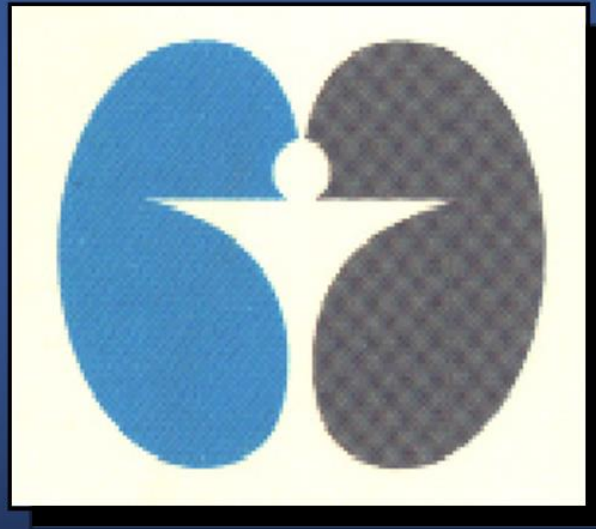




대한신장학회
등록위원회

우리나라 신대체 요법의 현황

- 인산 민병석교수 기념 말기 신부전 환자 등록사업 2005 -



대한신장학회 등록위원회



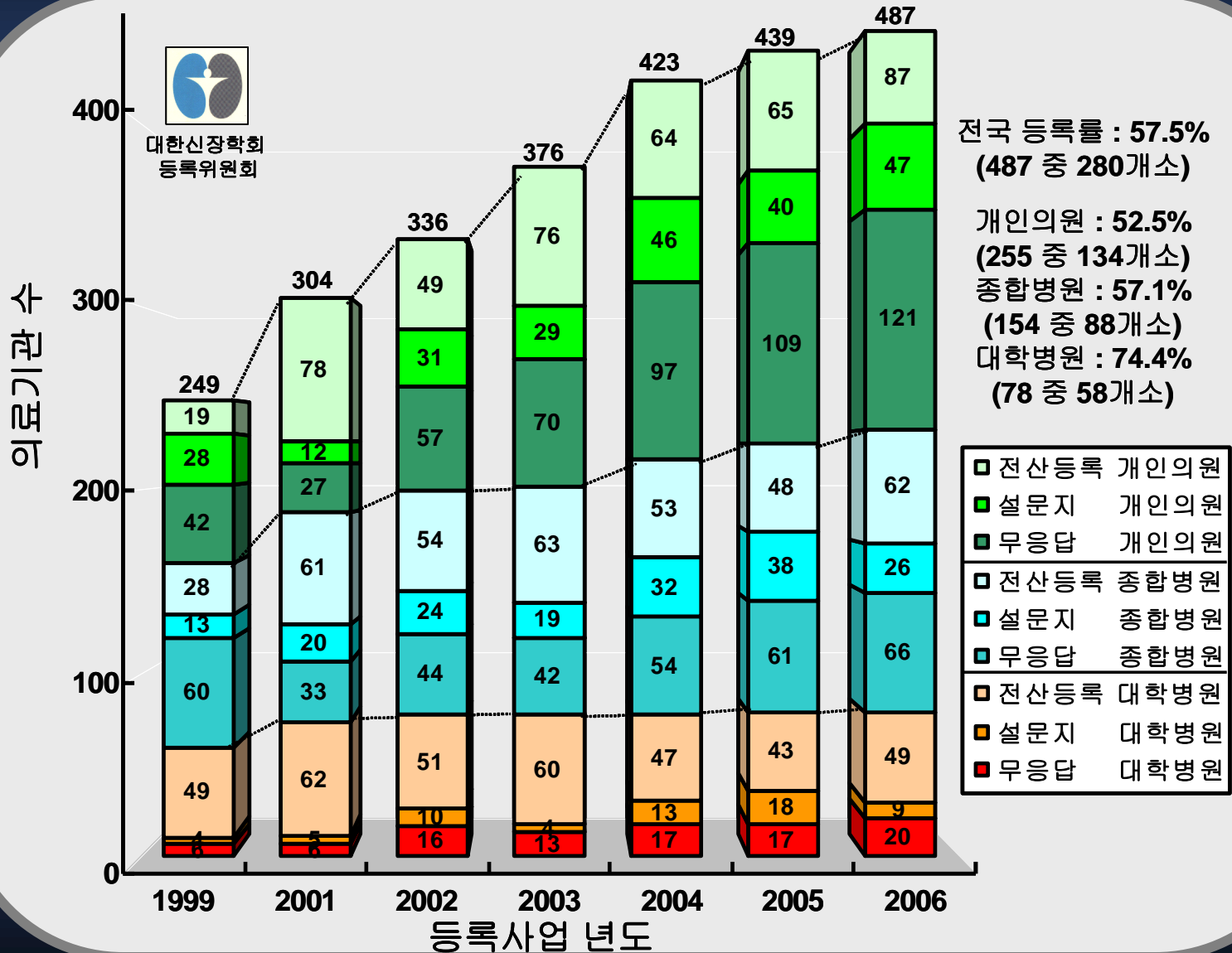


등록사업에 참여한 의료기관 수 및 응답률

	총의료기관수	인터넷입력	설문지응답	등록의료기관수	응답률(%)
서울	107	40	18	58	54.2
부산	34	12	8	20	58.8
대구	26	10	3	13	50.0
인천	16	5	3	8	50.0
광주	23	9	7	16	69.6
대전	19	9	2	11	57.9
울산	8	5	1	6	75.0
경기	98	38	19	57	58.2
강원	19	7	4	11	57.9
충북	18	6	6	12	66.7
충남	20	7	1	8	40.0
전북	12	7	1	8	66.7
전남	21	7	1	8	38.1
경북	27	16	6	22	81.5
경남	31	15	2	17	54.8
제주	8	5	0	5	62.5
전국	487	198	82	280	57.5



의료기관 증가와 의료기관별 등록률 추이





Prevalence of Renal Replacement Therapy

Year	HD	PD	Transplant	Total
1986	1,335 (32.6)	573 (13.9)	621 (15.1)	2,534 (61.7)
1988	3,012 (74.0)	1,058 (25.2)	982 (23.4)	5,142 (122.7)
1990	4,311 (101.8)	1,130 (26.7)	1,866 (44.1)	7,307 (172.6)
1992	5,890 (135.3)	1,599 (36.7)	2,862 (65.8)	10,351 (237.8)
1994	7,387 (162.7)	2,284 (50.3)	4,116 (90.6)	13,787 (303.6)
1996	9,635 (207.5)	2,976 (64.1)	5,461 (117.6)	18,072 (389.2)
1998	13,473 (285.6)	3,912 (82.9)	6,515 (138.1)	23,900 (506.7)
2000	15,853 (330.4)	4,671 (97.4)	7,522 (156.8)	28,046 (584.5)
2001	17,568 (363.8)	5,489 (113.7)	7,957 (164.8)	31,014 (642.3)
2002	20,010 (412.4)	5,712 (117.7)	8,271 (170.5)	33,993 (700.6)
2003	23,348 (478.2)	6,807 (139.4)	8,635 (176.9)	38,790 (794.5)
2004	25,335 (516.5)	7,569 (154.3)	8,987 (183.2)	41,891 (854.0)
2005	27,246 (553.0)	7,816 (158.6)	9,271 (188.2)	44,333 (899.8)

(): number of patients per million population



산정특레코드에 따른 국민 건강보험 청구 말기신부전 환자수

(2004년 국민 건강보험 자료*)

	년간 총 환자 수		11월 + 12월 환자수 ***		대한신장학회	
	2004		2004		2004 년말	2005 년말
	입원 + 외래	외래	입원 + 외래	외래		
HD (V001**)	38,473	34,897	27,824	26,725	25,335	27,246
PD (V003**)	10,408	9,776	7,574	7,275	7,569	7,816
KT (V005**)	10,700	10,596	9,566	9,518	8,987	9,271
HD+PD+KT	59,581	55,269	44,964	43,518	41,891	44,333
전환 환자수	4,297	3,704	634	579		
실 환자수	55,284	51,565	44,330	42,939	41,891	44,333

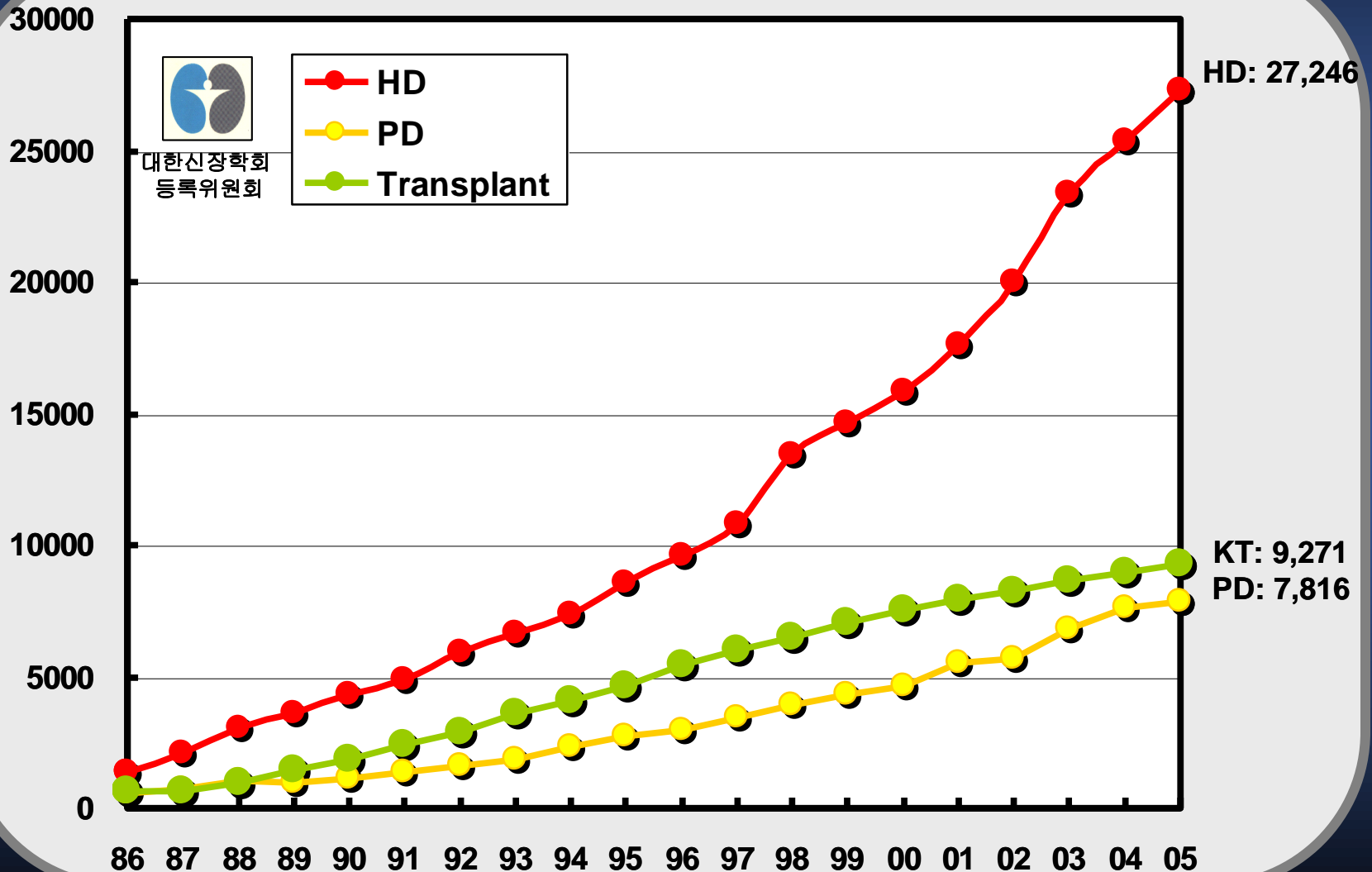
* 2004년 전체 말기신부전 환자 청구 건수 : 548,364 건.

** 말기 신부전 산정특레 코드 : V001 =혈액투석, V002 = 복막투석, V005=신장이식

*** 11월과 12월에 한번이라도 말기 신부전 산정특레 코드로 보험 청구한 환자수

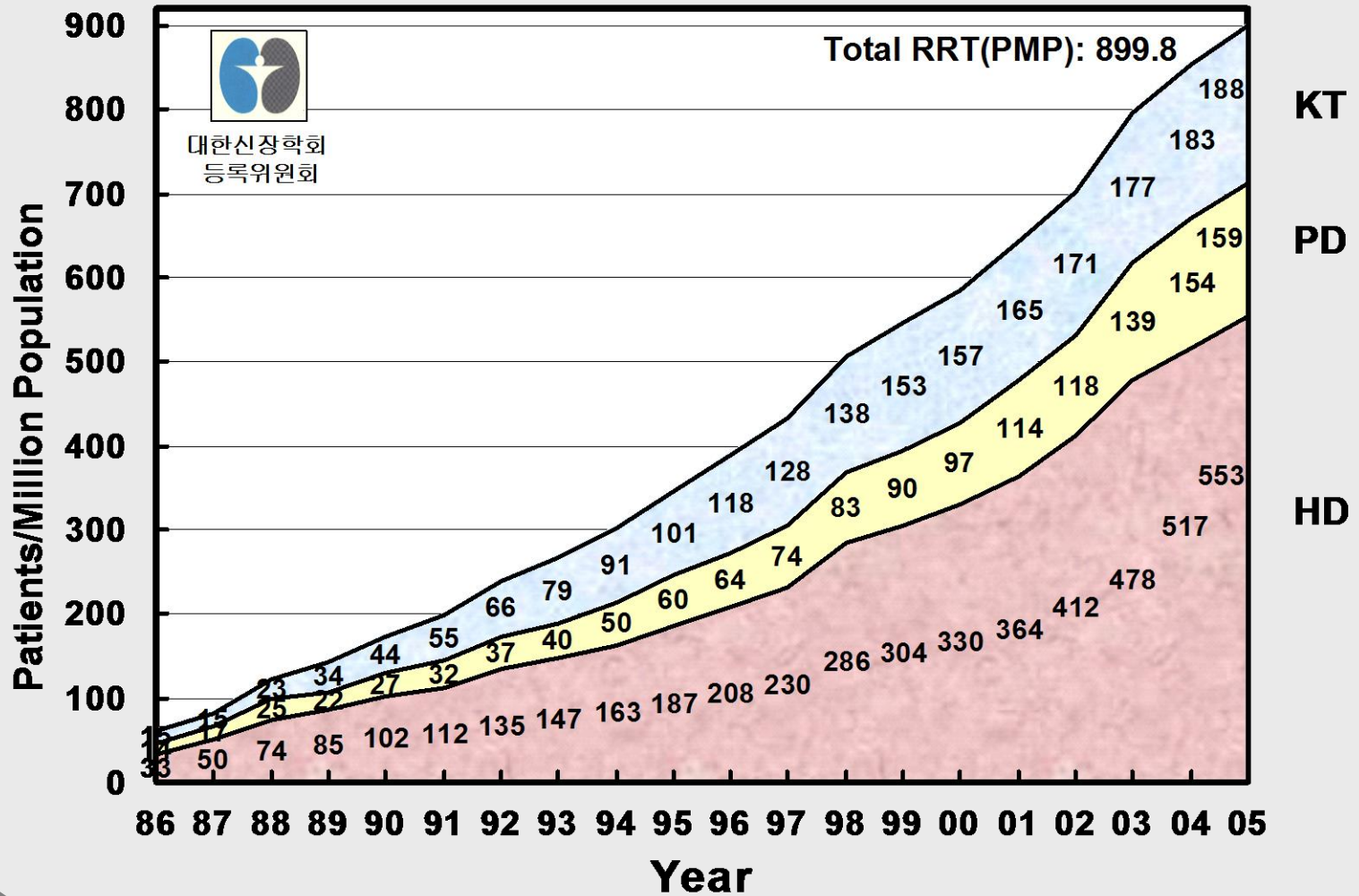


Patient Number of RRT





Point Prevalence of RRT

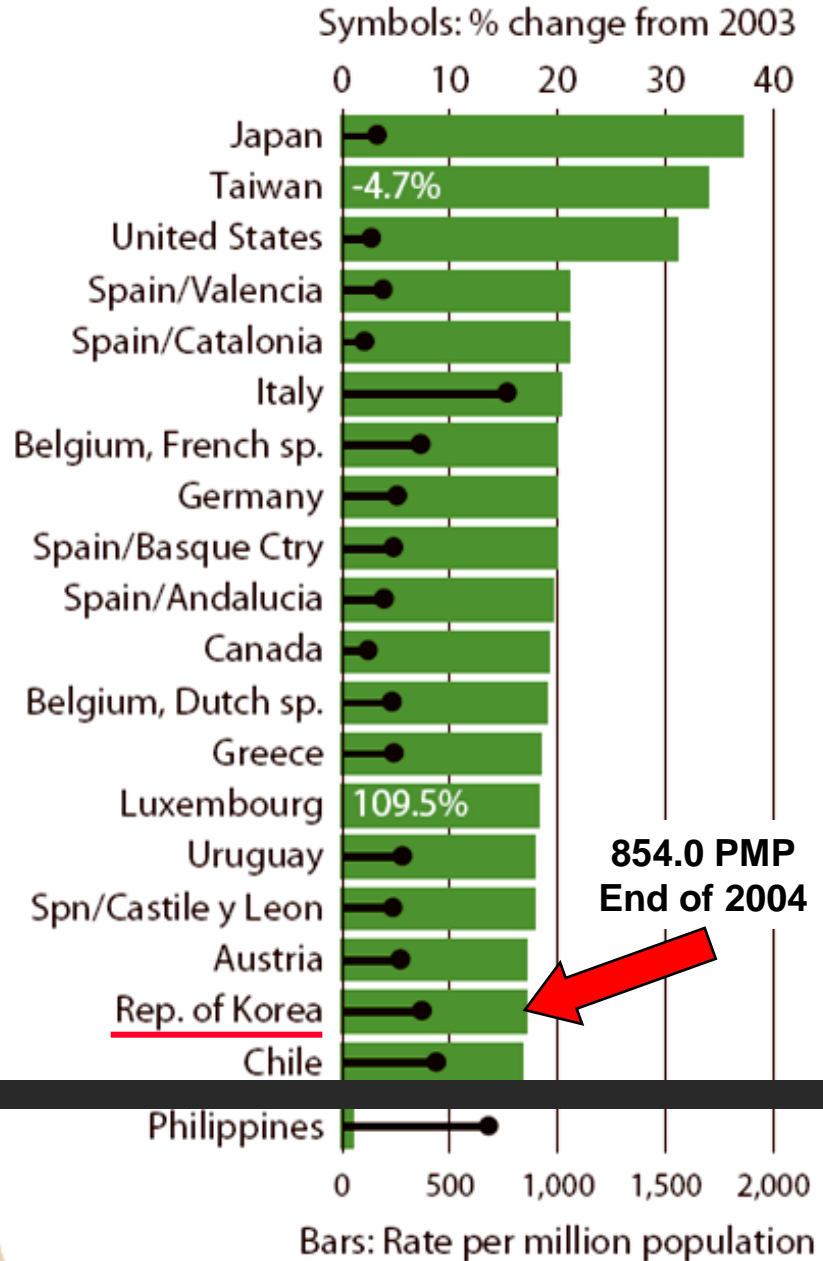


ESRD Prevalence (PMP)

USRDS 2006
International
comparison

2006 Annual Data Report
united states renal data system

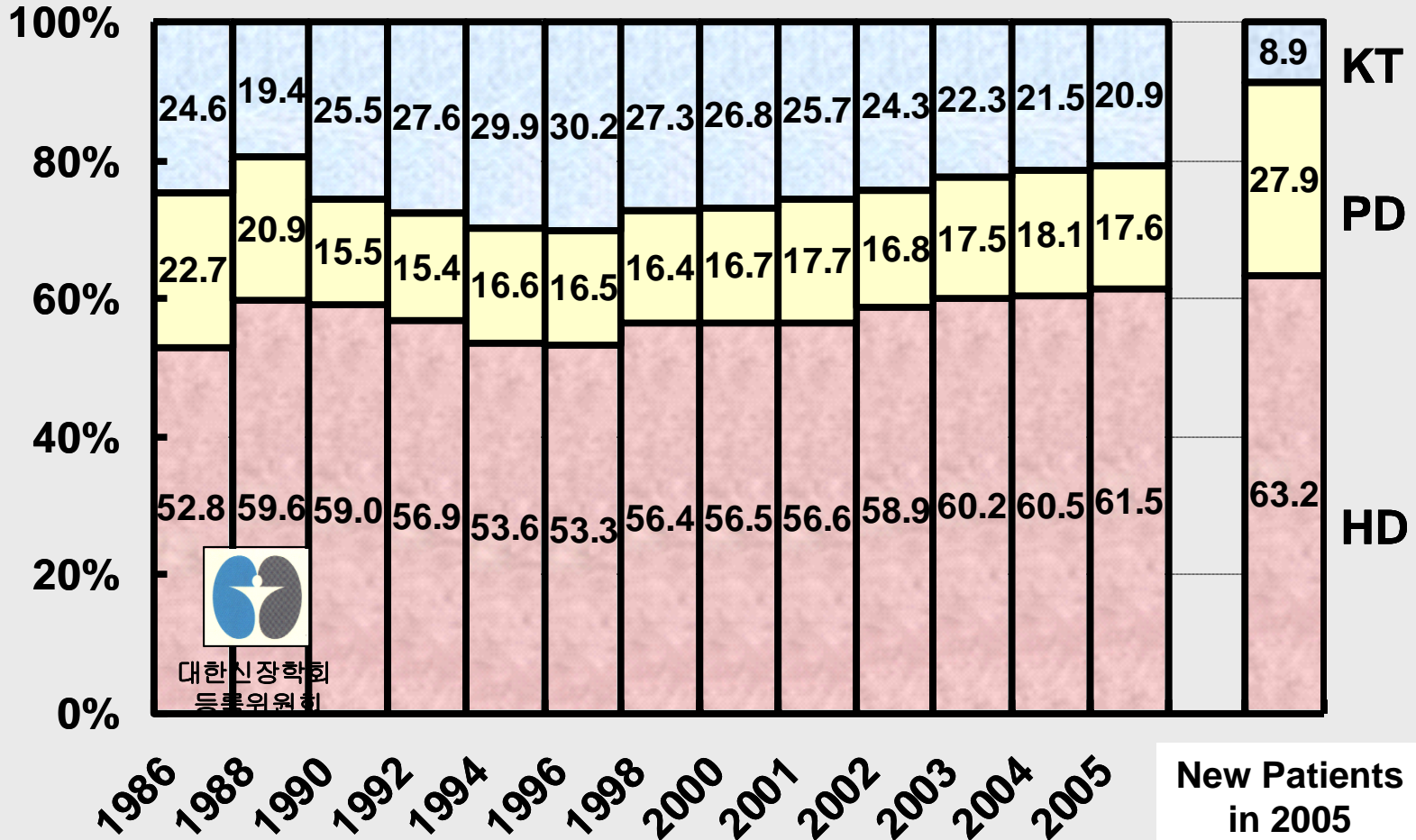
12.5 Prevalence of ESRD, 2004





Proportion of RRT Modalities

- Annual Prevalence & Incidence in 2005 -



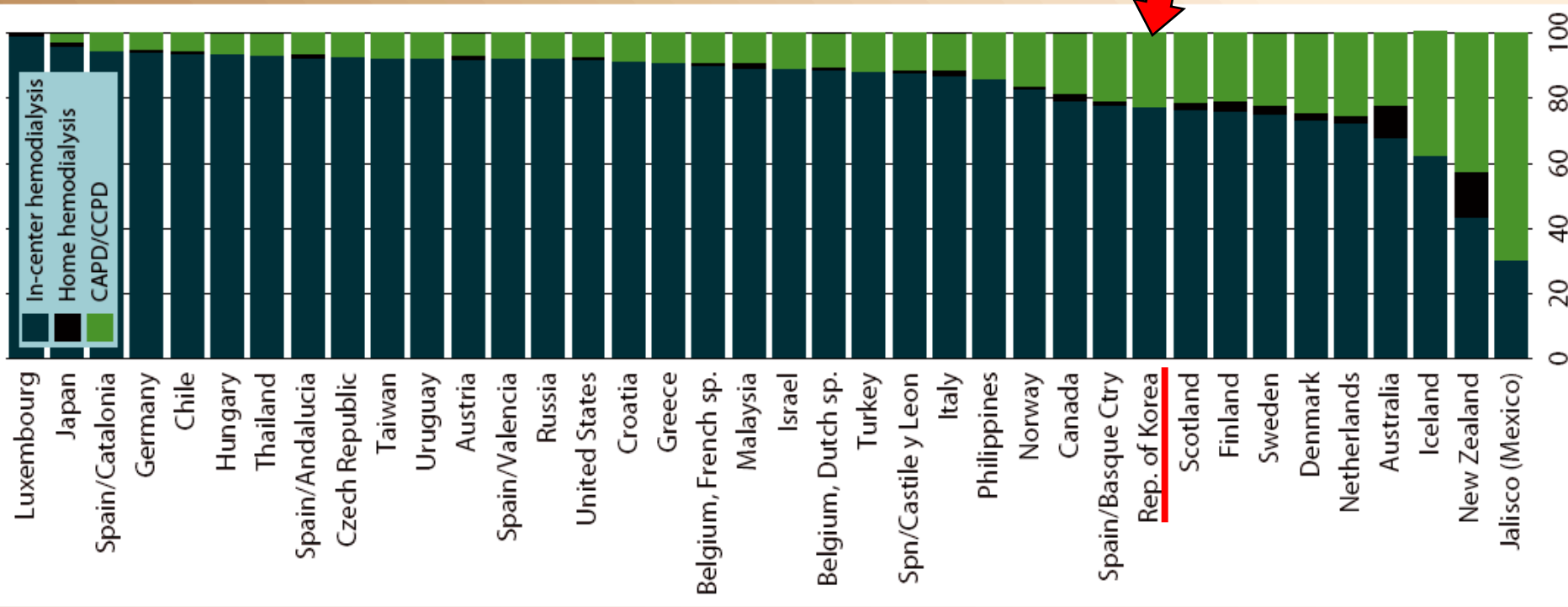
Dialysis Modality

2006 Annual Data Report
 united states renal data system

USRDS 2006

International comparison

12.7 Percent distribution of prevalent dialysis patients, by modality, 2004



HD: PD = 77.0: 23.0
 End of 2004



행정구역별 투석환자 및 혈액투석기 분포

(2005년 12월 말 기준)

지역	혈액투석환자	복막투석환자	총 투석환자	투석환자 / 인구백만명	투석의료기관수	투석기 수	혈액투석환자 / 투석기
서울	6,920	2,591	9,511	924	107	2,338	3.0
부산	2,244	996	3,240	886	34	757	3.0
대구	1,422	928	2,350	930	26	492	2.9
인천	1,308	443	1,751	665	16	423	3.1
광주	982	236	1,218	865	23	421	2.3
대전	968	238	1,206	825	19	472	2.1
울산	426	66	492	449	8	179	2.4
경기	5,576	1,075	6,651	613	98	2,098	2.7
강원	977	302	1,279	841	19	339	2.9
충북	816	82	898	598	18	306	2.7
충남	847	92	939	474	20	337	2.5
전북	1,015	137	1,152	608	12	298	3.4
전남	911	74	985	498	21	363	2.5
경북	987	262	1,249	461	27	384	2.6
경남	1,444	244	1,688	530	31	551	2.6
제주	403	50	453	809	8	143	2.8
전국	27,246	7,816	35,062	712	487	9,901	2.8



생활권역별 투석기 및 투석환자 분포

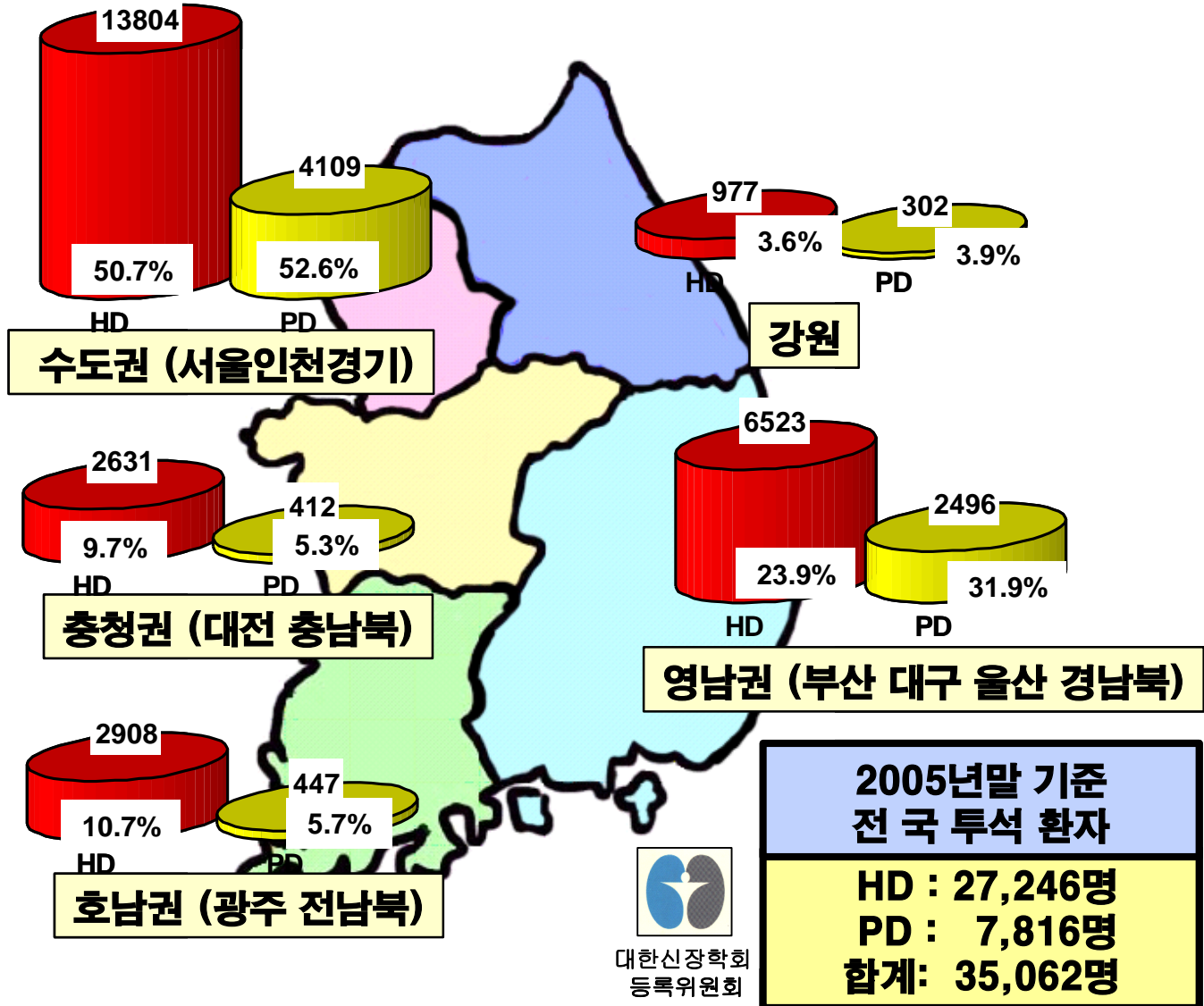
(2005년 12월 말 기준)

지역	주민등록인구 (전국비율 %)	혈액투석 환자수	복막투석 환자수	총 투석 환자	투석환자 / 인구 백만명	투석 의 료기관	혈액 투석기	혈액투석 환자/ 혈 액투석기
수도권 (서울,경기,인천)	23,782,339	13,804	4,109	17,913	753	221	4,859	2.8
	48.3%	50.7%	52.6%	51.1%		45.4%	49.1%	
충청권 (대전,충남,충북)	4,946,704	2,631	412	3,043	615	57	1,115	2.4
	10.0%	9.7%	5.3%	8.7%		11.7%	11.3%	
호남권 (광주,전남,전북)	5,280,071	2,908	447	3,355	635	56	1,082	2.7
	10.7%	10.7%	5.7%	9.6%		11.5%	10.9%	
영남권 (부산,대구,울산, 경남,경북)	13,177,791	6,523	2,496	9,019	684	126	2,363	2.8
	26.7%	23.9%	31.9%	25.7%		25.9%	23.9%	
강원	1,521,099	977	302	1,279	841	19	339	2.9
	3.1%	3.6%	3.9%	3.6%		3.9%	3.4%	
전국	49,267,751	27,246	7,816	35,062	712	487	9,901	2.8



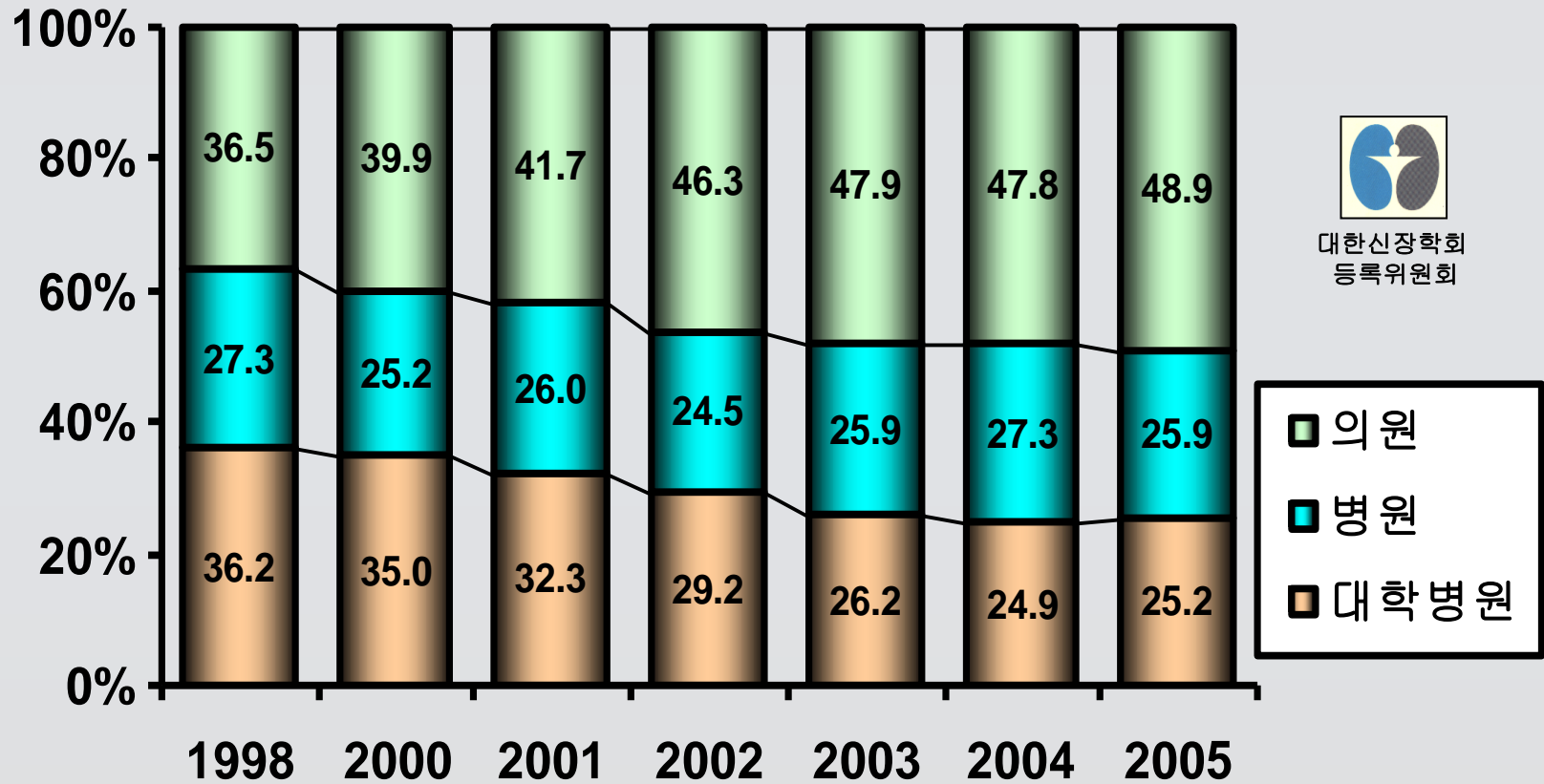
생활권역별 투석환자 분포

(전국 비율 %, 2005년 12월 말 기준)





의료기관 종류별 혈액투석환자수 비율



대한신장학회
등록위원회

- 의원
- 병원
- 대학병원



Number of New RRT Pts

Year	HD	PD	Transplant	Total
1986	670 (16.3)	287 (7.0)	221 (5.4)	1,173 (28.7)
1988	1,516 (36.2)	375 (8.9)	428 (10.2)	2,319 (55.3)
1990	2,418 (57.1)	530 (12.5)	624 (14.7)	3,572 (84.3)
1992	3,083 (70.8)	705 (16.2)	765 (17.6)	4,553 (104.6)
1994	2,999 (66.0)	907 (19.9)	685 (15.1)	4,591 (101.1)
1996	3,670 (79.0)	1,388 (29.9)	919 (19.8)	5,977 (128.7)
1998	2,463 (52.2)	753 (15.9)	994 (21.1)	4,210 (89.3)
2000	2,736 (57.0)	1,021 (21.3)	683 (14.2)	4,440 (92.5)
2001	3,373 (69.9)	1,279 (26.5)	848 (17.6)	5,500 (113.9)
2002	3,878 (79.9)	1,666 (34.3)	739 (15.2)	6,283 (129.5)
2003	4,769 (97.7)	1,866 (38.2)	806 (16.5)	7,441 (152.4)
2004	5,279 (107.6)	2,246 (45.8)	853 (17.4)	8,378 (170.8)
2005	5,400 (109.6)	2,381 (48.3)	762 (15.5)	8,543 (173.4)

(): number of patients per million population

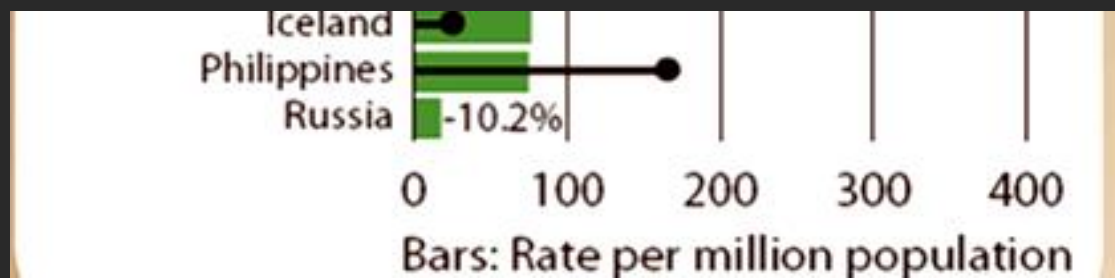
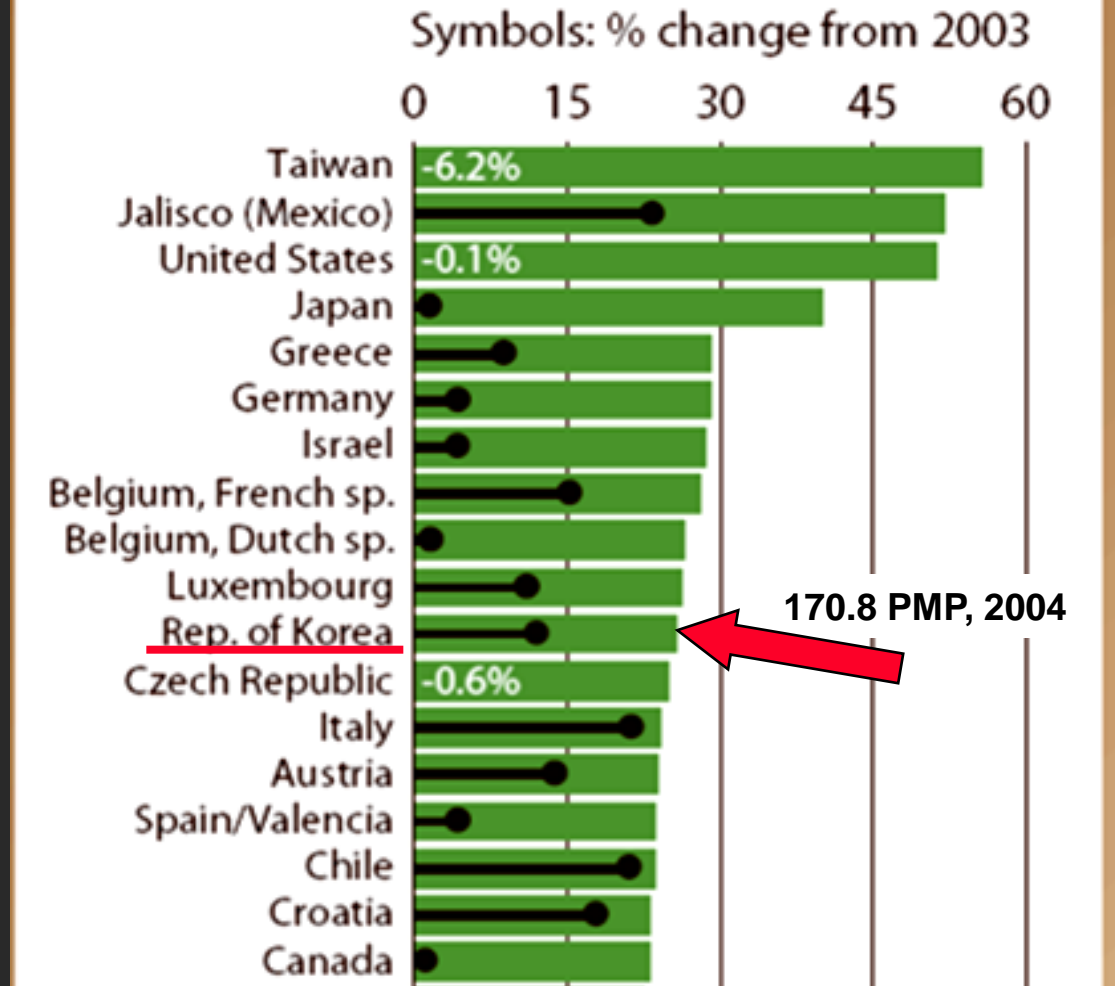
ESRD Incidence

(PMP)

USRDS 2006
International
comparison

2006 Annual Data Report
united states renal data system

12.2 Incidence of ESRD, 2004





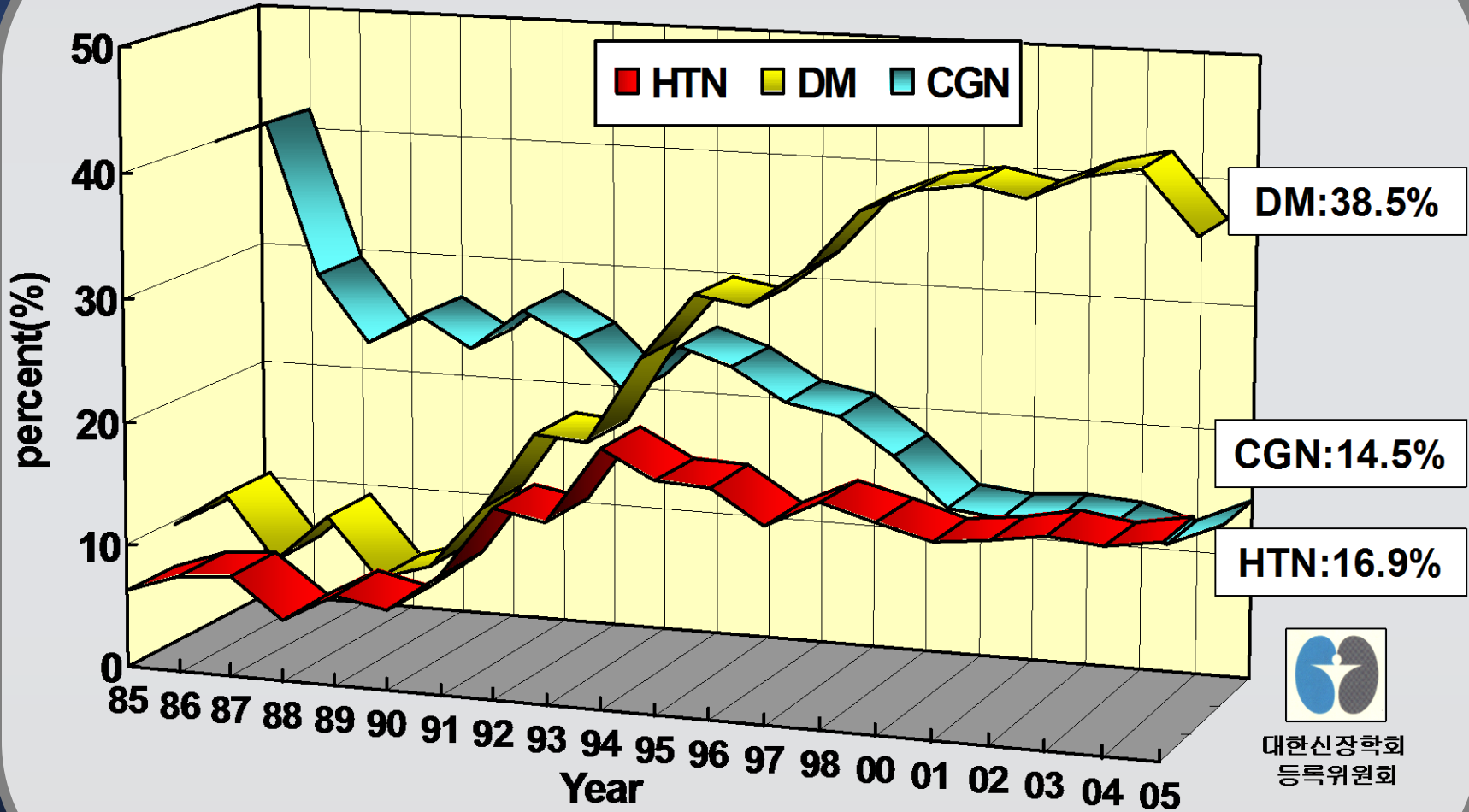
Causes of ESRD in New Pts

Causes	Percent (%)							
	1992	1994	1996	1998	2000	2002	2004*	2005*
Chronic Glomerulonephritis	25.3	25.5	21.6	17.9	14.0	13.9	12.5	14.5
Not Histologically confirmed	19.7	20.4	16.7	13.6	10.6	10.0	8.6	10.1
Histologically confirmed	5.6	5.0	4.9	4.3	3.4	3.9	3.9	4.4
Diabetic nephropathy	19.5	26.1	30.8	38.9	40.7	40.7	43.4	38.5
Hypertensive nephrosclerosis	15.4	20.8	18.3	17.8	16.6	16.0	16.2	16.9
Cystic kidney disease	2.1	2.2	1.8	1.7	2.2	1.6	1.4	1.9
Renal tuberculosis	1.1	1.5	1.2	0.5	0.4	0.5	0.3	0.3
Pyelo/interstitial nephritis	1.3	1.1	0.7	1.0	0.8	0.6	0.6	0.5
Drugs or nephrotoxic agents	1.3	0.1	0.6	0.3	0.3	0.4	0.2	0.2
Lupus nephritis	0.8	0.7	1.0	0.5	0.9	0.8	0.6	0.7
Gouty nephropathy	0.7	0.7	0.6	0.5	0.7	0.4	0.5	0.5
Hereditary nephropathy	0.3	0.7	0.4	0.2	0.1	0.2	0.3	0.4
Kidney tumor	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3
Other	4.1	2.7	2.8	3.9	3.0	5.6	5.9	7.5
Uncertain	28.6	17.8	15.9	16.6	20.2	19.0	17.8	17.8

* n = 7,943

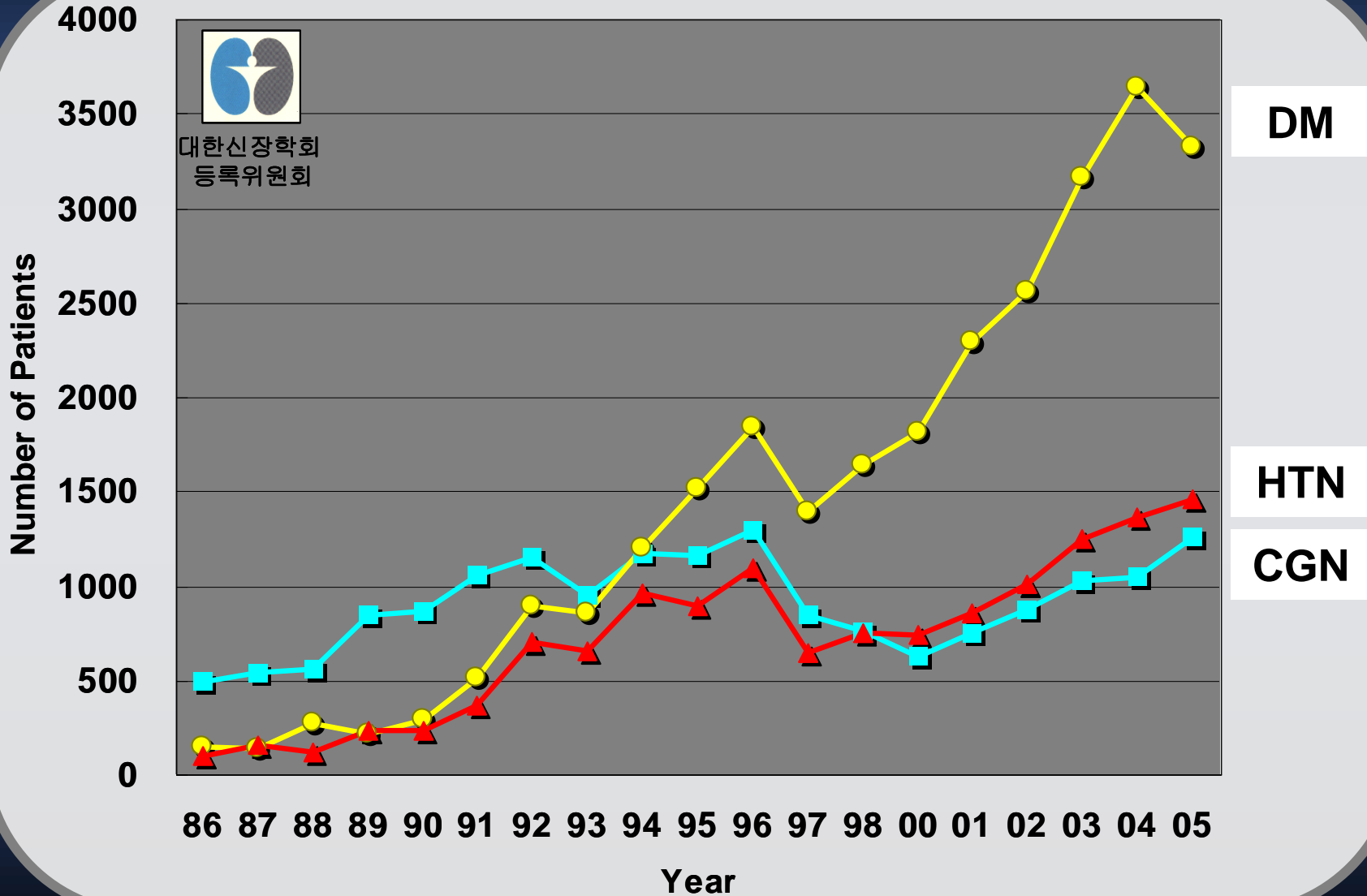


Three Major Causes of ESRD





New Pts Number according to ESRD Causes



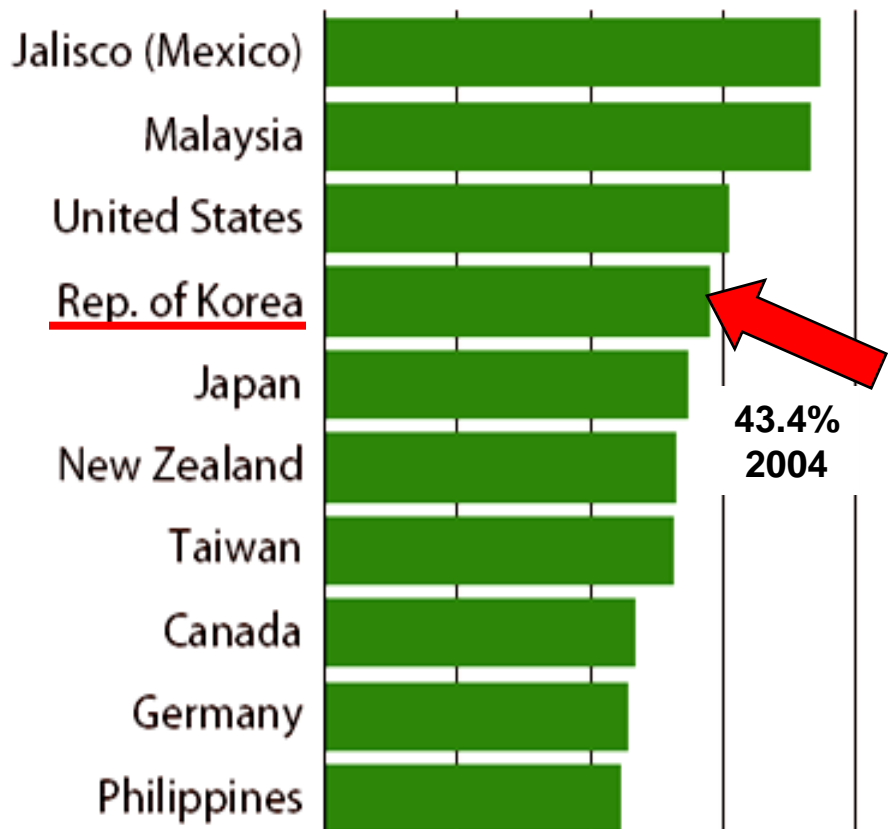
ESRD due to DM (%)

USRDS 2006
International
comparison

2006
Annual
Data
Report

united
states
renal
data
system

12.4 Percent of incident patients with diabetes, 2004



Iceland

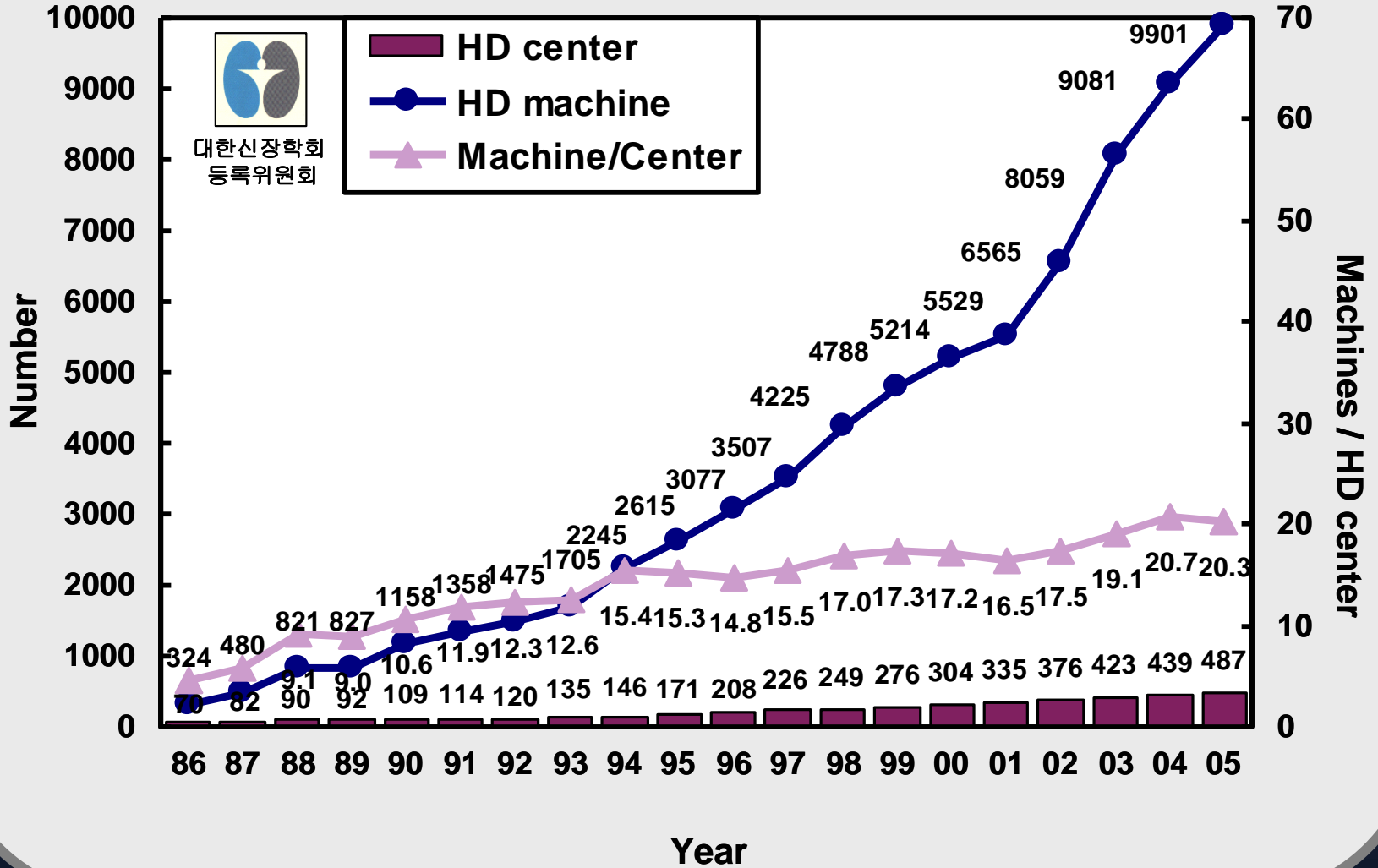
0 15 30 45 60

Percent of patients



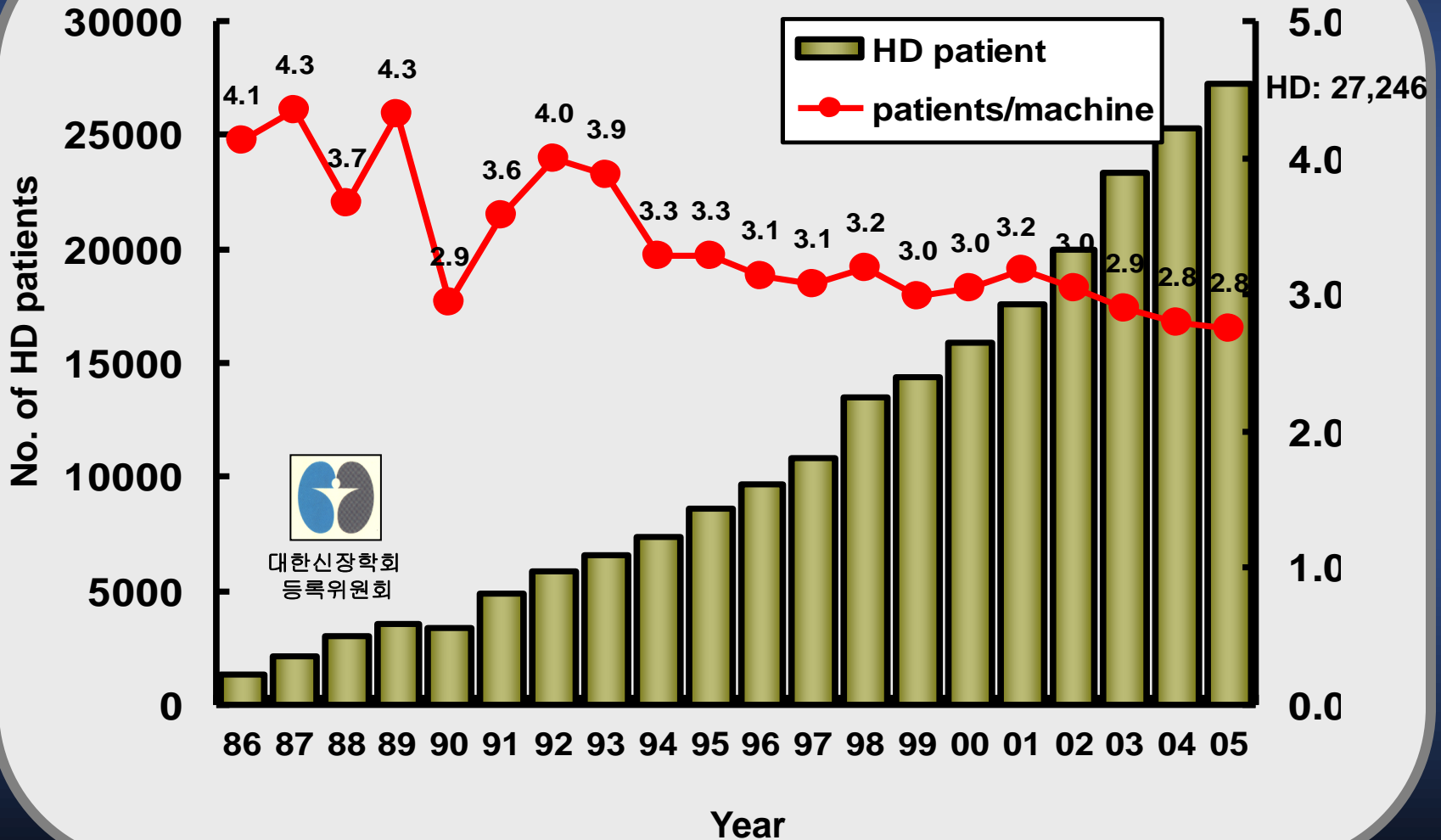
Number of HD Centers & HD Machines

대한신장학회
등록위원회



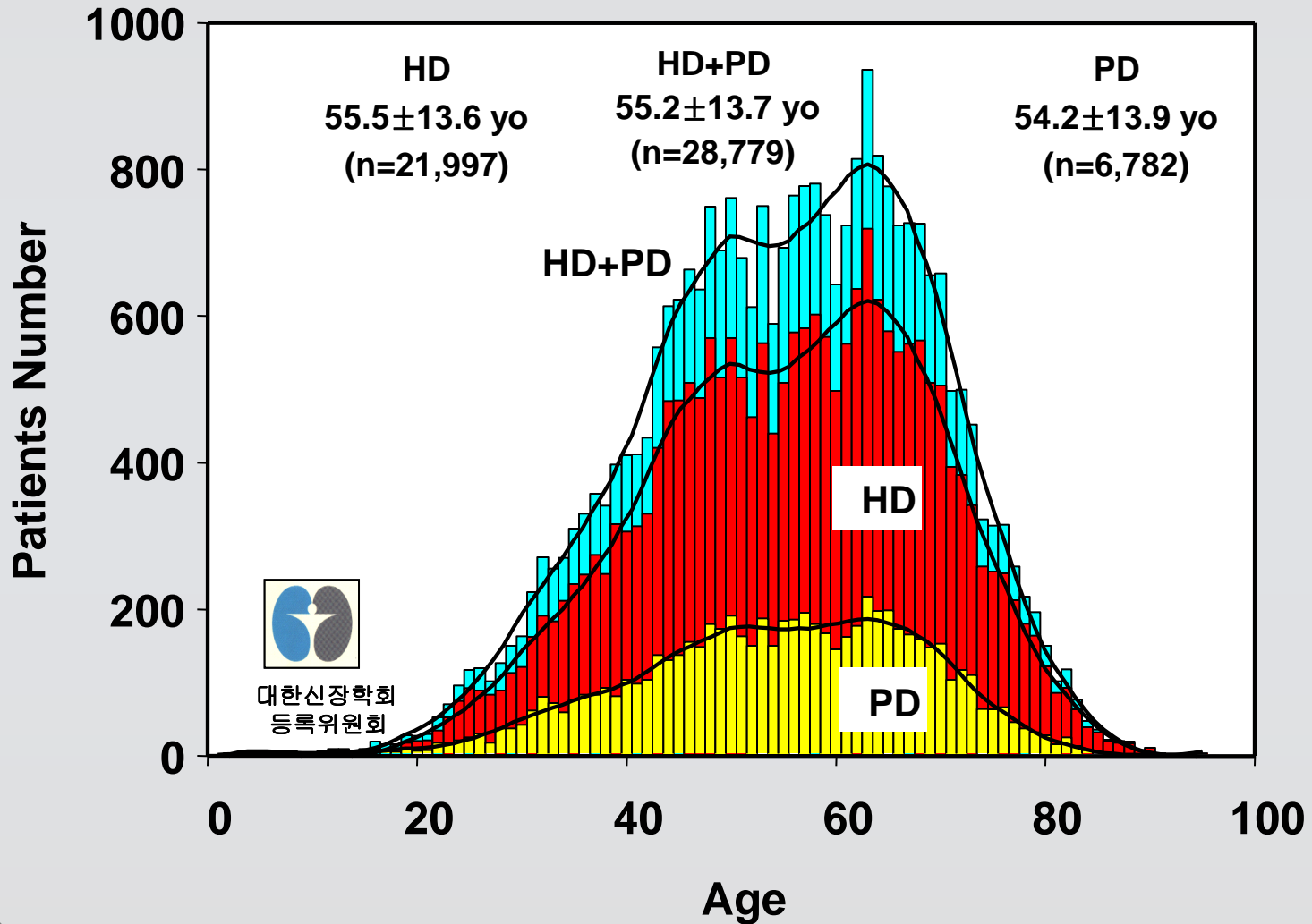


Ratio of HD Machine & HD Pts



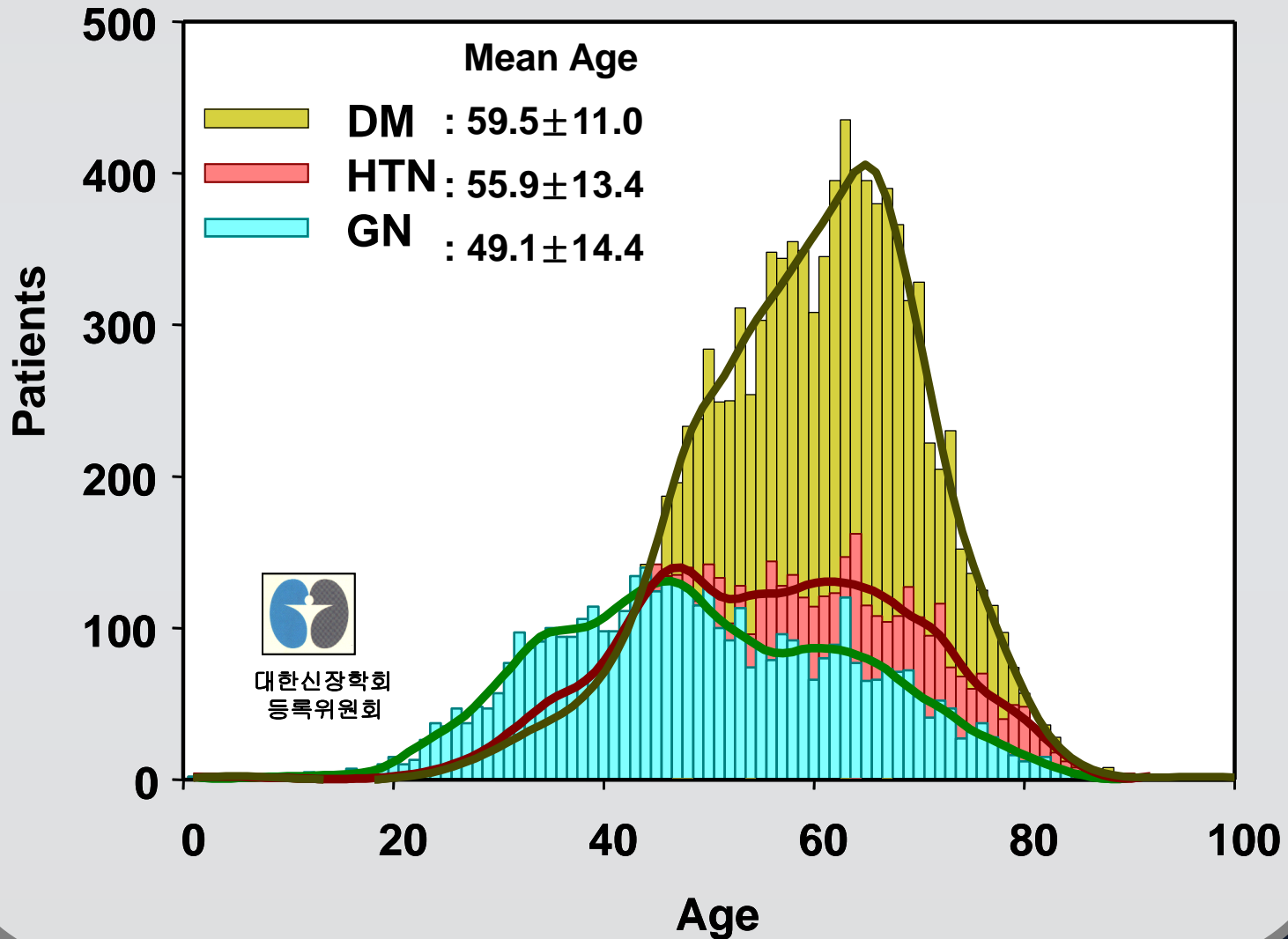


Age Distribution of Dialysis Pts



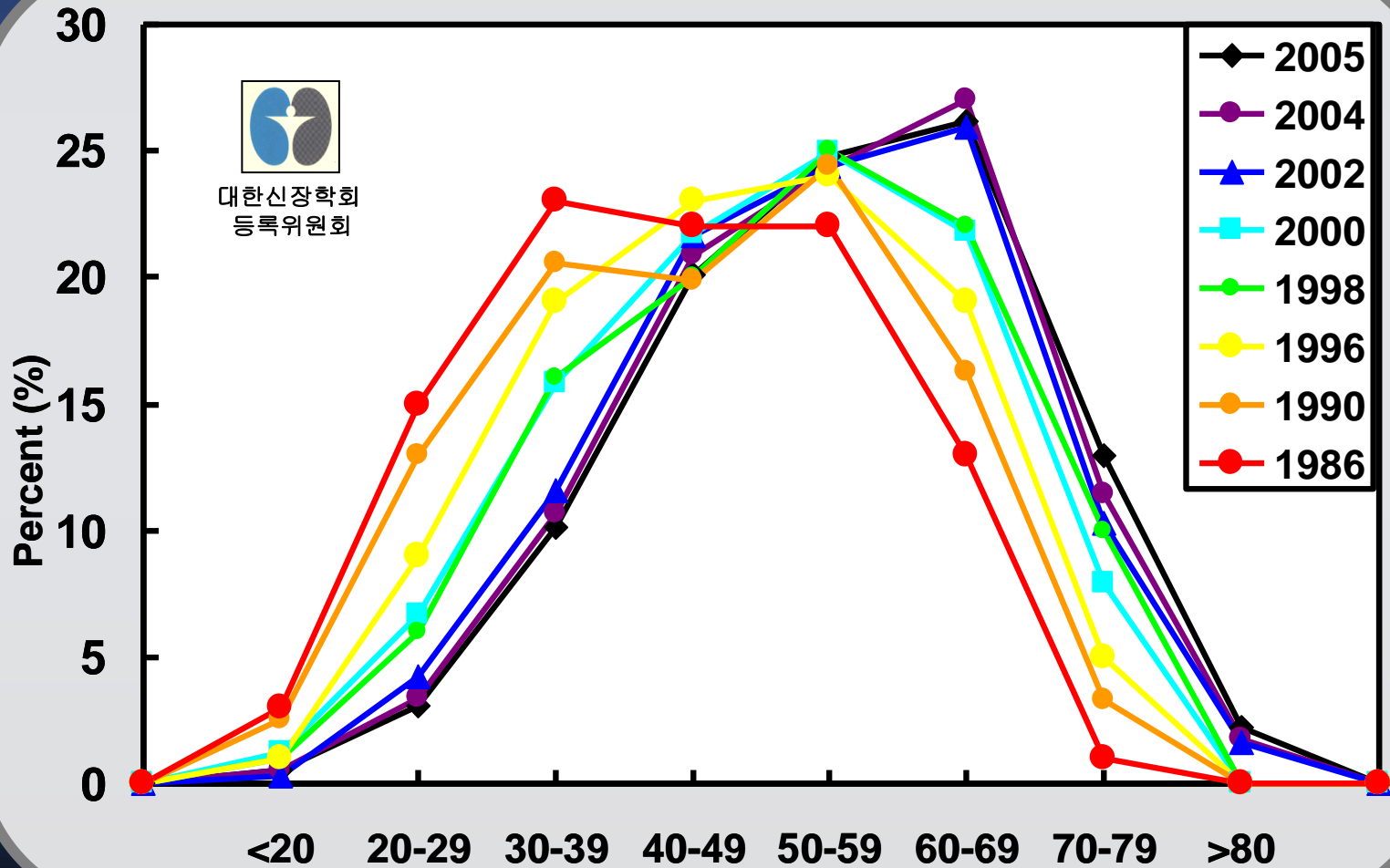


Age Distribution According to ESRD Causes



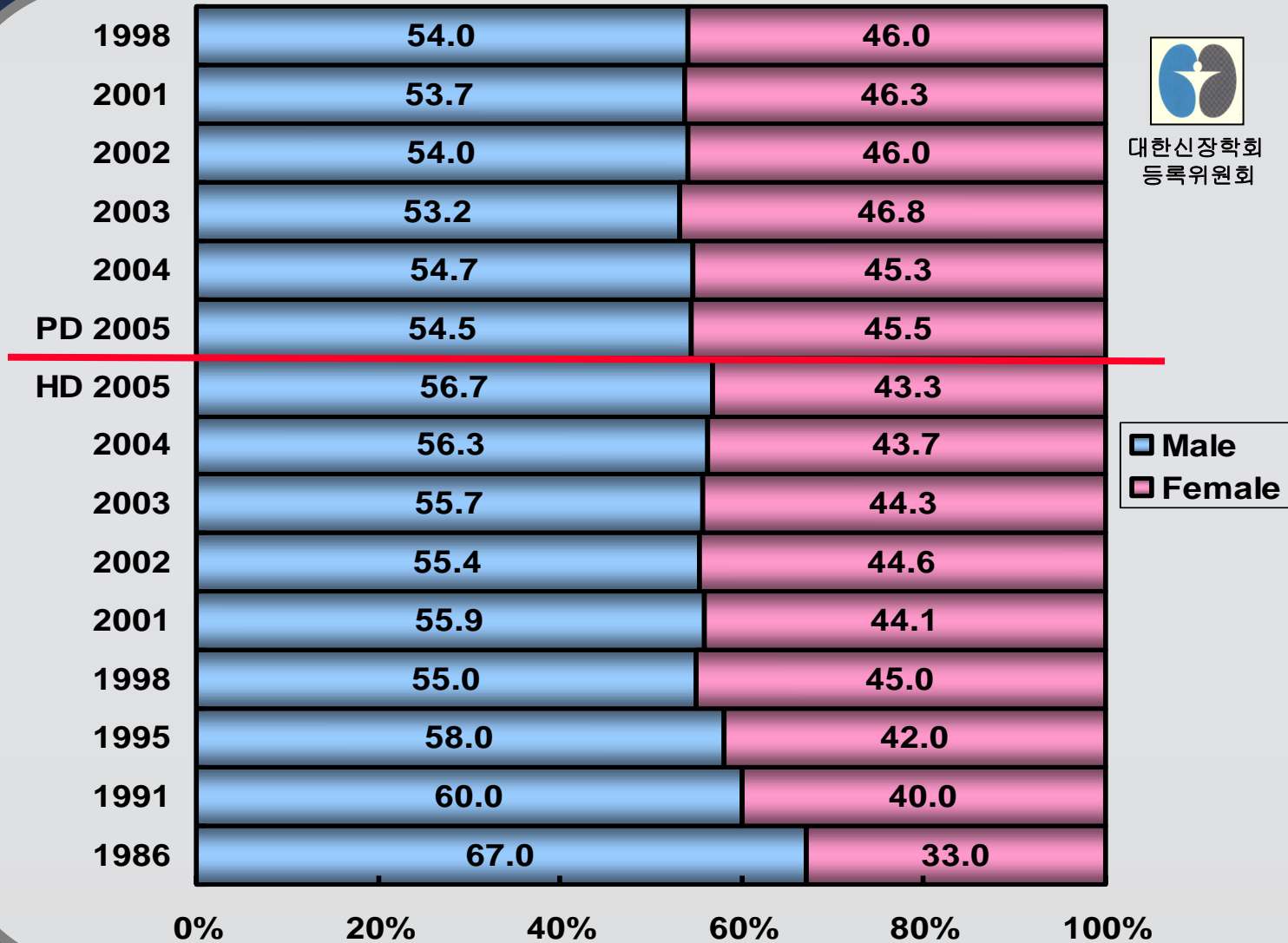


Age Distribution (%) of HD Pts According to Years



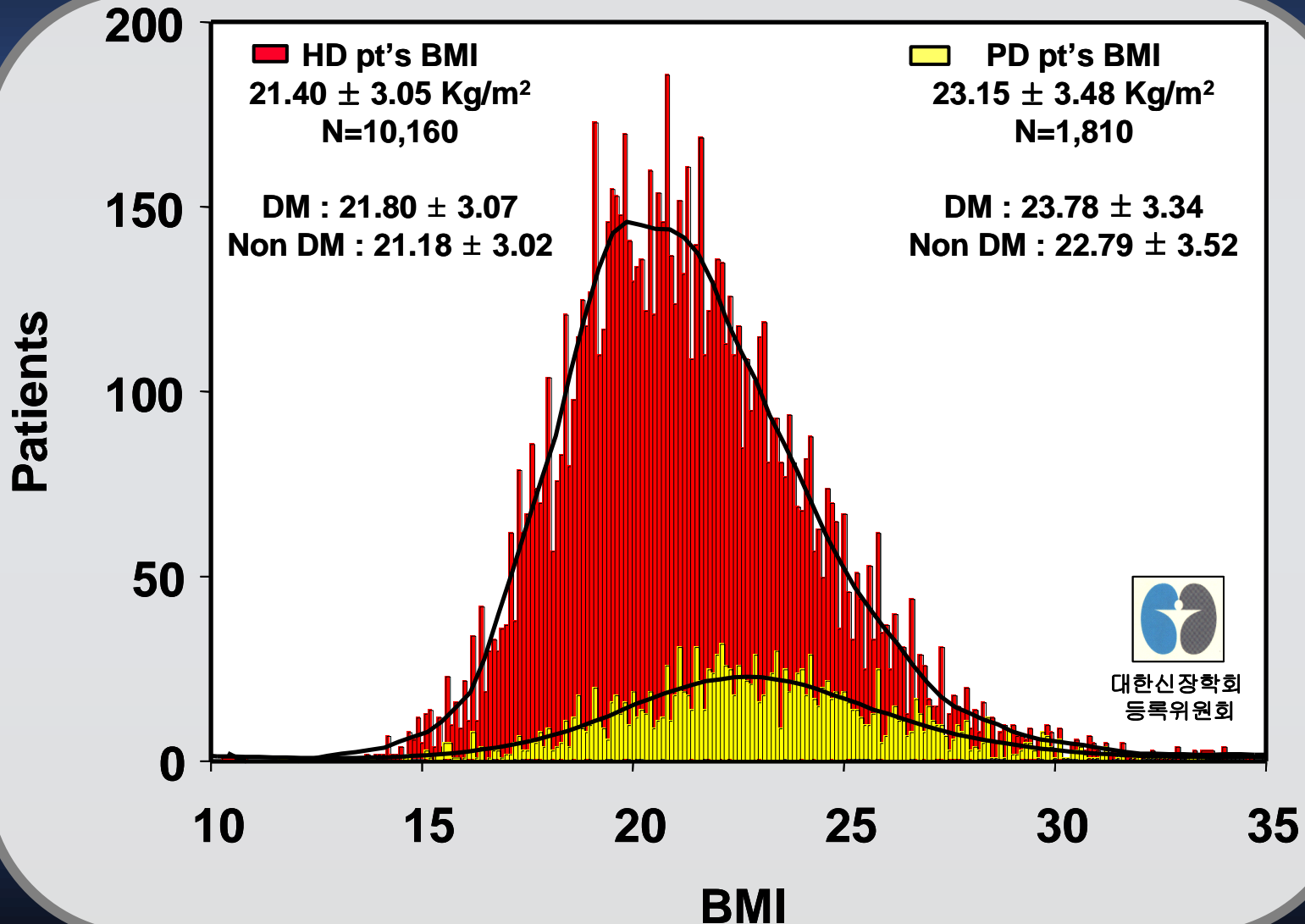


Sex Ratio of HD & PD Pts



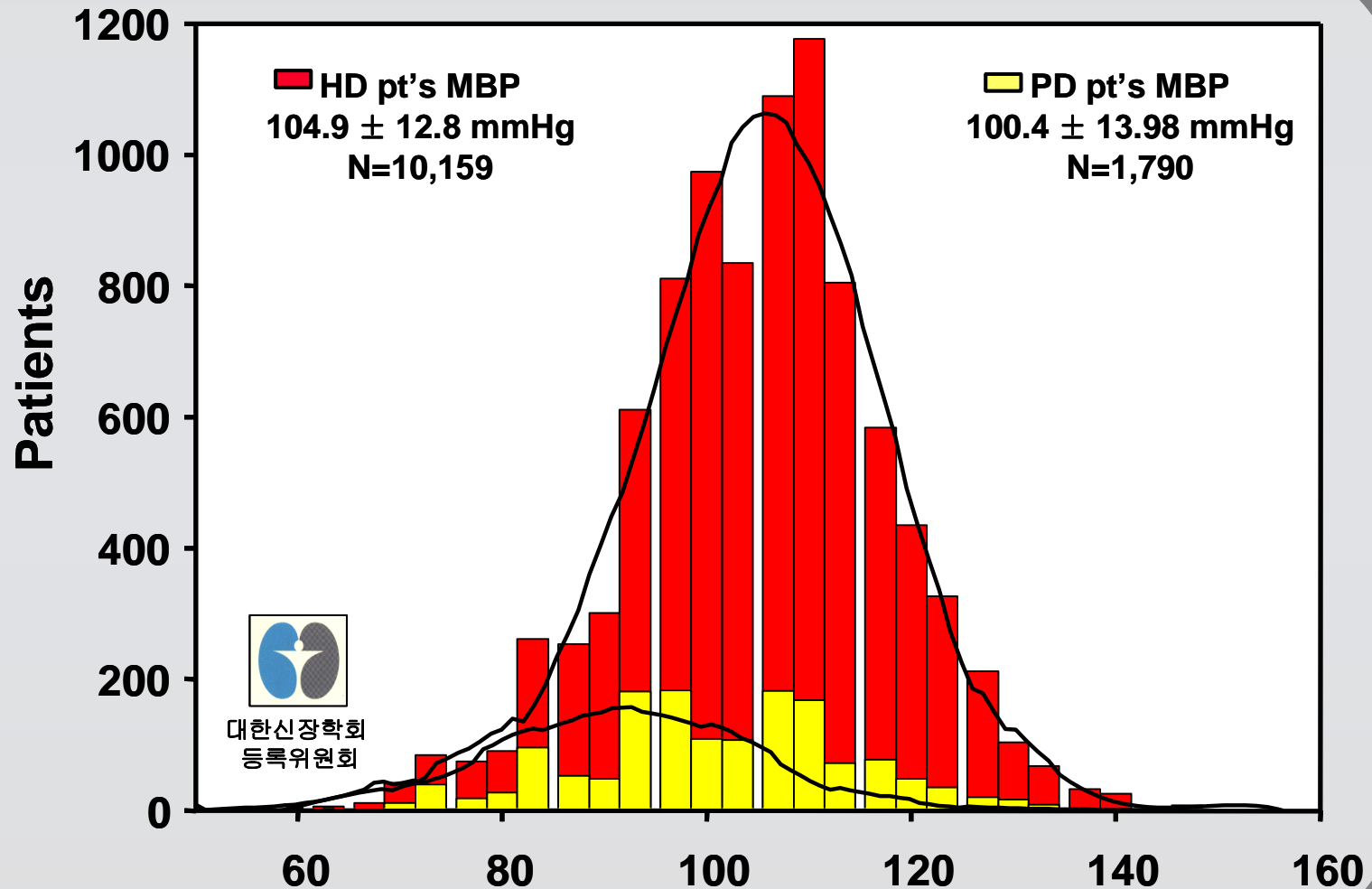


Body Mass Index



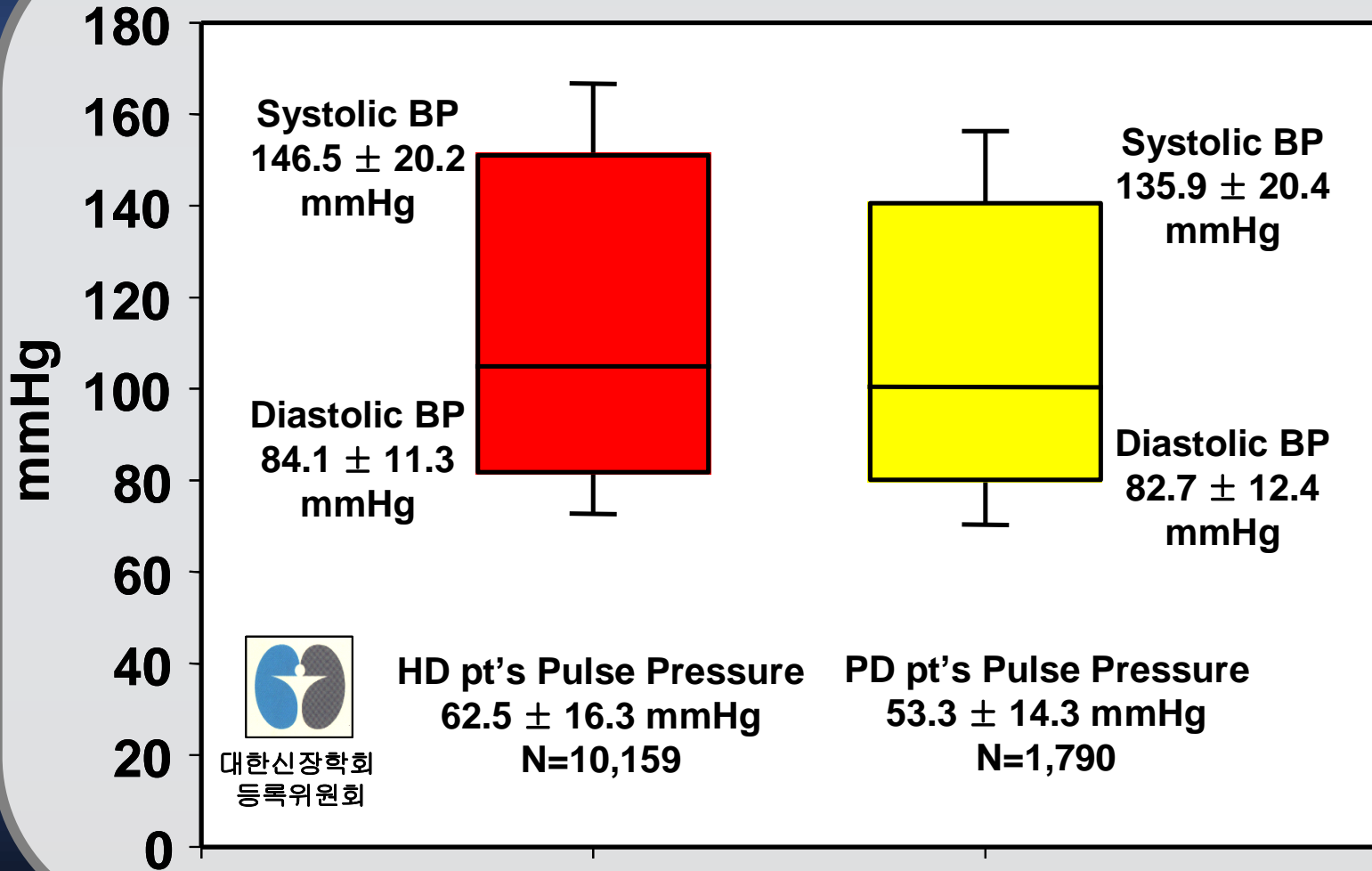


Mean Blood Pressure



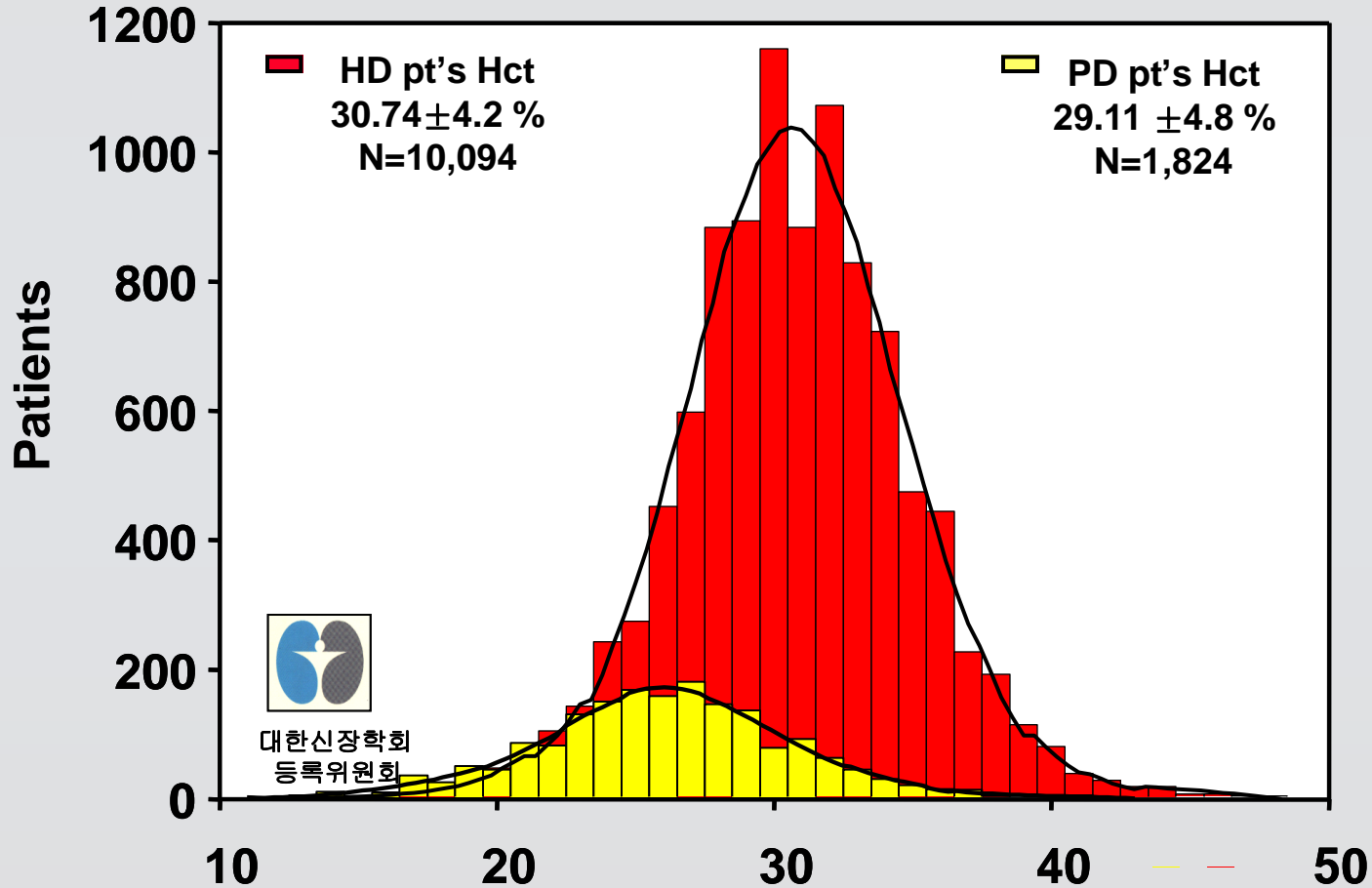


Pulse Pressure



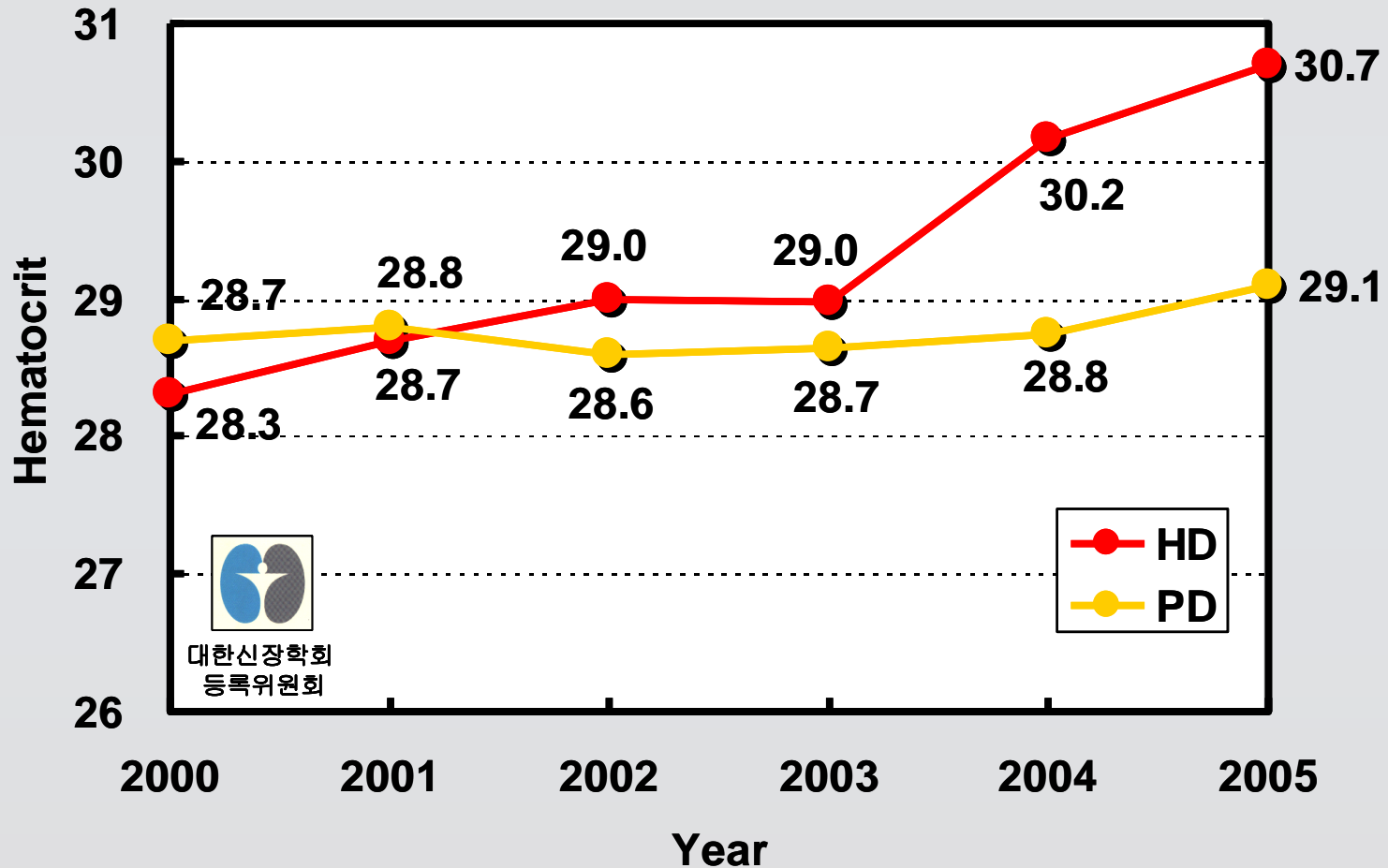


Hematocrit



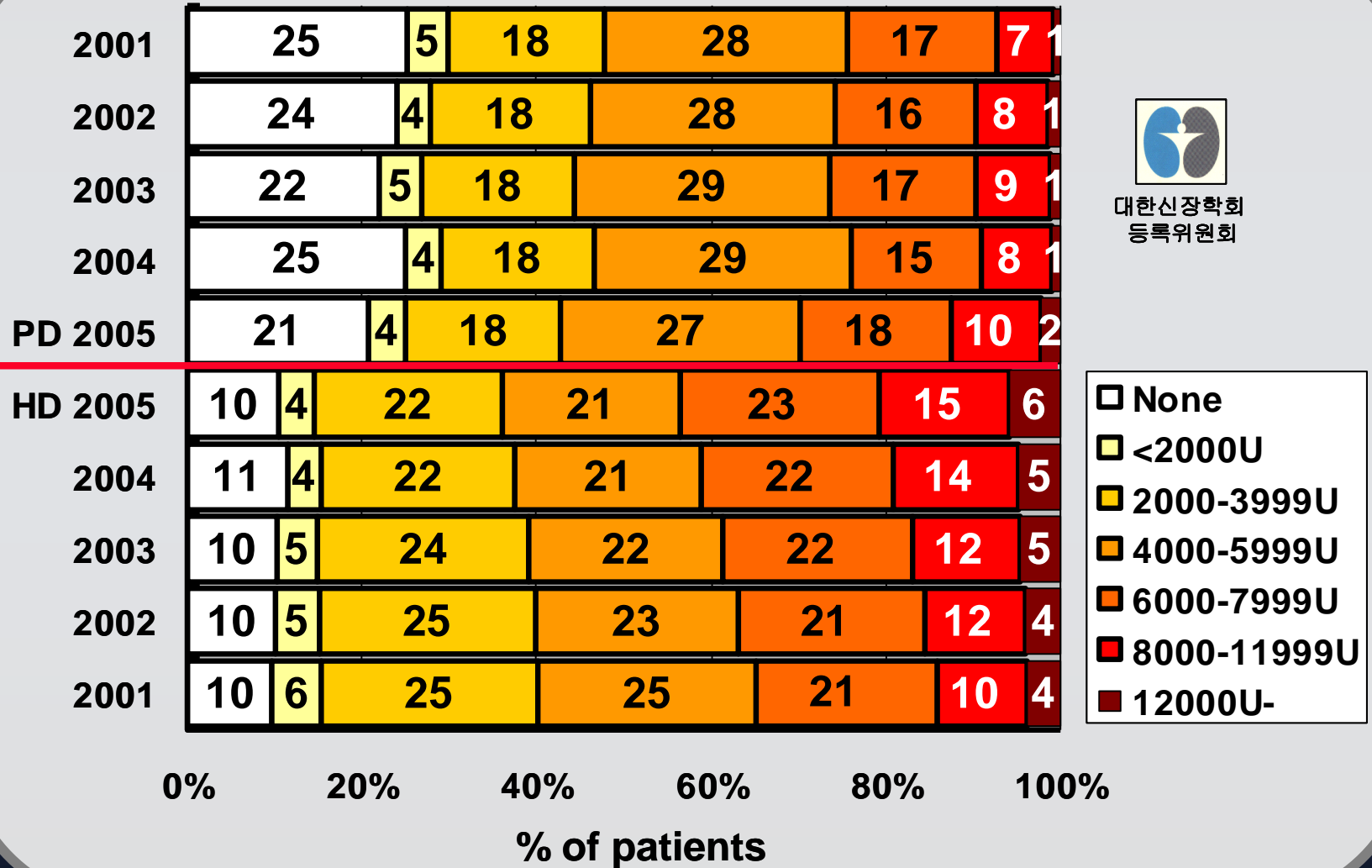
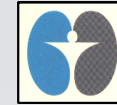


Changes of Hematocrit



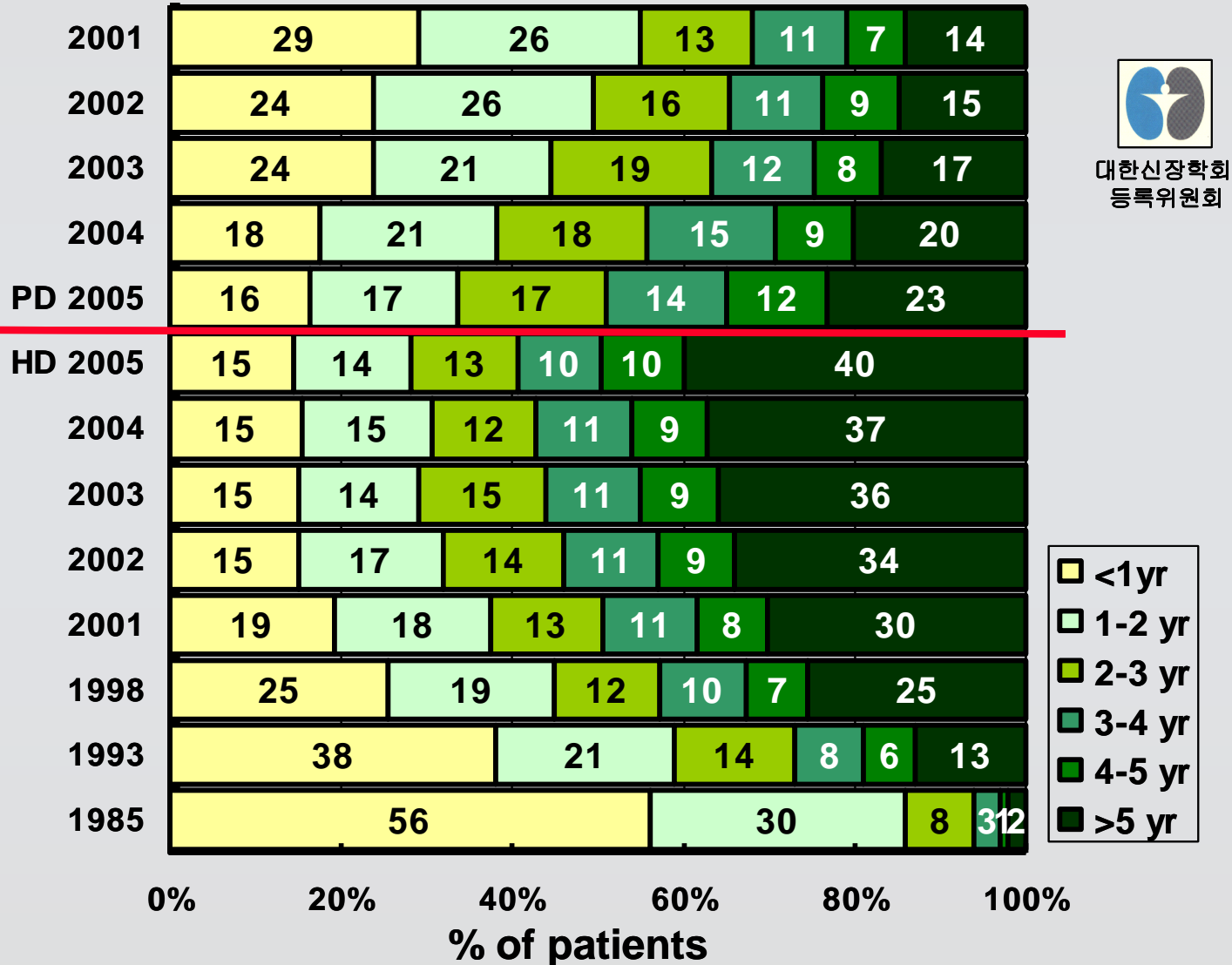


Erythropoietin Doses



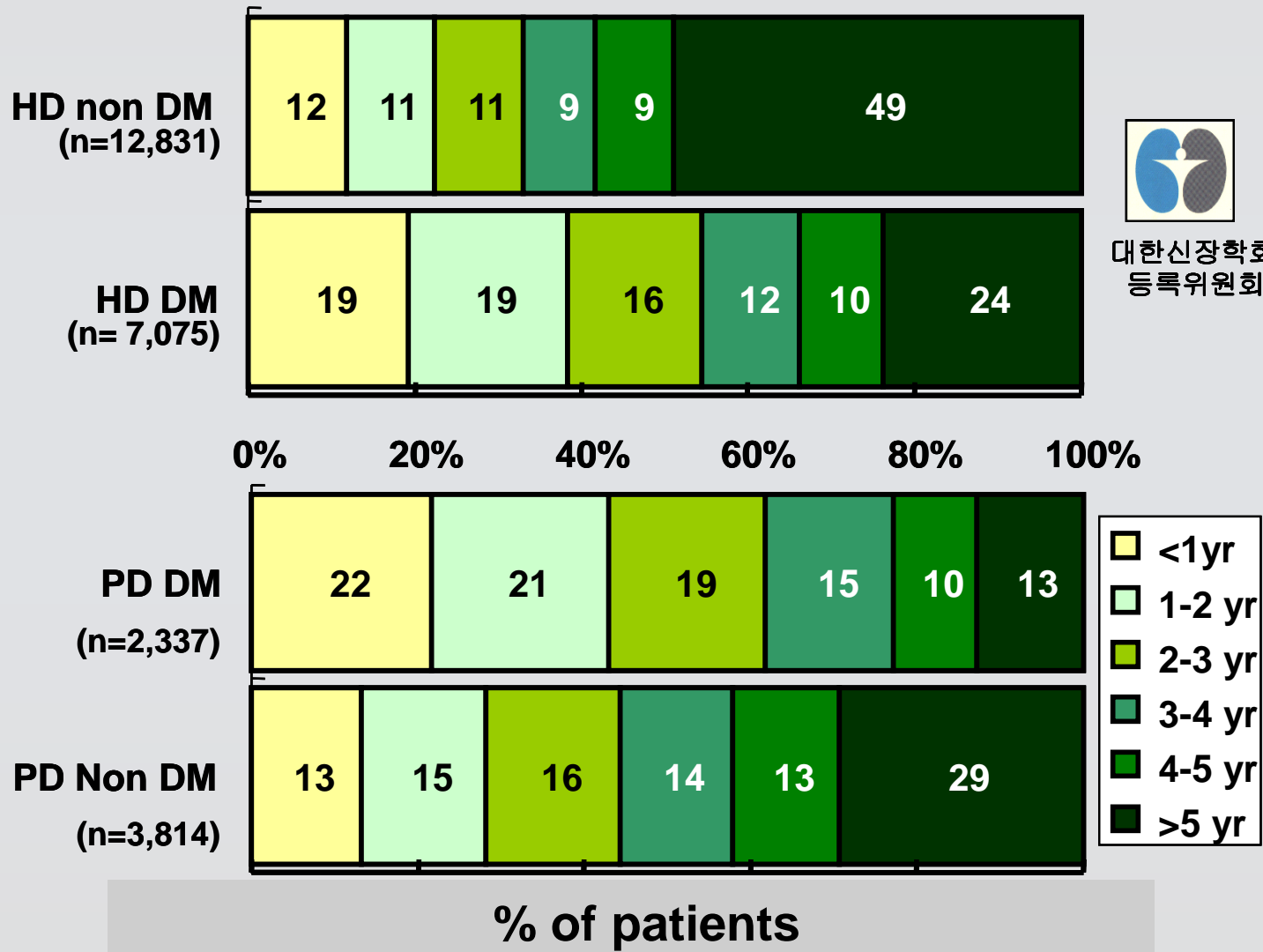


Duration of Dialysis Maintenance



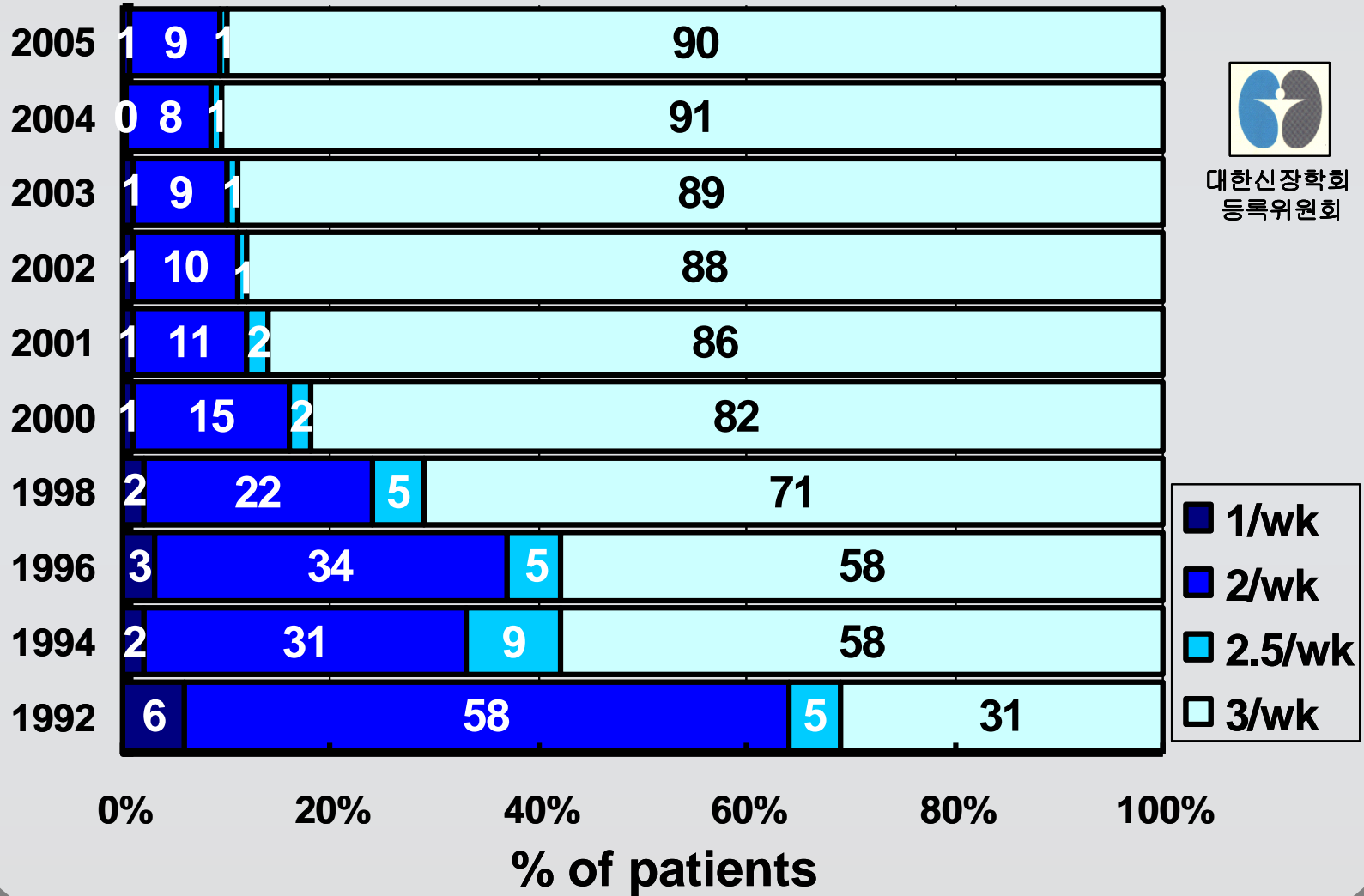


Duration of Dialysis : DM vs Non-DM



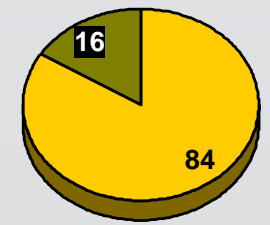
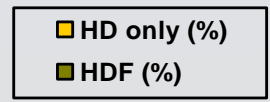
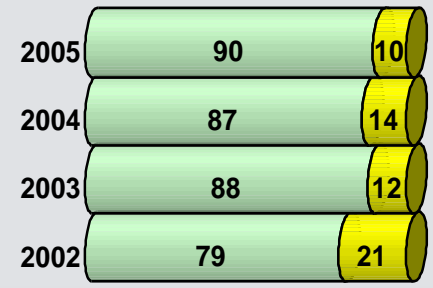
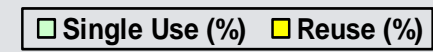
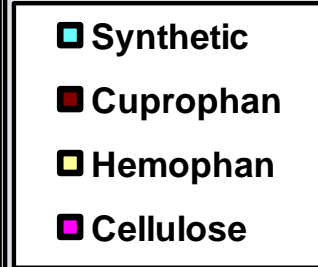
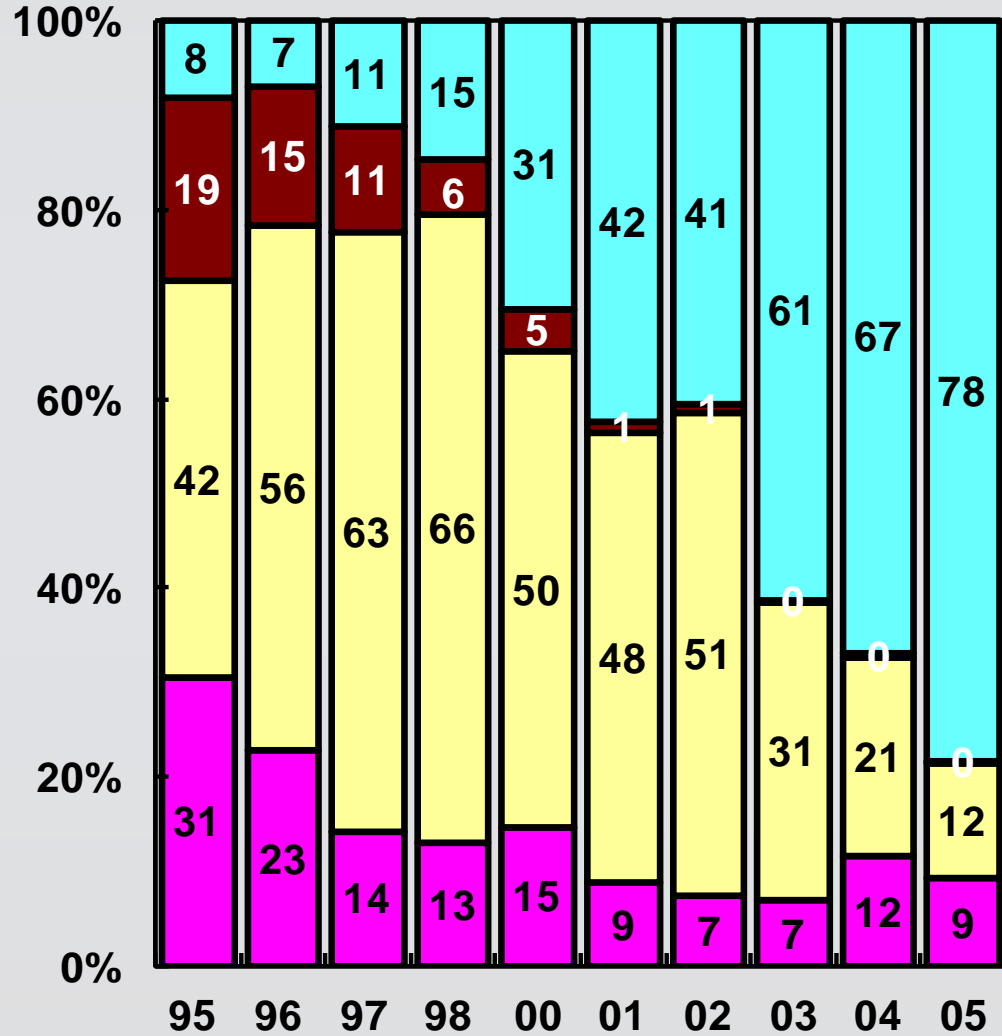


Frequency of HD per Week



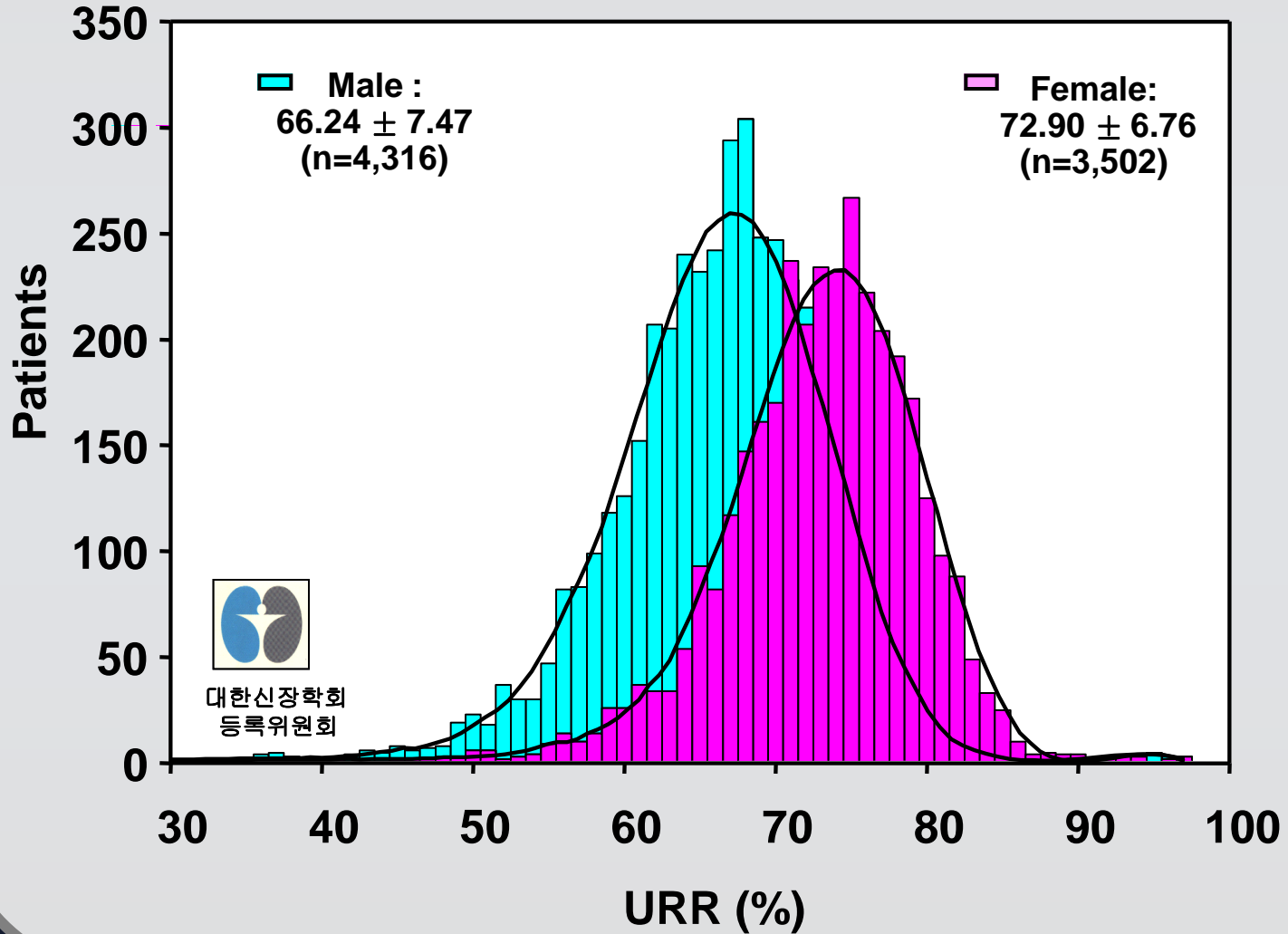


HD Membranes



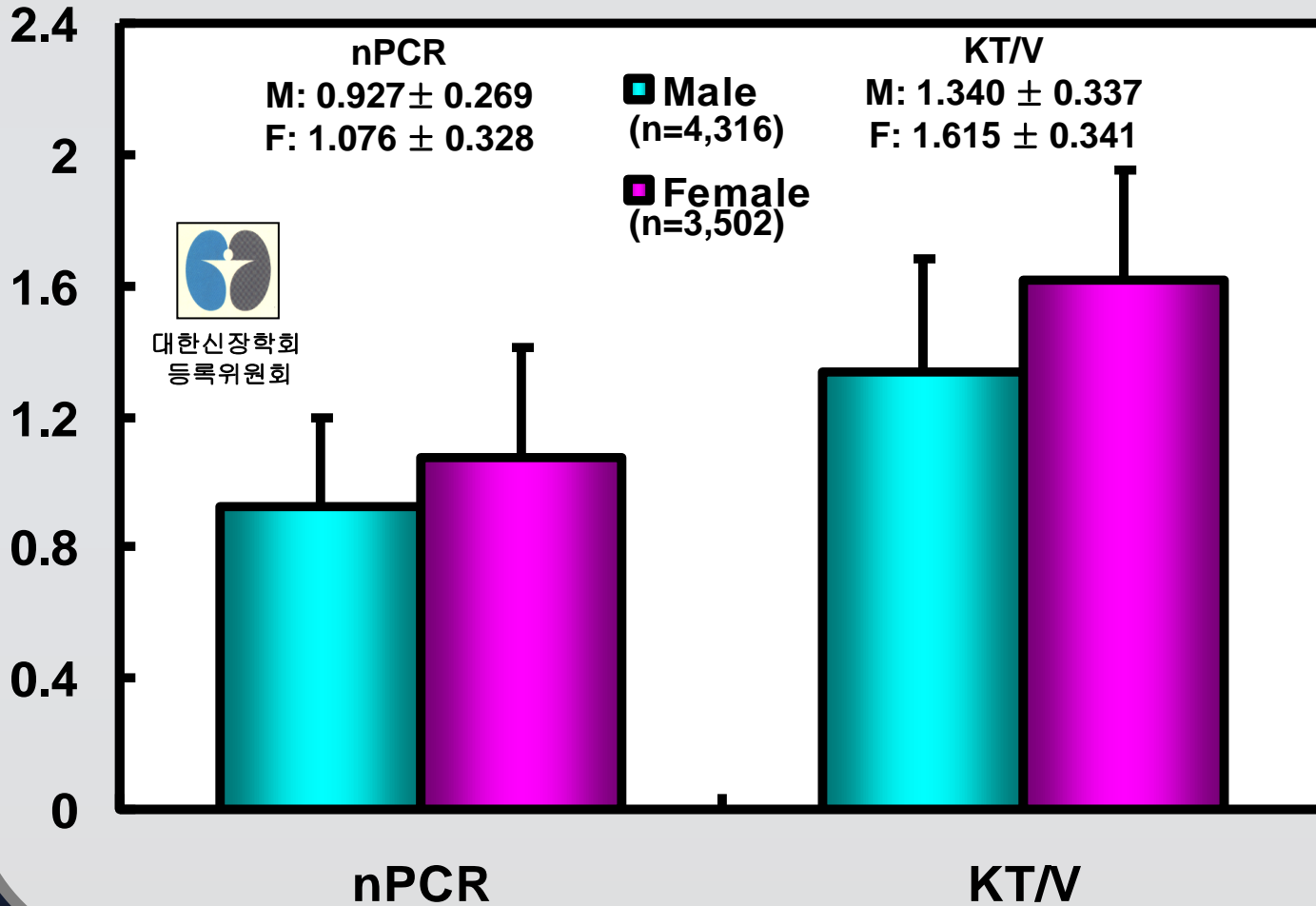


Urea Reduction Ratio of HD Pts



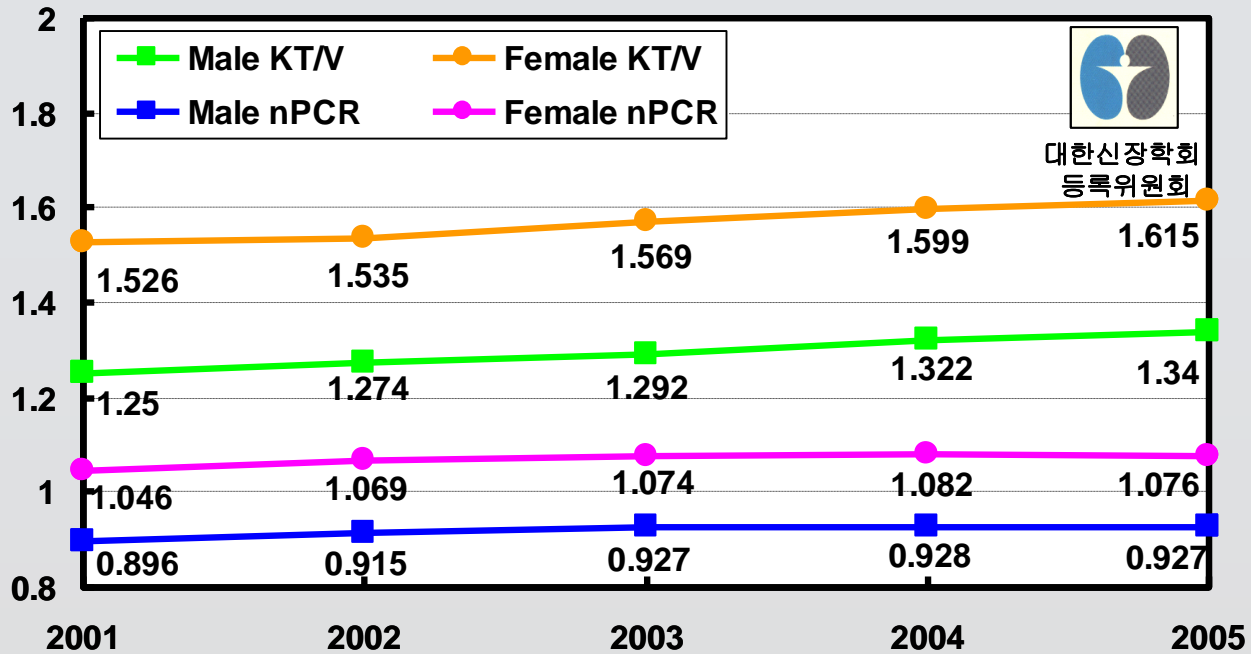
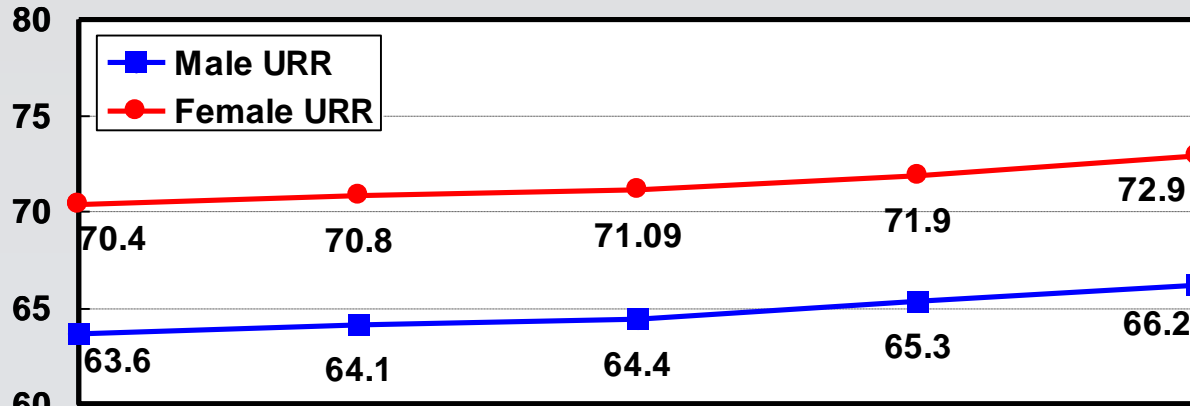


HD Adequacy



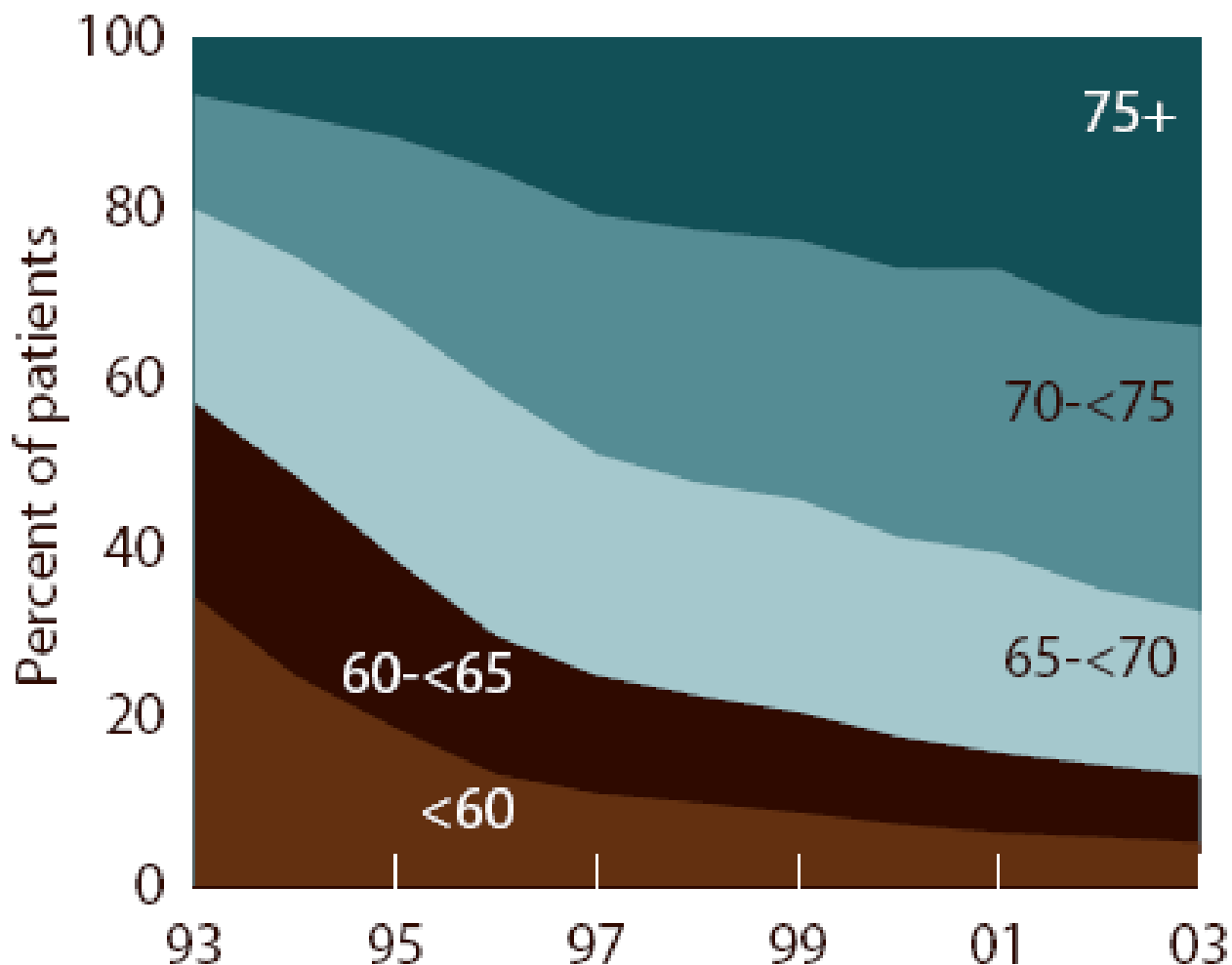


Changes of HD Adequacy



DIALYSIS ADEQUACY

p.11 **Mean URR (%)**  hemodialysis patients; CPM data

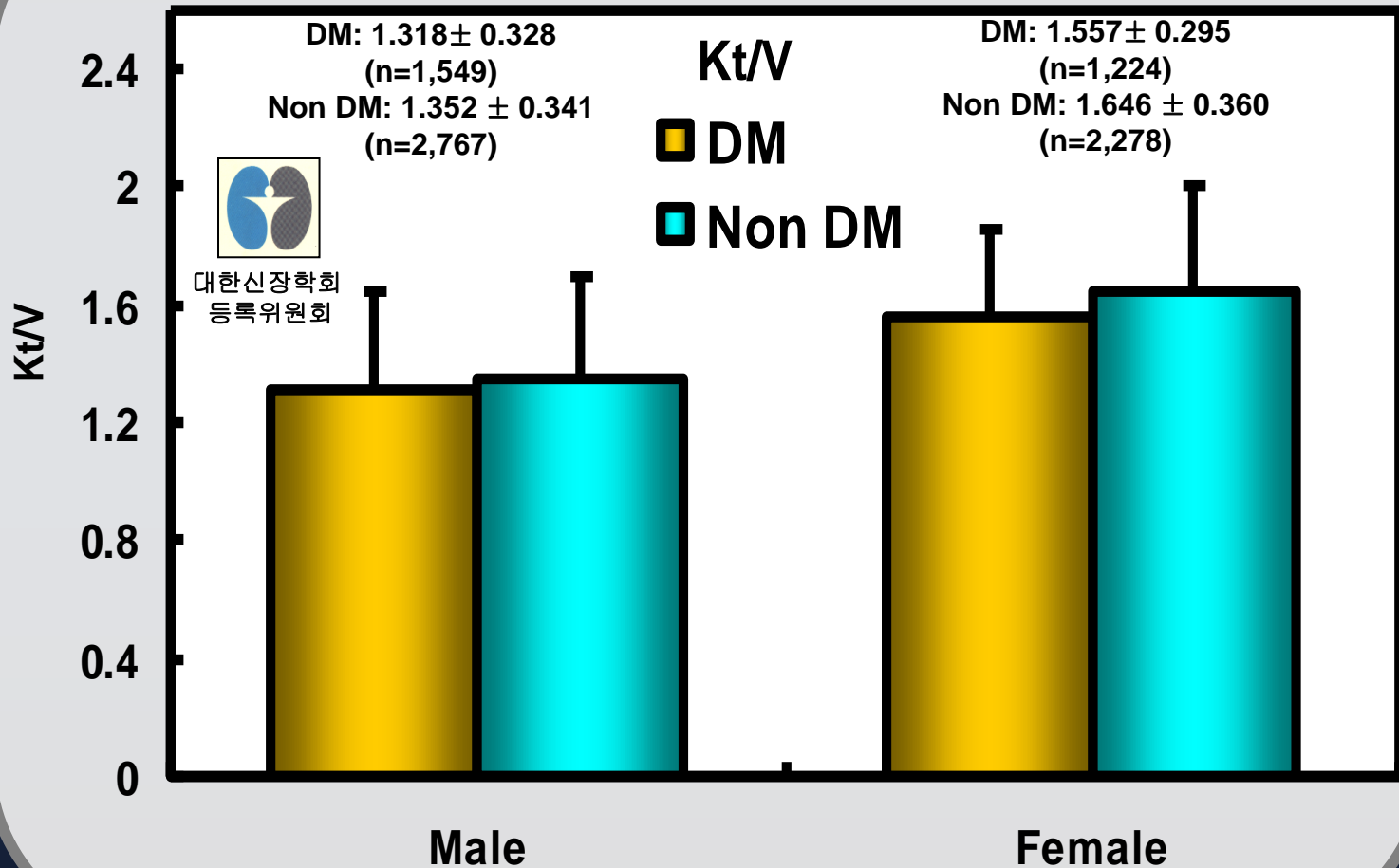


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Report**

united
states
renal
data
system 

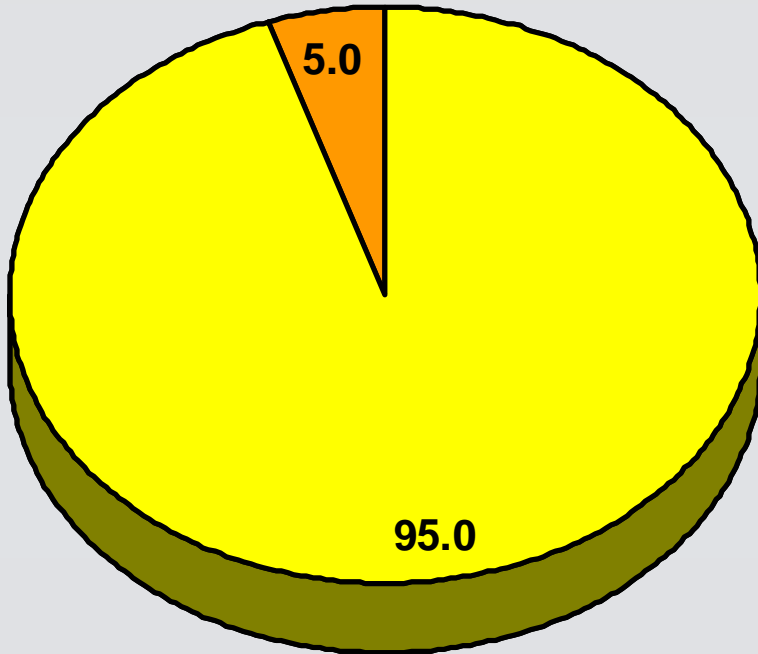


HD Adequacy : DM vs Non-DM



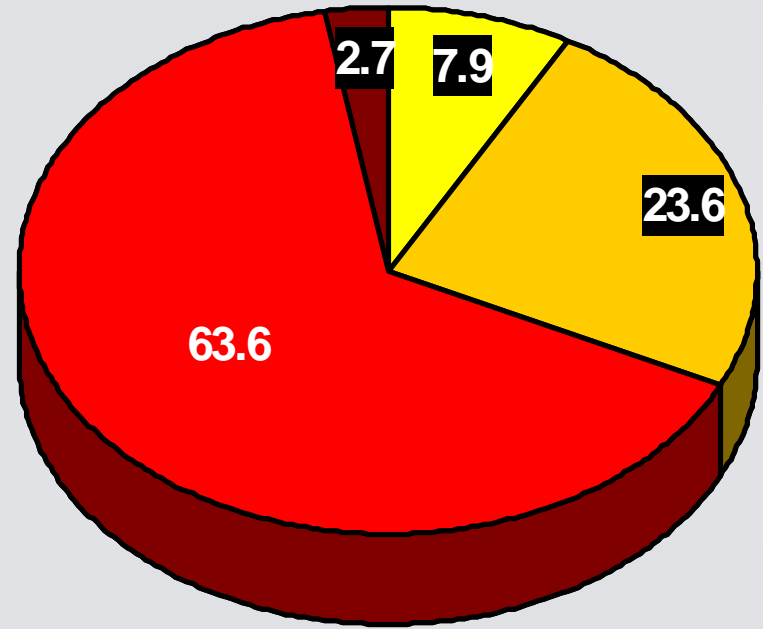


PD Type & Doses



□ CAPD

□ APD



□ 4-6L less

□ 6-8L less

□ 8-10L less

□ Over10L





Complications of Dialysis Pts

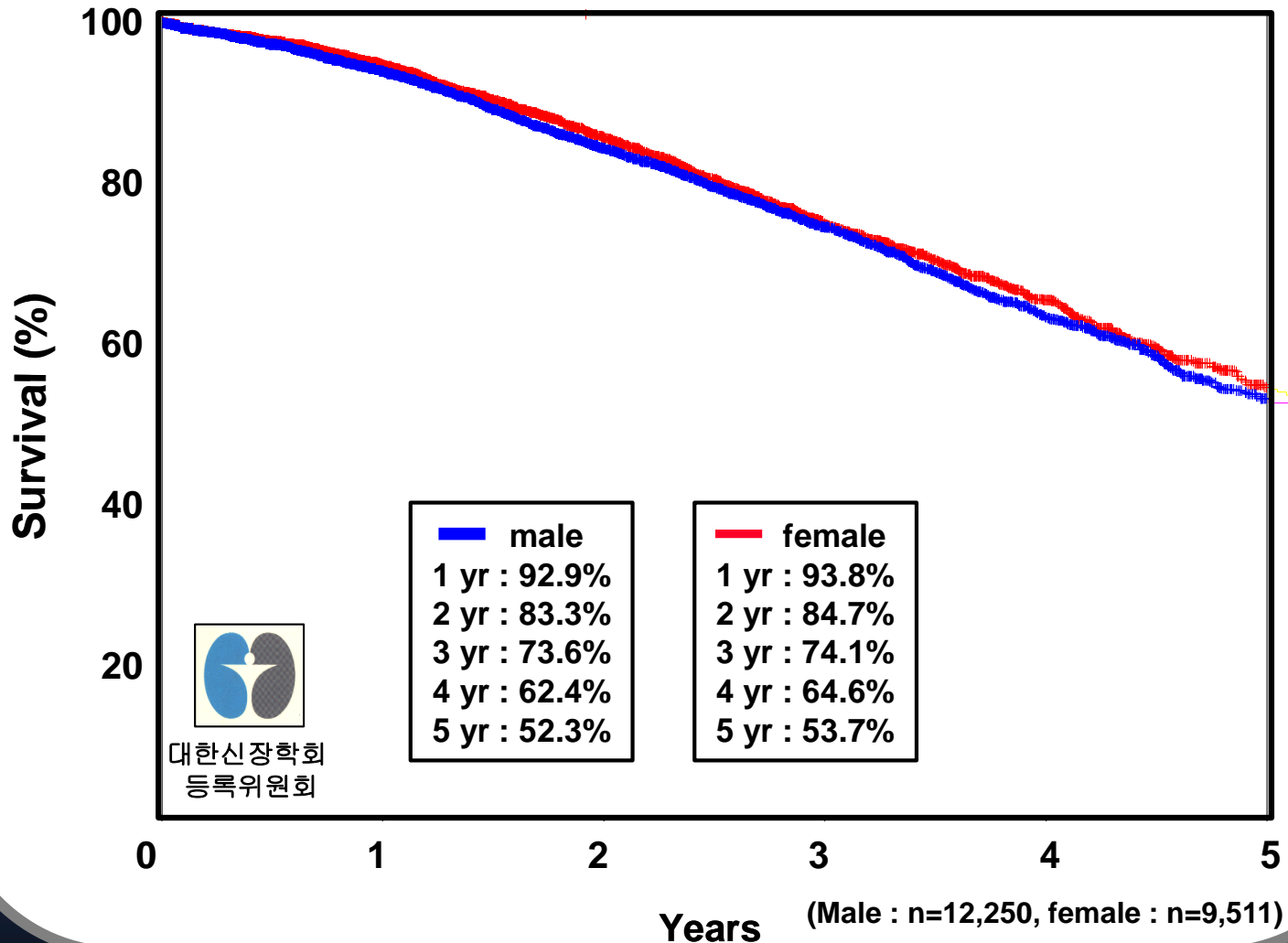
Complications	HD (%)	PD (%)
Cardiac Coronary Artery Disease Congestive Heart Failure Pericardial Effusion Arrhythmia	15.6	15.6
Vascular Cerebrovascular accident Hypertension Other vascular disease	47.3	51.7
Infection Pneumonia Tuberculosis Peritonitis Herpes zoster Other Infection	5.0	12.6
Liver disease Hepatitis B Hepatitis C Congestive Liver Hemochromatosis Other liver diseases	9.4	4.5
Gastrointestinal Gastric Ulcer Duodenal Ulcer Other Gastrointestinal Diseases	9.4	5.6
Miscellaneous Malnutrition (Alb<2.5g/dl) Malignancy Hypertensive Retinopathy Uremic Dermatitis Uremic Neuritis Uremic Dementia Uremic Ascites / Pleural Effusion Osteodystrophy	13.3	9.9

* Number of patients: Hemodialysis =7,008, Peritoneal dialysis=1,582.



Overall Patient Survival

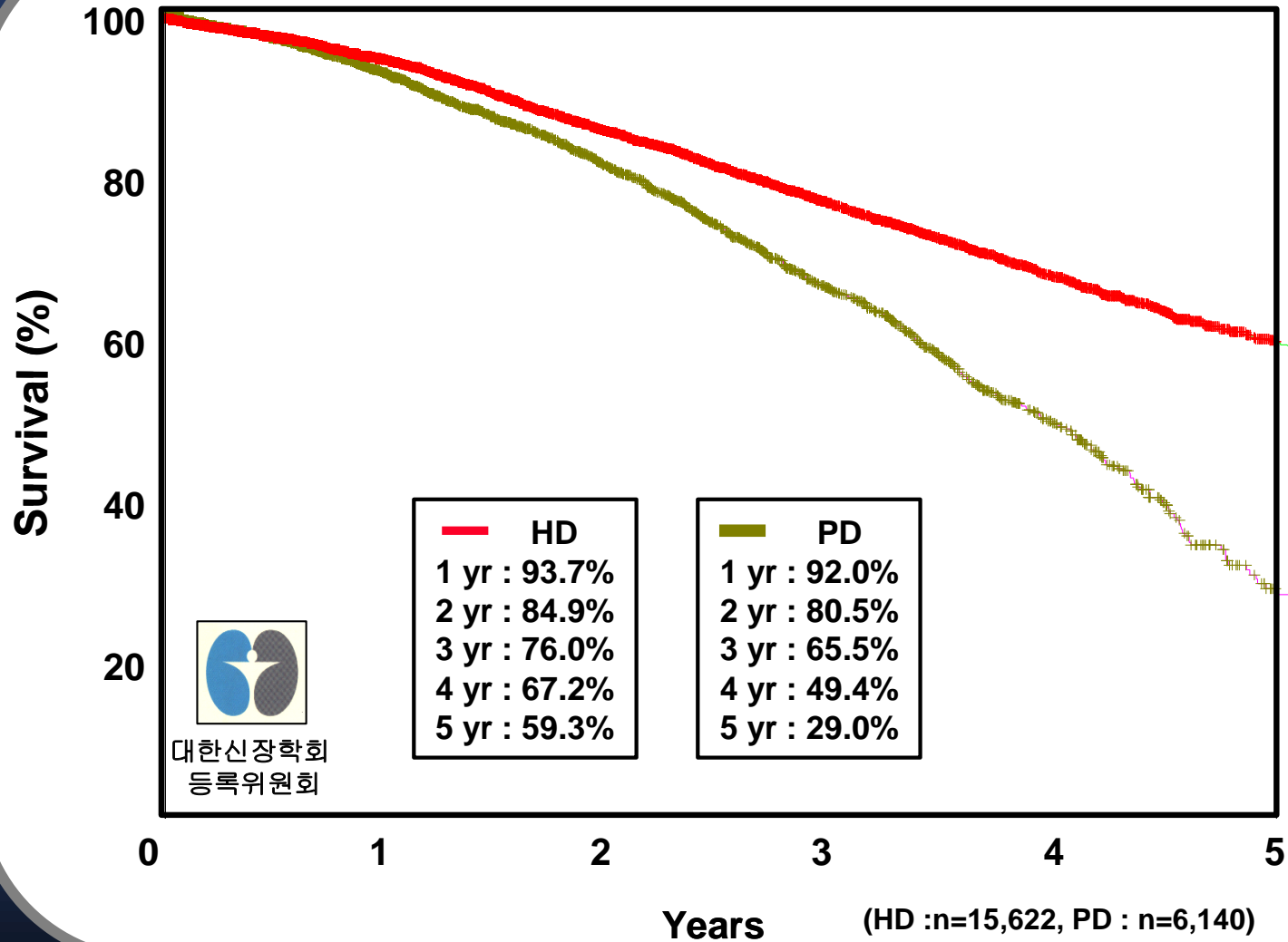
Registered dialysis patients since 2001





Patient Survival : HD vs PD

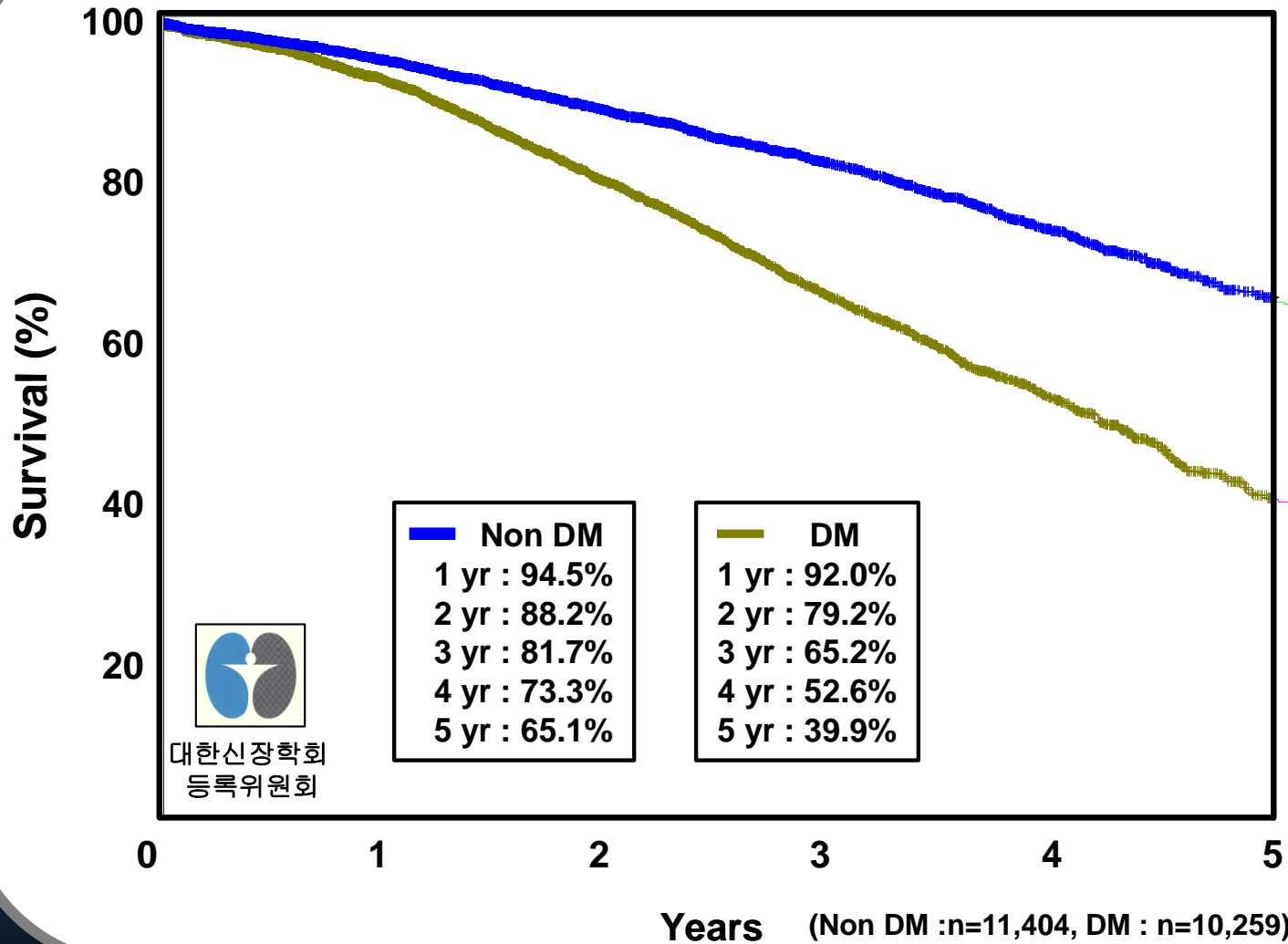
Registered dialysis patients since 2001





Patient Survival : DM vs Non-DM

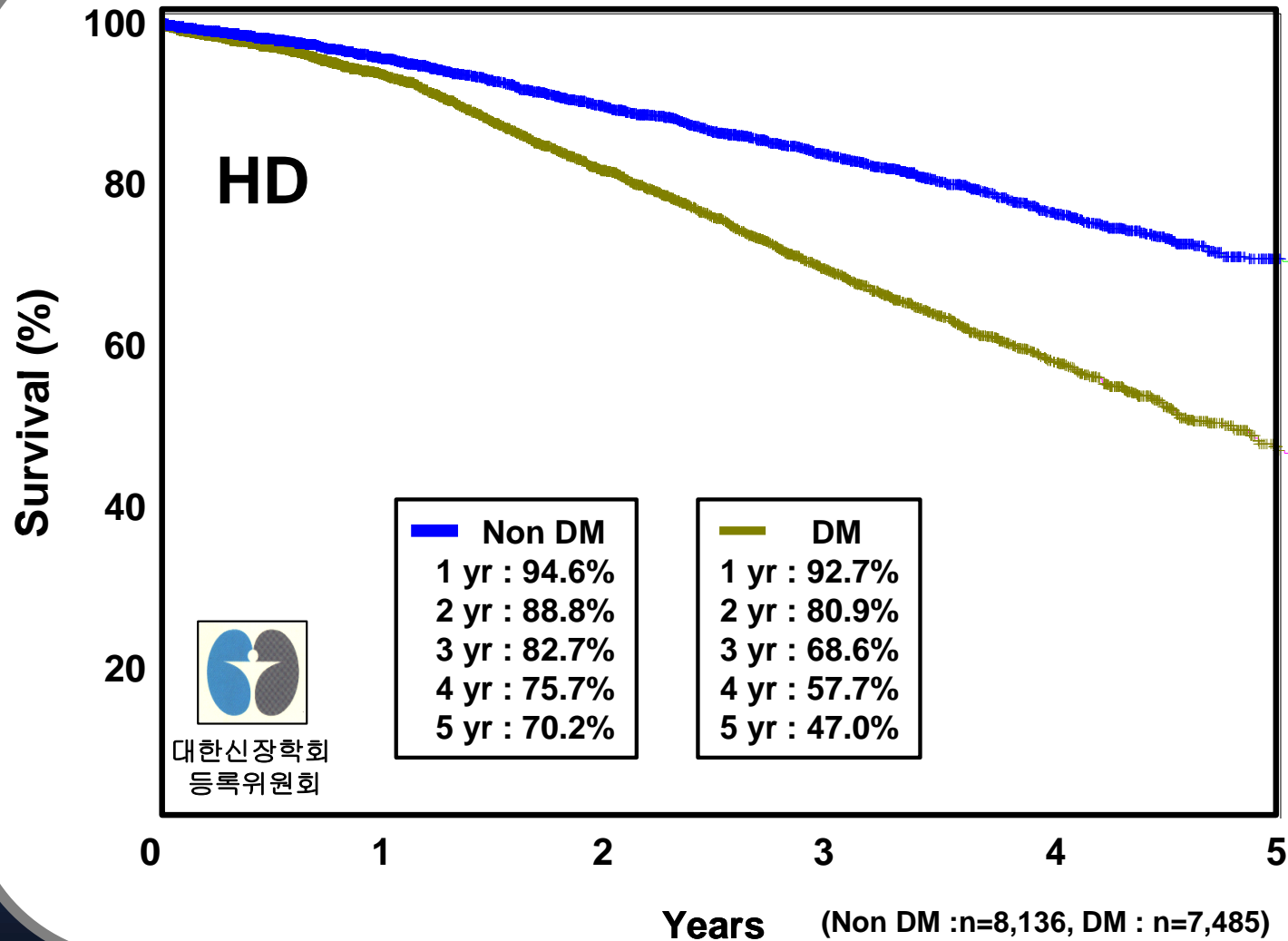
Registered dialysis patients since 2001





HD Pts Survival : DM vs Non-DM

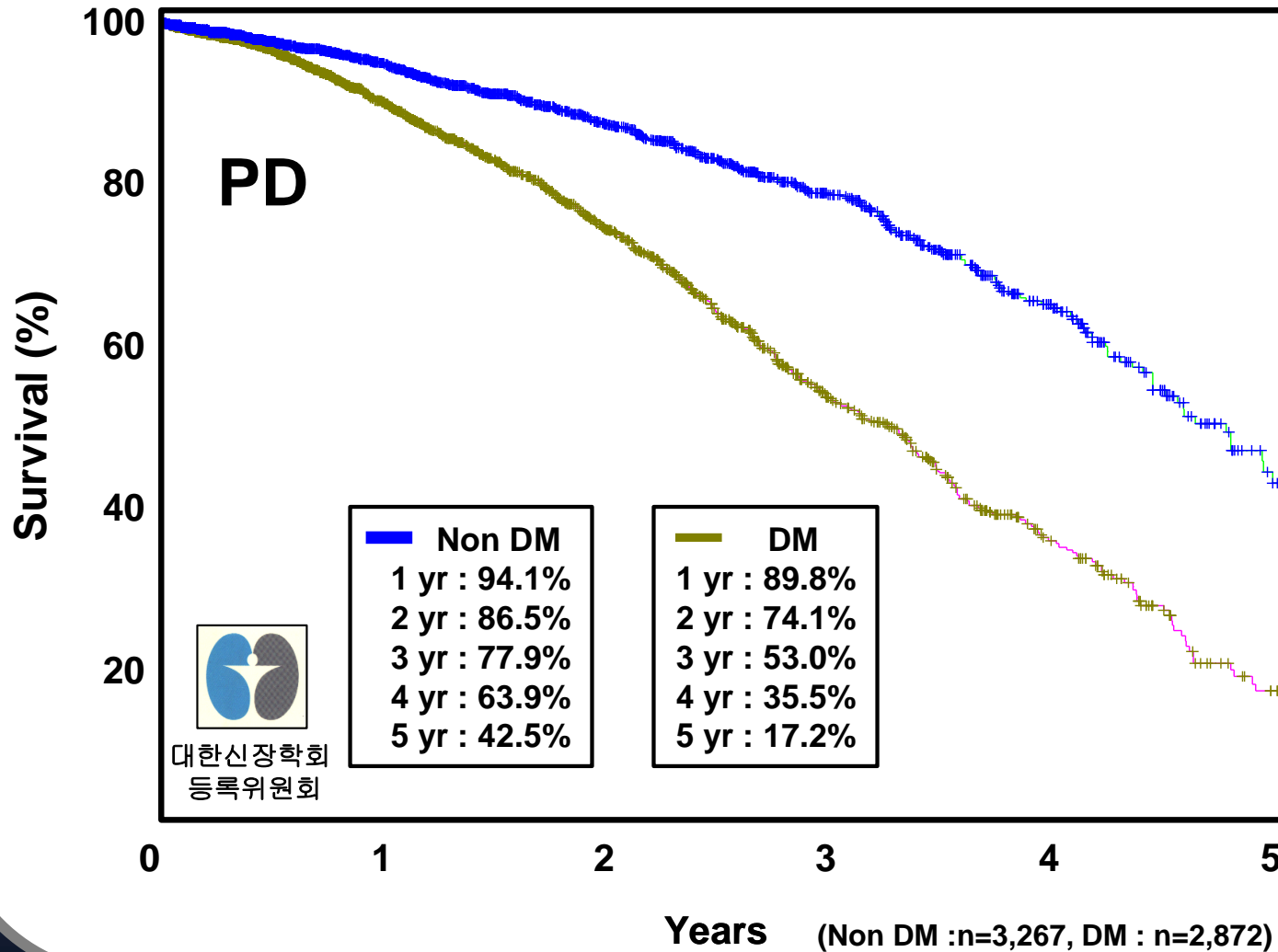
Registered dialysis patients since 2001





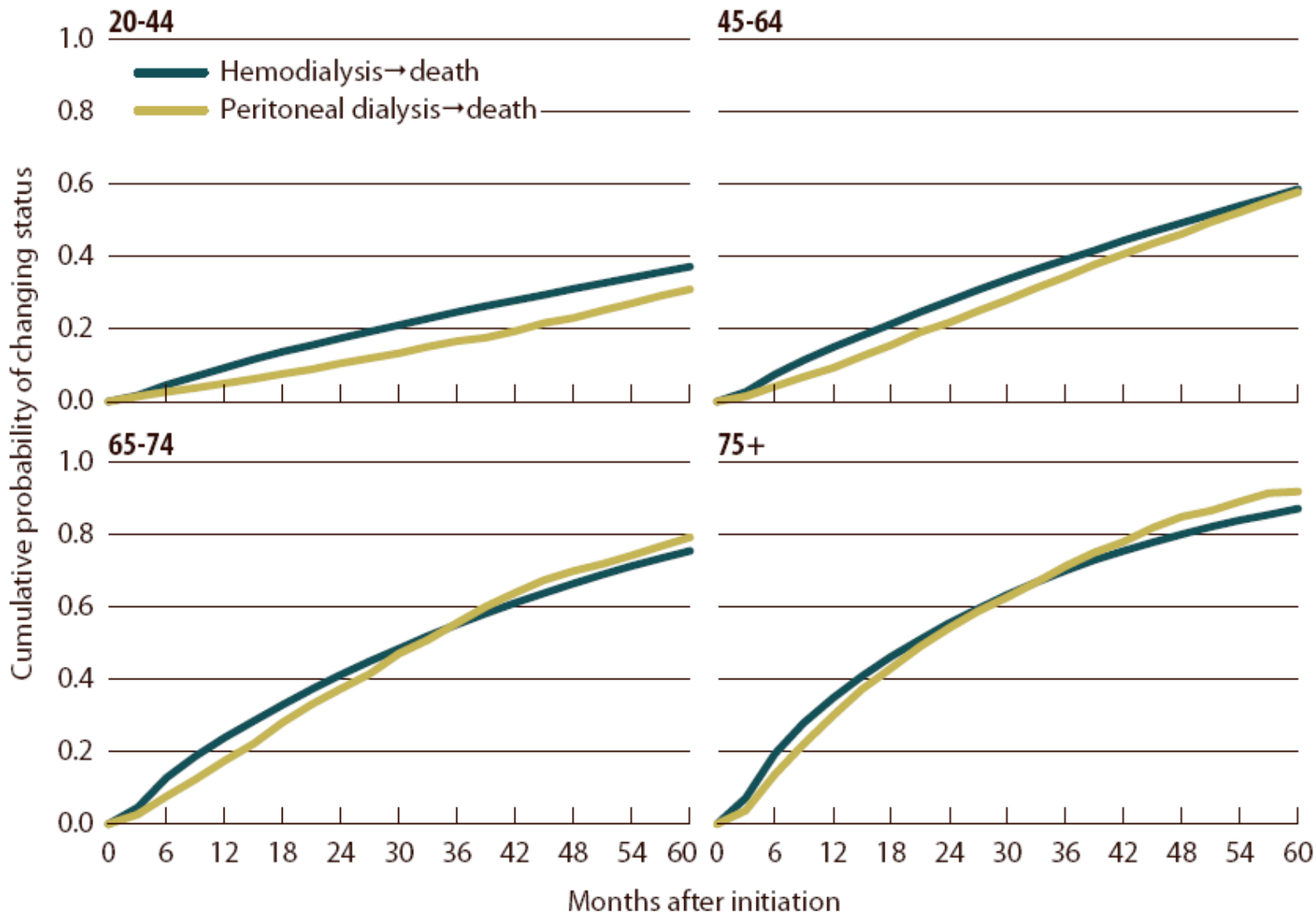
PD Pts Survival : DM vs Non-DM

Registered dialysis patients since 2001



4.7 Cumulative probability (adjusted) of death or a change in modality, by age incident dialysis patients

Death as endpoint



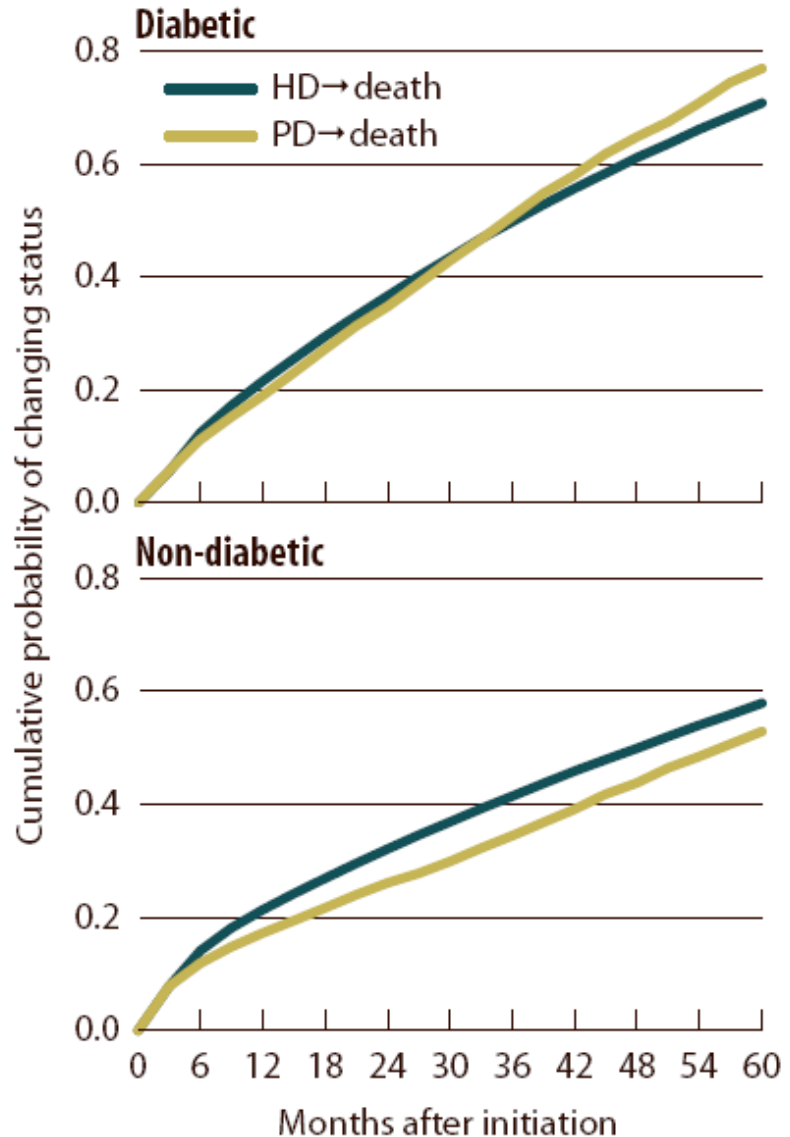
Probability of Death :

DM & Non-DM
USRDS 2006

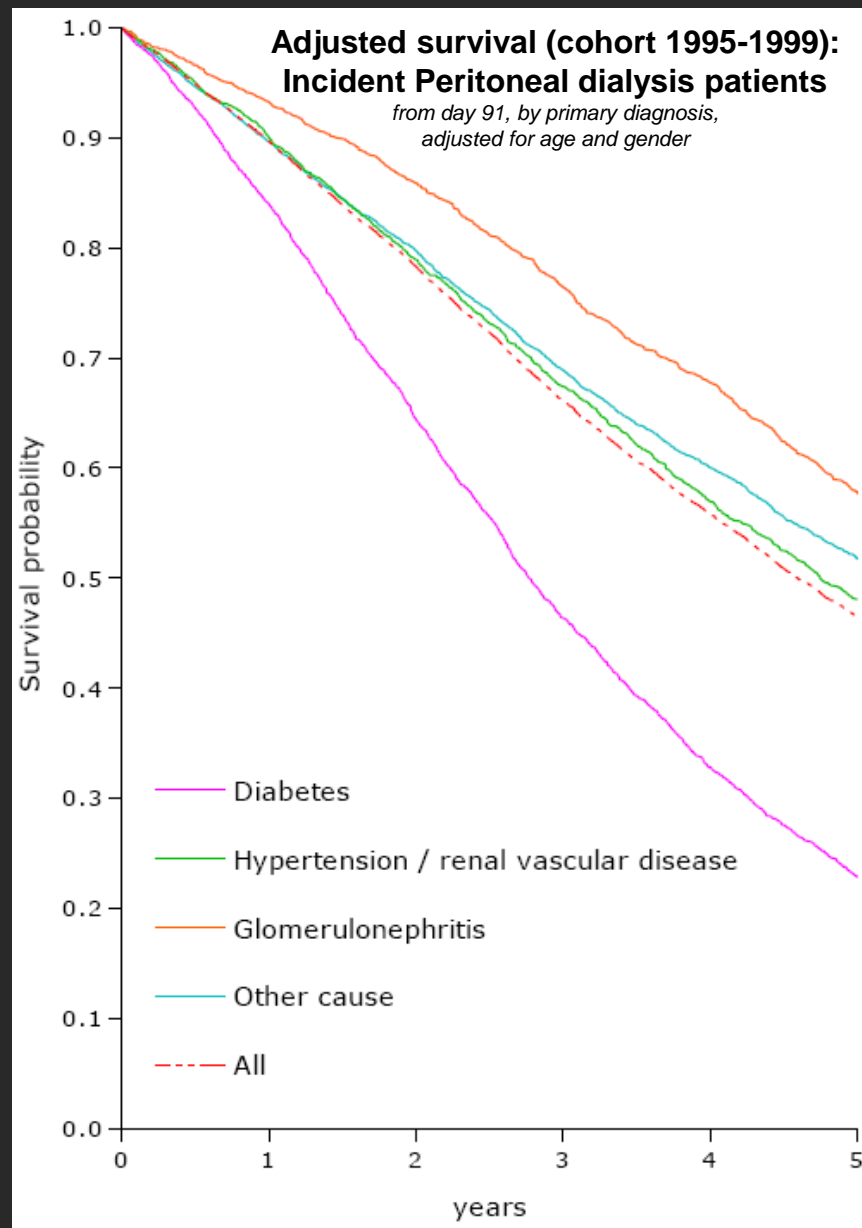
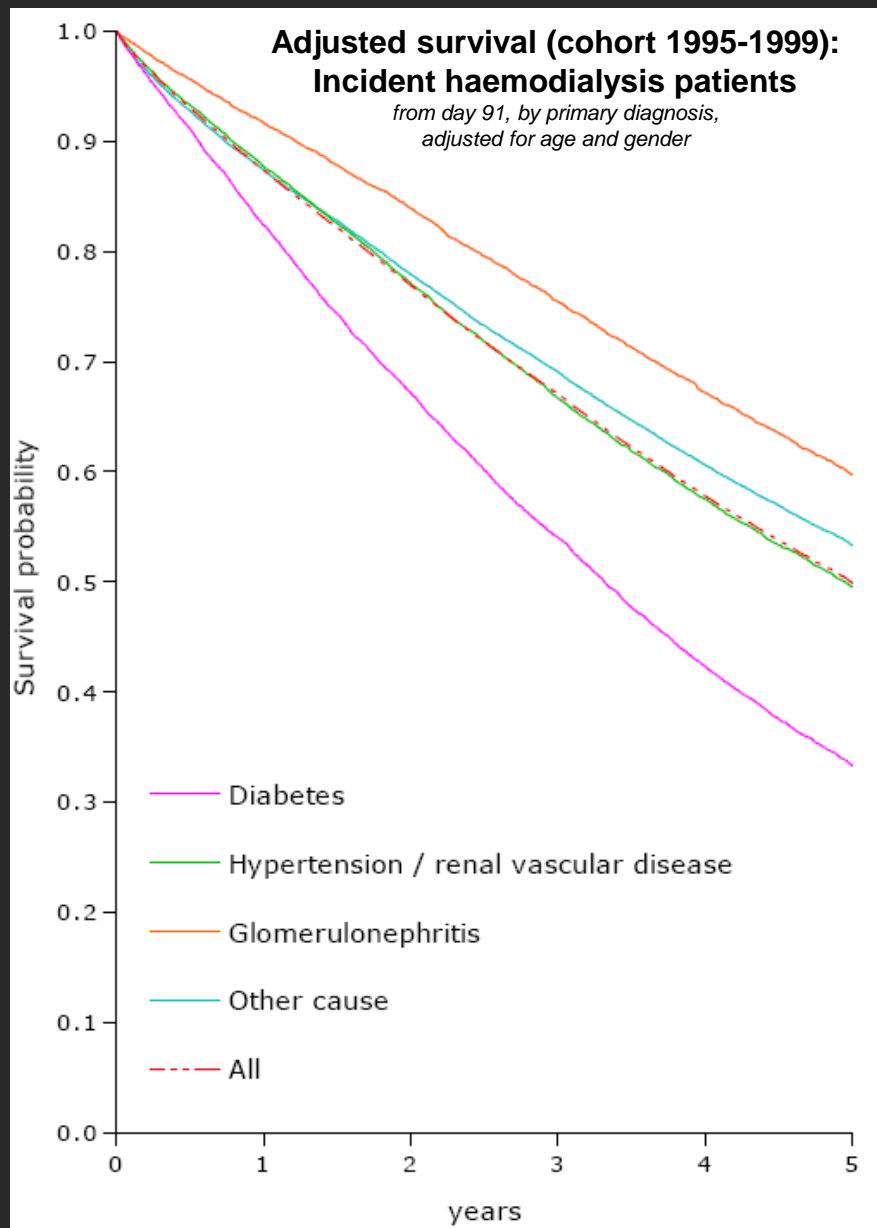
2006 Annual Data Report
united states renal data system

4.8 Prob. (adj.) of death or modality chg., by DM status incident dial. pts

Death as endpoint



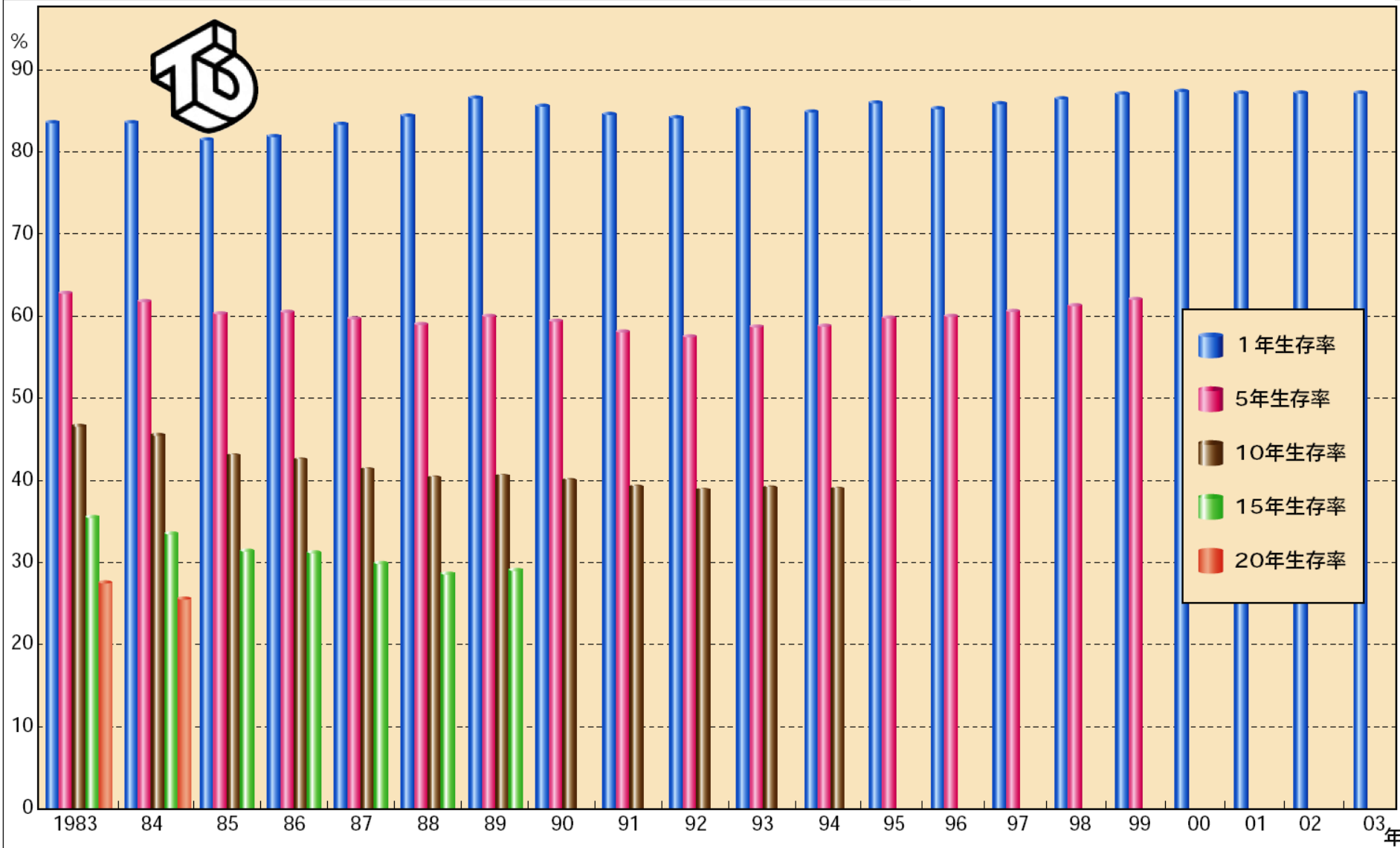
Pts Survival : EDTA data



Pts Survival : Japanese Data

日本透析医学会

Japanese Society for Dialysis Therapy





Causes of death (%), 1994-2005

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Causes	1994-1996	1997	1998	1999 – 2000	2001	2002	2003	2004	2005
Cardiac	27.4	31.8	33.3	38.0	26.9	27.9	31.7	35.5	30.7
Myocardial infarction	6.4	4.7	6.6	7.8	7.7	5.5	7.4	8.3	8.0
Hyperkalemia	13.7	15.3	17.5	19.0	11.2	10.6	11.7	13.6	10.4
Cardiac arrest, other cause	7.2	11.8	8.1	11.2	8.1	11.8	12.5	13.6	12.4
Vascular	17.2	23.5	18.5	15.6	22.7	15.7	19.5	17.5	17.0
Cerebrovascular accident	14.3	18.8	16.6	11.5	15.1	11.6	14.5	12.8	12.3
Pulmonary embolus	0.2	0.0	0.1	0.7	0.5	0.4	0.1	0.2	0.6
Gastrointestinal hemorrhage	1.7	4.7	2.1	1.4	2.7	1.9	3.2	2.0	1.7
Gastrointestinal embolism	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.5
Other vascular disease	0.9	0.0	0.9	2.0	4.3	1.7	1.6	2.1	1.9
Infection	13.5	14.2	18.1	17.3	17.8	21.6	20.5	19.5	20.1
Pulmonary infection	2.5	2.4	3.4	2.0	4.5	4.9	3.6	3.7	4.5
Septicemia	6.6	4.7	10.8	8.1	6.9	9.2	9.7	9.4	9.6
Tuberculosis	0.3	1.2	0.8	0.7	0.8	0.5	0.2	0.1	0.3
Peritonitis	2.1	3.5	2.5	1.4	1.1	2.5	2.0	1.5	1.4
Other Infection	2.0	2.4	1.8	5.1	4.5	4.5	4.9	4.8	4.3
Liver disease	3.4	1.2	3.4	3.4	2.6	2.8	2.8	2.9	2.7
Liver failure due to hepatitis B	1.8	1.2	2.3	2.7	1.6	1.2	1.8	2.1	1.5
Liver failure due to other cause	1.6	0.0	1.3	0.7	1.0	1.6	1.0	0.9	1.2
Social	6.2	5.9	4.2	6.1	6.3	4.7	4.4	3.6	5.4
Patient refused further treatment	2.9	1.2	1.8	1.4	2.1	1.8	1.0	1.1	1.1
Suicide	2.5	3.5	0.9	0.3	3.3	1.9	2.3	2.0	3.3
Therapy ceased for other reason	0.8	1.2	1.9	4.4	0.9	1.0	1.0	0.5	1.0
Miscellaneous	32.0	23.5	19.7	19.7	23.7	27.4	21.3	21.0	24.0
Cachexia	2.9	7.1	3.3	8.1	8.1	6.8	6.6	6.1	4.0
Malignant disease	2.1	4.7	4.1	3.1	4.4	4.8	3.5	3.6	6.4
Accident	1.2	1.2	1.0	1.0	0.9	0.5	1.1	0.9	1.4
Uncertain	25.8	10.6	12.5	7.5	10.3	15.3	10.1	10.3	12.3

Number of patients :1994-1996=981, 1997=81, 1998=911, 1999-2000=306, 2001=761, 2002=1,256, 2003=894, 2004=1162, 2005=1,256.

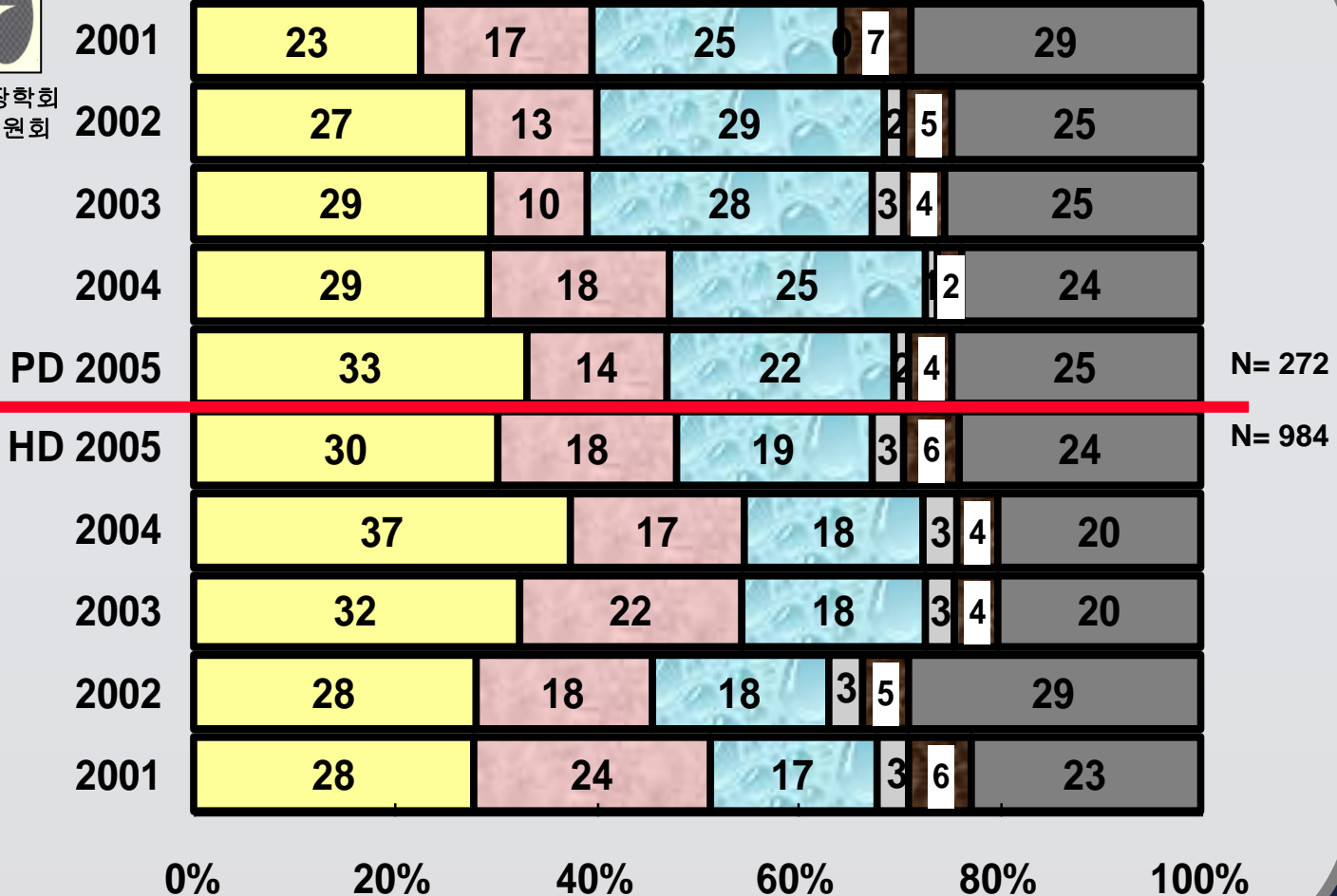


Death Causes, HD & PD



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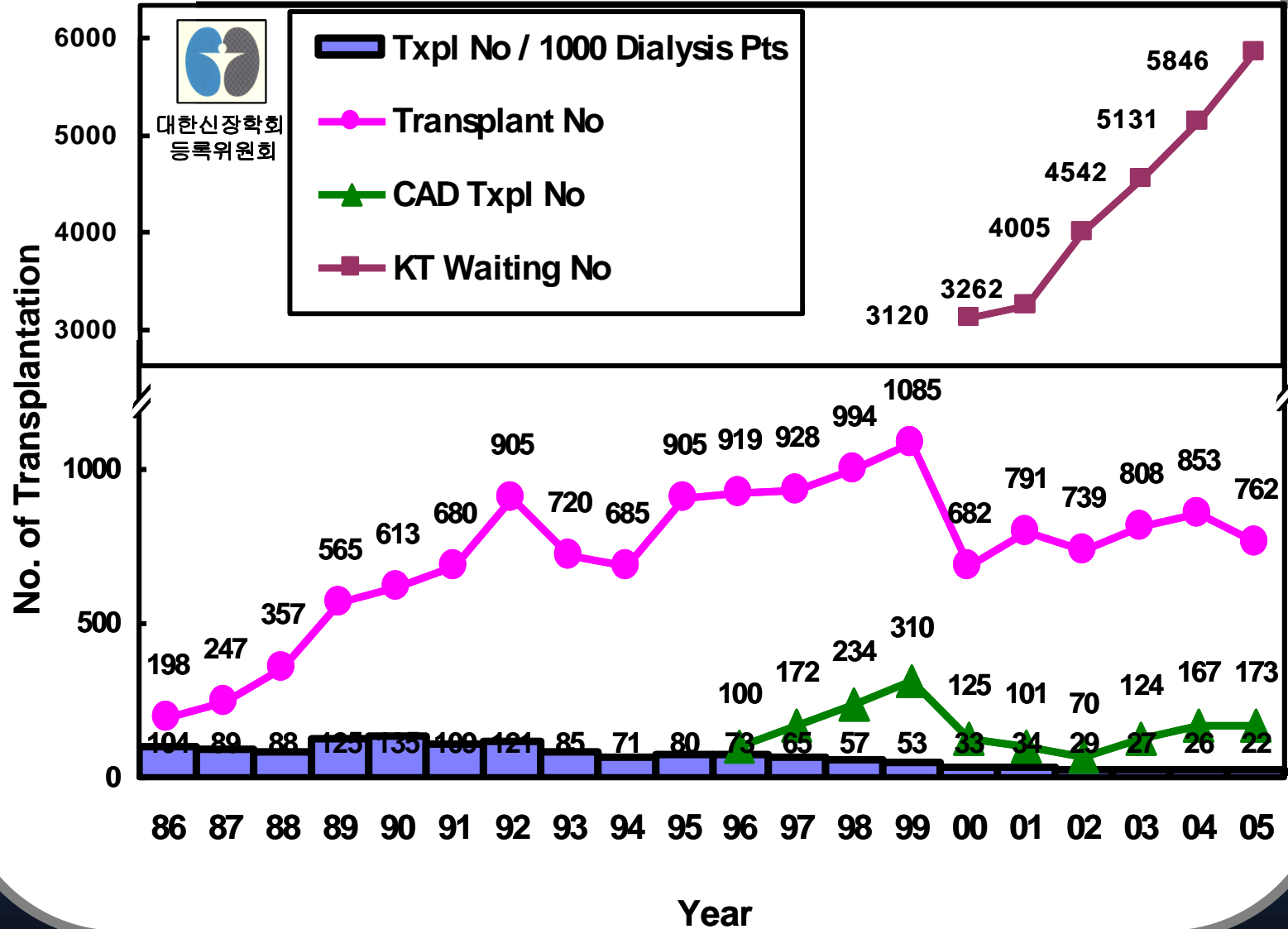
Cardiac Vascular Infection Liver dis Social Misc.





Kidney Transplantation

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등록위원회



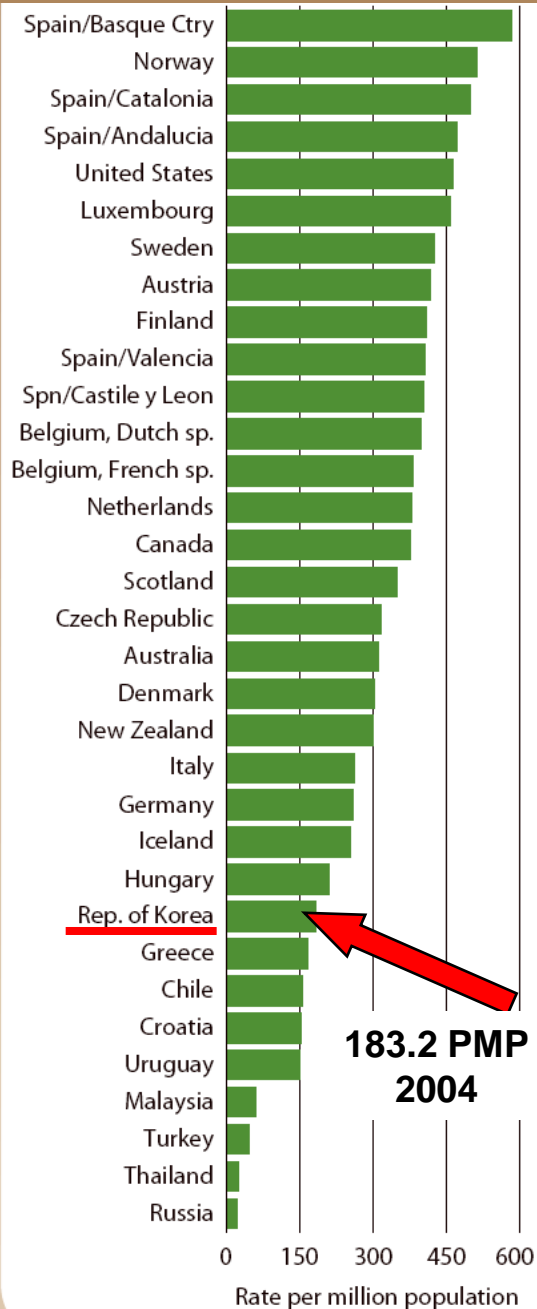
Kidney Transplant

USRDS 2006 International comparison



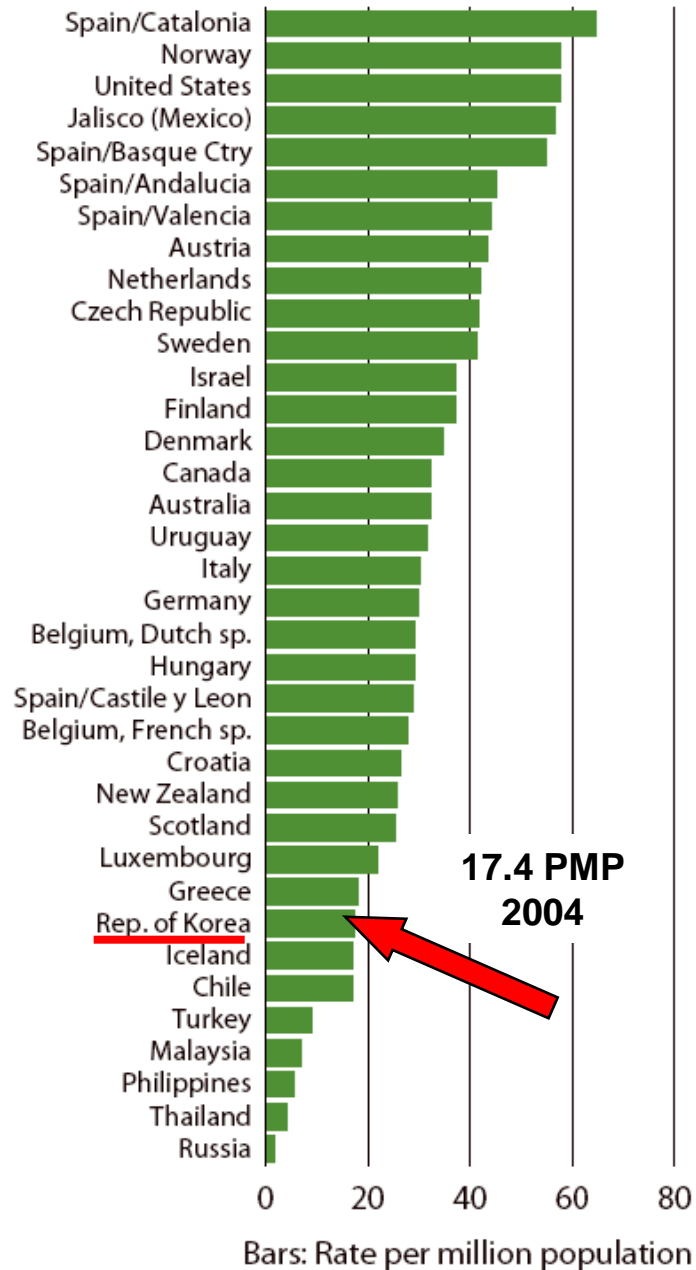
12.9

Prevalent rates of functioning grafts, 2004



12.10

Transplant rates, 2004





주요 관심 사항 (1)

1) 말기 신부전 환자 수의 증가율

- 전체 환자 수 : 우리나라 vs 외국 (선진국)
- 원인질환별 : DM vs Non-DM

2) 신대체 요법 경향

- HD vs PD vs KT
- 투석 시설의 증가 : 병원 vs 개인의원



주요 관심 사항 (2)

3) 투석의 질 및 합병증

- 환자 나이, 혈압, Hb/Hct
- URR, KT/V, nPCR

4) 생존율

- Overall, HD vs PD, DM vs Non-DM

5) 사망원인

6) 신장이식



감사의 글

- 전국의 인공신장실 담당의료진
- 대한신장학회 사무국
- 투석용 의료물품 공급업체 :
(Fresenius Korea, Gambro Korea, Baxter Korea, 보령제약)