우리나라 신대체 요법의 현황

– 인산 민병석 교수 기념 말기 신부전 환자 등록사업 2008 –

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Current Renal Replacement Therapy in Korea

-Insan Memorial Dialysis Registry 2008-

ESRD Registry Committee, Korean Society of Nephrology*

=Abstracts=

Registry committee of Korean Society of Nephrology has collected data about dialysis in Korea through on-line registry program in KSN internet web site. The status of renal replacement therapy in Korea at the end of 2008 was as follows:

1) The total number of patients with renal replacement therapy (RRT) was 51,989 (hemodialysis : HD 33,427, peritoneal dialysis : PD 7,840, functioning kidney transplant :KT 10,722). Prevalence of RRT was 1,031.6 patients per million population (pmp). The proportion of RRT was HD 64.3%, PD 15.1%, and renal transplant 20.6%.
2) New RRT patients in 2008 were 9,179 (HD 6,415, PD 1,619, KT 1,145). Incidence rate was 182.1 pmp in 2008.
3) The most common primary cause of end stage renal diseases was diabetic nephropathy (41.9%), hypertensive nephrosclerosis (18.7%) and chronic glomerulonephritis (12.1%), in order.
4) The number of RRT centers was 562 and total number of HD machines was 12,748. Dialysis patients' individual data were collected from 64.2% of overall RRT centers.
5) Mean age of HD patient was 57.2 years old, of PD was 54.8 years old. Proportion of patients on HD more than 5 years' maintenance was 43%.
6) Mean BMI (body mass index; Kg/m^2) of HD patients was 21.7Kg/m^2 and BMI of PD patients was 23.0Kg/m^2. Mean blood pressure was 102.5mmHg in HD and 100.4mmHg in PD patients. Pulse pressure was 62.8mmHg in HD and 53.6mmHg in PD patients.
7) Mean hemoglobin of HD patient was 10.29g/dL (hematocrit 31.2%), PD was 9.89g/dL (29.5%).
8) Mean urea reduction ratio was 67.2% in male HD patients and 73.5% in female HD patients. Mean Kt/V was 1.368 in male patient, 1.644 in female patients.
9) The common co-morbid disease of HD patients was hypertension (38.8%), coronary artery disease (8.2%), congestive heart failure (4.0%), and those of PD patients were also hypertension (54.4%), coronary artery disease (7.3%), congestive heart failure (5.2%).
10) Overall patient survival of male dialysis patient in 5 years was 64.2%, female patients was 66.3%. HD patient's 5 year survival was 66.2% and PD was 49.2%. Diabetic dialysis patient's 5 year survival was 54.9%.
11) Common causes of death were unknown cause or not uremia associated cardiac arrest (14.4%), cerebro-vascular accident (12.2%), uremia associated cardiac arrest (11.0%), myocardial infarction (9.7%), and sepsis (9.0%) in 2008.
12) The number of kidney transplantation was 1145 (cadaver donor 481) in 2008.

Key words: renal replacement therapy, hemodialysis, peritoneal dialysis, kidney transplantation, prevalence, incidence, survival, dialysis adequacy

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Part 1. Prevalence & Incidence of ESRD (1)

Table 1-1. Prevalence of renal replacement therapy.

	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)
2006	29,031 (585.0)	7,990 (161.0)	9,709 (195.7)	46,730 (941.7)
2007	30,907 (617.7)	7,649 (152.9)	10,119 (202.2)	48,675 (972.8)
2008	33,427 (663.3)	7,840 (155.6)	10,722 (212.8)	51,989 (1031.6)

( ): number of patients per million population (2008 overall Korean population : 50,394,374)

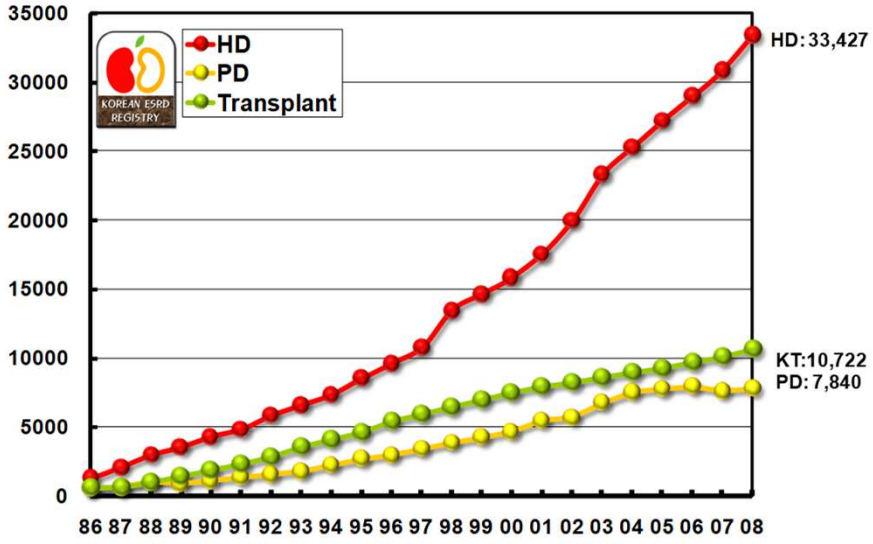

Fig. 1-1. Patient numbers of renal replacement therapy at the end of each year.

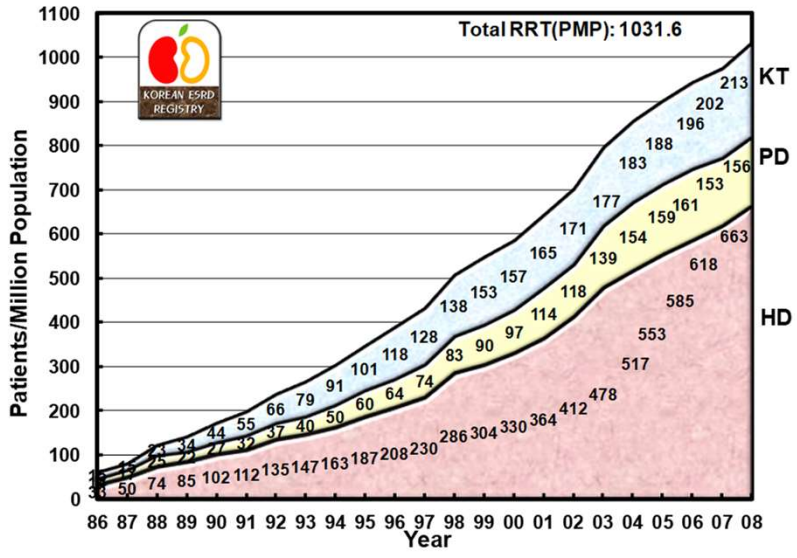

Fig. 1-2. Point prevalence of renal replacement therapy (Patients numbers per million population, HD: hemodialysis, PD: peritoneal dialysis, KT: kidney transplantation).

Part 1. Prevalence & Incidence of ESRD (2)

Table 1-2. Number of new renal replacement therapy patients.

	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)
2006	5,694	(114.7)	2,568	(51.7)	935	(18.8)	9,197	(185.3)
2007	6,193	(123.8)	2,062	(41.2)	928	(18.5)	9,183	(183.5)
2008	6,415	(127.3)	1,619	(32.1)	1,145	(22.7)	9,179	(182.1)

( ): number of patients per million population (2008 overall Korean population : 50,394,374)

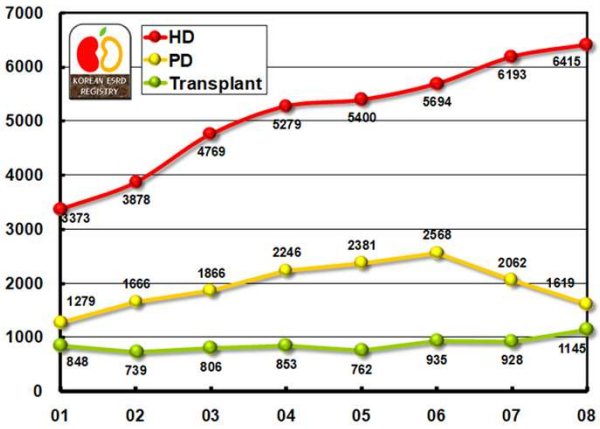

Fig.1- 3. New renal replacement therapy patients in each year.

Table 1-3. Causes of end stage renal disease in new patients.

Causes	Percent (%)									
	1992	1994	1996	1998	2000	2002	2004	2006	2007	2008*
Chronic Glomerulonephritis	25.3	25.5	21.6	17.9	14.0	13.9	12.5	13.0	11.6	12.1
Not Histologically confirmed	19.7	20.4	16.7	13.6	10.6	10.0	8.6	9.0	8.3	8.2
Histologically confirmed	5.6	5.0	4.9	4.3	3.4	3.9	3.9	3.9	3.3	3.8
Diabetic nephropathy	19.5	26.1	30.8	38.9	40.7	40.7	43.4	42.3	44.9	41.9
Hypertensive nephrosclerosis	15.4	20.8	18.3	17.8	16.6	16.0	16.2	16.9	17.2	18.7
Cystic kidney disease	2.1	2.2	1.8	1.7	2.2	1.6	1.4	1.7	1.7	1.7
Renal tuberculosis	1.1	1.5	1.2	0.5	0.4	0.5	0.3	0.3	0.3	0.2
Pyelo/interstitial nephritis	1.3	1.1	0.7	1.0	0.8	0.6	0.6	0.6	0.5	0.5
Drugs or nephrotoxic agents	1.3	0.1	0.6	0.3	0.3	0.4	0.2	0.3	0.2	0.3
Lupus nephritis	0.8	0.7	1.0	0.5	0.9	0.8	0.6	0.6	0.6	0.6
Gouty nephropathy	0.7	0.7	0.6	0.5	0.7	0.4	0.5	0.3	0.3	0.3
Hereditary nephropathy	0.3	0.7	0.4	0.2	0.1	0.2	0.3	0.3	0.2	0.3
Kidney tumor	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.2
Other	4.1	2.7	2.8	3.9	3.0	5.6	5.9	6.0	5.1	5.8
Uncertain	28.6	17.8	15.9	16.6	20.2	19.0	17.8	17.5	17.2	17.6

* n = 8,619

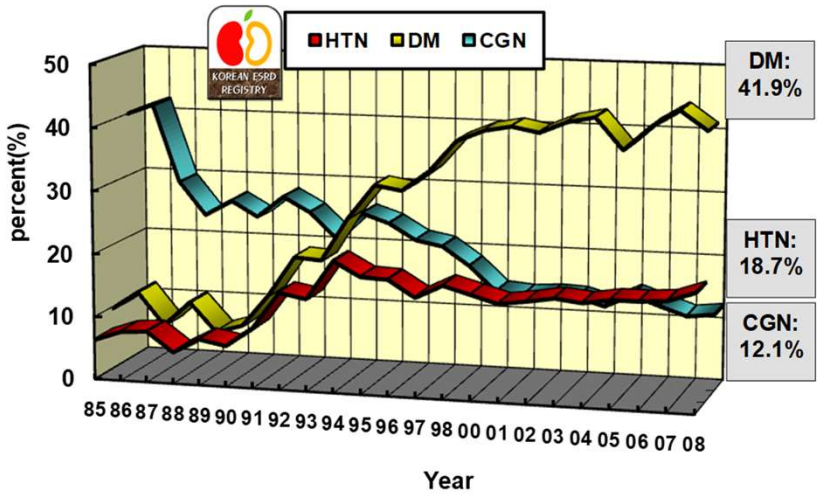

Fig.1- 4. Three major causes of end stage renal disease patients who were initiated renal replacement therapy in each year. (DM: diabetic nephropathy, CGN: chronic glomerulonephritis, HTN: hypertensive nephrosclerosis). Note increase of DM and decrease of CGN.

Part 2. Renal Replacement Therapy Modalities

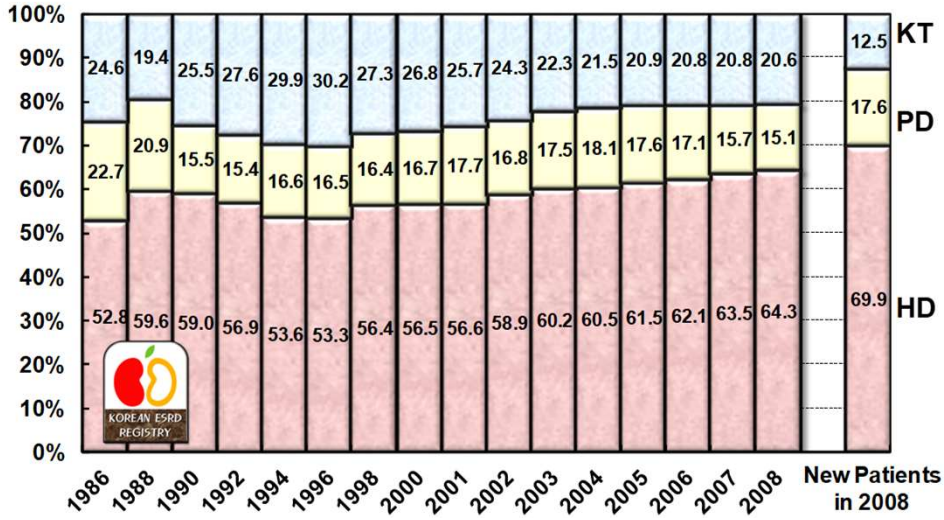

Fig. 2-1. Proportion of renal replacement modalities, annual prevalence and incidence in 2008. HD: hemodialysis, PD: peritoneal dialysis, KT: kidney transplantation.

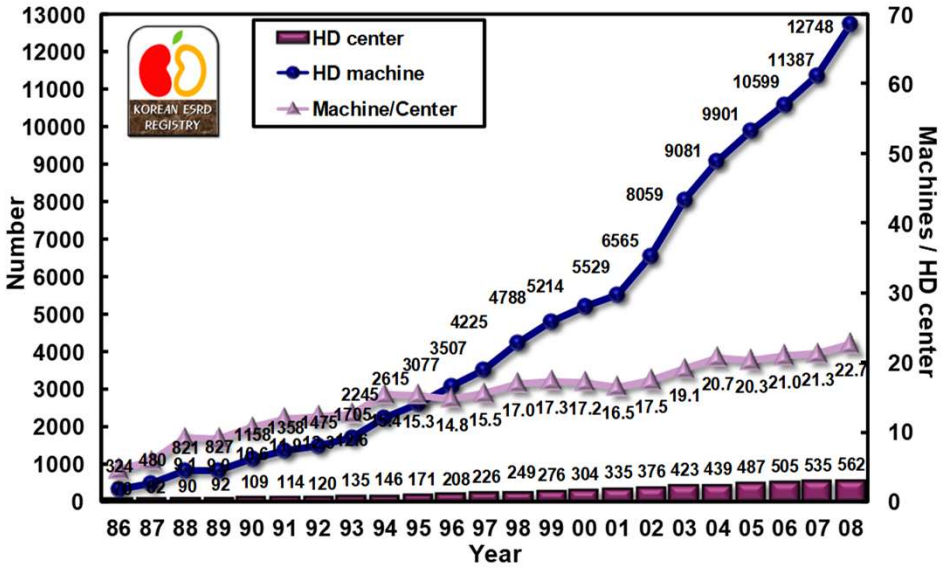

Fig. 2-2. Numbers of dialysis centers, hemodialysis machines and machine per each dialysis center in Korea.

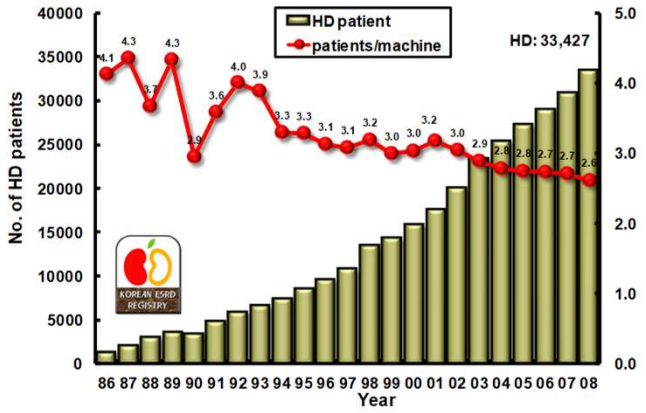

Fig. 2-3. Number of hemodialysis patients and hemodialysis patients per hemodialysis machine.

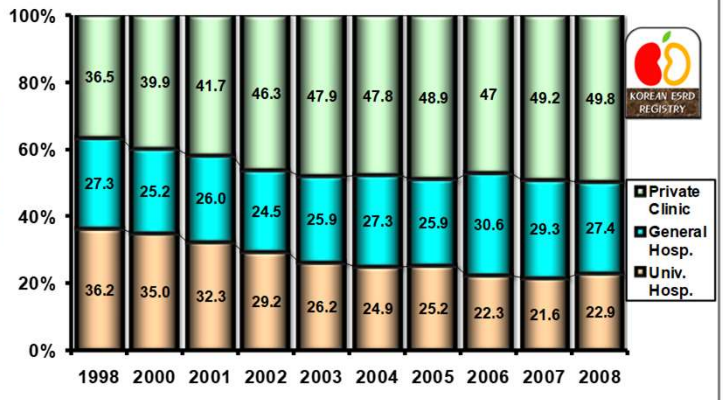

Fig.2-4. Percentage of hemodialysis patients number according to dialysis center.

Part 3. Regional Distribution of Patients & Facilities

Table 3-1. Administrative regional distribution of dialysis patients and machines (at the end of 2008).

	HD pts	PD pts	Total Dialysis pts	Dialysis pts./ Million pop.	Dialysis Centers	HD machines	HD pts./HD machine
서울 Seoul	8,084	2,667	10,751	1,028	126	3,019	2.7
부산 Busan	2,663	994	3,657	1,017	37	955	2.8
대구 Daegu	1,846	848	2,694	1,072	29	626	2.9
인천 Incheon	1,537	378	1,915	699	20	529	2.9
광주 Gwangju	1,248	223	1,471	1,025	28	591	2.1
대전 Daejeon	1,041	263	1,304	872	20	493	2.1
울산 Ulsan	568	77	645	572	12	251	2.3
경기 Gyeonggi	6,632	1,246	7,878	682	111	2,678	2.5
강원 Gangwon	1,115	332	1,447	951	21	421	2.6
충북 Chungbuk	1,170	96	1,266	821	22	431	2.7
충남 Chungnam	1,253	71	1,324	645	23	424	3.0
전북 Jeonbuk	1,371	130	1,501	801	16	397	3.5
전남 Jeonnam	1,034	90	1,124	580	24	471	2.2
경북 Gyeongbuk	1,413	115	1,528	564	28	500	2.8
경남 Gyeongnam	1,928	252	2,180	665	37	784	2.5
제주 Jeju	524	58	582	1,029	8	178	2.9
Total	33,427	7,840	41,267	819	562	12,748	2.6

Table 3-2. Distribution of dialysis patients and machines according to life zone.

	Population (%)	HD patients	PD patients	Total Dialysis patients	Dialysis pts /Million pop.	Dialysis centers	Dialysis machine	HD pts / HD machine
수도권 (Capital area)	24,746,342	16,253	4,291	20,544	830	257	6,226	2.6
(Seoul, Incheon, Gyeonggi)	49.1%	48.6%	54.7%	49.8%		45.7%	48.8%	
충청권 (Chungchung)	5,091,029	3,464	430	3,894	765	65	1,348	2.6
(Daejeon, Chungnam, Chungbuk)	10.1%	10.4%	5.5%	9.4%		11.6%	10.6%	
호남권 (Honam)	5,247,836	3,653	443	4,096	781	68	1,459	2.5
(Gwangju, Jeonnam, Jeonbuk)	10.4%	10.9%	5.7%	9.9%		12.1%	11.4%	
영남권 (Youngnam)	13,222,180	8,418	2,286	10,704	810	143	3,116	2.7
(Busan, Daegu, Gyeongnam, Gyeongbuk, Ulsan)	26.2%	25.2%	29.2%	25.9%		25.4%	24.4%	
강원권 (Gangwon)	1,521,467	1,115	332	1,447	951	21	421	2.6
	3.0%	3.3%	4.2%	3.5%		3.7%	3.3%	
Total	50,394,374	33,427	7,840	41,267	819	562	12,748	2.6

* 제주 표시 제외. Data of Jeju-do is not shown.

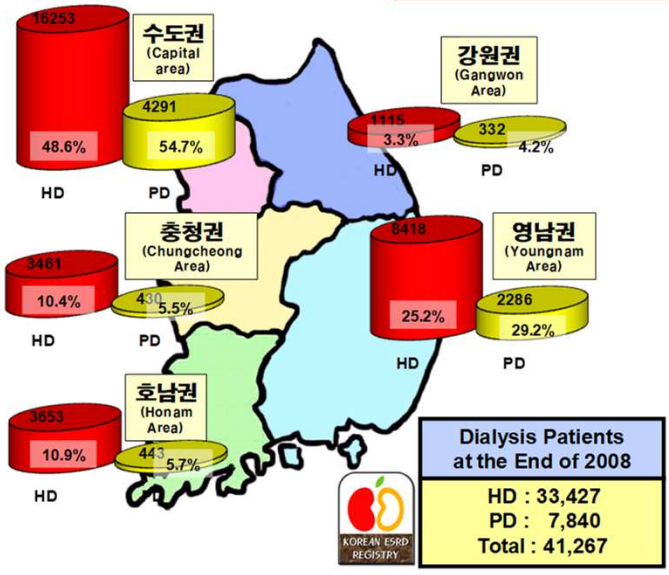

Fig. 3-1. Distribution of dialysis patients and machines according to life zone.

Part 4. Dialysis Patients Demographics (1)

Table 4-1. Percent of dialysis centers contributing individual patient data.

	Dialysis centers	Internet Input	Paper data	Total contributed center	Contributing rate (%)
서울 Seoul	126	65	21	86	68.3
부산 Busan	37	18	7	25	67.6
대구 Daegu	29	15	4	19	65.5
인천 Incheon	20	9	1	10	50.0
광주 Gwangju	28	11	7	18	64.3
대전 Daejeon	20	7	2	9	45.0
울산 Ulsan	12	5	2	7	58.3
경기 Gyeonggi	111	51	19	70	63.1
강원 Gangwon	21	9	3	12	57.1
충북 Chungbuk	22	10	5	15	68.2
충남 Chungnam	23	10	3	13	56.5
전북 Jeonbuk	16	10	2	12	75.0
전남 Jeonnam	24	10	3	13	54.2
경북 Gyeongbuk	28	16	4	20	71.4
경남 Gyeongnam	37	20	6	26	70.3
제주 Jeju	8	6	0	6	75.0
Total	562	272	89	361	64.2

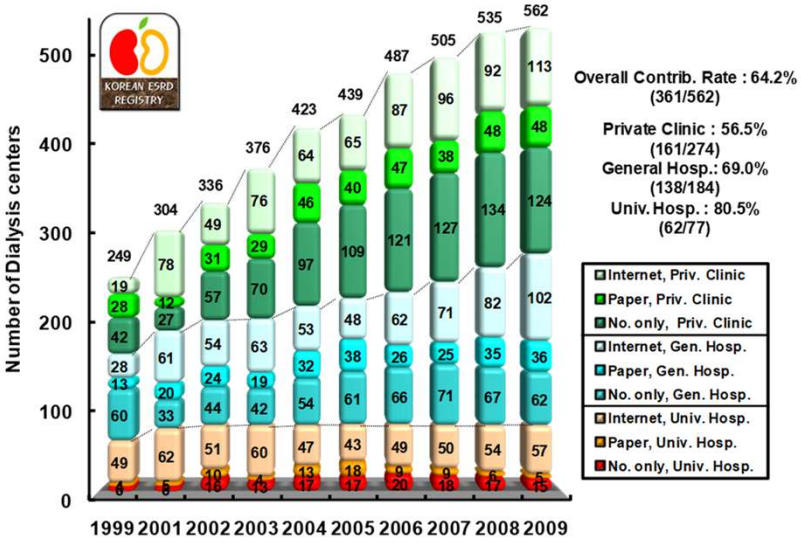

Fig. 4-1. Individual patients data contributing rate of dialysis centers according to hospital classification.

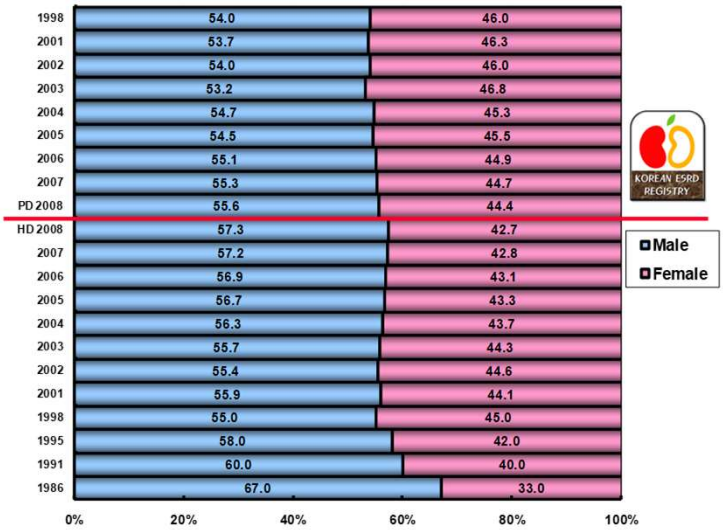

Fig.4-2. Gender ratio of HD & PD patients according to years.

Part 4. Dialysis Patients Demographics (2) - Age

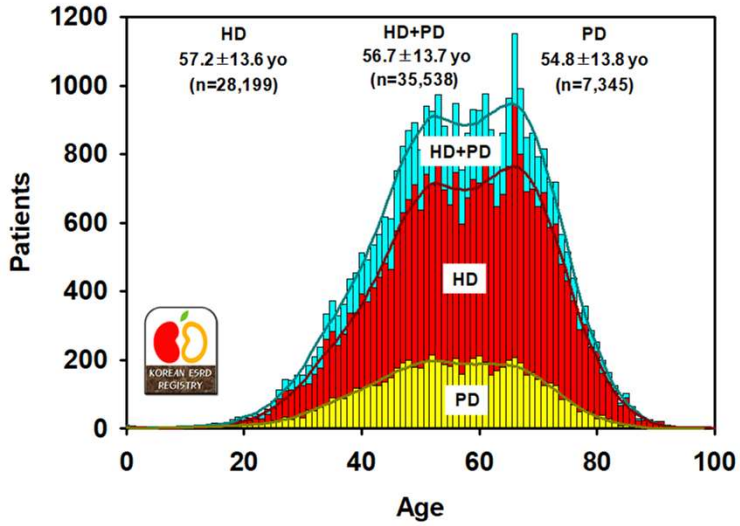

Fig. 4-3. Age distribution of dialysis patients according to dialysis modalities.

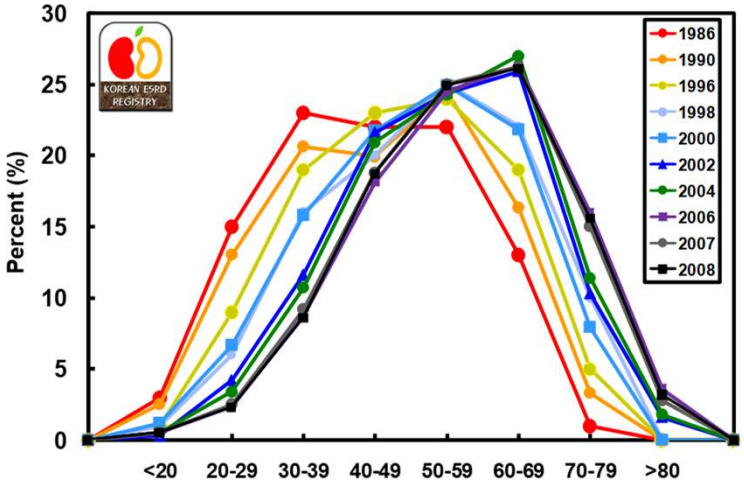

Fig.4-4. Age distribution of dialysis patients according to years. Note the peak age was shift to old age.

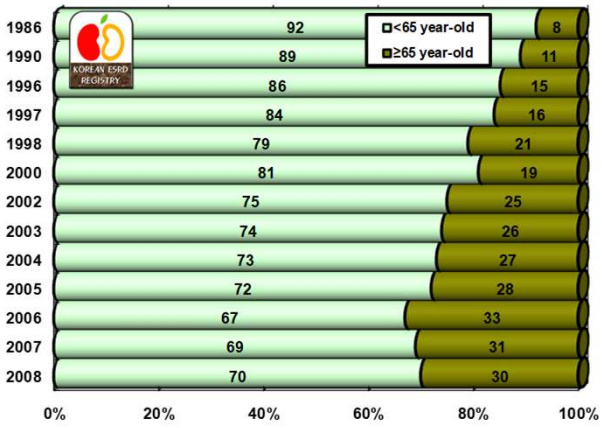

Fig.4-5. Elderly dialysis patient (≥65 year-old) proportion according to year.

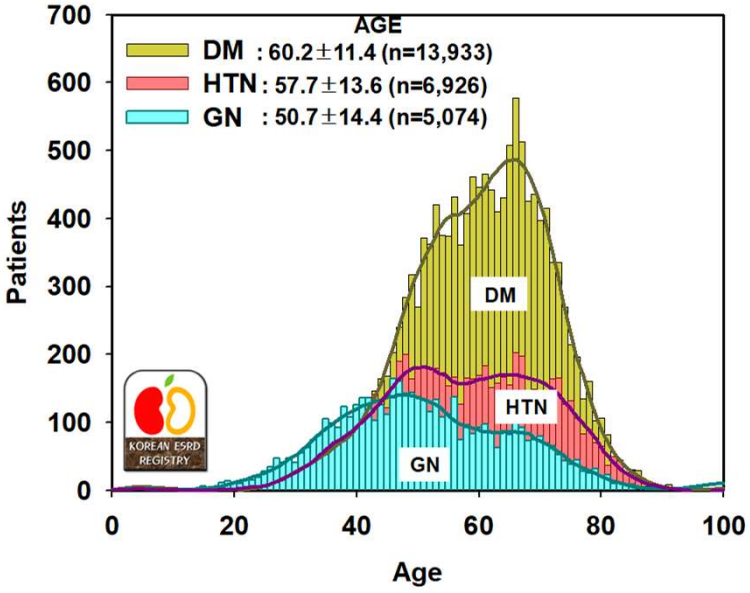

Fig. 4-6. Age distribution of dialysis patients according to underlying diseases, diabetic patients (DM), hypertensive nephrosclerosis (HTN) and glomerulonephritis (GN). Note difference of peak age between GN and DM.

Part 4. Dialysis Patients Demographics (3) – Dialysis Duration

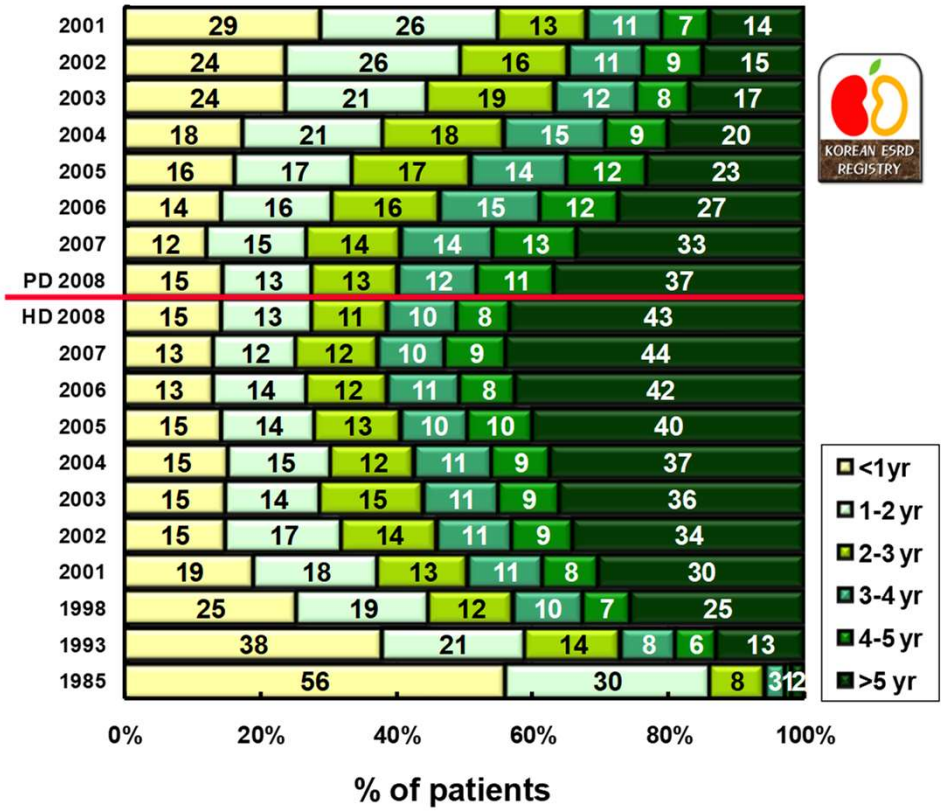

Fig. 4-7. Duration of maintenance hemodialysis and peritoneal dialysis. Percent of estimated patient number according to year.

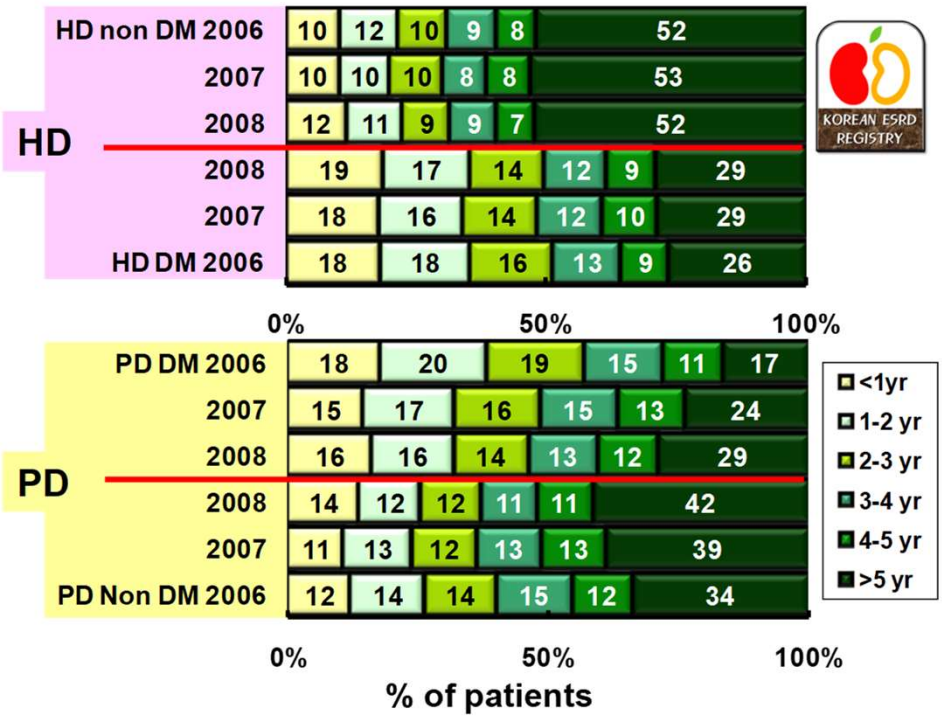

Fig 4-8. Diabetic and non-diabetic patient's duration of dialysis maintenance.

Part 4. Dialysis Patients Demographics (4) – BMI & BP

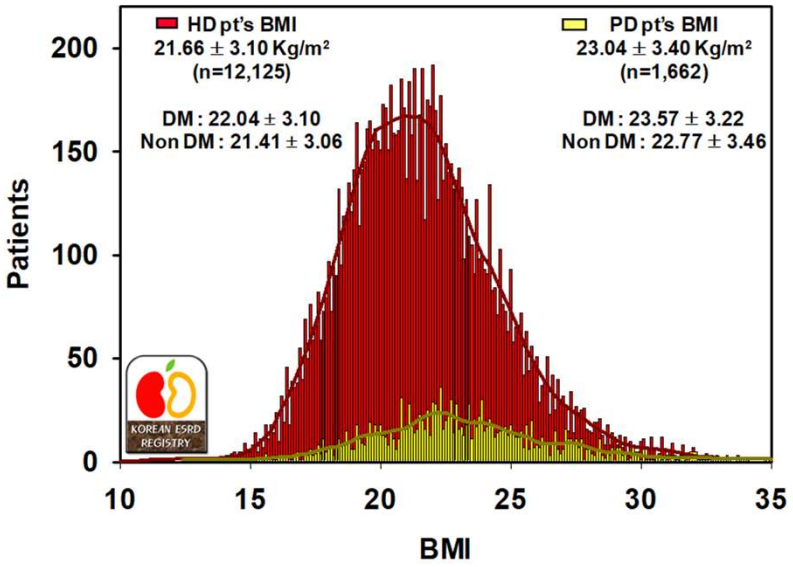

Fig. 4-9. Distribution of body mass index (BMI) in hemodialysis (HD) and peritoneal dialysis (PD) patients.

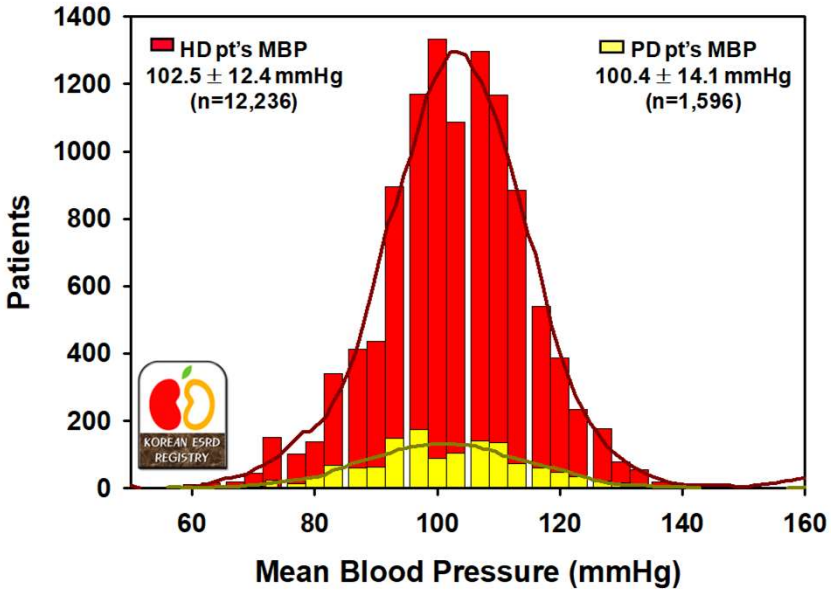

Fig. 4-10. Distribution of mean blood pressure (MBP) in hemodialysis and peritoneal dialysis patients. Blood pressure of HD patients was higher than PD patients BP.

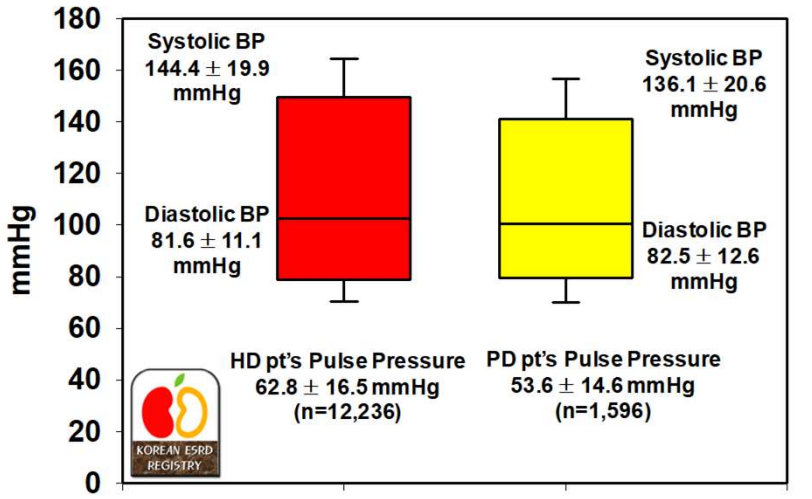

Fig.4-11. Systolic and diastolic blood pressure with pulse pressure in hemodialysis and peritoneal dialysis patients. Note difference of pulse pressure between HD and PD patients.

Part 5. Dialysis Therapy (1) – Anemia & Erythropoietin

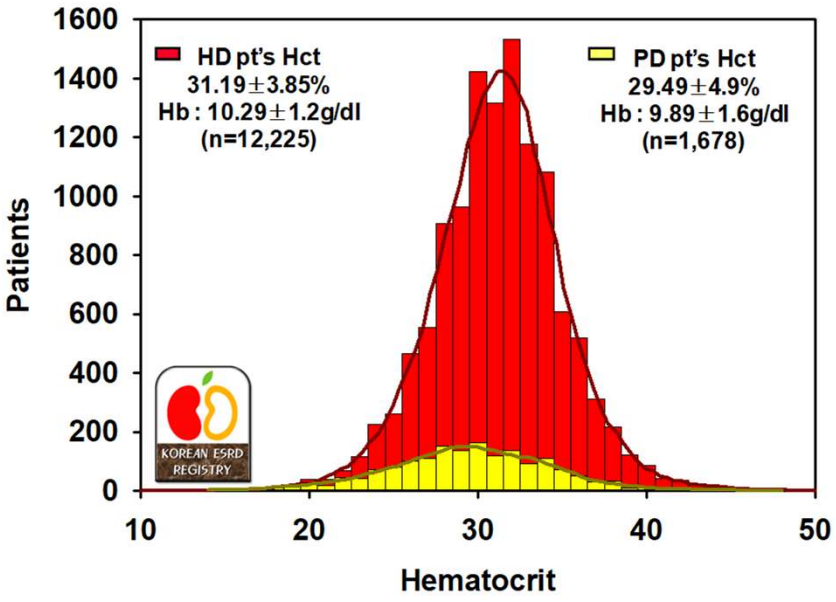

Fig.5-1. Distribution of hematocrit levels in hemodialysis and peritoneal dialysis patients. Also mean of hemoglobin level of HD and PD patients were shown.

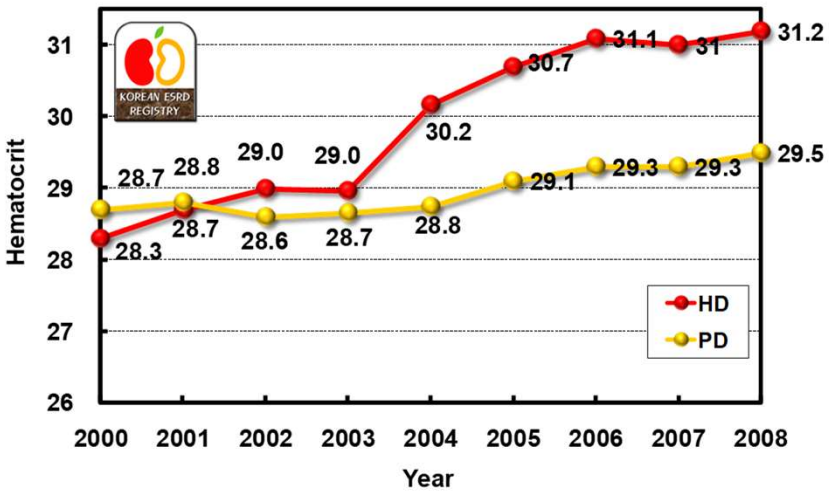

Fig. 5-2. Changes of hematocrit (%) in dialysis patients, HD versus PD. Note the increase of hematocrit of HD patients.

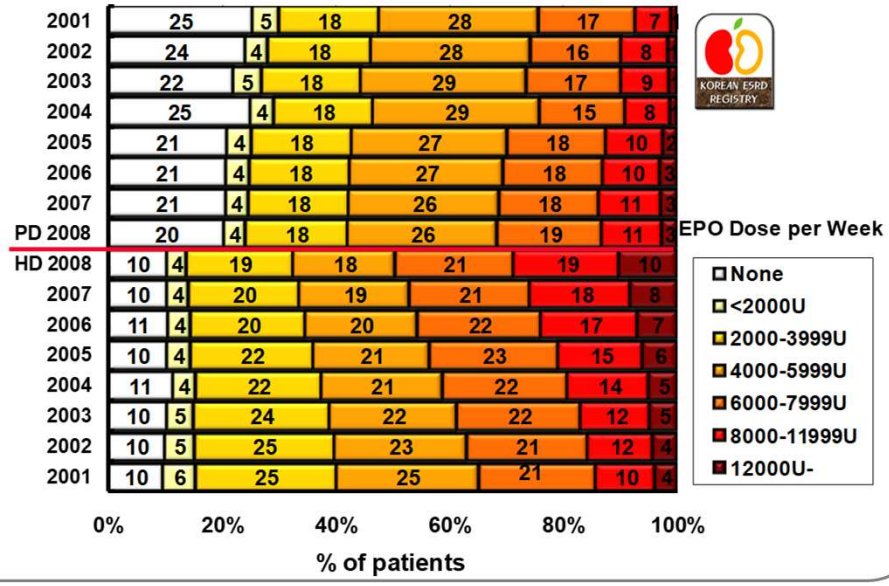

Fig.5-3. Percent distribution of prescribed erythropoietin doses for hemodialysis and peritoneal dialysis patients.

Part 5. Dialysis Therapy (2) – HD Frequency & Dialyzer

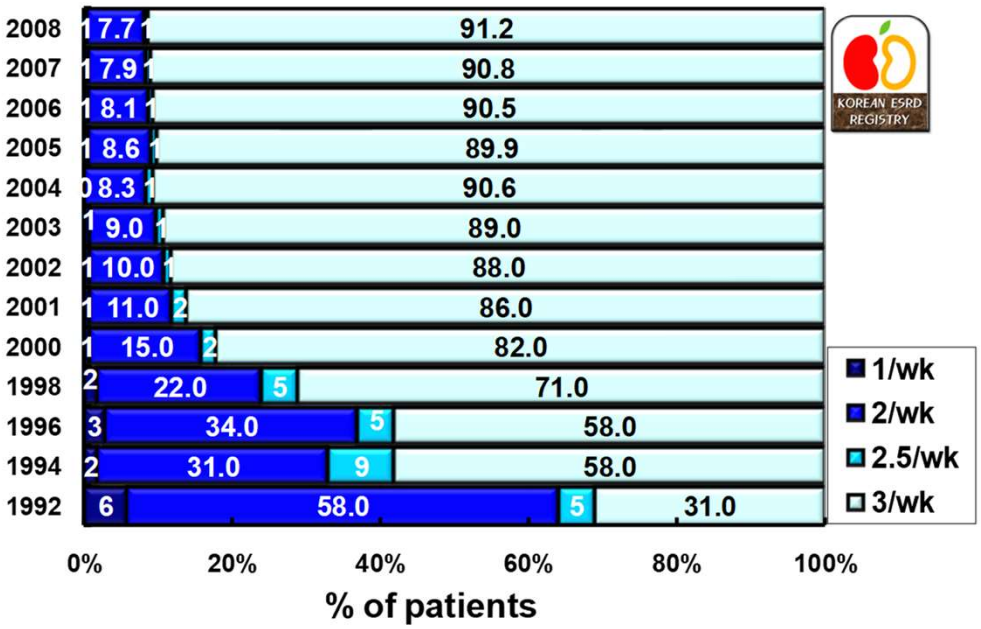

Fig.5-4. Frequency of hemodialysis per week.

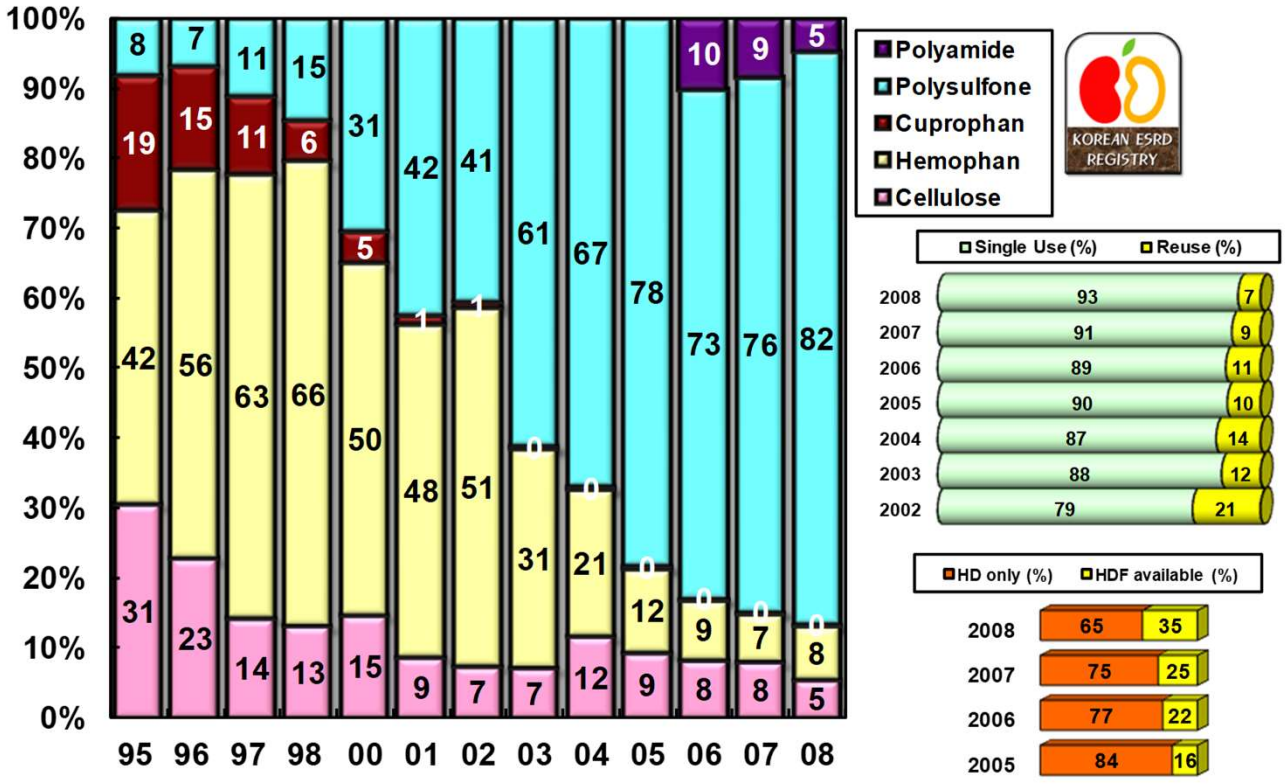

Fig.5-5. Currently using hemodialysis membranes, reuse of dialysis membrane and hemodiafiltration performing center percent.

Part 5. Dialysis Therapy (3) – HD Adequacy

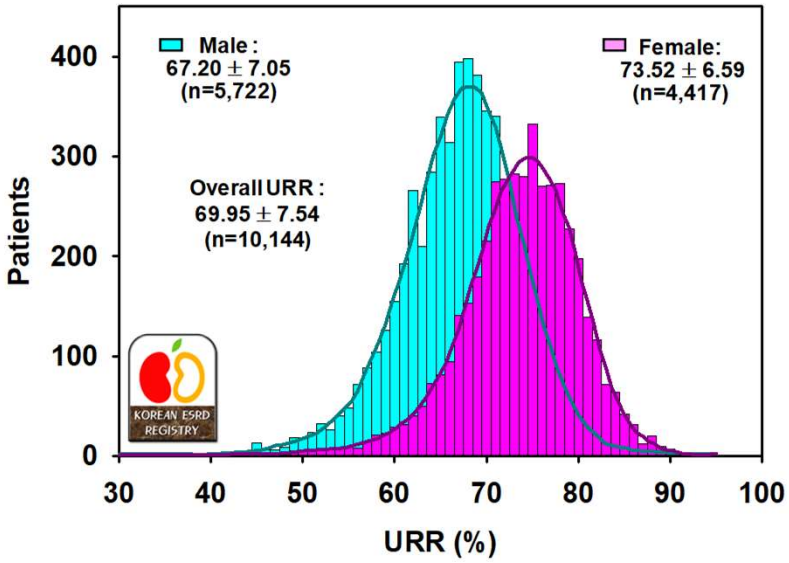

Fig.5-6. Distribution of urea reduction ratio (URR) of hemodialysis patients. Note the difference between male and female.

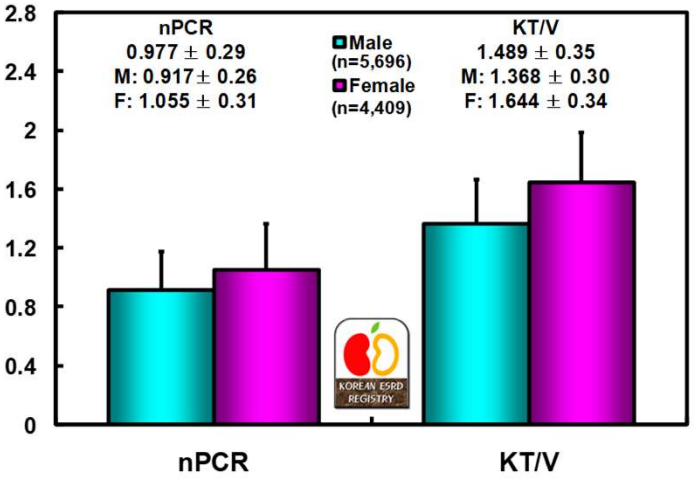

Fig.5-7. Dialysis adequacy parameters (nPCR & KT/V) of hemodialysis patients.

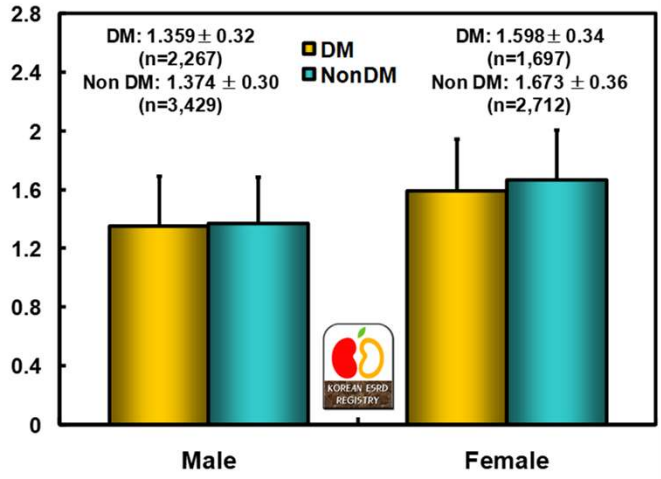

Fig.5-8. Dialysis adequacy parameters (Kt/V) of diabetic and non-diabetic hemodialysis patients.

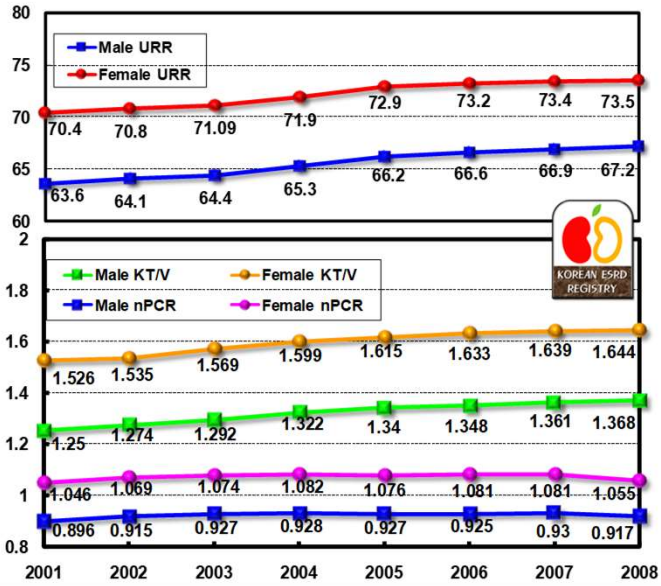

Fig.5-9. Annual changes of dialysis adequacy parameters of hemodialysis patients.

Part 5. Dialysis Therapy (4) – Peritoneal Dialysis

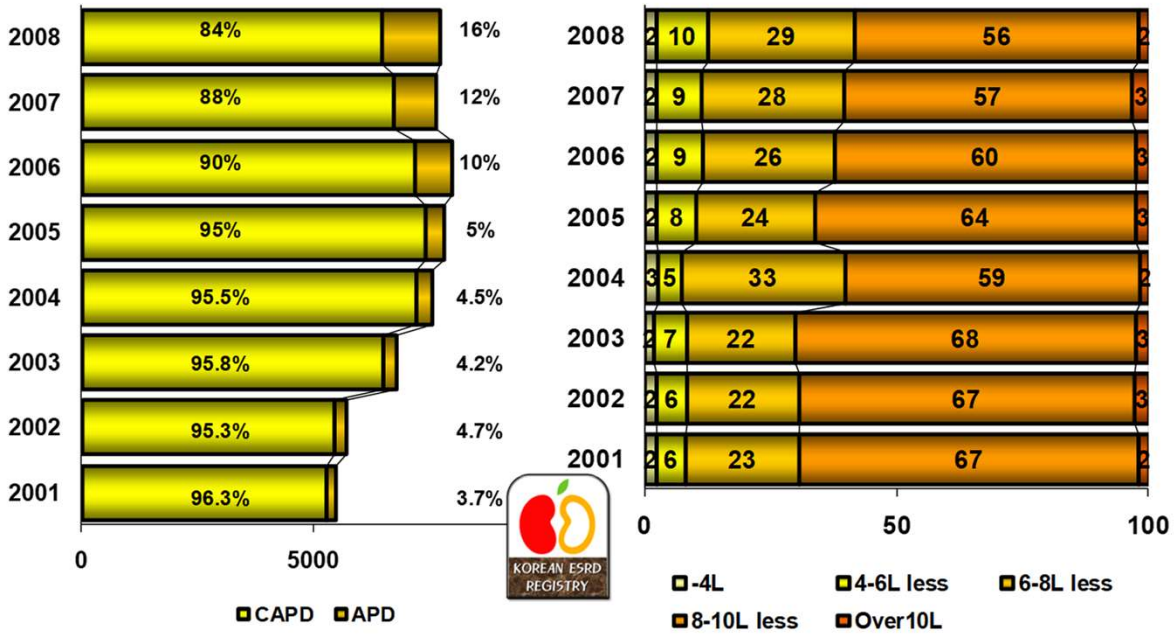

Fig. 5-10. Percent distribution of peritoneal dialysis type and doses per day.

Part 6. Co-morbidity of Dialysis Patients

Table 6-1. Co-morbidity of dialysis patients in 2008*.

Diseases	HD Patients (%)	PD Patients (%)
Cardiac	**16.1**	**15.4**
Coronary Artery Disease	8.2	7.3
Congestive Heart Failure	4.0	5.2
Pericardial Effusion	0.4	1.2
Arrythmia	3.6	1.7
Vascular	**45.1**	**57.8**
Cerebrovascular accident	4.3	2.3
Hypertension	38.8	54.4
Other vascular disease	2.0	1.2
Infection	**5.8**	**12.2**
Pneumonia	1.5	1.2
Tuberculosis	0.8	0.9
Peritonitis	0.7	8.1
Herpes zoster	0.5	0.0
Other Infection	2.4	2.0
Liver disease	**7.3**	**5.2**
Hepatitis B	4.0	3.5
Hepatitis C	2.7	0.6
Congestive Liver	0.0	0.6
Hemochromatosis	0.1	0.0
Other liver diseases	0.5	0.6
Gastrointestinal	**9.5**	**3.8**
Gastric Ulcer	2.4	0.3
Duodenal Ulcer	0.5	0.6
Other Gastrointestinal Diseases	6.7	2.9
Miscellaneous	**16.2**	**5.5**
Malnutrition (Alb<2.5g/dl)	0.9	0.6
Malignancy	1.7	0.0
Hypertensive Retinopathy	2.1	4.1
Uremic Dermatitis	3.2	0.3
Uremic Neuritis	4.6	0.3
Uremic Dementia	1.0	0.3
Uremic Ascites / Pleural Effusion	1.0	0.0
Osteodystrophy	1.6	0.0

* Reported patients number: Hemodialysis =1,912, Perioneal dialysis=344.

Part 7. Causes of Death in Dialysis Patients

Table 7-1. Causes of death (%) in dialysis patients, 1994-2008.

Causes	1994-1996	1998	2001	2002	2003	2004	2005	2006	2007	2008
Cardiac	**27.4**	**33.3**	**26.9**	**27.9**	**31.7**	**35.5**	**30.7**	**33.7**	**31.7**	**35.1**
Myocardial infarction	6.4	6.6	7.7	5.5	7.4	8.3	8.0	9.1	7.5	9.7
Cardiac arrest, uremia associated	13.7	17.5	11.2	10.6	11.7	13.6	10.4	11.1	10.8	11.0
Cardiac arrest, other cause	7.2	8.1	8.1	11.8	12.5	13.6	12.4	13.5	13.3	14.4
Vascular	**17.2**	**18.5**	**22.7**	**15.7**	**19.5**	**17.5**	**17.0**	**16.5**	**17.8**	**16.0**
Cerebrovascular accident	14.3	16.6	15.1	11.6	14.5	12.8	12.3	11.5	13.0	12.2
Pulmonary embolus	0.2	0.1	0.5	0.4	0.1	0.2	0.6	0.7	0.5	0.1
Gastrointestinal hemorrhage	1.7	2.1	2.7	1.9	3.2	2.0	1.7	1.8	2.7	1.9
Gastrointestinal embolism	0.1	0.0	0.1	0.1	0.0	0.4	0.5	0.5	0.1	0.1
Other vascular disease	0.9	0.9	4.3	1.7	1.6	2.1	1.9	2.0	1.6	1.7
Infection	**13.5**	**18.1**	**17.8**	**21.6**	**20.5**	**19.5**	**20.1**	**18.8**	**20.2**	**19.5**
Pulmonary infection	2.5	3.4	4.5	4.9	3.6	3.7	4.5	4.2	4.4	4.4
Septicemia	6.6	10.8	6.9	9.2	9.7	9.4	9.6	8.9	11.7	9.0
Tuberculosis	0.3	0.8	0.8	0.5	0.2	0.1	0.3	0.1	0.2	0.1
Peritonitis	2.1	2.5	1.1	2.5	2.0	1.5	1.4	1.1	1.1	2.0
Other Infection	2.0	1.8	4.5	4.5	4.9	4.8	4.3	4.5	2.9	4.0
Liver disease	**3.4**	**3.4**	**2.6**	**2.8**	**2.8**	**2.9**	**2.7**	**2.6**	**2.2**	**1.9**
Liver failure due to hepatitis B	1.8	2.3	1.6	1.2	1.8	2.1	1.5	1.4	1.3	1.0
Liver failure due to other cause	1.6	1.3	1.0	1.6	1.0	0.9	1.2	1.1	0.8	0.8
Social	**6.2**	**4.2**	**6.3**	**4.7**	**4.4**	**3.6**	**5.4**	**4.2**	**3.3**	**3.3**
Patient refused further treatment	2.9	1.8	2.1	1.8	1.0	1.1	1.1	0.6	1.1	0.6
Suicide	2.5	0.9	3.3	1.9	2.3	2.0	3.3	3.0	1.5	1.6
Therapy ceased for other reason	0.8	1.9	0.9	1.0	1.0	0.5	1.0	0.6	0.7	1.0
Miscellaneous	**32.0**	**19.7**	**23.7**	**27.4**	**21.3**	**21.0**	**24.0**	**24.2**	**24.8**	**24.3**
Cachexia	2.9	3.3	8.1	6.8	6.6	6.1	4.0	3.9	4.4	3.8
Malignant disease	2.1	4.1	4.4	4.8	3.5	3.6	6.4	5.4	5.7	4.6
Accident	1.2	1.0	0.9	0.5	1.1	0.9	1.4	1.6	1.2	1.0
Uncertain	25.8	12.5	10.3	15.3	10.1	10.3	12.3	13.2	13.4	14.9

Number of patients :1994-1996=981, 1998=911, 2001=761, 2002=1,256, 2003=894, 2004=1,162, 2005=1,256, 2006=1,248, 2007=1,531, 2008=1,563.

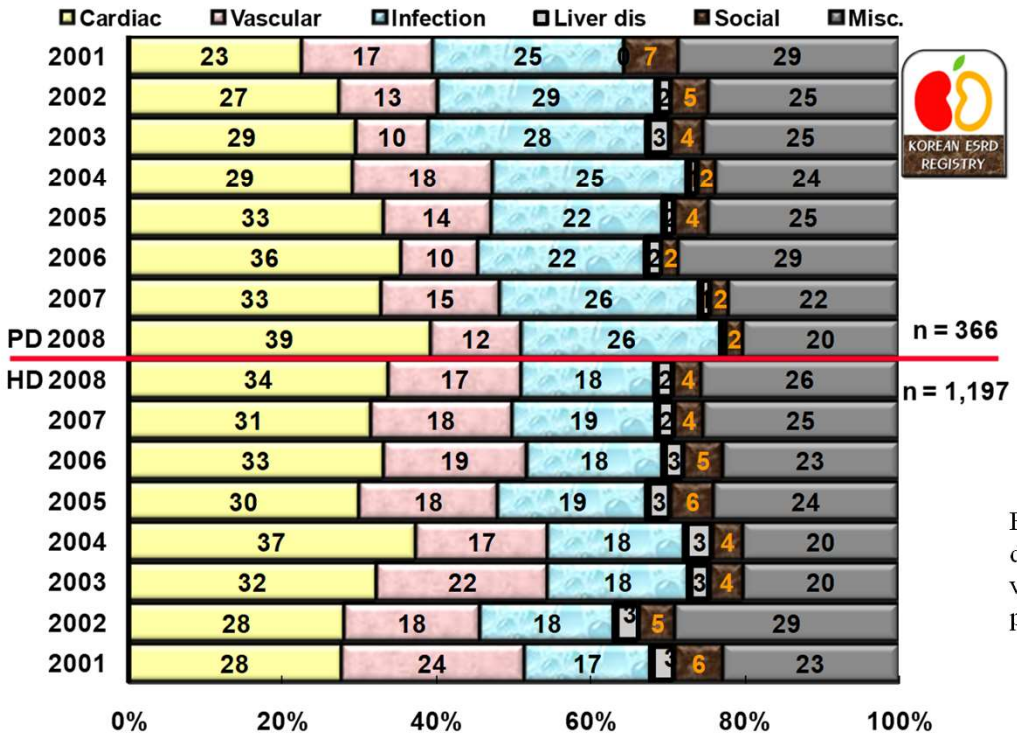

Fig.7-1. Comparison of death causes, hemodialysis versus peritoneal dialysis patients in 2001-2008.

Part 8. Survival of Dialysis Patients (1)- Overall

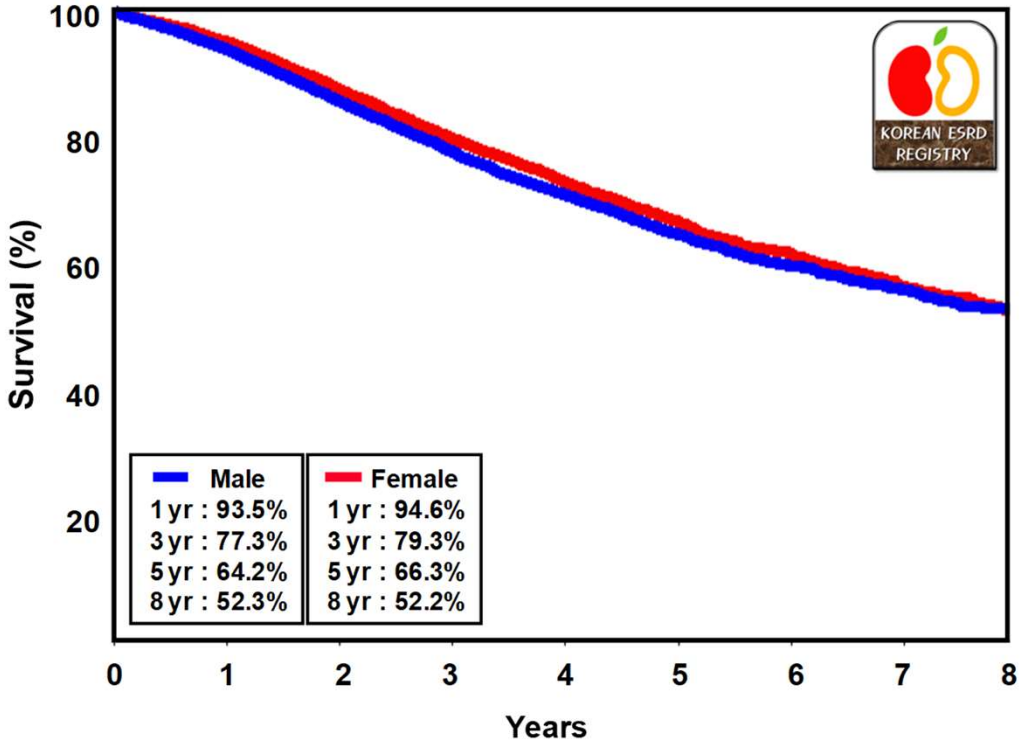

Fig.8-1. Overall registered dialysis patient survival since 2001. (male : n=17,001, female : n=12,743).

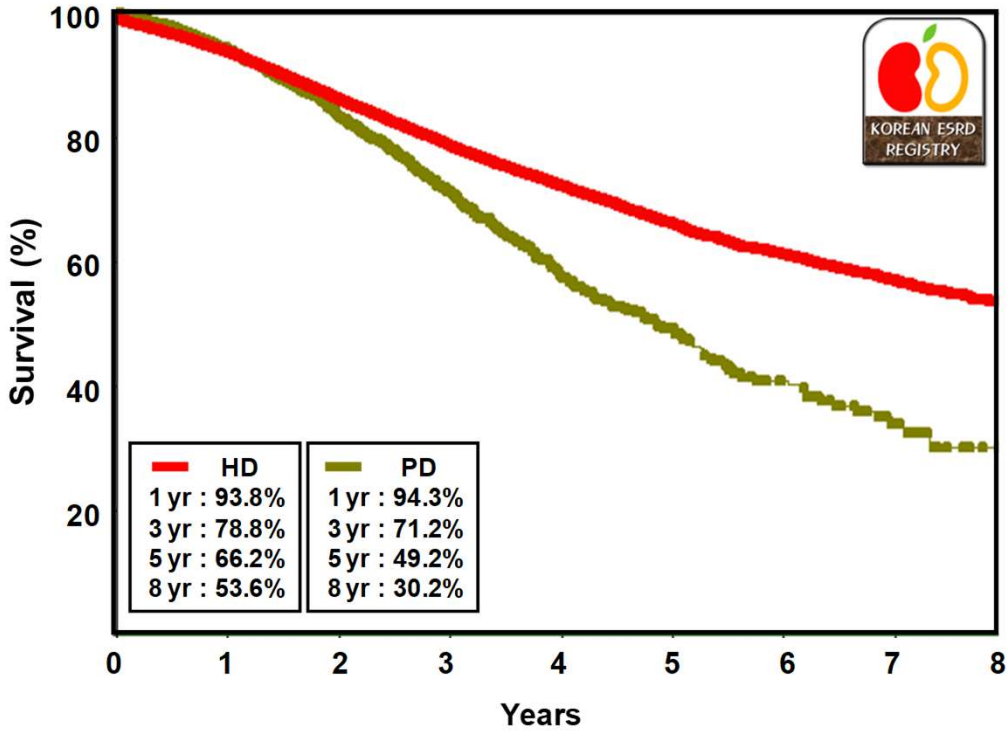

Fig.8-2. HD & PD dialysis patient survival since 2001 (HD : n=23,330, PD : n=6,462). Probably significant portion of hemodialysis patients' death report was not submitted during patient transfer to another hospital (censored data) which could result hemodialysis patient survival is much higher than peritoneal dialysis patient survival.

Part 8. Survival of Dialysis Patients (2)- DM vs Non DM

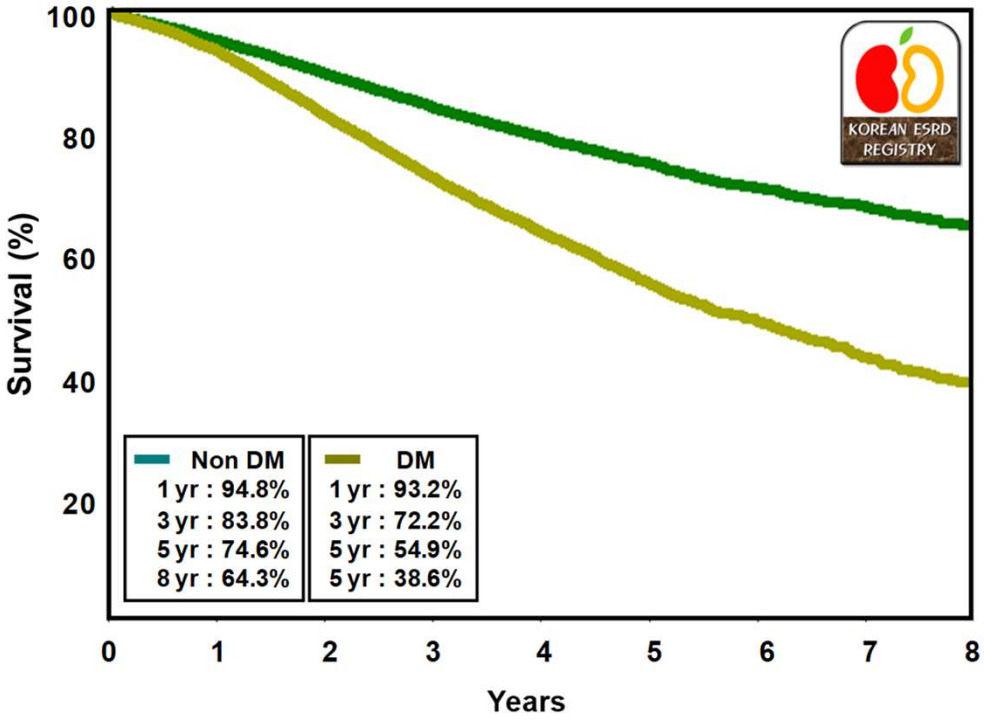

Fig. 8-3. Overall diabetic & non diabetic dialysis patient survival since 2001 (Non DM : n=14,143, DM : n=15,601).

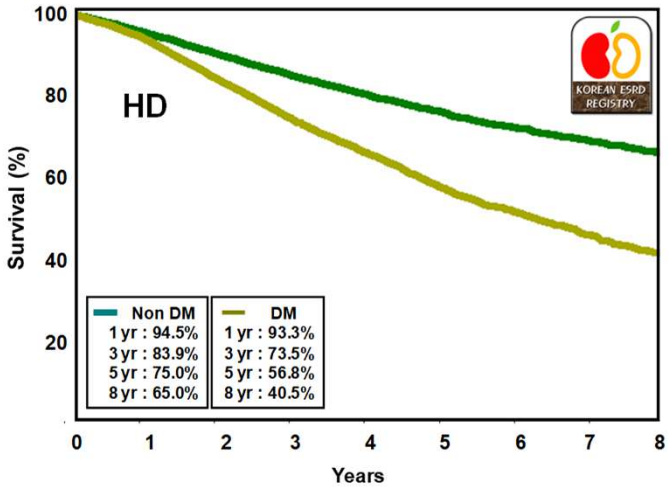

Fig. 8-4 . Diabetic & non diabetic hemodialysis patient survival since 2001 (Non DM : n=11,898, DM : n=11,401).

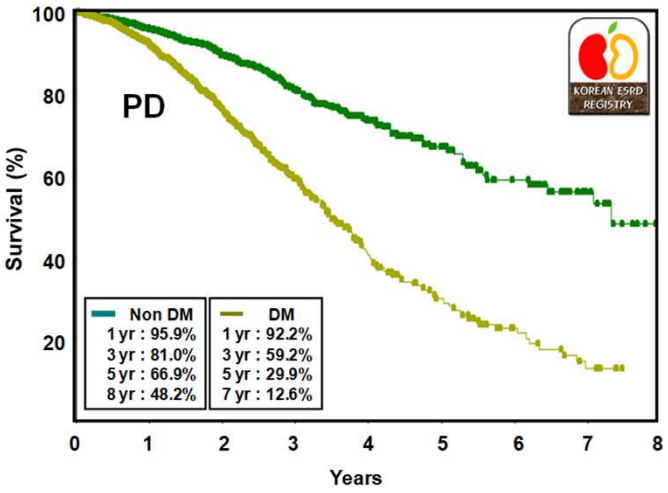

Fig. 8-5. Diabetic & non diabetic peritoneal dialysis patient survival since 2001 (Non DM : n=3,703, DM : n=2,742).

Part 9. Kidney Transplantation

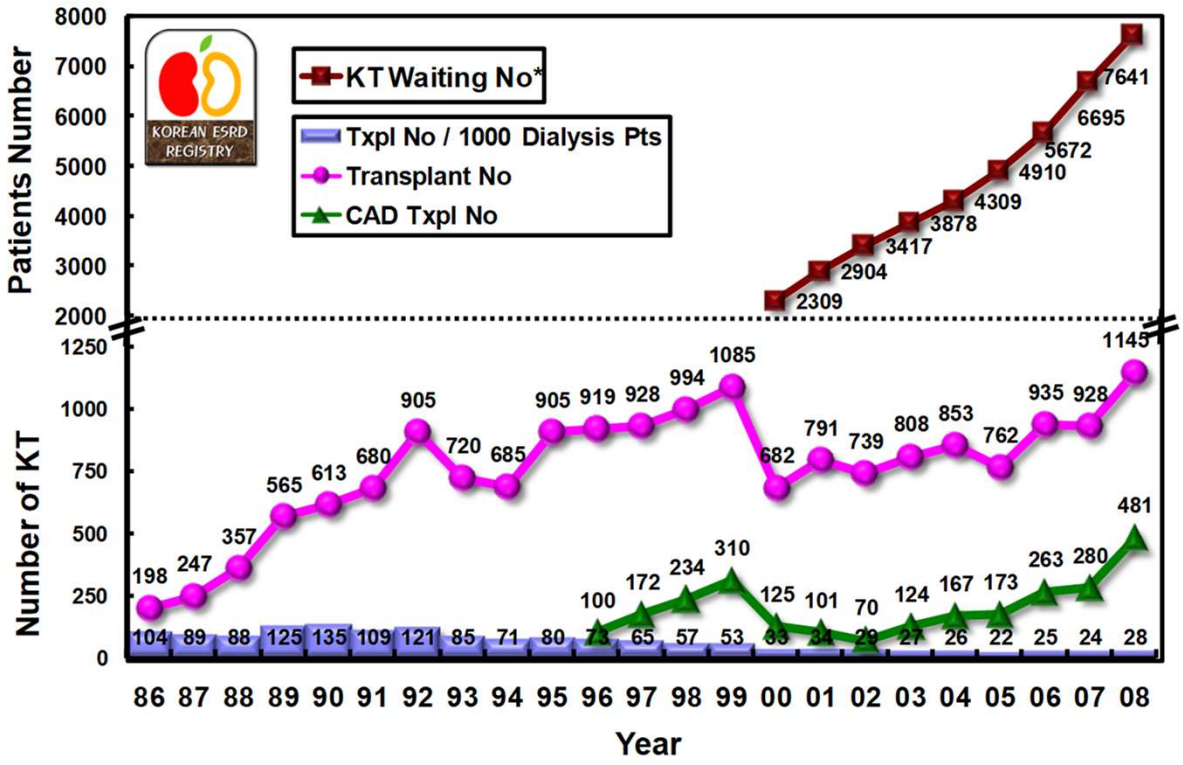

Fig.9-1. Annual number of kidney transplantation in Korea (including data from KONOS: Korean Network for Organ Sharing). * Survived KT waiting patient number at the end of each year.

Part 10. Medical Cost for CKD

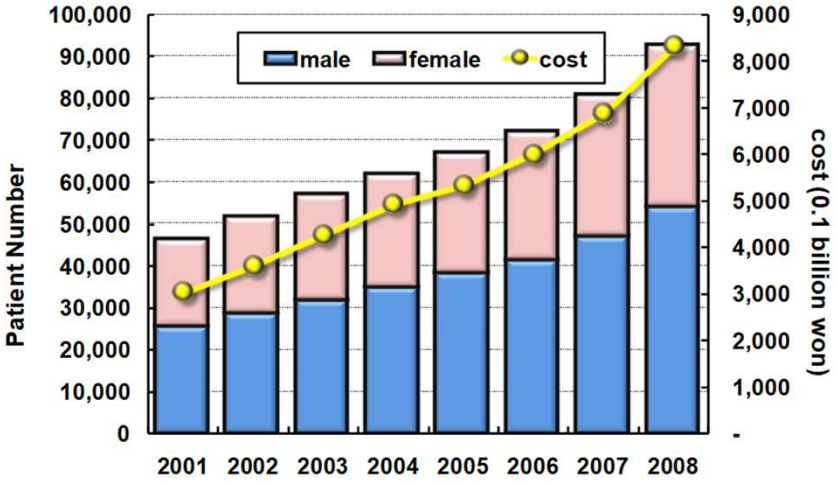

Fig.10-1. Annual number of chronic kidney disease patient (International disease code :N18) and medical cost. Data from National health insurance corporation.

◆ Acknowledgements : We, ESRD registry committee of Korean Society of Nephrology, would like deeply thank to every dialysis center medical doctors and nurses in Korea for participation in this survey. FMC Korea, Gambro Korea, Baxter Korea, Boryung Pharm were also share their data for confirmation.