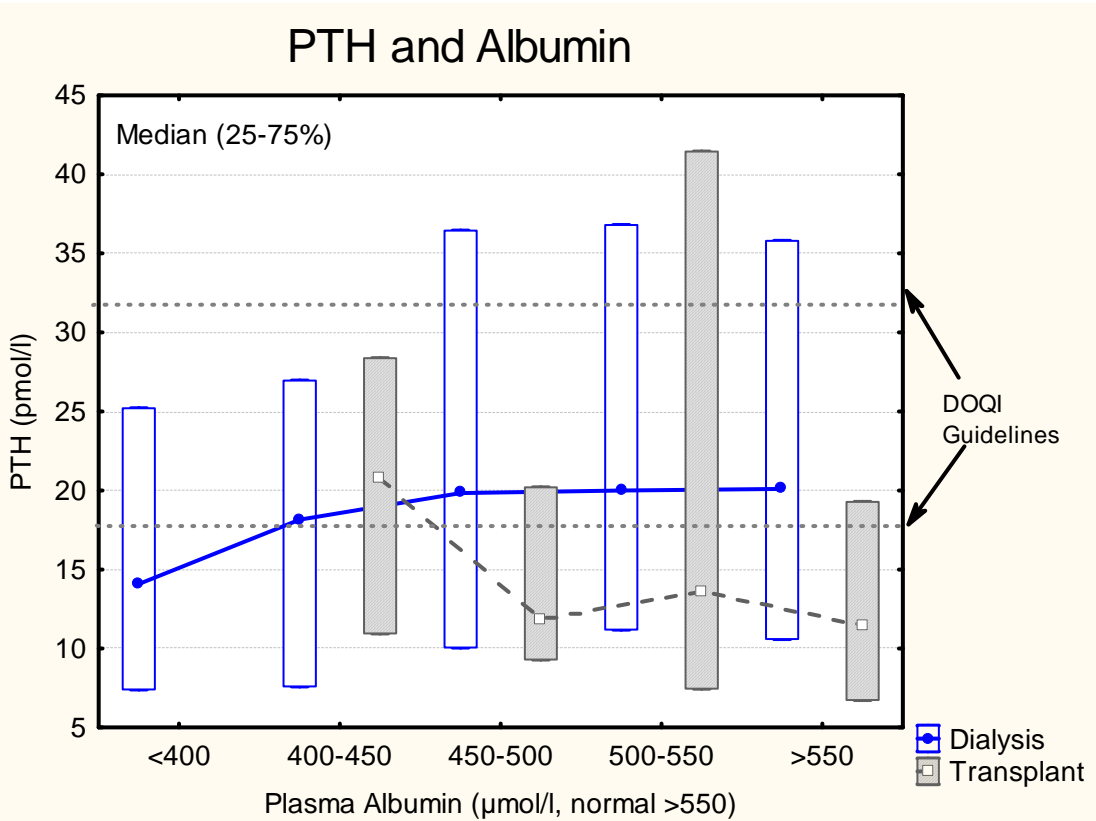


Fig. 4 PTH and P-albumin. PTH is low in hypoalbuminemic dialysis patients. This, in combination with fig. 1, implies that PTH is a “reverse epidemiological” variable: unhealthy high levels are paradoxically associated with good health. The opposite pattern is seen in transplant patients, where uremic patients have low albumin and high PTH.

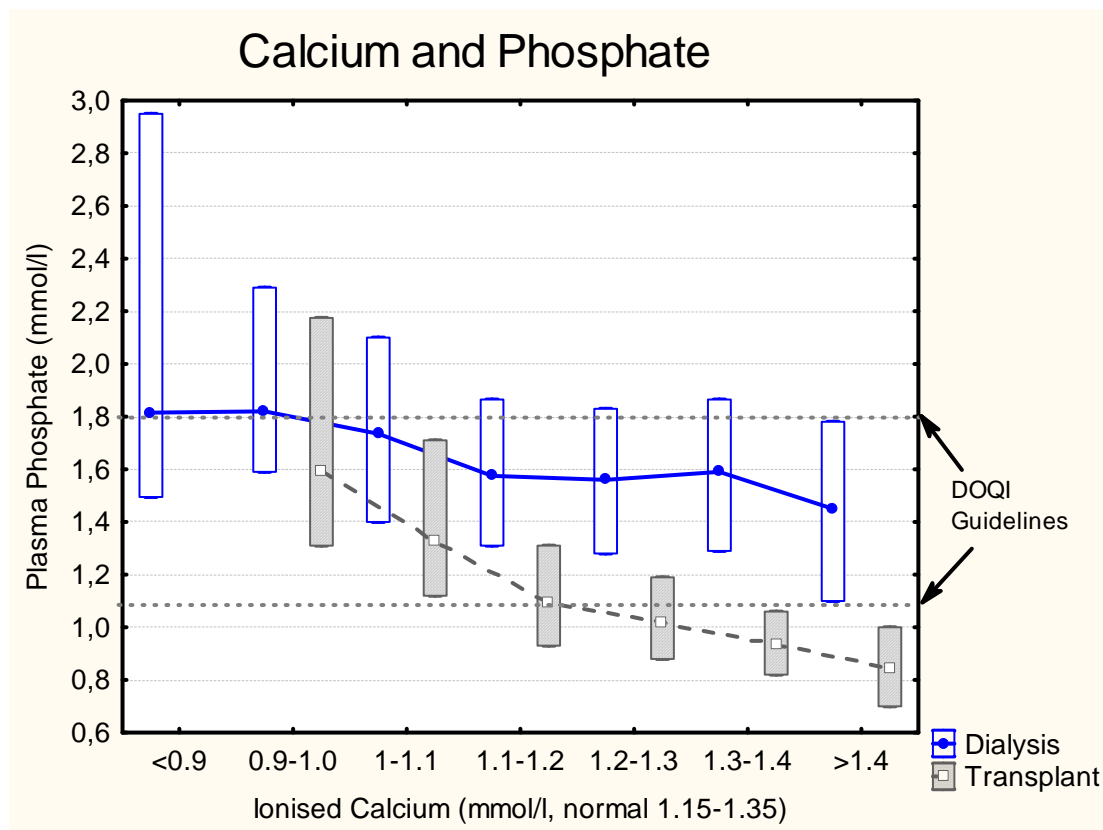


Fig. 5. P-calcium and P-phosphate. The relationship in dialysis patients is marginal. Uremic transplant patients are characterized by hypocalcemia and hyperphosphatemia.

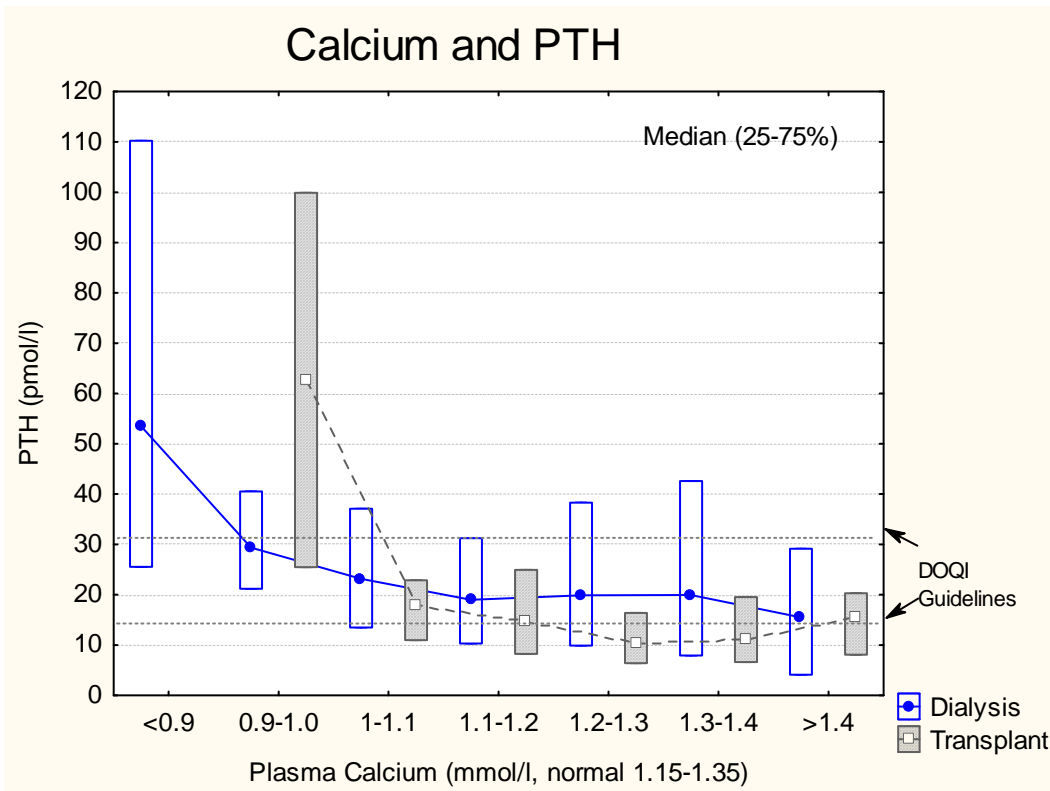


Fig. 6. P-calcium-ion and PTH. Except for extreme hypocalcemia, the normal inverse relationship between calcium and PTH is minimal, presumably due to treatment with active vitamin D.

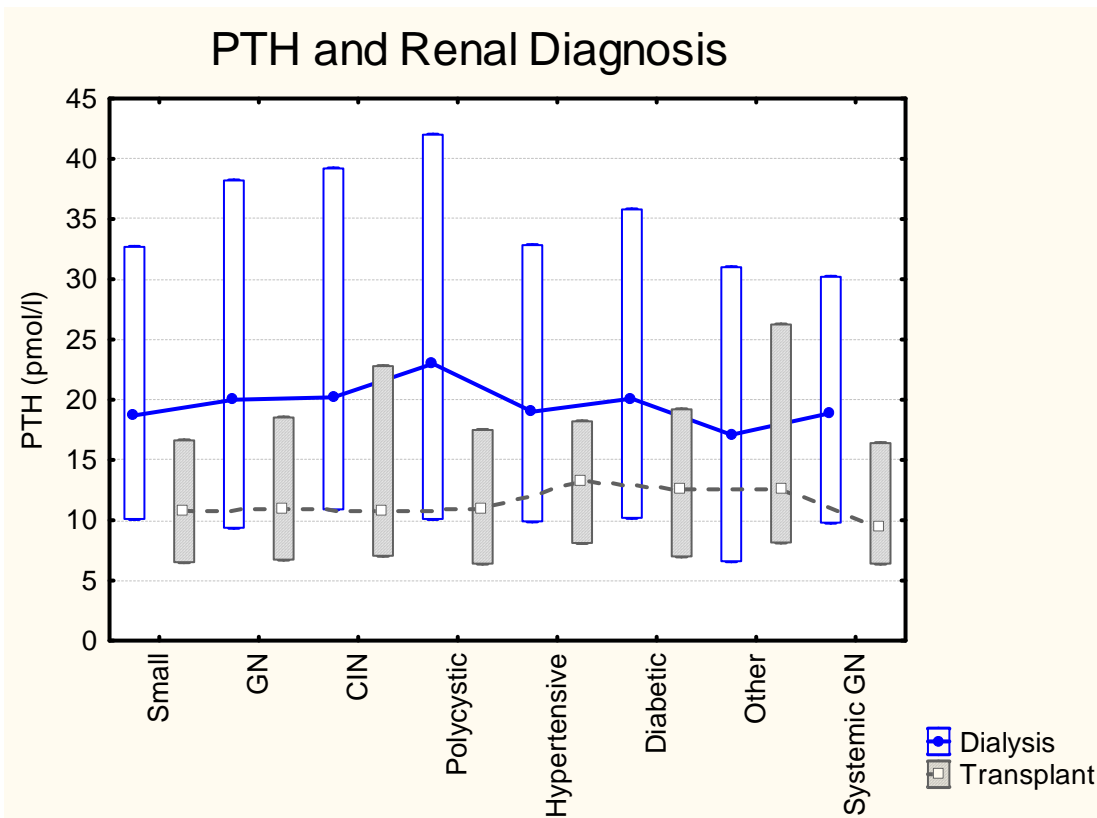


Fig. 7. PTH and renal diagnosis. There is no relationship between PTH and renal diagnosis.

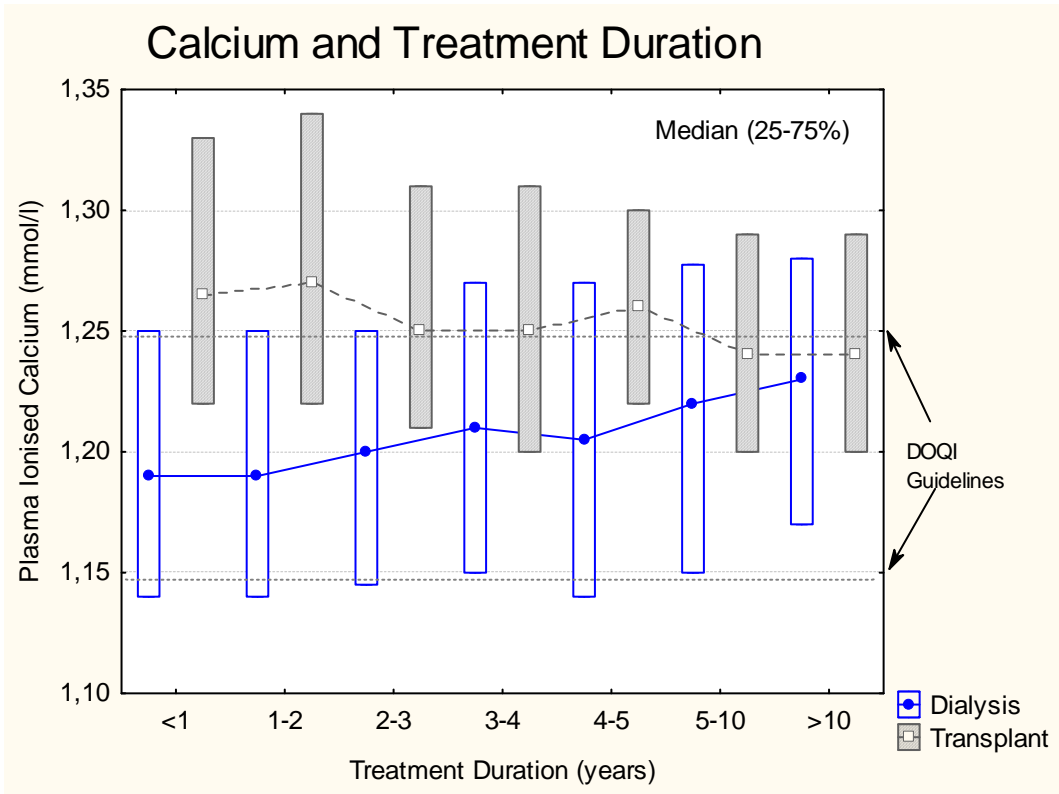


Fig. 8. P-calcium-ion and treatment duration. Dialysis patients have an increasing problem with hypercalcemia after 3 years of therapy.

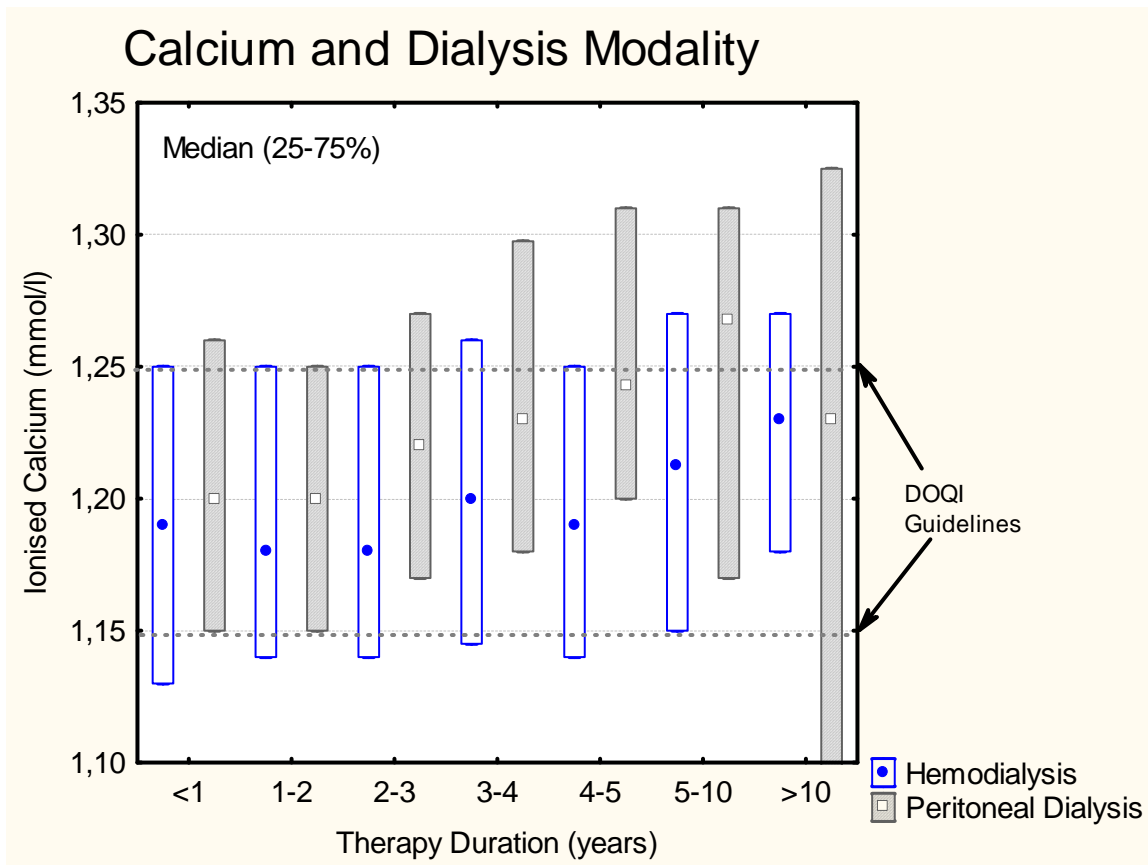


Fig. 9. P-calcium-ion and dialysis modality. The problem of hypercalcemia is particularly acute for long-term peritoneal dialysis patients.

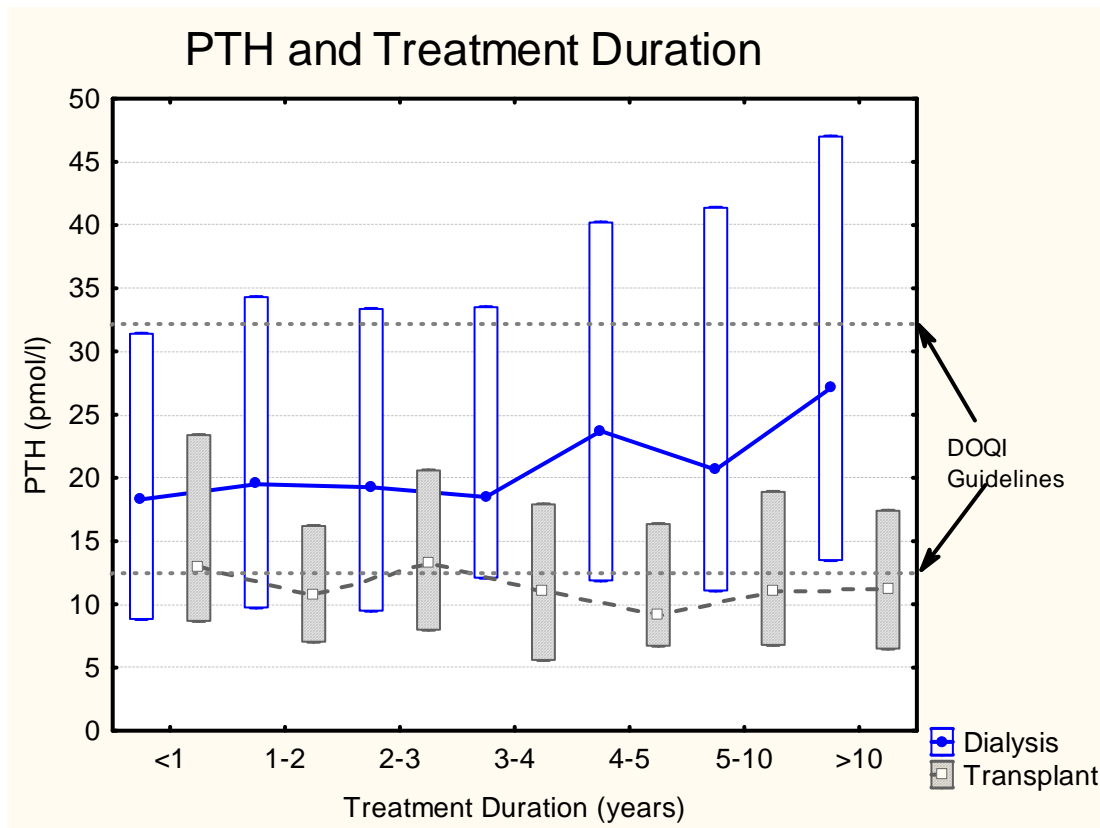


Fig. 10. PTH and treatment duration. Control of PTH becomes increasingly difficult after 4 years of dialysis. There is no tendency for the resolution of hyperparathyroidism seen in transplant patients.

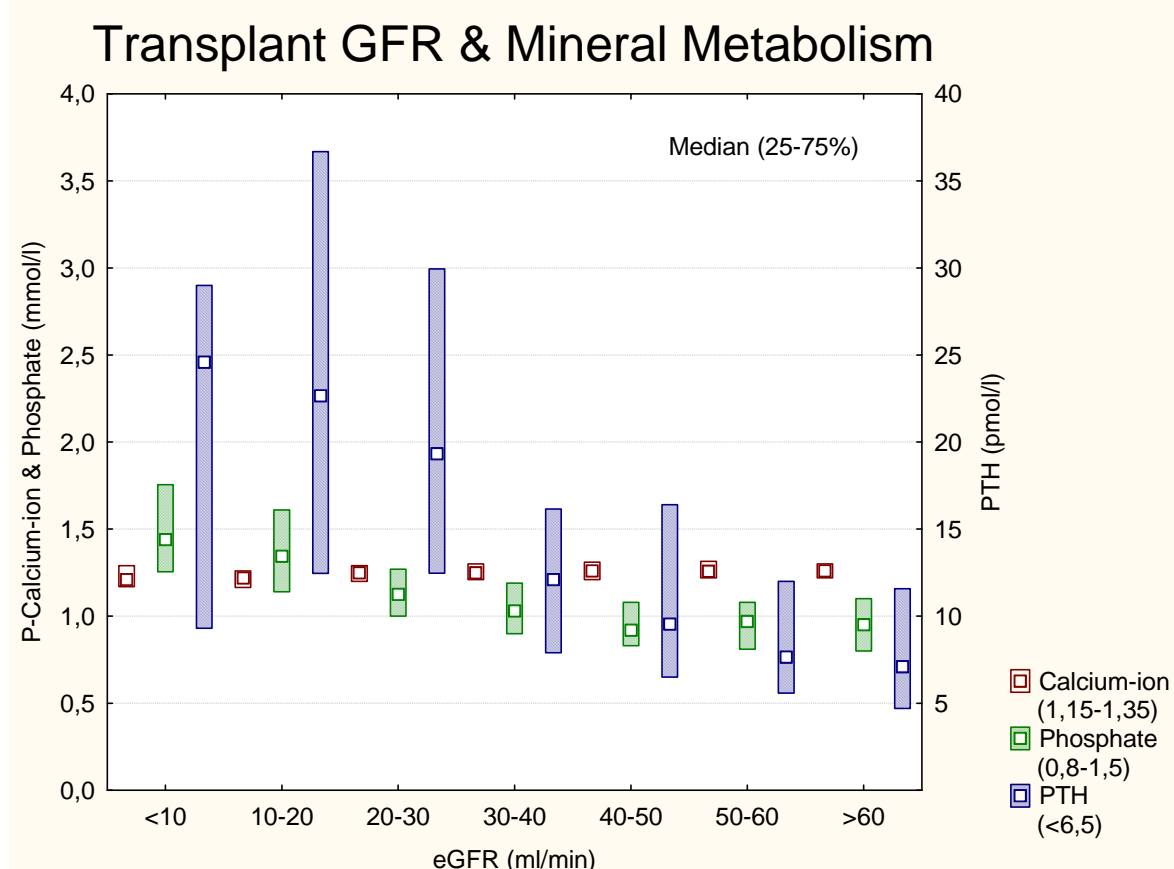


Fig.11. Transplant eGFR and mineral metabolism. Transplanted patients behave similarly to non-transplanted uremic patients, with rising phosphate and PTH, and falling calcium when GFR falls below 30 ml/min. However, at no level of GFR is PTH normal.



# Scandiatransplant Waiting List Statistics 1995-2006

*James Heaf, Herlev Hospital, København*

## Introduction

The Scandiatransplant waiting list registry became comprehensive from 1.1.1995, at which point it contained data for 507 courses in 504 patients. 2679 waiting list courses in 2414 patients were added between 1.1.1995 and 31.12.2006 (Group 1). A further 202 courses in 172 patients were added during the first part of 2007. Data for 2007 are not comprehensive. The waiting list registry contains data concerning 853 patients starting active therapy for terminal uremia before 1995, and 2065 patients out of 5611 patients (37%) starting therapy between 1.1.1995 and 31.12.2006 (Group 2). The present study concerns groups 1 & 2, but where relevant, data from the other groups are included.

Combining the Scandiatransplant waiting list registry with the DNS national registry allows a number of errors in the Scandiatransplant registry to be corrected. In particular, many patients remain in the Scandiatransplant registry for some time after they no longer are available for transplantation, either due to already performed transplantation or death. In the present study, patients presently registered as temporarily unsuitable for transplantation were counted as permanently unavailable. The average waiting time in this study was shortened overall by 4 months. Patients who received kidneys from living donors without having been on the waiting list were assigned an arbitrary waiting time of one day.

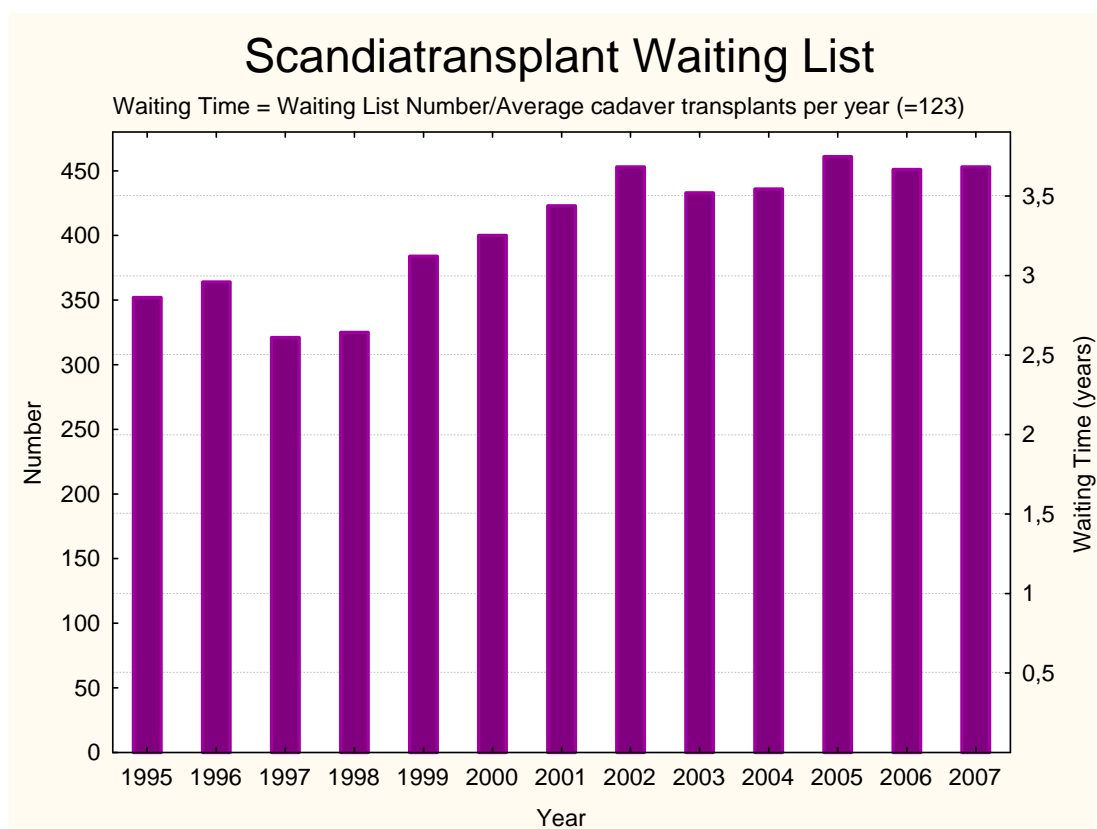


Fig. 1. Scandiatransplant waiting list. The waiting list grew during the period of observation. Since the number of transplants from dead donors remained approximately constant at 123/year, the average waiting time increased from 2.9 to 3.7 years. The increase was entirely due to an increase in the number of elderly transplant candidates. The average age increased from  $42.2 \pm 13.7$  years in 1995-98 to  $45.1 \pm 14.6$  years in 2003-6, and the proportion of patients over 60 years from 7.8 to 17.1%.

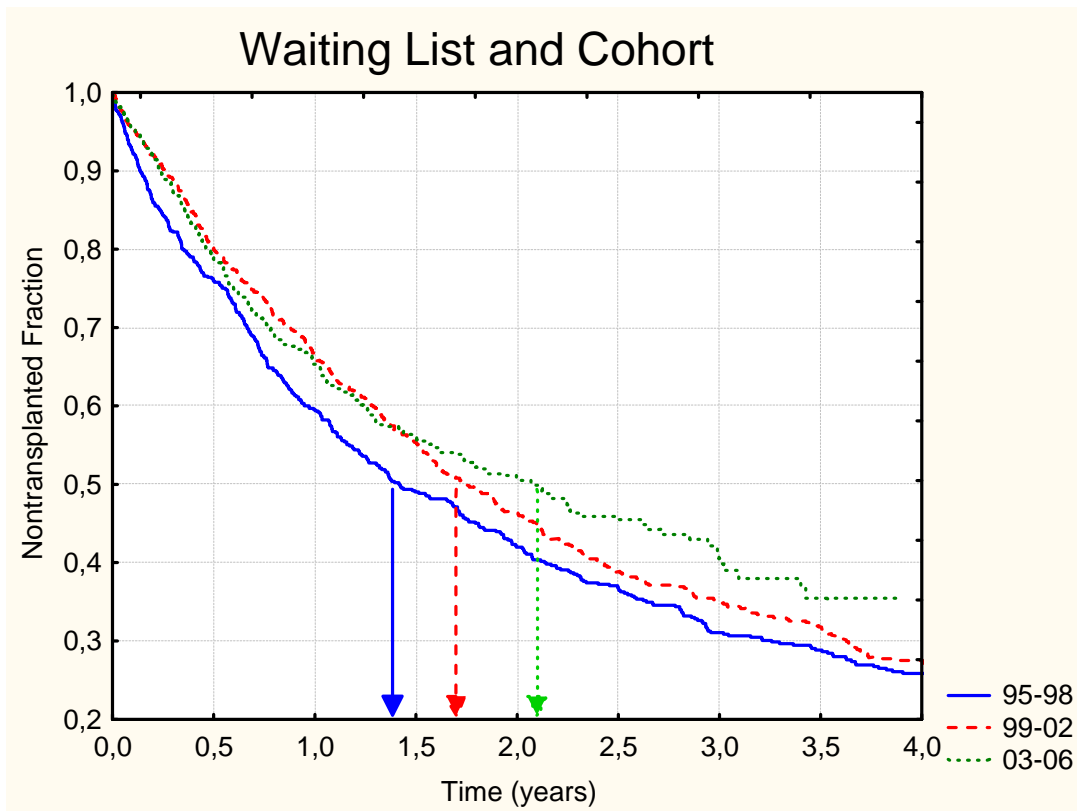


Fig. 2 Waiting list and cohort. Correspondingly, the median waiting time increased from 1.4 to 2.1 years.

## Waiting List Duration and Transplant Frequency

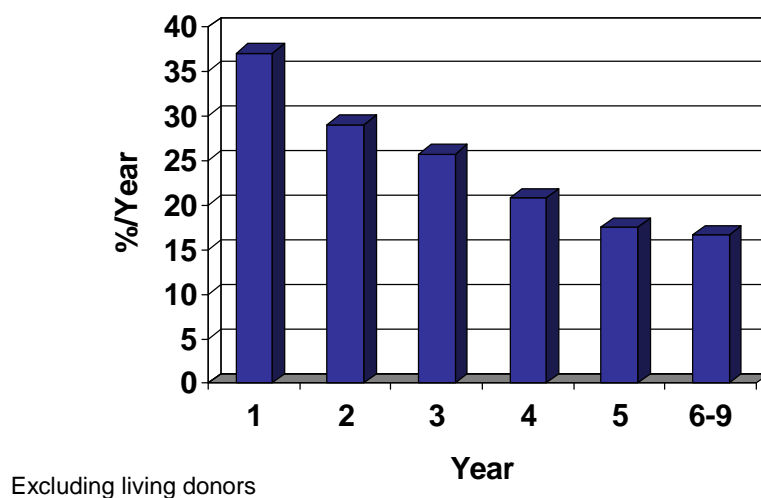


Fig. 3. Waiting list duration and transplant frequency. The difference between the average and median waiting time was due to the fact that transplant frequency gradually fell from 37% the first year to 16% in later years. A major cause of this was an increasing prevalence of immunisation (see fig. 23 below).





## Waiting List Fate and Cohort (1)

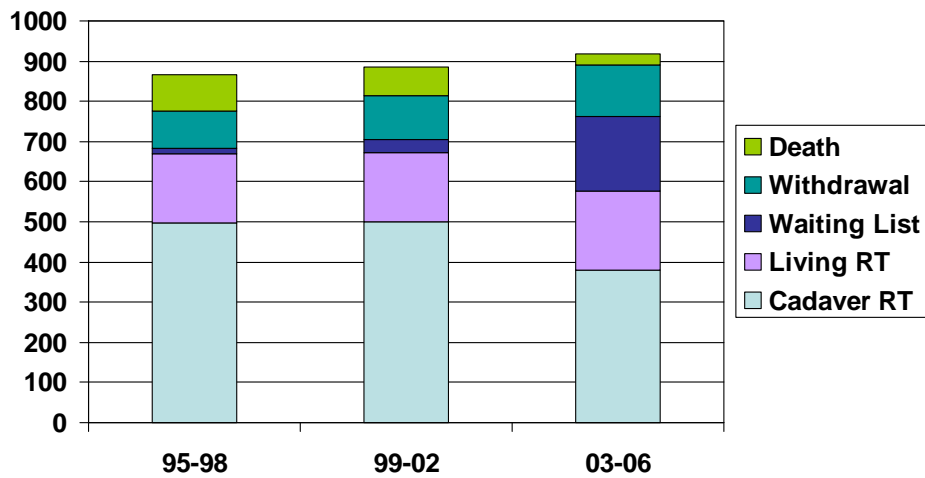


Fig. 4. Waiting list fate and cohort (part 1). The 1995-8 cohort is the most interesting, since only 15 patients remain on the waiting list. 77% of waiting list registrations end in transplantation.

## Waiting List Fate and Cohort (2)

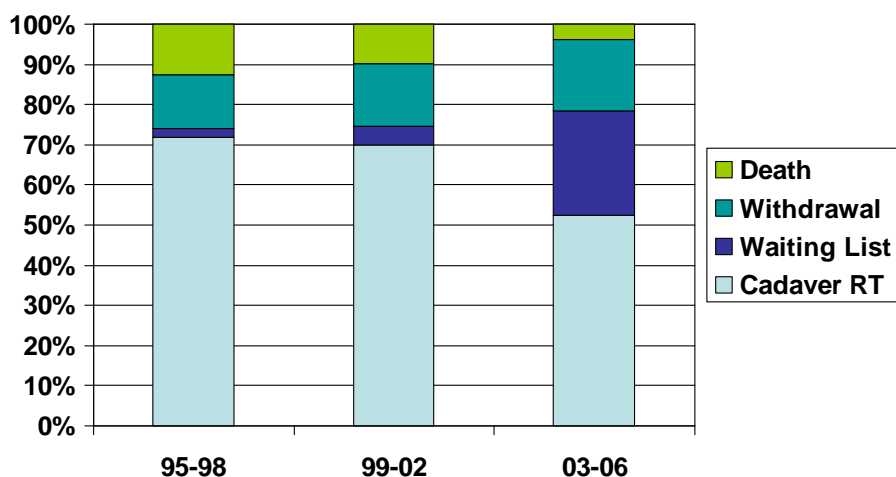


Fig. 5. Waiting list fate and cohort (part 2). If a patient does not have a living donor, the chance of transplantation falls to 72%. Thus, all other things being equal, the problem of excessive waiting time could be solved by a 40% increase in transplants from dead donors.

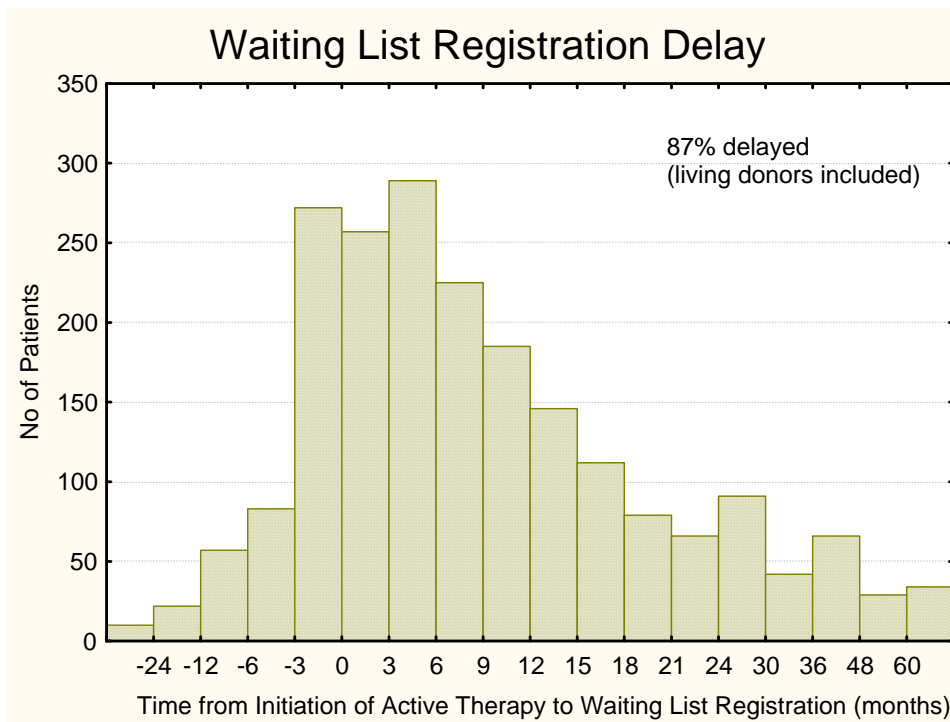


Fig. 6. Waiting list delay. In the perfect world, patients should be registered for transplantation before initiation of active therapy. This is however only the case in 13% of cases. Reasons for delay include late referral, acute uremia, acute progression of chronic uremia, failure to recognise uremia progression, administrative delays, requirements for time-consuming preregistration treatment (e.g dental treatment) and patient preference.

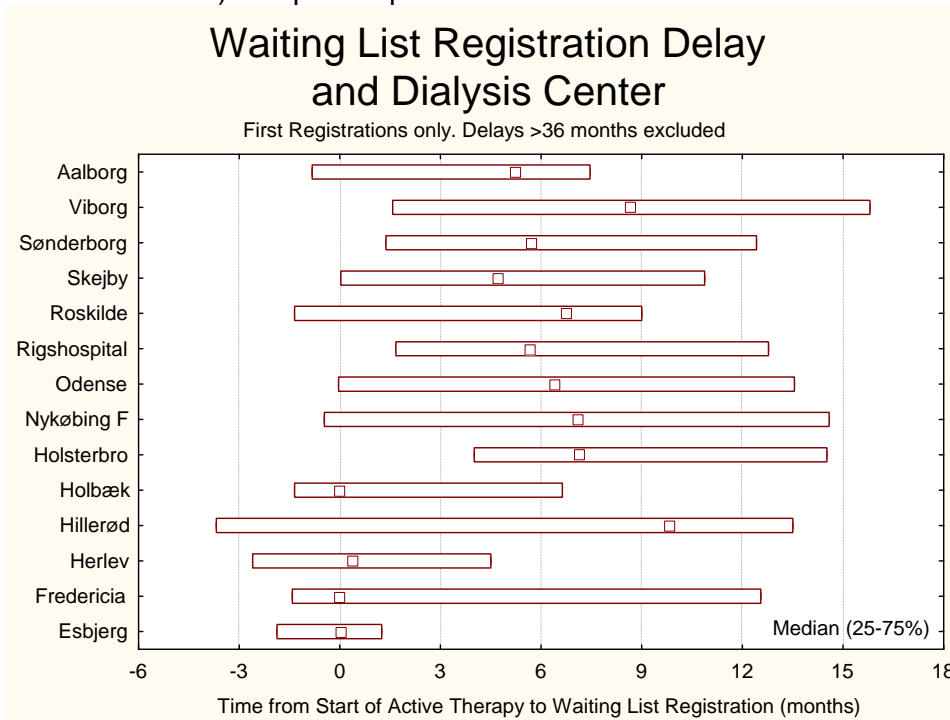


Fig. 7. Waiting list registration delay and dialysis center. Comparison between centers is unreliable, since the local conditions for patient referral and preregistration investigational procedures vary widely, and this figure should be interpreted with caution. The variability between centers suggest that improvements in this quality indicator are possible. However, this is a “zero sum game”: the total number of transplantations will not be increased by earlier registration.



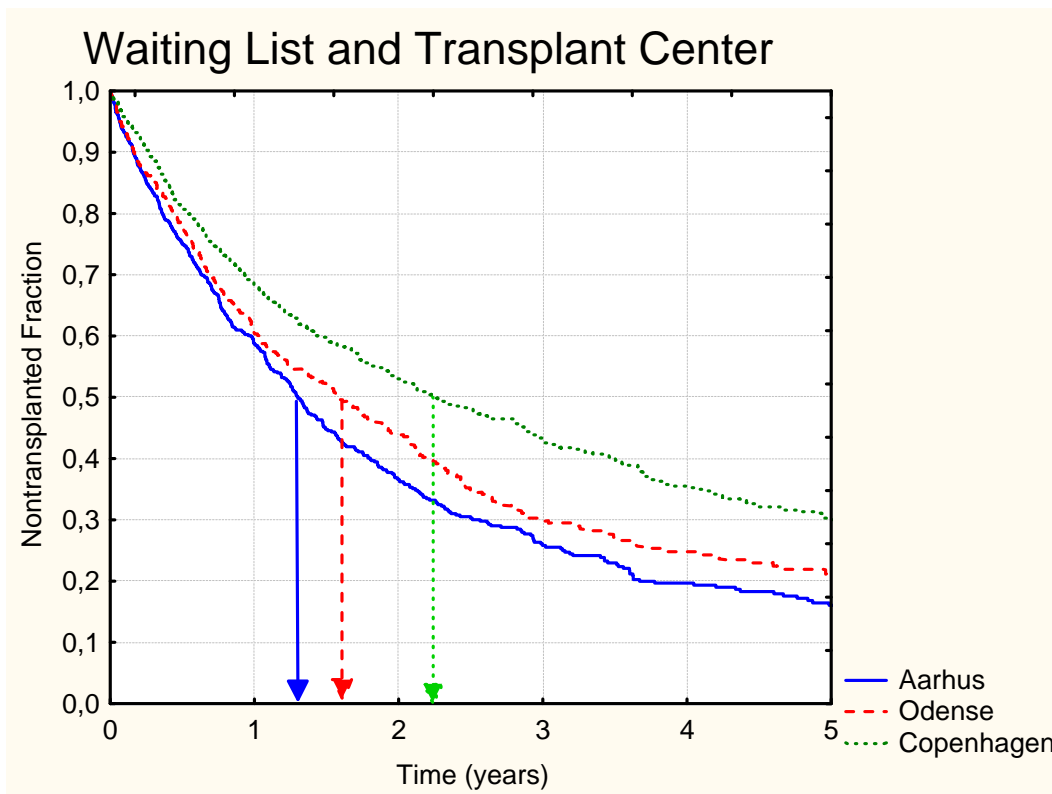


Fig. 8. Waiting list and transplant center (part 1). There are considerable regional differences in waiting times in Denmark. Waiting times are longer in Copenhagen (State University Hospital (Rigshospitalet) and Herlev), and shorter in Aarhus (Skejby).

## Median Waiting Time: Transplant Center and Cohort

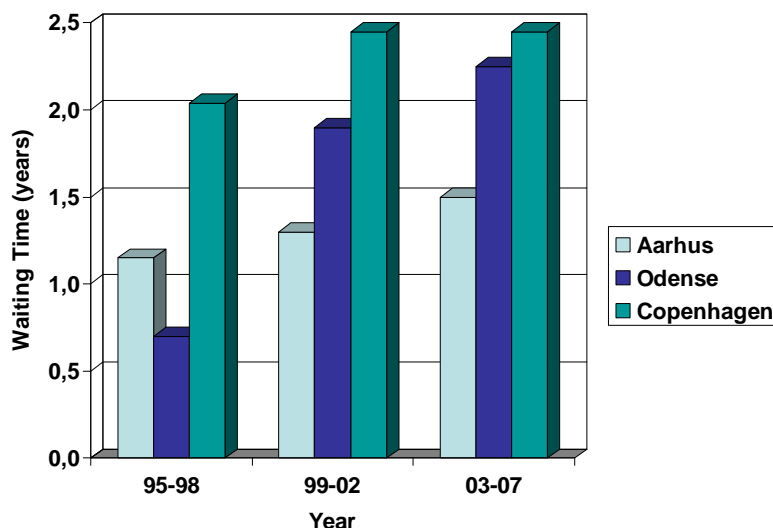


Fig. 9. Waiting list and transplant center (part 2). Odense had very short times in the nineties, but these have now lengthened.

## Waiting Time for Living Donor Recipients

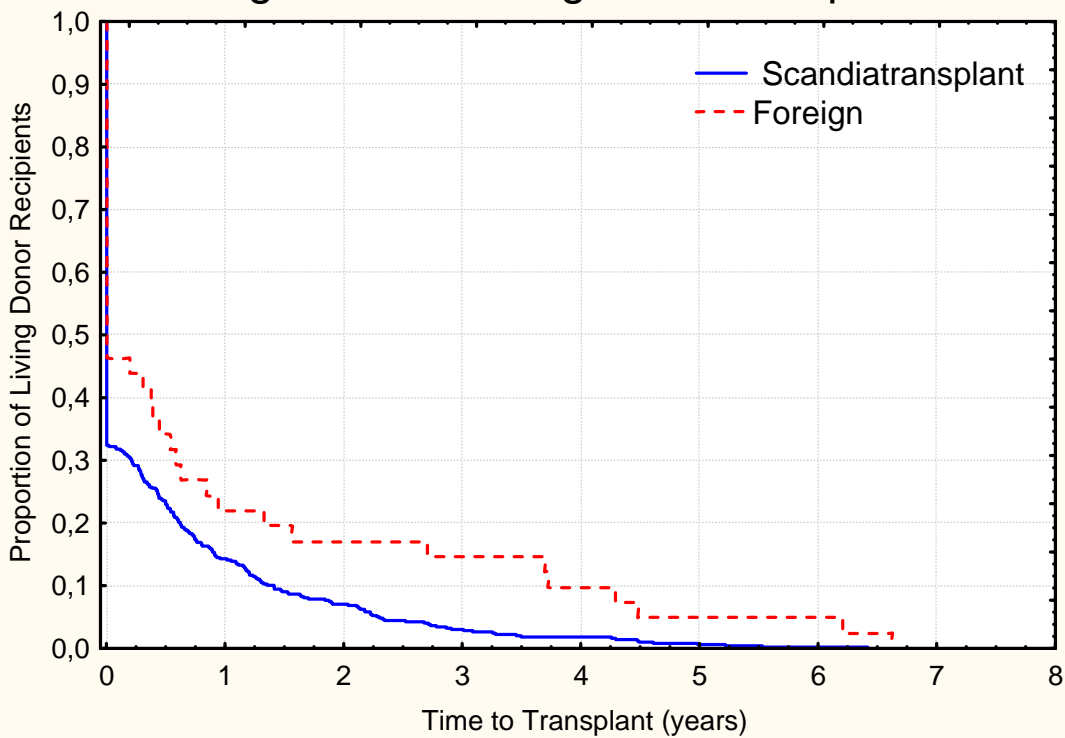


Fig. 10. Waiting time for living donor recipients. 2/3 of living donor recipients have not been on the waiting list before transplantation. The majority of renal transplants performed abroad are also the result of early planning rather than the consequence of a long period on the Scandiatriplant waiting list.

## Waiting List and Age

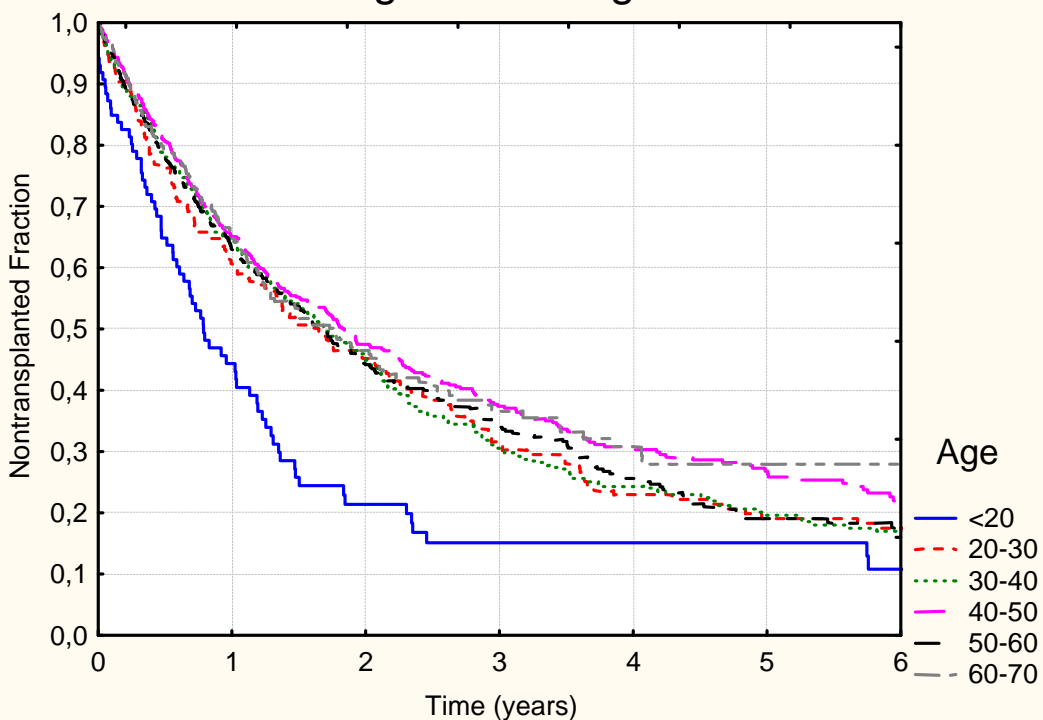


Fig. 11. Waiting List and Age. There is no influence of age other than for pediatric transplants whose waiting time is shorter. This is in accordance with Danish transplant policy.

# Age and Transplantation

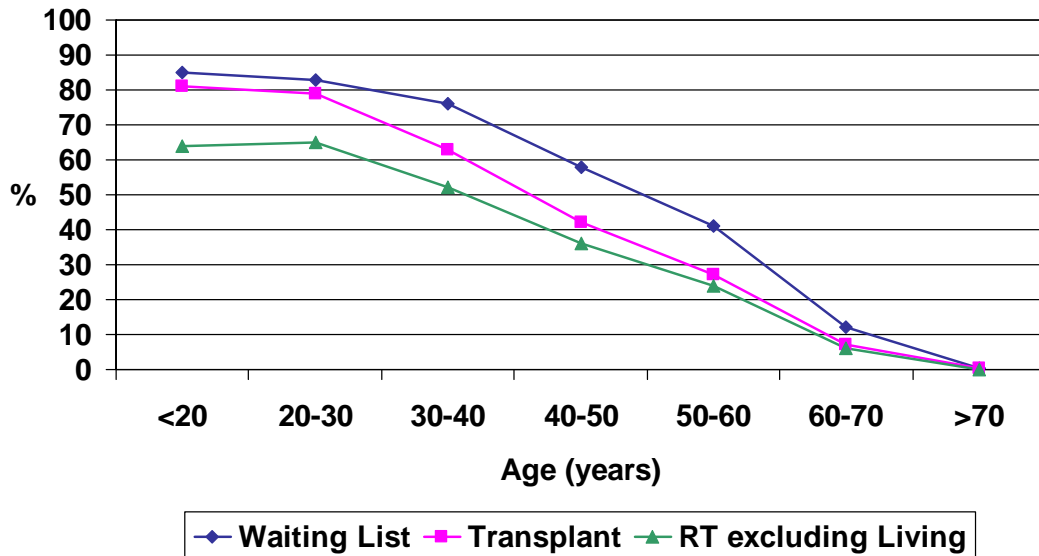


Fig. 12. Age and transplantation. The chance of being put on the waiting list, and thus being transplanted falls with age, and is virtually nonexistent after the age of 70. Patients who do not have a living donor available have a lower overall chance of being transplanted, particularly if they are young.

# Waiting List, Age and Diagnosis

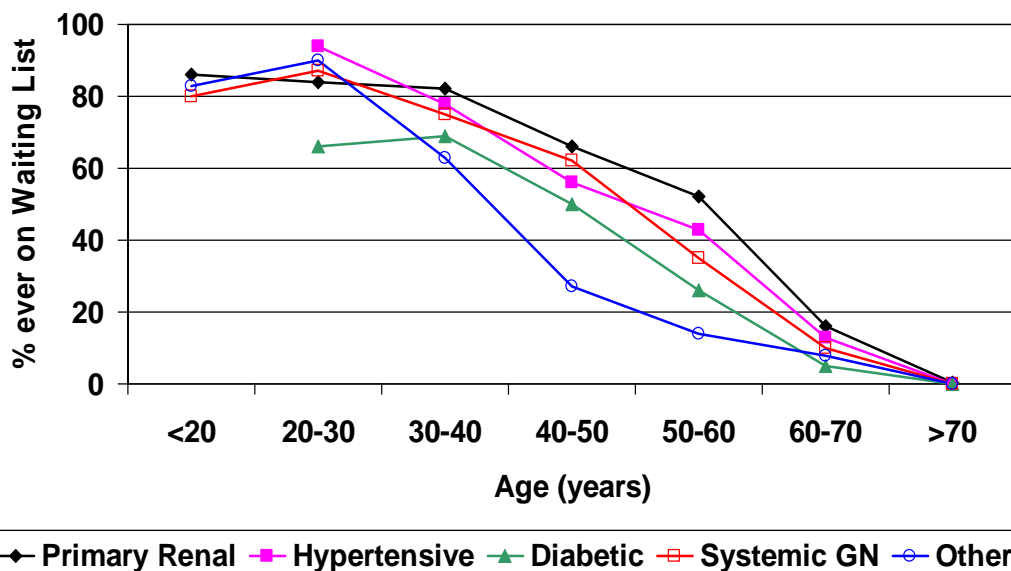


Fig. 13 Waiting List, transplantation, age and renal diagnosis. The presence of systemic renal disease, particularly diabetic nephropathy and “other” renal pathology (amyloidosis, myelomatosis, etc.), reduces the chance of being put on the waiting list, and of subsequent transplantation.

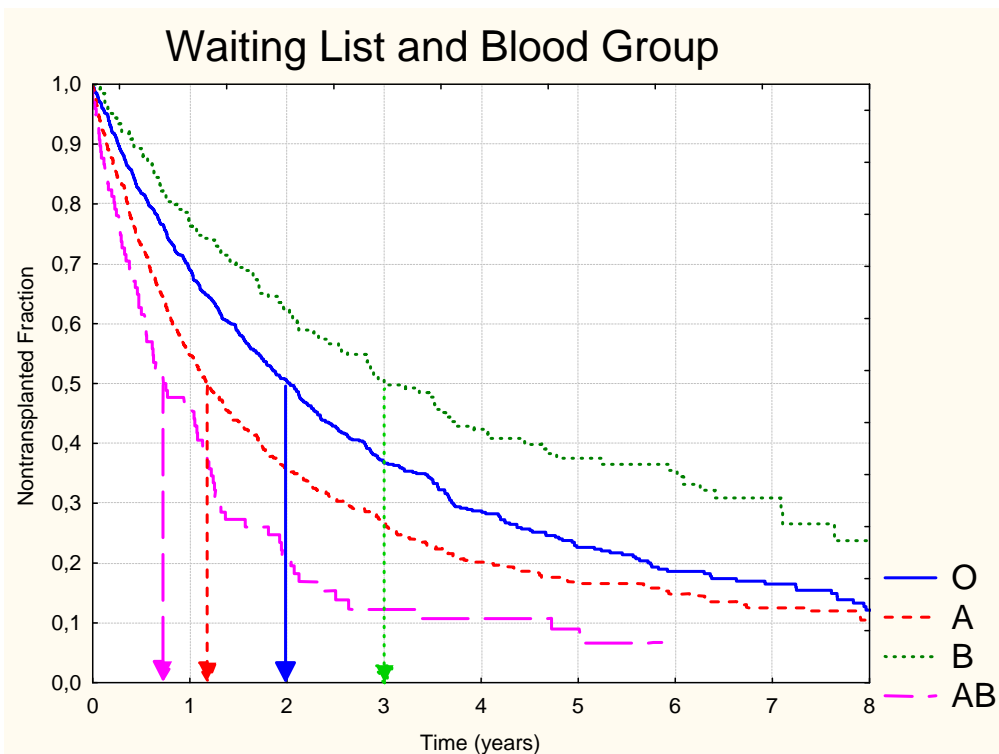
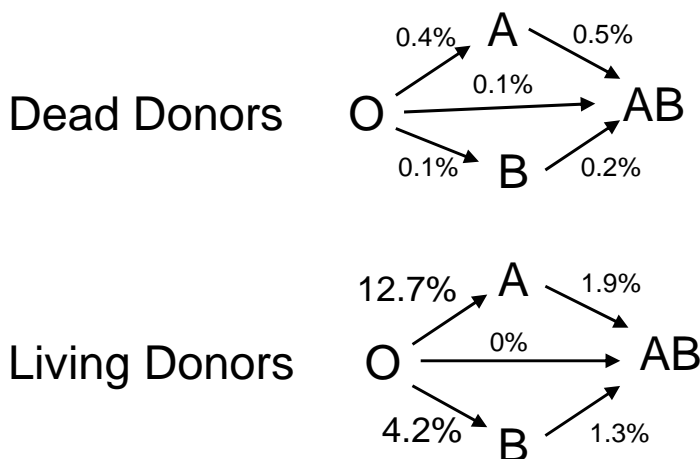


Fig. 14. Waiting list and blood group. Blood group had a significant effect on waiting times. AB had the shortest waiting times, followed by A, O and B. Blood groups B and AB are rare in Denmark (O 41%, A 44%, B 10%, AB 5%). Small absolute changes in transplant activity will therefore have major percentage changes in waiting times.

## Net Blood Group Transfers



% of Blood Group Donor Pool

Fig. 15. Net blood group transfers. As a deliberate policy decision, transfers from dead O donors to other groups is virtually non-existent. Some transfer from groups A and B to AB does occur. These rules do not apply to living donors, where transfers are common. In recent years occasional transplants have been performed in incompatible blood groups after immunabsorption therapy. O to AB donation does not occur due to the lack of O donors in AB recipient families.

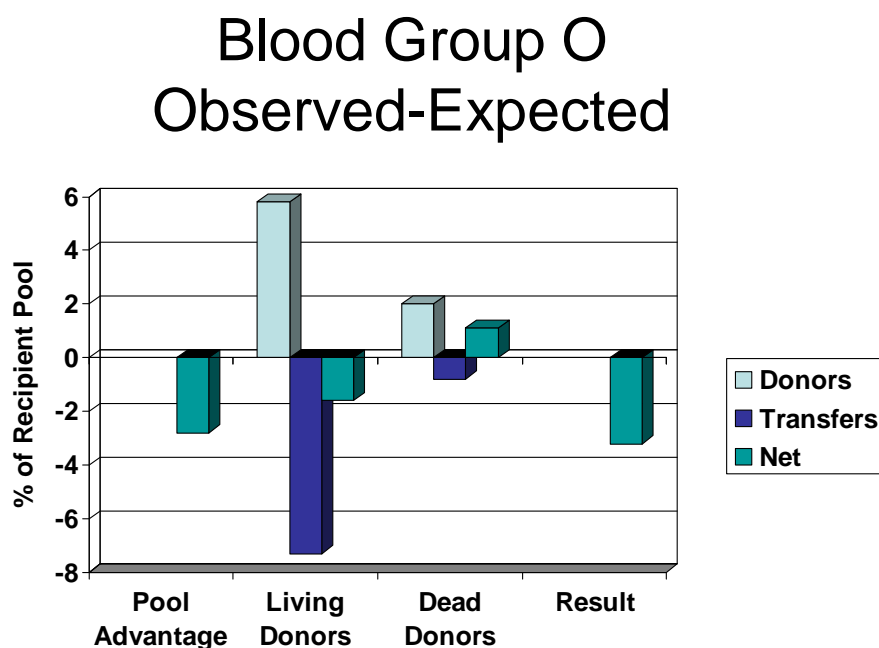


## Short Blood Group Waiting List: Possible Causes

Possible causes for a short blood group waiting list include:

- “Pool advantage”: fewer recipients than expected
- More living donors than expected
- Living donor transfers from other blood groups
- More dead donors than expected
- Transfers of dead donors from other blood groups.

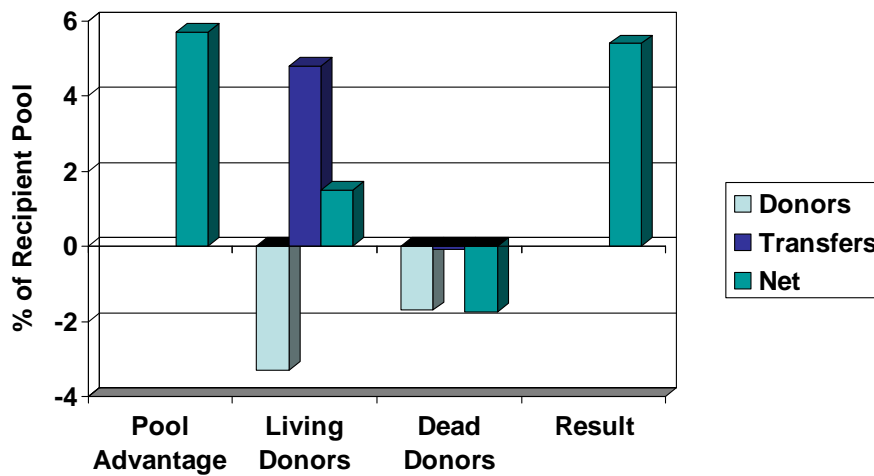
The following figures illustrate the relative contribution of these factors. Positive values shorten the waiting list; negative values lengthen it.



Pool Advantage = % Expected in Recipient pool - % Observed

Fig. 16. Blood group O observed-expected. There is an excess of living O donors, but their kidneys go to other groups, so the overall effect is neutral. There are only small deviations from expected.

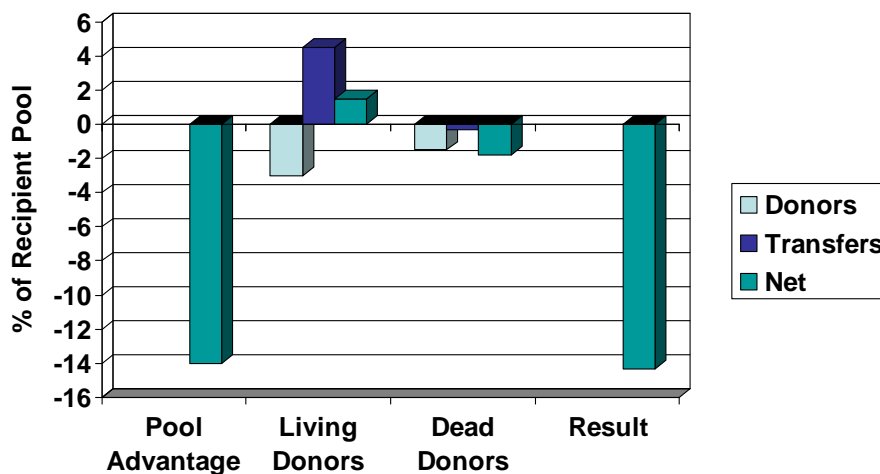
## Blood Group A Observed-Expected



Pool Advantage = % Expected in Recipient pool - % Observed

Fig. 17. Blood group A. In contrast there are fewer A living donors than expected, but the deficit is made up from living O donors. The cause of the short A waiting list is fewer A recipients than expected.

## Blood Group B Observed-Expected

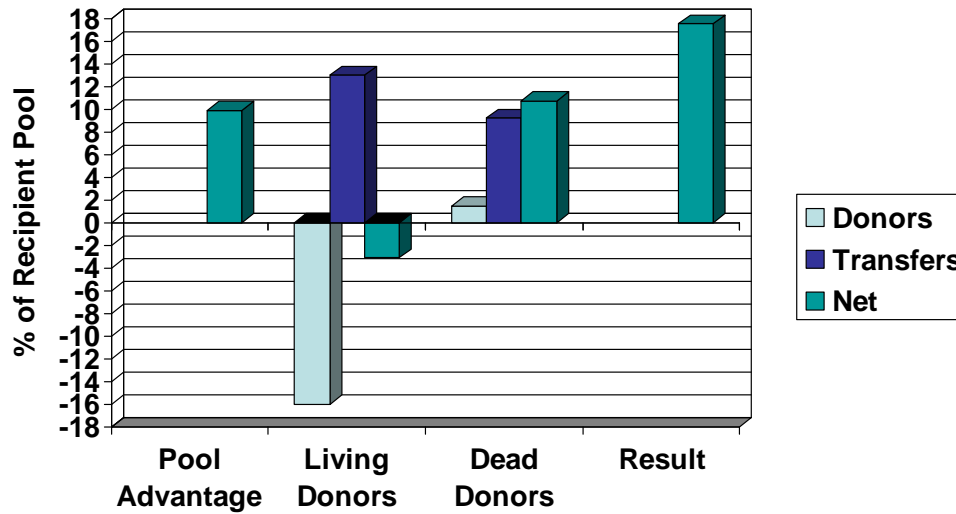


Pool Advantage = % Expected in Recipient pool - % Observed

Fig. 18. Blood group B. The living donor situation is similar to group A. The cause of the long B waiting list is considerably more B recipients than expected.



## Blood Group AB Observed-Expected



Pool Advantage = % Expected in Recipient pool - % Observed

Fig. 19. Blood group AB. It is virtually impossible to find a living AB donor, but large transfers from group A and B neutralise this problem. The cause of the very short waiting list is a combination of fewer AB recipients than expected and relatively major transfers from other dead donor blood groups.

## Renal Diagnosis and Blood Group B Frequency

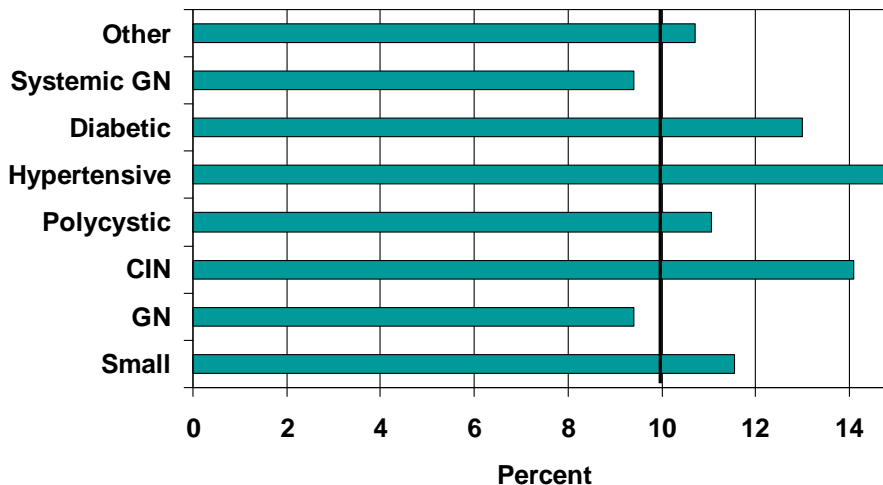


Fig. 20. Renal diagnosis and blood group B frequency. The excess of B recipients is confined to patients with hypertensive, diabetic and polycystic nephropathy.

## Waiting List and Previous Blood Transfusion

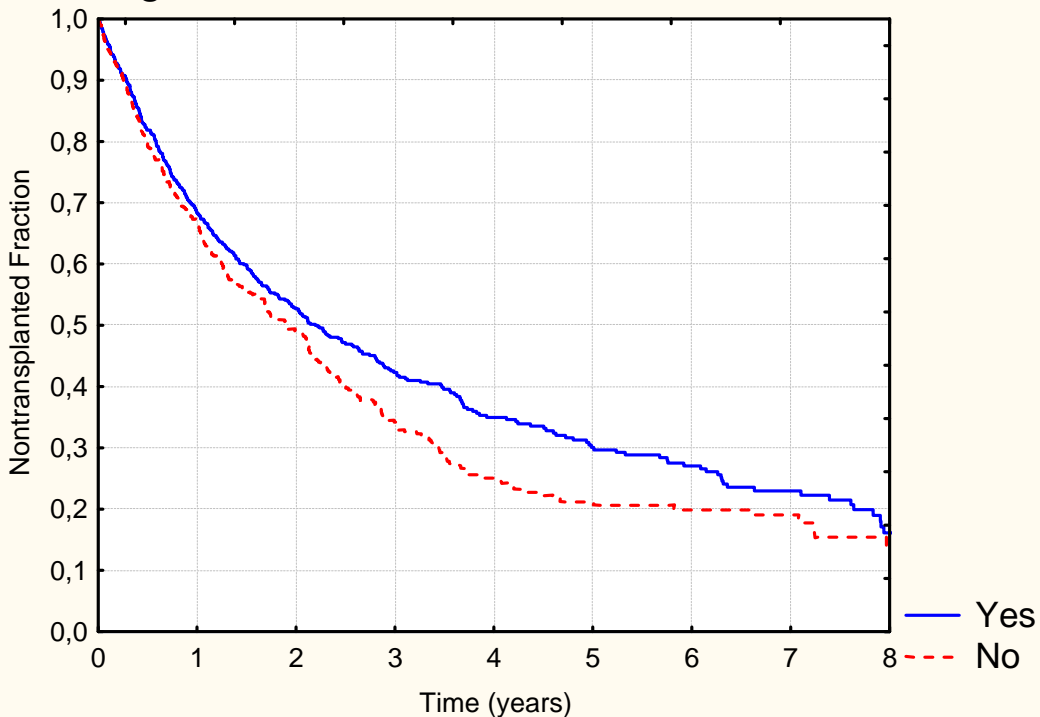


Fig. 21. Waiting list and previous blood transfusion. Previous blood transfusion has a minor, and insignificant effect on waiting list.

## Waiting List and Immunisation

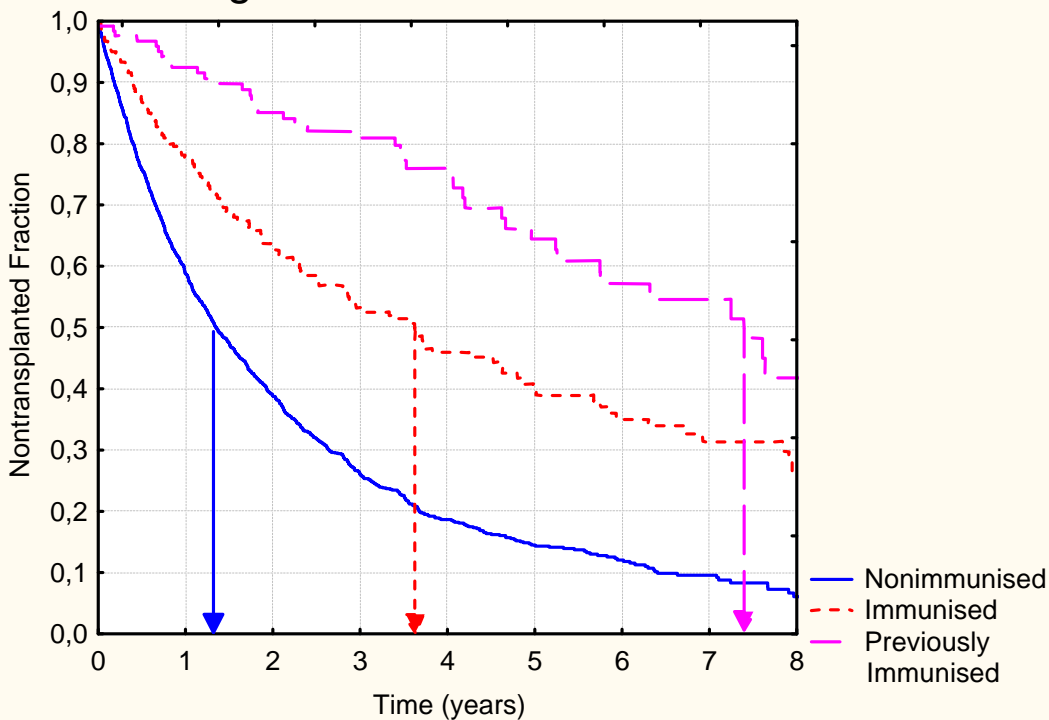
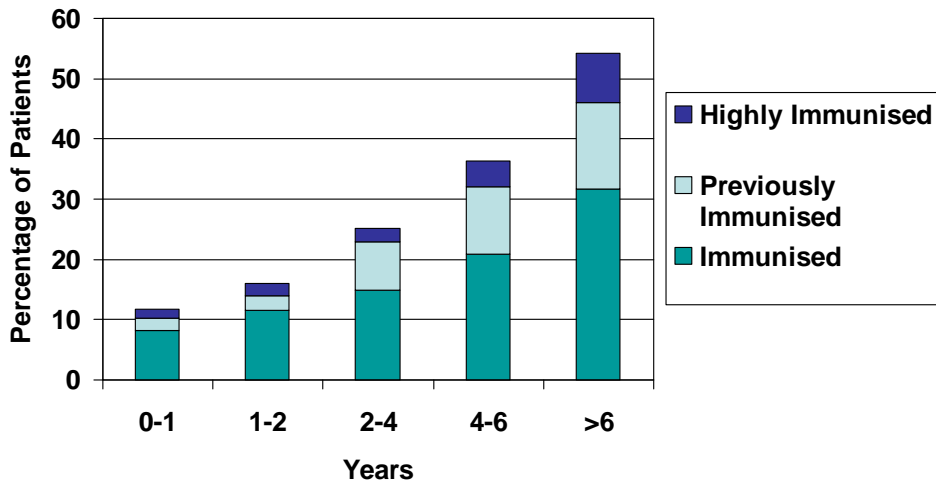


Fig. 22. Waiting List and Immunisation. Presence of antibodies reduces transplantation chance. The excess waiting list for previously immunised patients may be partly artefactual: one has to be on the waiting list for a significant period of time before disappearance of antibodies can be registered.

# Waiting List Duration and Immunisation



Living Donors Excluded

Fig. 23. Waiting list duration and immunisation. The proportion of immunised patients increases with waiting list duration. Immunised/previously immunised patients had twice the risk of being withdrawn from the waiting list and dying on the waiting list. For all registered waiting list causes (including living donors), the overall incidence was 18.5% and their risk of withdrawal was 21.7% vs. 10.3% and of dying 16.5% vs. 8.5% for non-immunised patients.

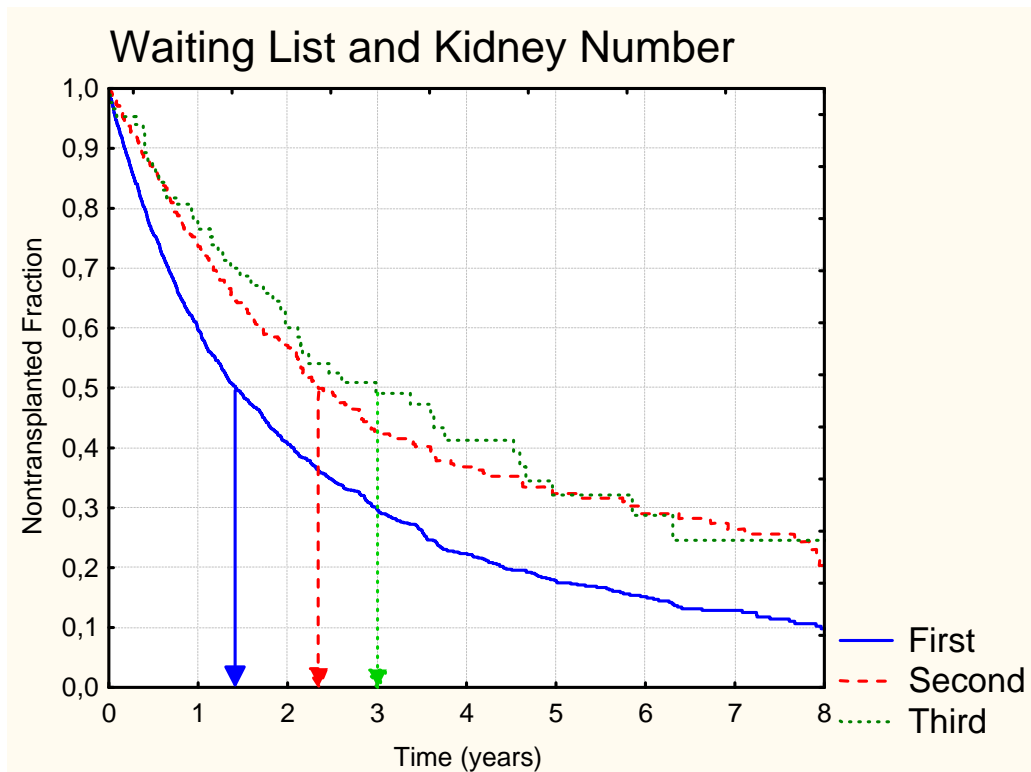


Fig. 24. Waiting list and kidney number. Waiting time increases with increasing transplant number.

## Waiting List Duration and Graft Survival

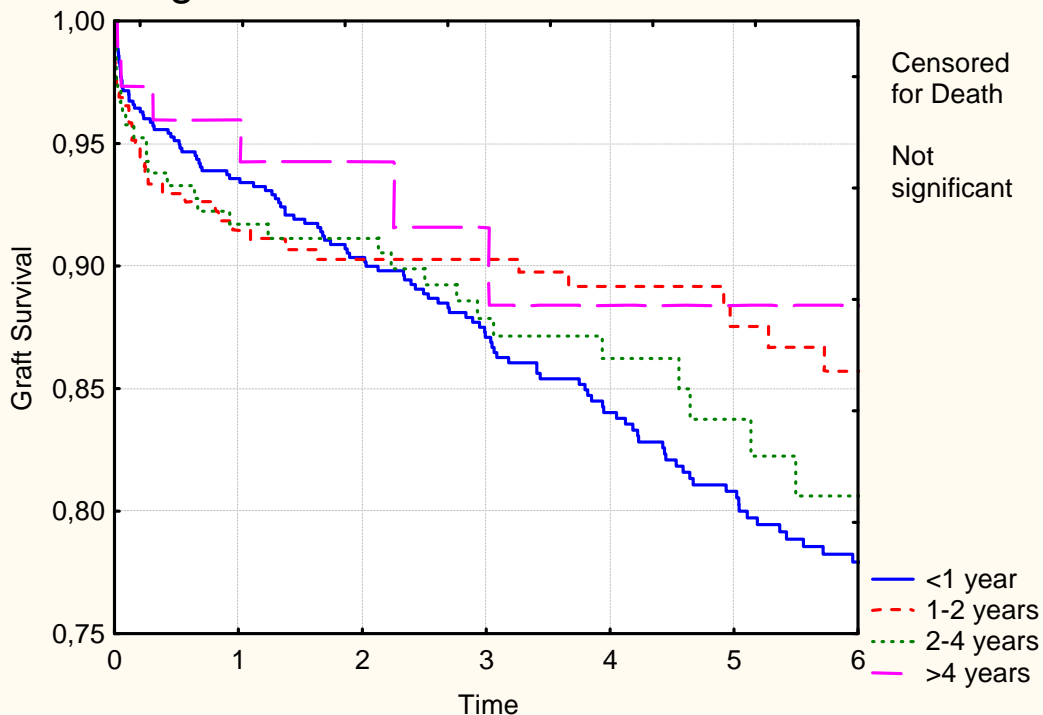


Fig. 25. Waiting list duration and graft survival. Waiting time has no effect on subsequent graft survival.

## Waiting List and Urgency

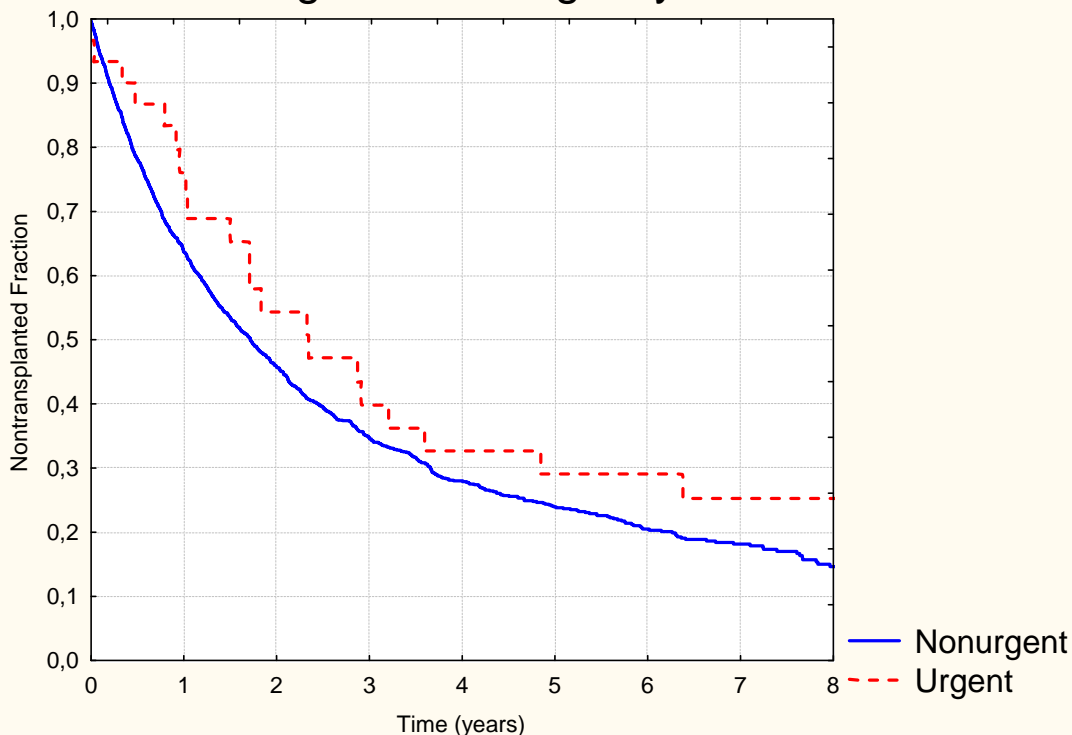


Fig. 26. Waiting list and local urgency. Local urgency registration did not affect waiting times.

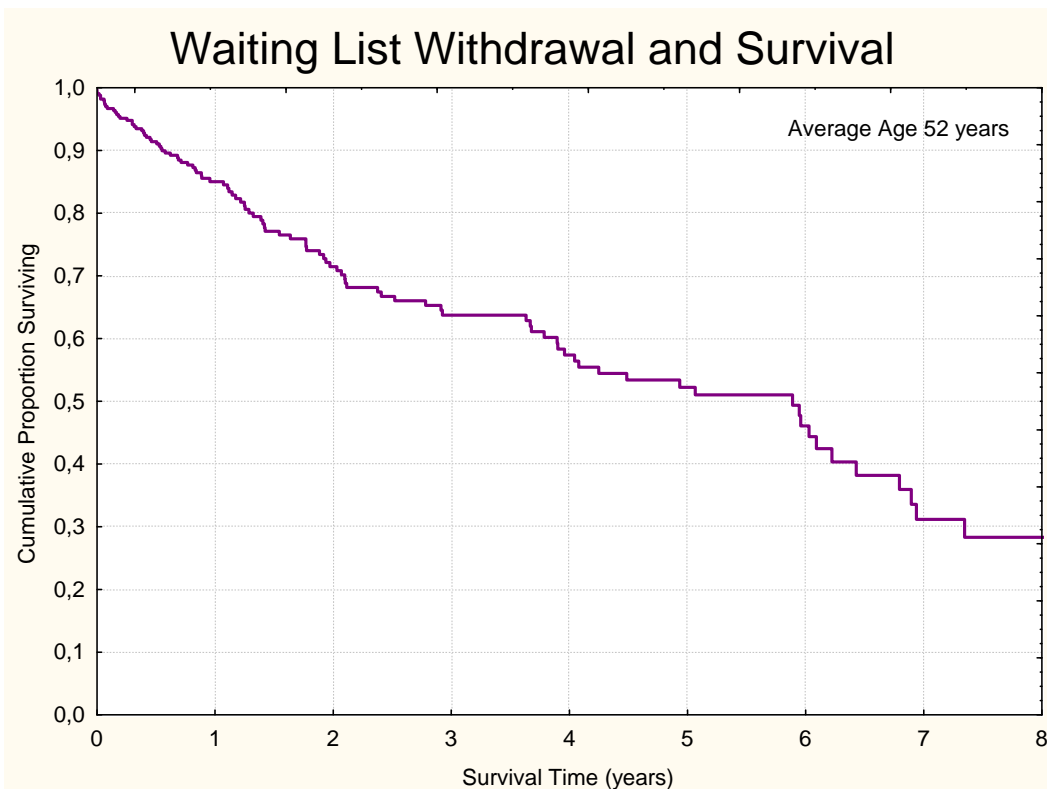


Fig. 27. Waiting list withdrawal and survival. Withdrawal from the waiting list did not seem to affect subsequent survival on dialysis.

## Risk Factors for Death

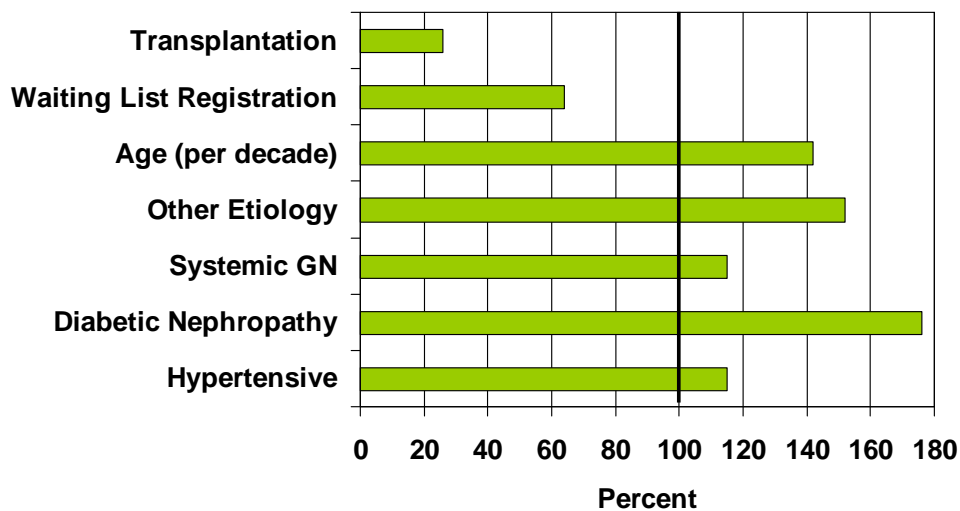


Fig. 28. Risk factors for death. On a Cox proportional hazards analysis, hypertensive nephropathy, diabetic nephropathy, systemic glomerulonephritis, other etiology and age all significantly increased mortality. Admission to the transplant waiting risk was a marker of a 35% reduced mortality, presumably due to absence of comorbidity. Subsequent transplantation more than halved mortality, in accordance with the literature.