우리나라 신대체 요법의 현황

– 인산 민병석 교수 기념 말기 신부전 환자 등록사업 2017 –

Current Renal Replacement Therapy in Korea

-Insan Memorial Dialysis Registry 2017-

KOREAN ESRD REGISTRY

대한신장학회 등록위원회

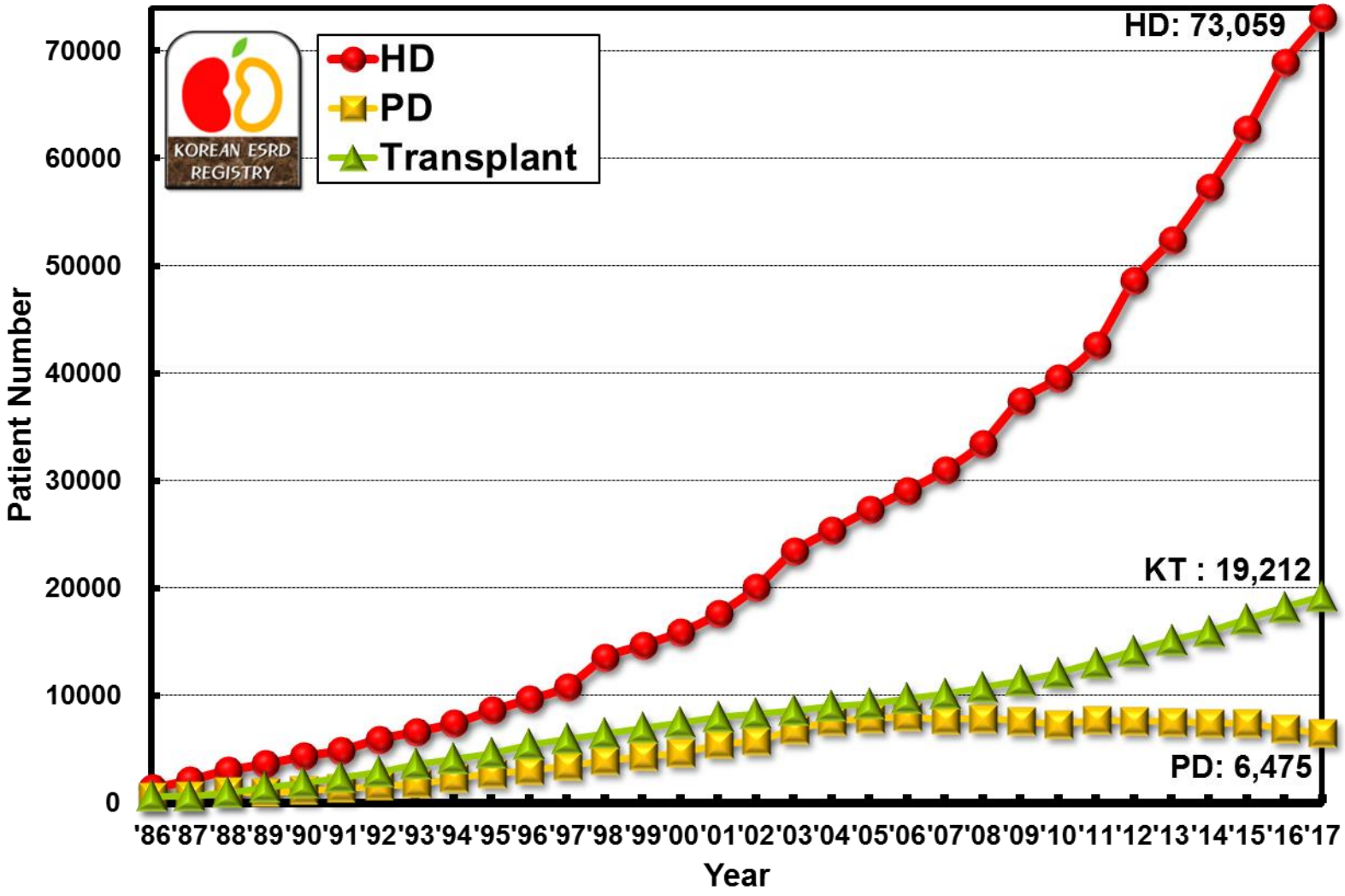
ESRD Registry Committee, Korean Society of Nephrology

Prevalence of Renal Replacement Therapy

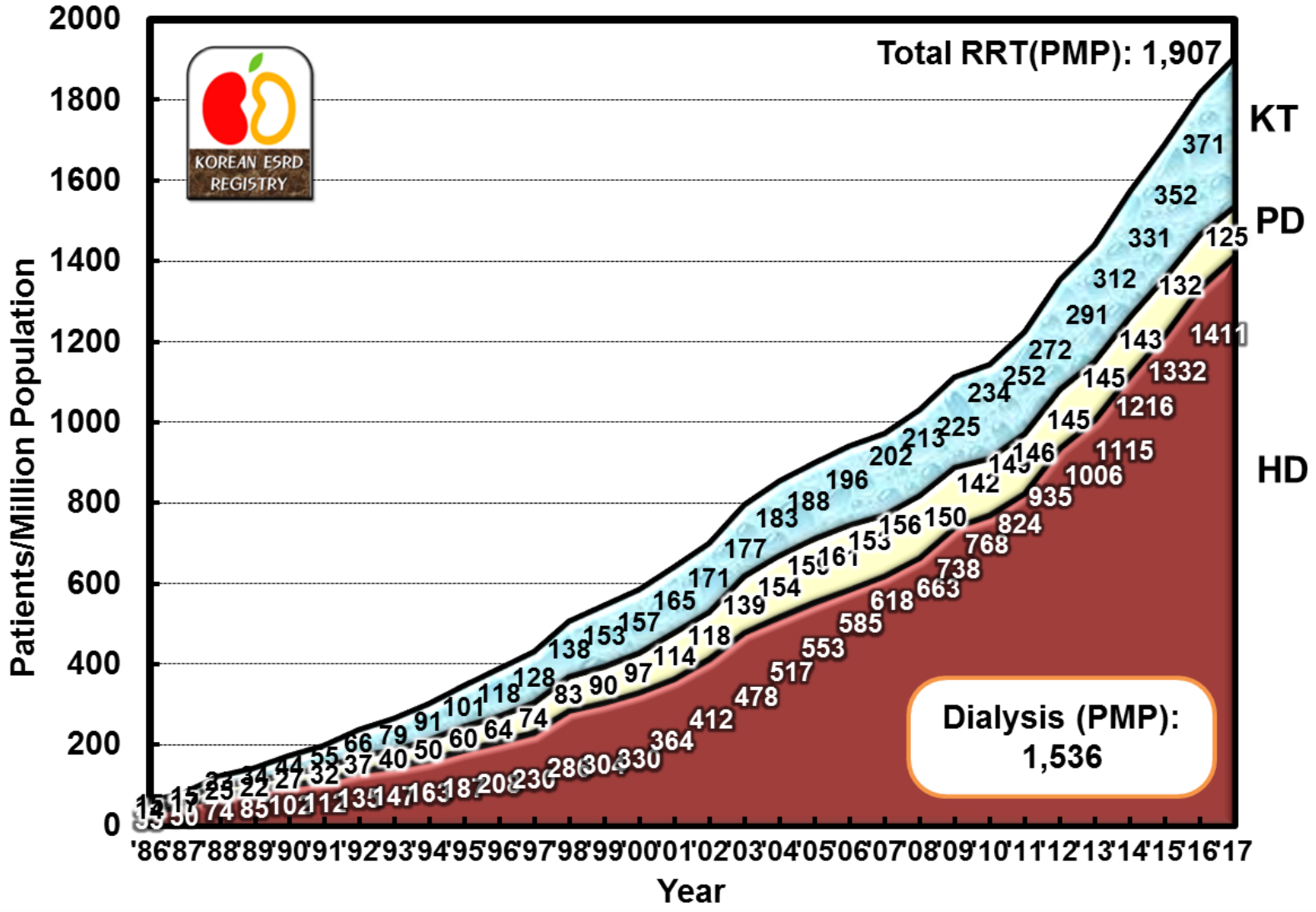
Year	HD		PD		Transplant		Total	
1980	198	(4.9)	30	(0.7)	-	-	228	(6.0)
1986	1,335	(32.6)	573	(13.9)	621	(15.1)	2,534	(61.7)
1988	3,012	(74.0)	1,058	(25.2)	982	(23.4)	5,142	(122.7)
1990	4,311	(101.8)	1,130	(26.7)	1,866	(44.1)	7,307	(172.6)
1992	5,890	(135.3)	1,599	(36.7)	2,862	(65.8)	10,351	(237.8)
1994	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)
2002	20,010	(412.4)	5,712	(117.7)	8,271	(170.5)	33,993	(700.6)
2004	25,335	(516.5)	7,569	(154.3)	8,987	(183.2)	41,891	(854.0)
2006	29,031	(585.0)	7,990	(161.0)	9,709	(195.7)	46,730	(941.7)
2008	33,427	(663.3)	7,840	(155.6)	10,722	(212.8)	51,989	(1031.6)
2010	39,509	(768.1)	7,309	(142.1)	12,042	(234.1)	58,860	(1144.4)
2011	42,596	(823.6)	7,694	(148.8)	13,051	(252.4)	63,341	(1224.8)
2012	48,531	(935.4)	7,552	(145.6)	14,128	(272.3)	70,211	(1353.3)
2013	52,378	(1006.1)	7,540	(144.8)	15,124	(290.5)	75,042	(1441.5)
2014	57,256	(1115.3)	7,423	(144.6)	15,995	(311.6)	80,674	(1571.5)
2015	62,634	(1215.5)	7,352	(142.7)	17,028	(330.5)	87,014	(1688.6)
2016	68,853	(1331.9)	6,842	(132.4)	18,189	(351.8)	93,884	(1816.1)
2017	73,059	(1411.0)	6,475	(125.1)	19,212	(371.0)	98,746	(1907.1)

( ): Number of patients per million population. Rep. of Korea's population at the end of 2017: 51,778,544.

Patient Number of RRT

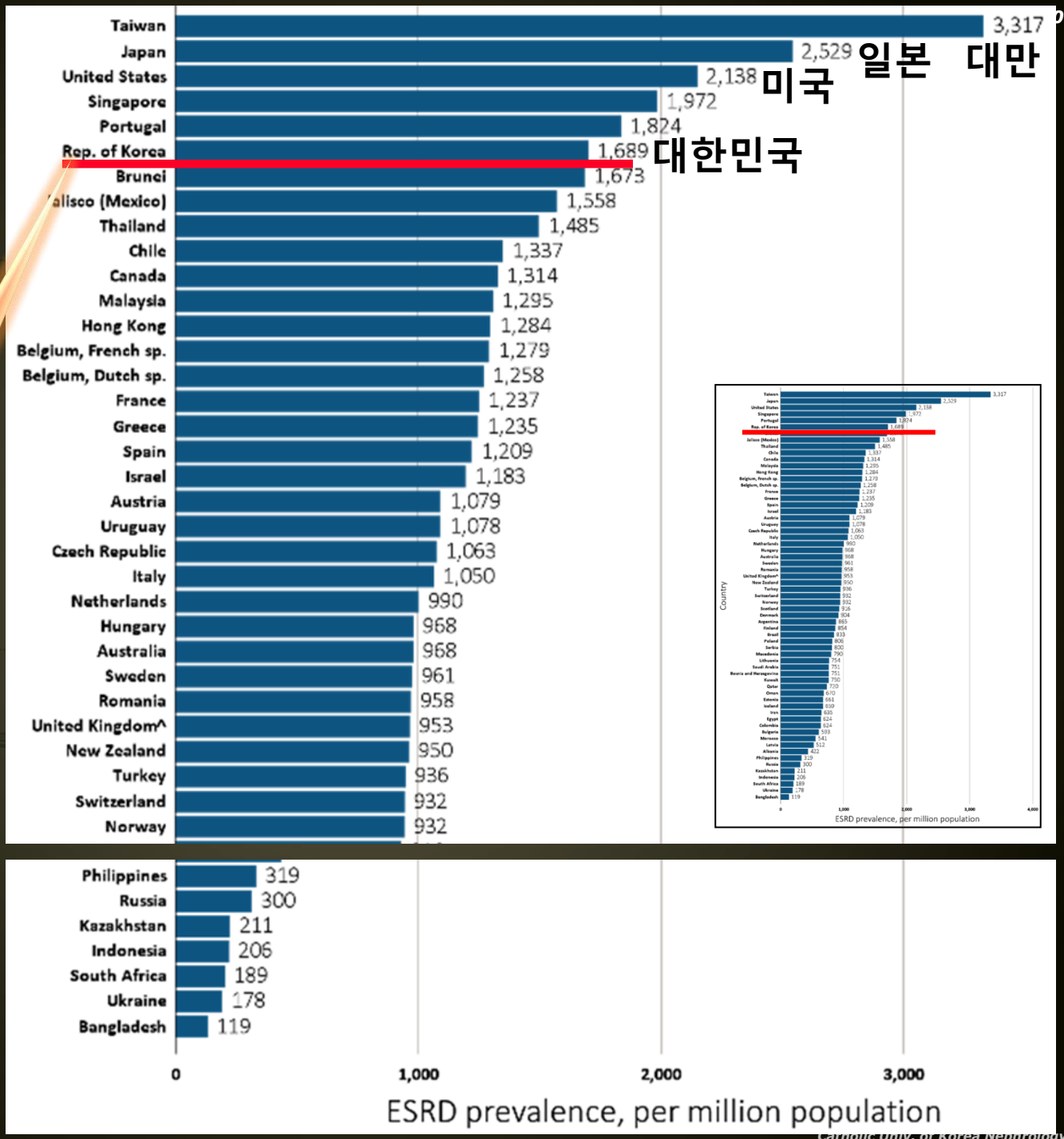


Point Prevalence of RRT



International comparison of ESRD Prevalence

1,689 PMP
End of 2015



USRDS
UNITED STATES RENAL DATA SYSTEM

USRDS Report 2017

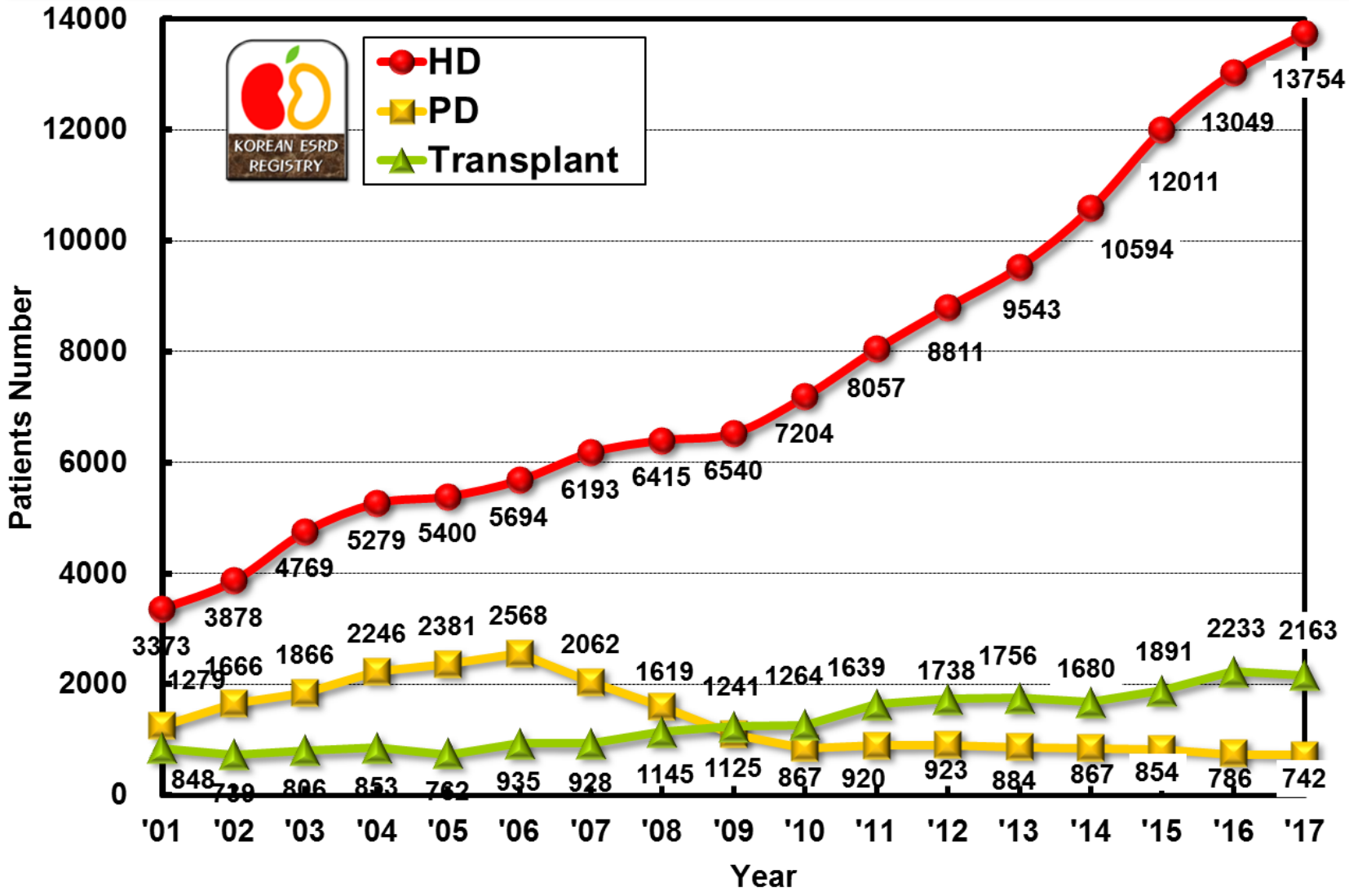
May 2018

Number of New RRT 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)
2002	3,878	(79.9)	1,666	(34.3)	739	(15.2)	6,283	(129.5)
2004	5,279	(107.6)	2,246	(45.8)	853	(17.4)	8,378	(170.8)
2006	5,694	(114.7)	2,568	(51.7)	935	(18.8)	9,197	(185.3)
2008	6,415	(127.3)	1,619	(32.1)	1,145	(22.7)	9,179	(182.1)
2010	7,204	(140.1)	867	(16.9)	1,264	(24.6)	9,335	(181.5)
2011	8,057	(155.8)	920	(17.8)	1,639	(31.7)	10,616	(205.3)
2012	8,811	(169.8)	923	(17.8)	1,738	(33.5)	11,472	(221.1)
2013	9,543	(183.3)	884	(17.0)	1,756	(33.7)	12,183	(234.0)
2014	10,594	(206.4)	867	(16.9)	1,680	(32.7)	13,141	(256.0)
2015	12,011	(233.1)	854	(16.6)	1,891	(36.7)	14,756	(286.4)
2016	13,049	(252.4)	786	(15.2)	2,233	(43.2)	16,068	(310.8)
2017	13,754	(265.6)	742	(14.3)	2,163	(41.8)	16,659	(321.7)

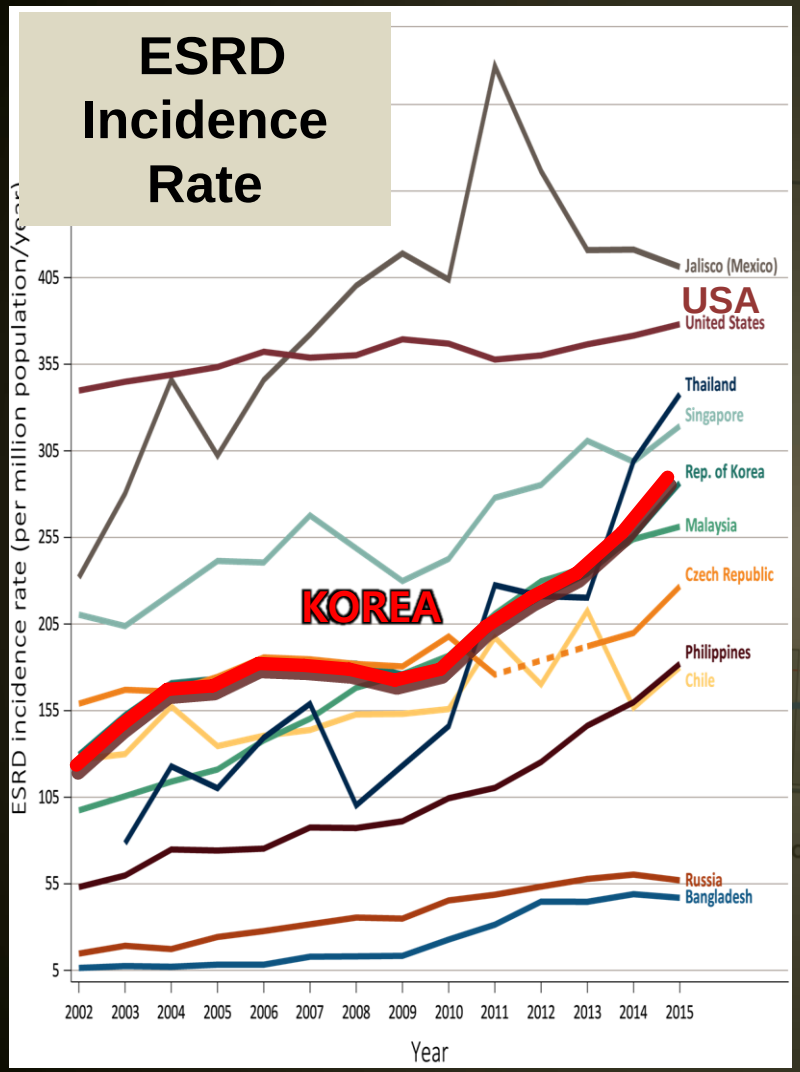
( ): Number of patients per million population. Rep. of Korea's population at the end of 2017: 51,778,544.

Number of New RRT Patients

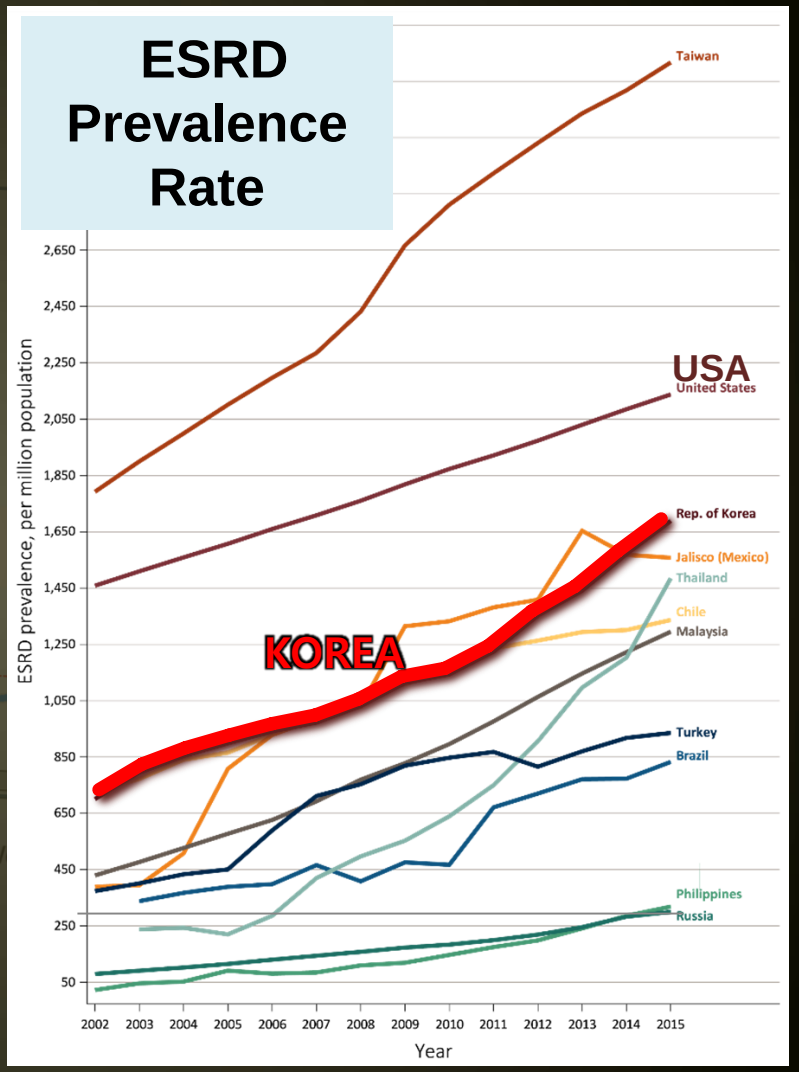


International Comparison

ESRD Incidence Rate



ESRD Prevalence Rate



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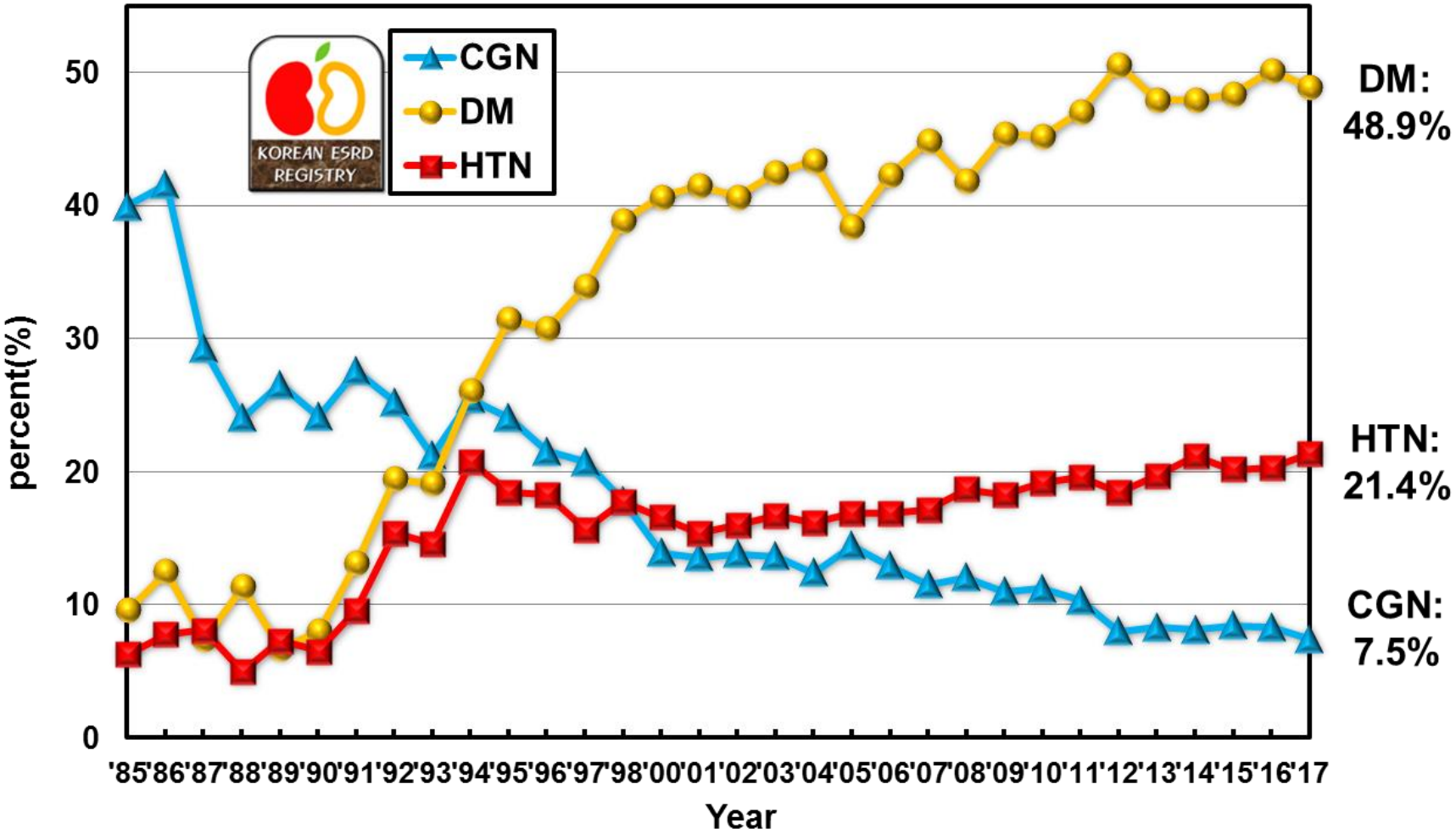
Causes of ESRD in New Patients

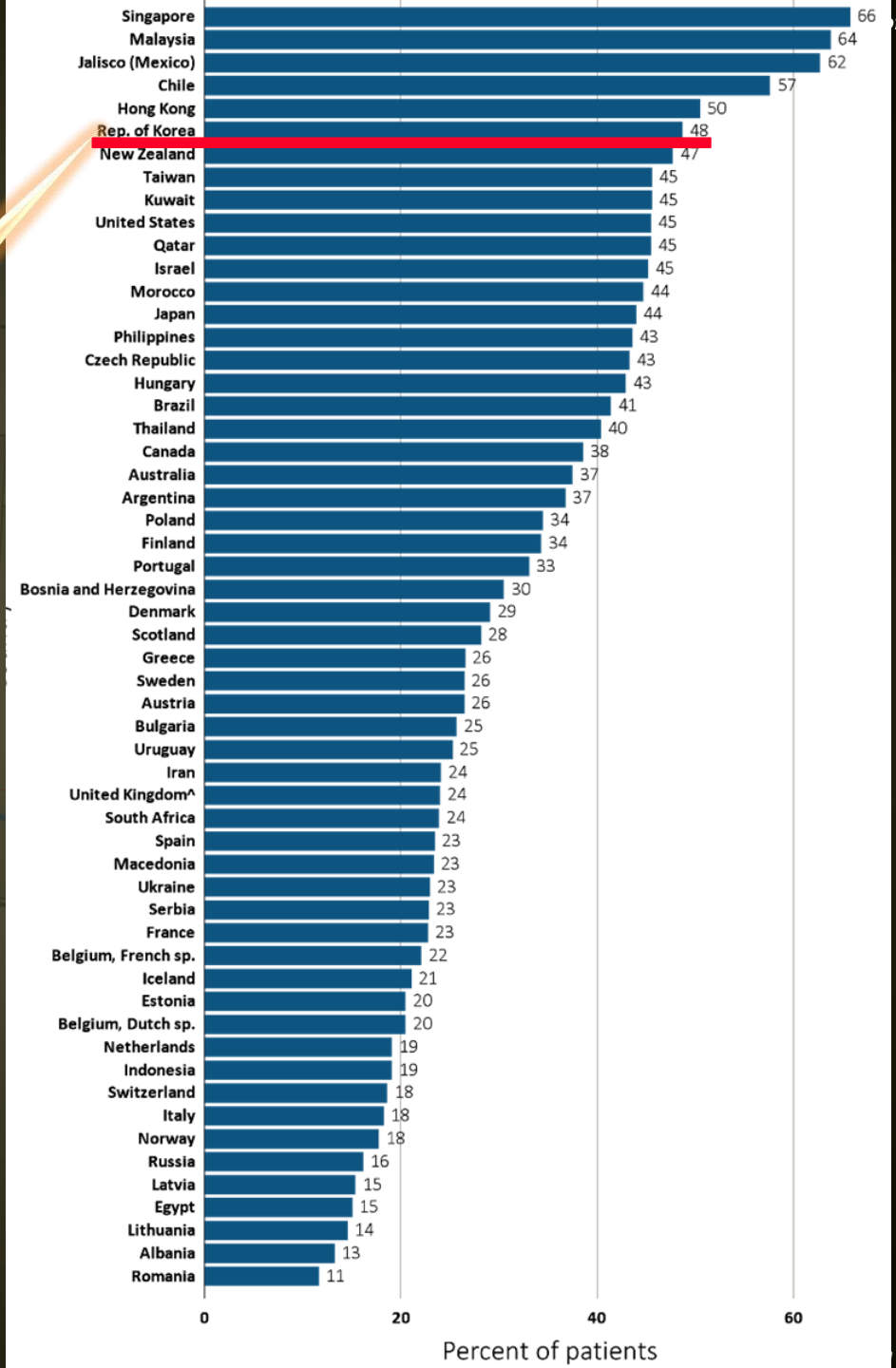
Causes	Percent (%)														
	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2015	2016	2017
Chronic Glomerulonephritis	25.3	25.5	21.6	17.9	14	13.9	12.5	13.0	12.1	11.3	8.1	8.2	8.5	8.4	7.5
Not Histologically confirmed	19.7	20.4	16.7	13.6	10.6	10.0	8.6	9.0	8.2	7.7	4.5	4.4	4.2	3.8	3.7
Histologically confirmed	5.6	5.0	4.9	4.3	3.4	3.9	3.9	3.9	3.8	3.6	3.6	3.8	4.3	4.5	3.8
Diabetic nephropathy	19.5	26.1	30.8	38.9	40.7	40.7	43.4	42.3	41.9	45.2	50.6	48.0	48.4	50.2	48.9
Hypertensive nephrosclerosis	15.4	20.8	18.3	17.8	16.6	16	16.2	16.9	18.7	19.2	18.5	21.2	20.2	20.3	21.4
Cystic kidney disease	2.1	2.2	1.8	1.7	2.2	1.6	1.4	1.7	1.7	1.7	1.8	1.8	1.9	1.5	1.7
Renal tuberculosis	1.1	1.5	1.2	0.5	0.4	0.5	0.3	0.3	0.2	0.2	0.0	0.1	0.1	0.1	0.0
Pyelo/interstitial nephritis	1.3	1.1	0.7	1.0	0.8	0.6	0.6	0.6	0.5	0.4	0.5	0.8	0.3	0.4	0.5
Drugs or nephrotoxic agents	1.3	0.1	0.6	0.3	0.3	0.4	0.2	0.3	0.3	0.3	0.4	0.2	0.6	0.3	0.3
Lupus nephritis	0.8	0.7	1.0	0.5	0.9	0.8	0.6	0.6	0.6	0.5	0.6	0.5	0.3	0.5	0.5
Gouty nephropathy	0.7	0.7	0.6	0.5	0.7	0.4	0.5	0.3	0.3	0.4	0.3	0.3	0.4	0.3	0.2
Hereditary nephropathy	0.3	0.7	0.4	0.2	0.1	0.2	0.3	0.3	0.3	0.2	0.5	0.5	0.4	0.5	0.4
Kidney tumor	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.5
Other	4.1	2.7	2.8	3.9	3.0	5.6	5.9	6.0	5.8	5.1	6.8	6.1	6.3	5.5	5.9
Uncertain	28.6	17.8	15.9	16.6	20.2	19	17.8	17.5	17.6	15.3	11.4	12.1	12.3	11.7	12.1

Three Major Causes of ESRD



Diabetic ESRD
International Comparison

Rep. of Korea
48.4% in 2015



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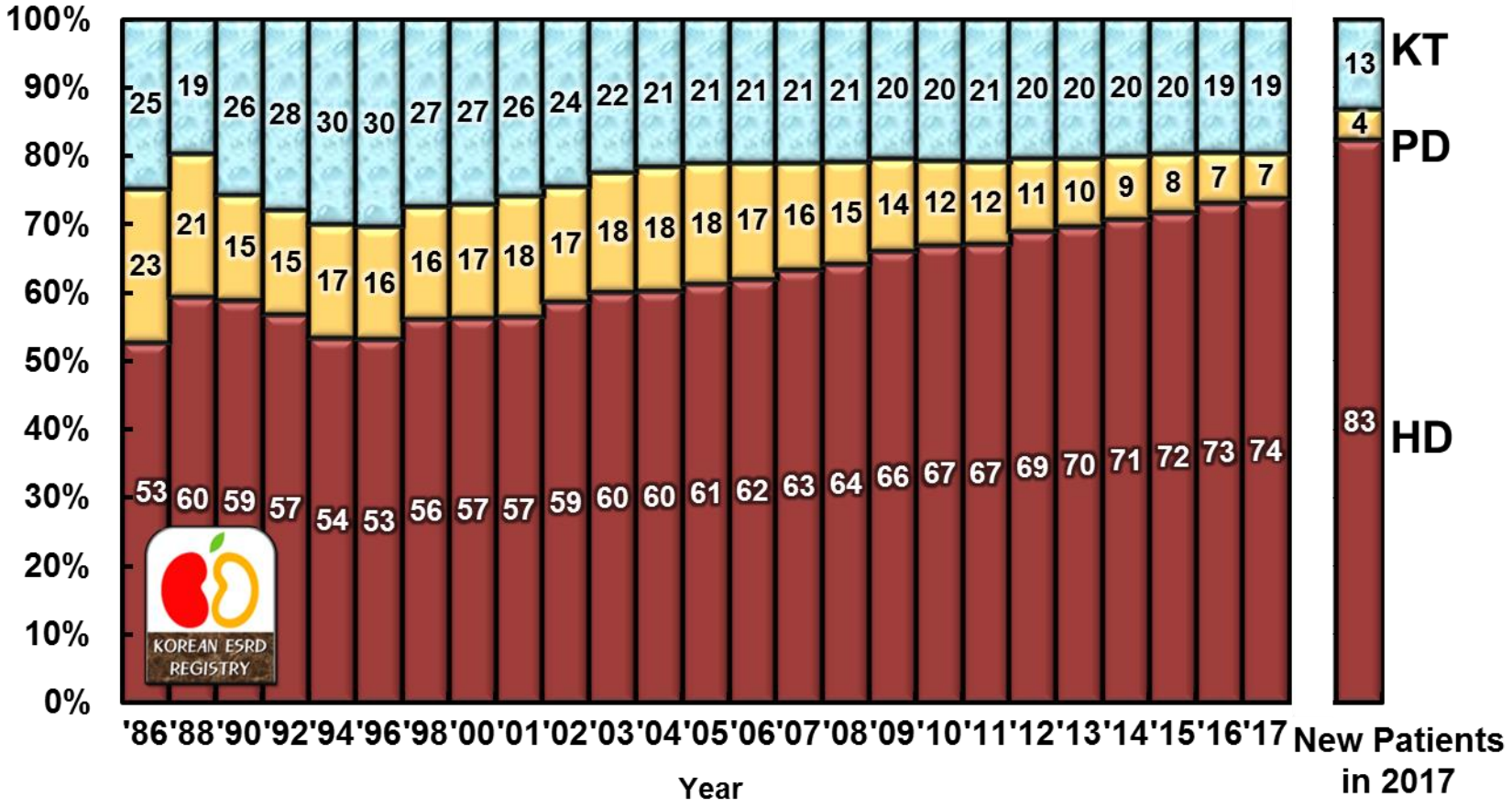
Proportion of RRT Modalities



Percent Distribution of Dialysis Modalities

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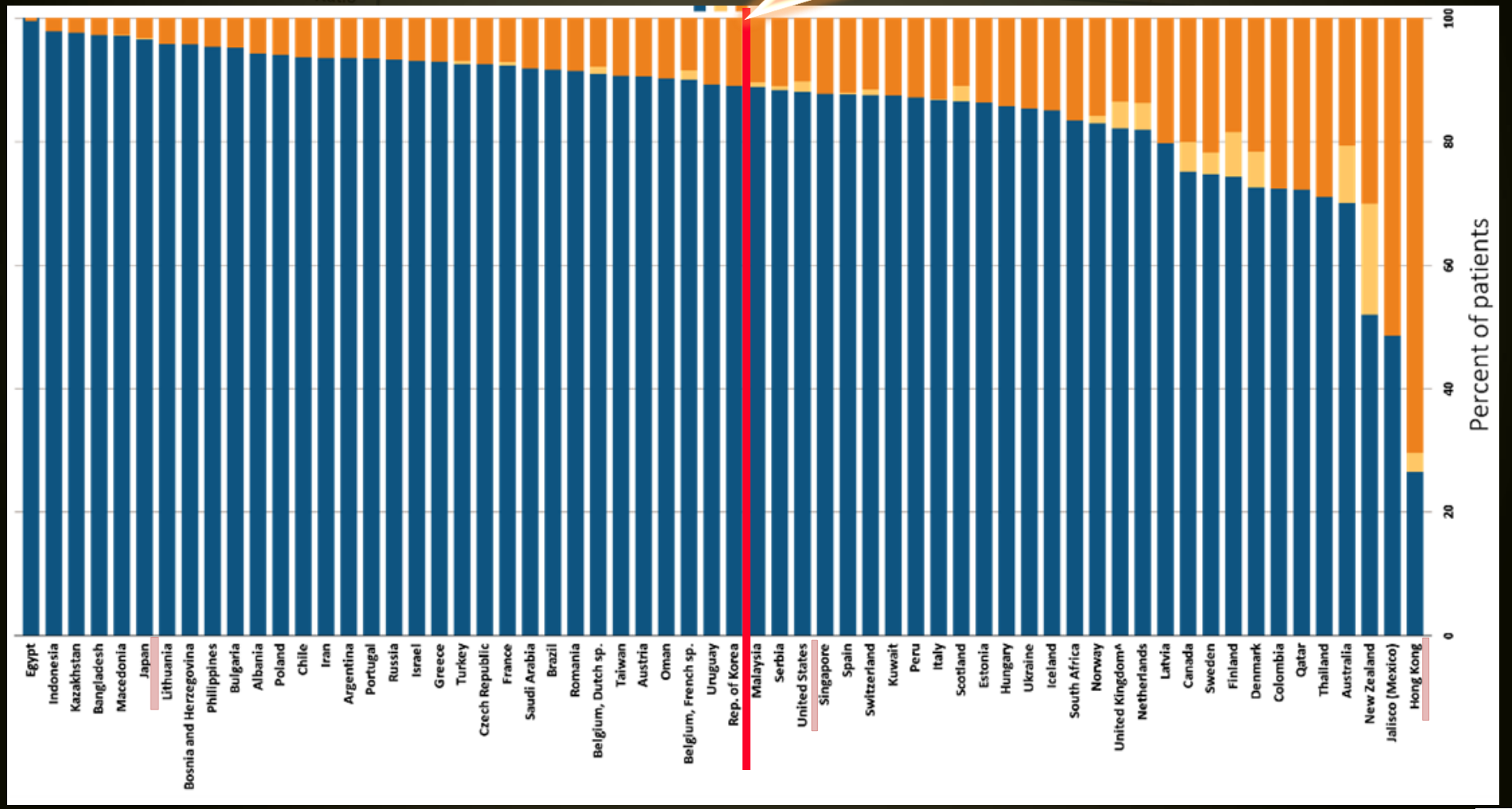
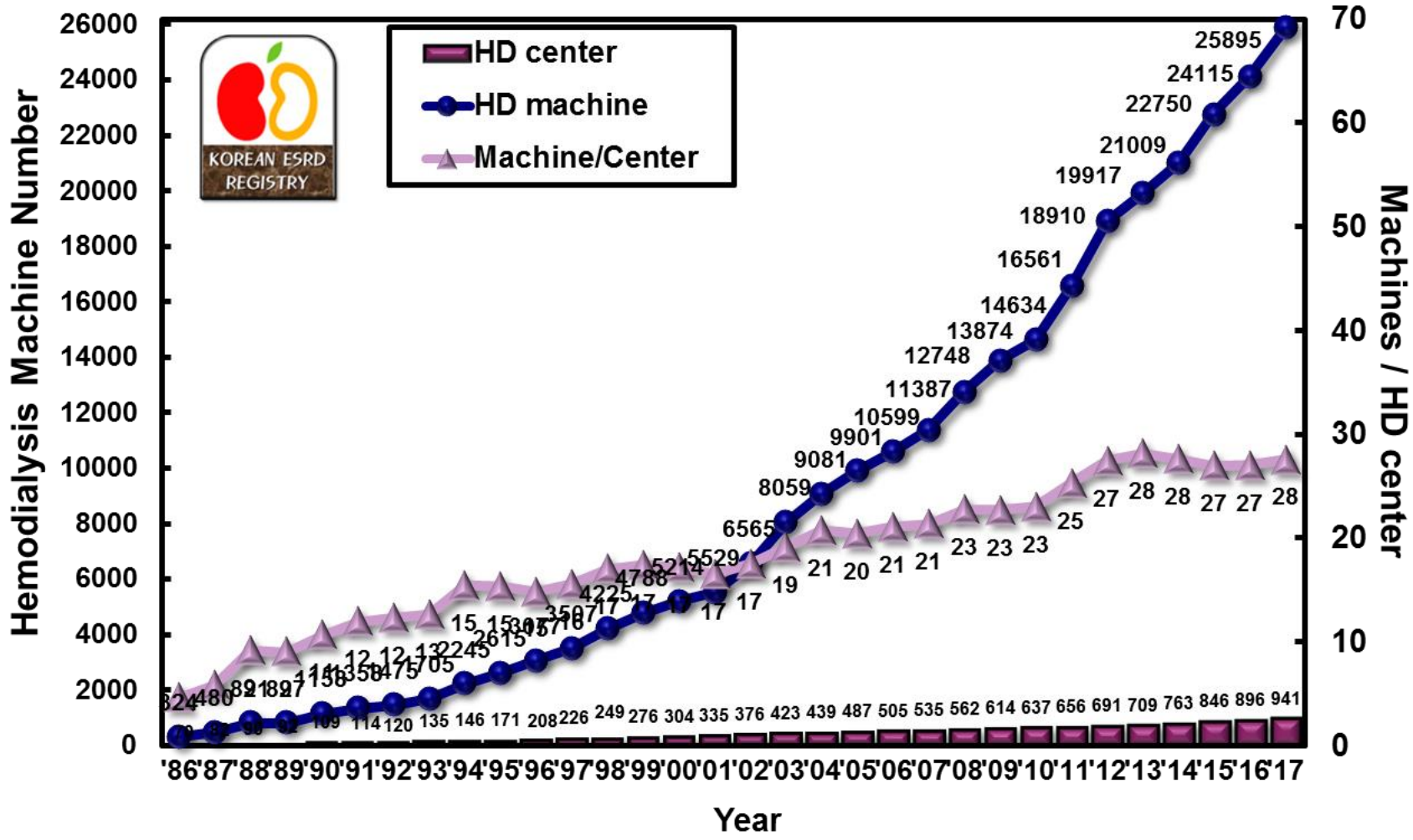
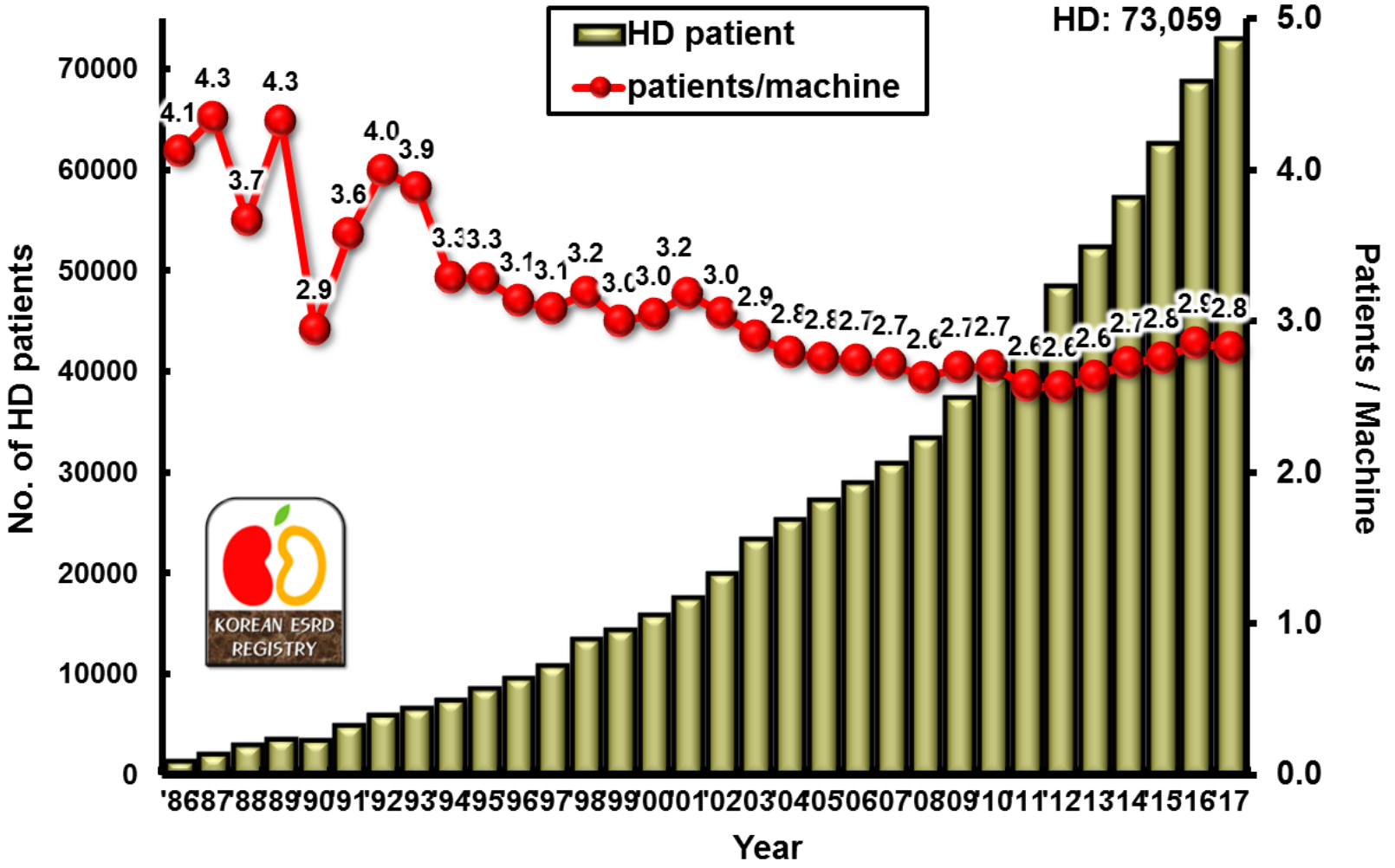
HD:PD = 91% : 9%
End of 2015



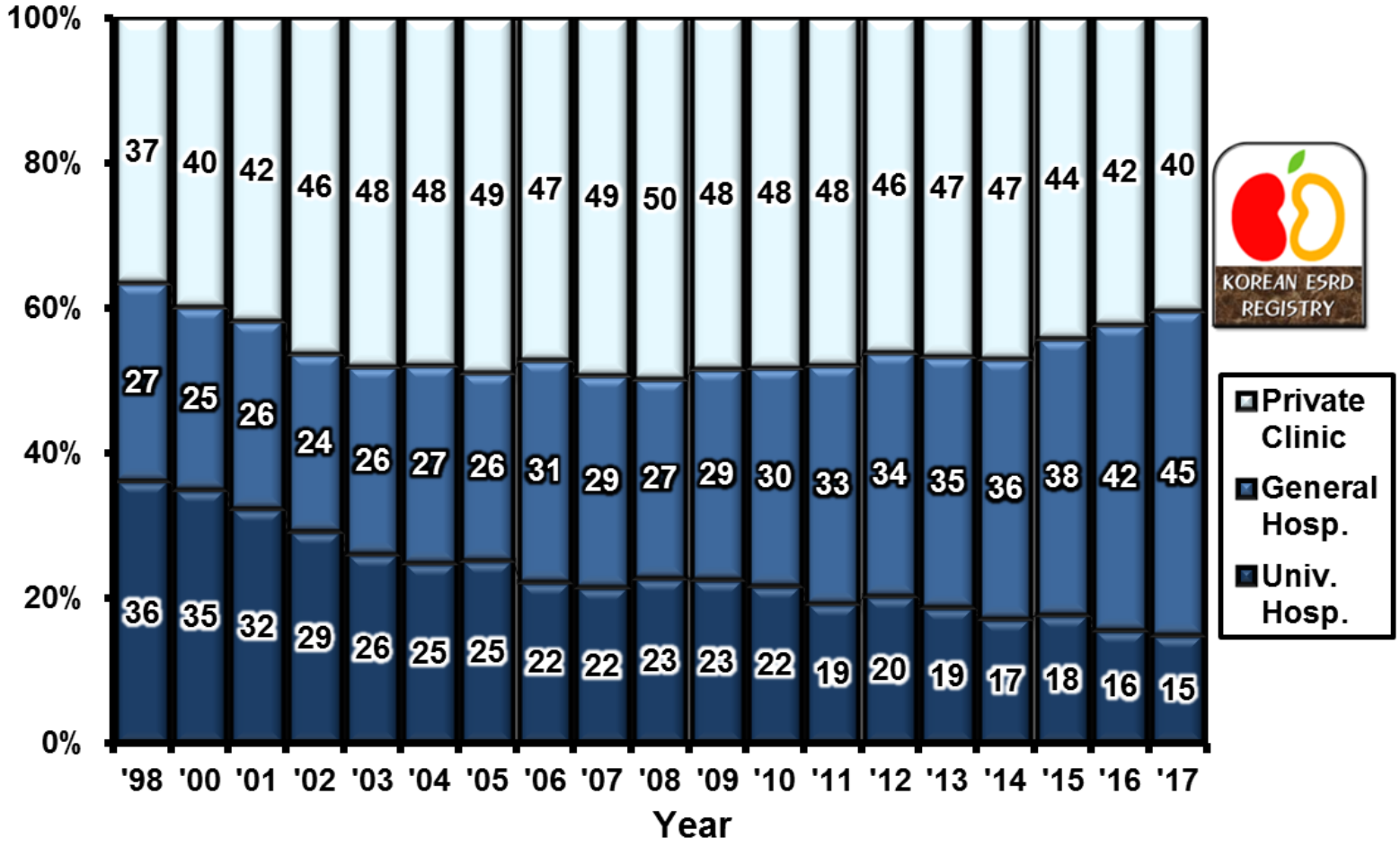
Number of HD Centers & HD Machines



Ratio of HD Machine & HD Patients



HD Pts Proportion by Dialysis Center Type



행정구역별 투석환자 및 혈액투석기 분포

(At the end of Dec. 2017)

	HD pts	PD pts	Total Dialysis pts	Dialysis pts. / Million pop.	Dialysis Centers	HD machines	HD pts./ HD machine
서울 Seoul	17,570	1,875	19,445	1,973	197	5,302	3.3
부산 Busan	5,454	814	6,268	1,806	65	1,885	2.9
대구 Daegu	3,997	548	4,545	1,836	44	1,257	3.2
인천 Incheon	3,770	290	4,060	1,377	44	1,356	2.8
광주 Gwangju	2,376	209	2,585	1,766	39	963	2.5
대전 Daejeon	1,893	263	2,156	1,435	22	729	2.6
울산 Ulsan	1,564	77	1,641	1,408	21	540	2.9
경기 Gyeonggi	14,965	1,257	16,222	1,260	195	5,538	2.7
강원 Gangwon	2,188	334	2,522	1,627	30	775	2.8
충북 Chungbuk	2,452	80	2,532	1,588	35	944	2.6
충남 Chungnam	2,762	121	2,883	1,203	47	1,174	2.4
전북 Jeonbuk	2,320	92	2,412	1,301	31	1,073	2.2
전남 Jeonnam	2,477	133	2,610	1,376	42	1,061	2.3
경북 Gyeongbuk	3,584	100	3,684	1,369	52	1,231	2.9
경남 Gyeongnam	4,574	185	4,759	1,408	62	1,690	2.7
제주 Jeju	1,113	97	1,210	1,841	15	377	3.0
Total	73,059	6,475	79,534	1,536	941	25,895	2.8

생활권역별 투석환자 및 혈액투석기 분포

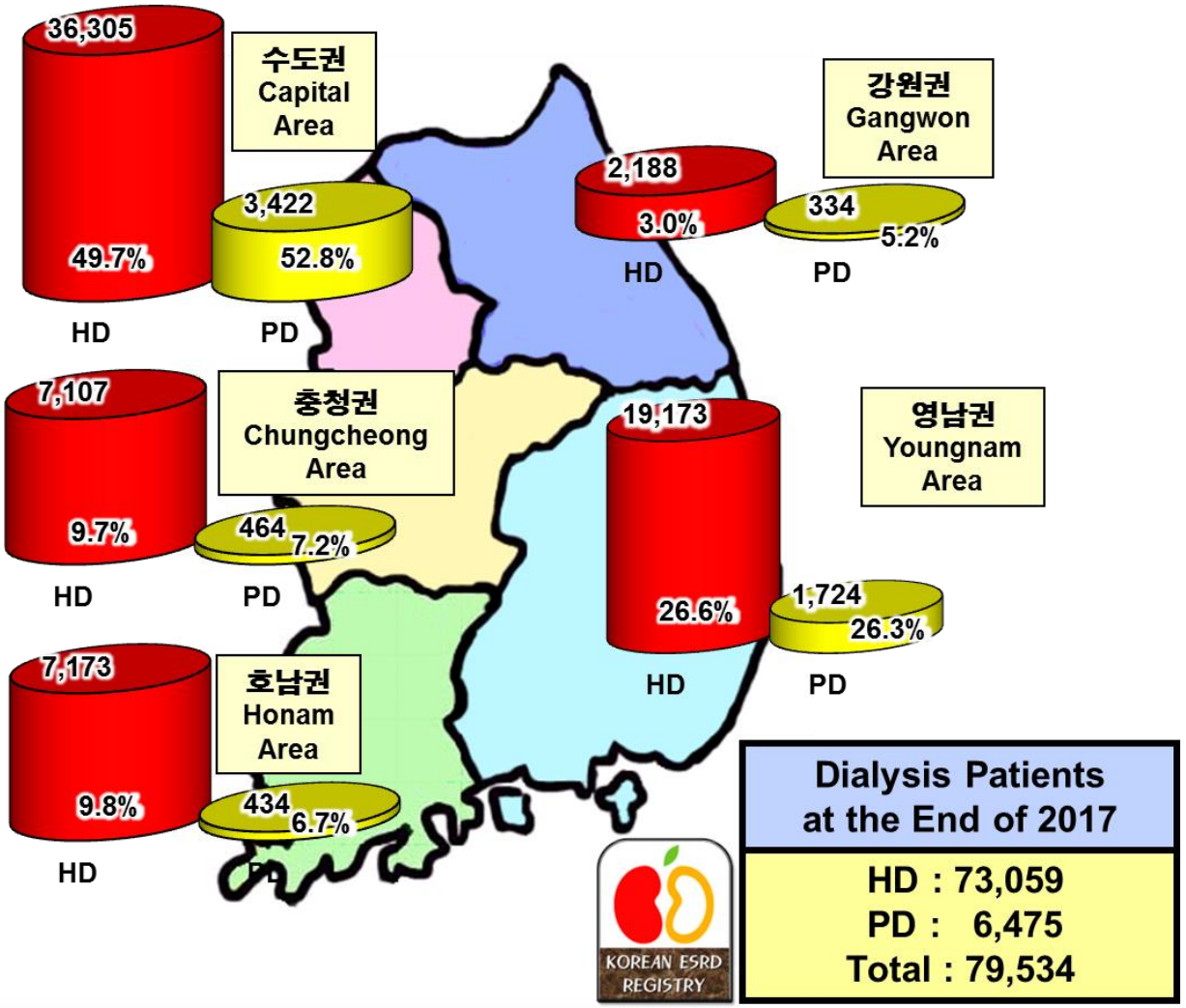
(At the end of Dec. 2017)

	Population (%)	HD patients	PD patients	Total Dialysis patients	Dialysis pts /Million pop.	Dialysis centers	Dialysis machine	HD pts / HD machine
수도권 Capital Area (Seoul, Incheon, Gyeonggi)	25,679,863 49.6%	36,305 49.7%	3,422 52.8%	39,727 49.9%	1,547	436 46.3%	12,196 47.1%	3.0
충청권 Chungchung (Daejeon, Chungnam, Chungbuk)	5,493,529 10.6%	7,107 9.7%	464 7.2%	7,571 9.5%	1,378	104 11.1%	2,847 11.0%	2.5
호남권 Honam (Gwangju, Jeonnam, Jeonbuk)	5,214,801 10.1%	7,173 9.8%	434 6.7%	7,607 9.6%	1,459	112 11.9%	3,097 12.0%	2.3
영남권 Youngnam (Busan, Daegu, Gyeongnam, Gyeongbuk, Ulsan)	13,183,126 25.5%	19,173 26.2%	1,724 26.6%	20,897 26.3%	1,585	244 25.9%	6,603 25.5%	2.9
강원권 Gangwon	1,550,142 3.0%	2,188 3.0%	334 5.2%	2,522 3.2%	1,627	30 3.2%	775 3.0%	2.8
Total	51,778,544	73,059	6,475	79,534	1,536	941	25,895	2.8

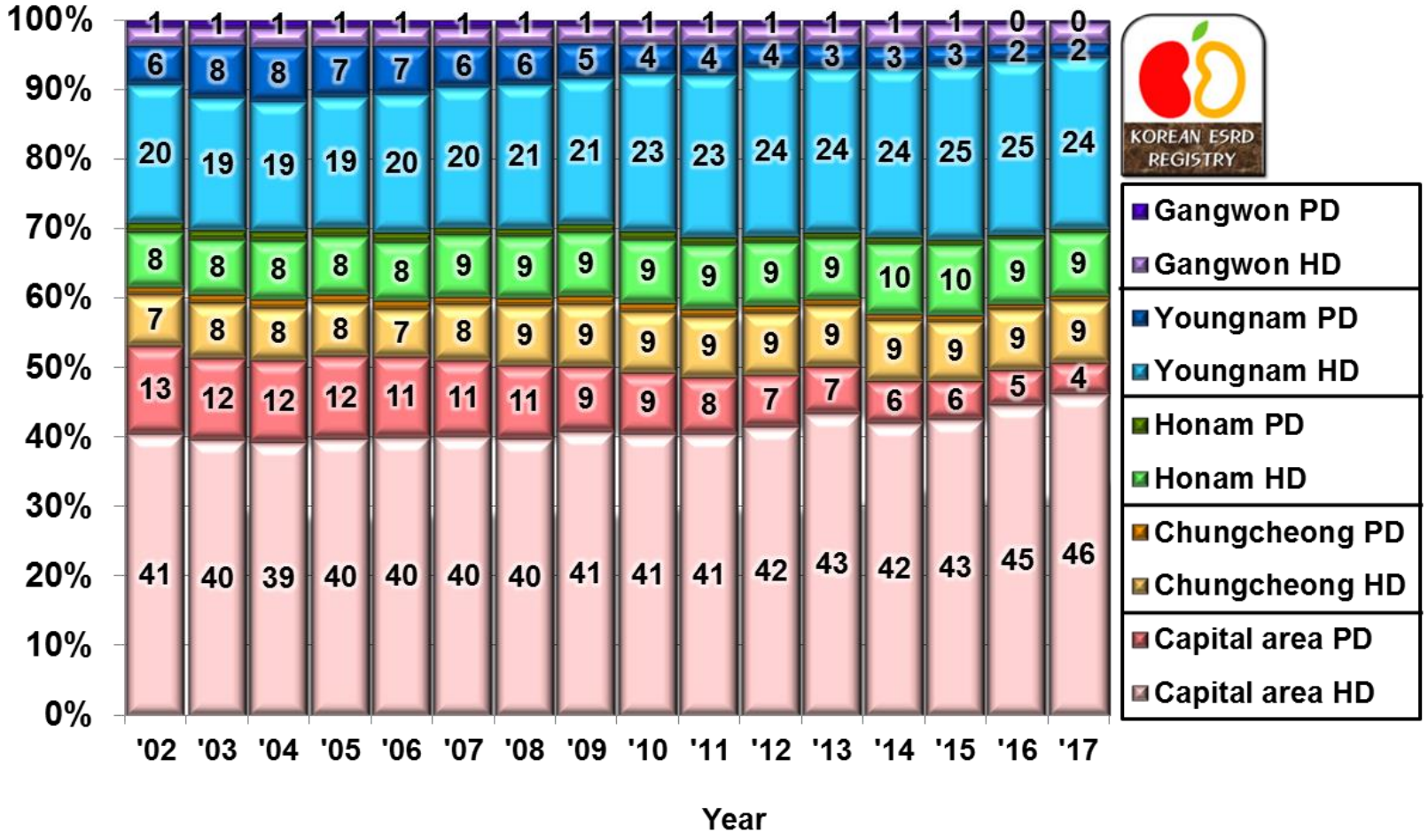
* 제주 표시 제외. Data of Jeju-do is not shown.

생활권역별 투석환자 분포

(At the end of Dec. 2017)



생활권역별 투석환자 비율의 연도별 변화

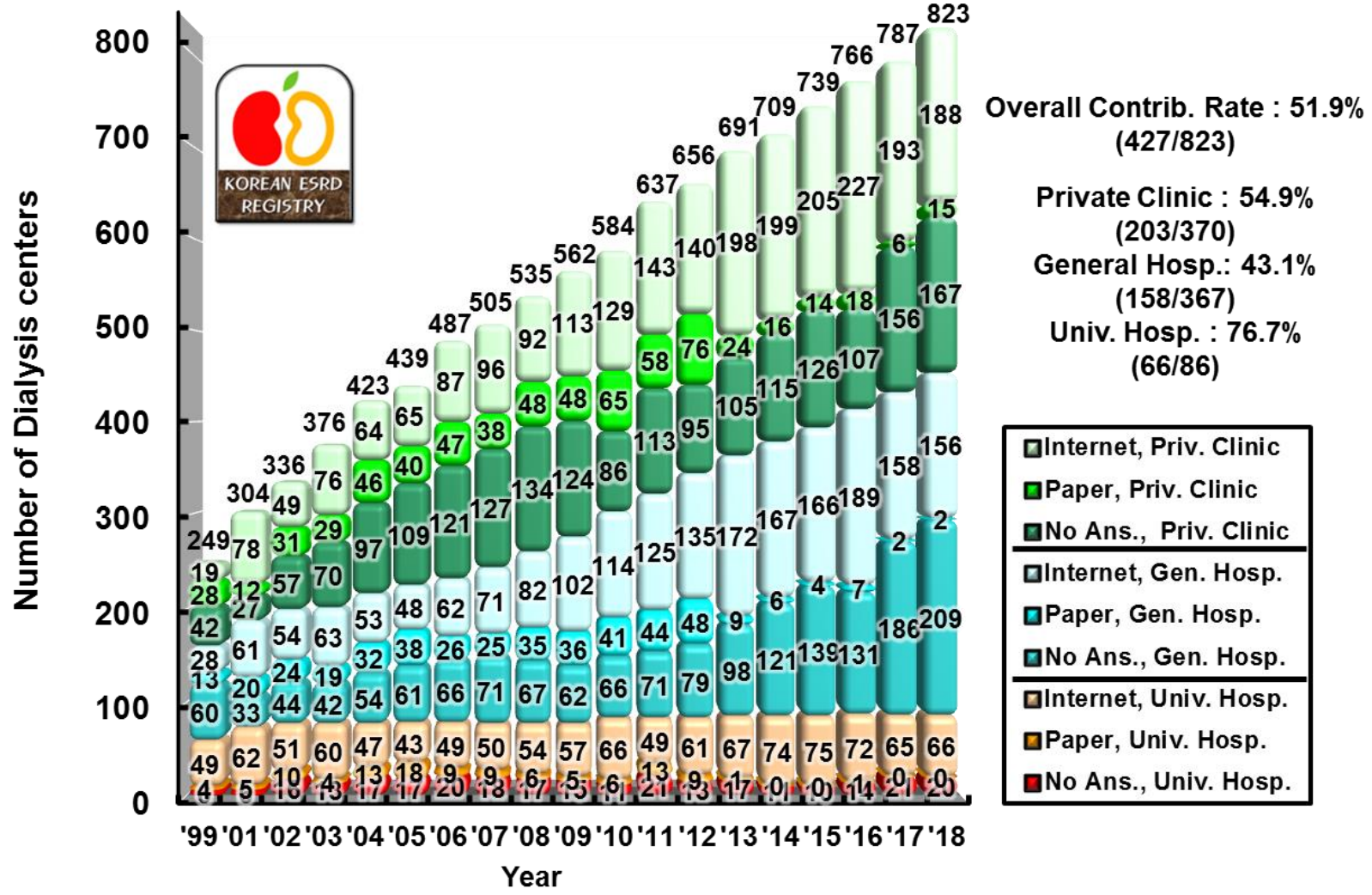


등록사업에 참여한 의료기관 수 및 응답률

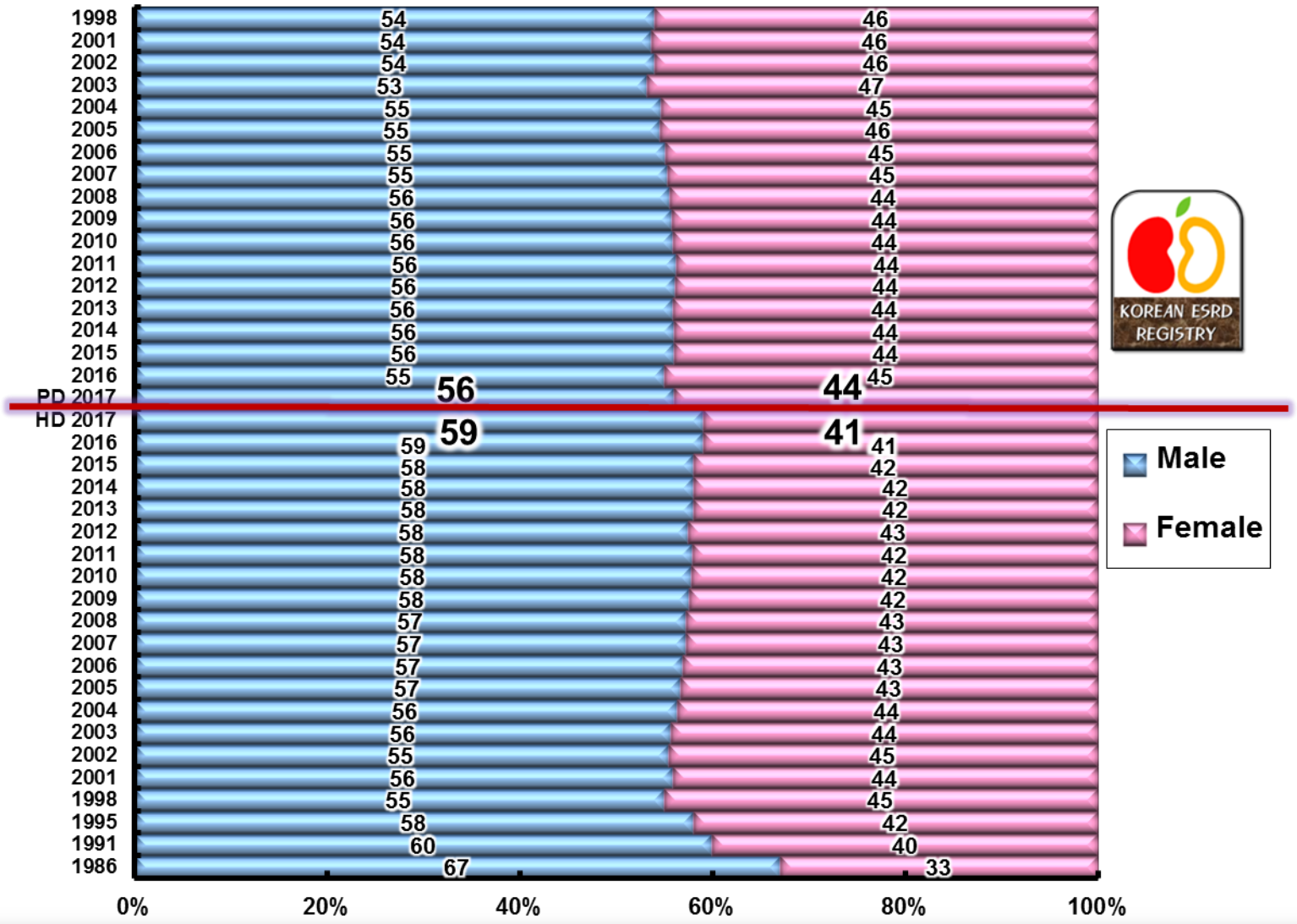
	Dialysis Centers*	Internet Input	Paper Data	Total Contributed Centers	Contributing Rate (%)
서울 Seoul	172	97	6	103	59.9
부산 Busan	57	27	1	28	49.1
대구 Daegu	38	20	1	21	55.3
인천 Incheon	38	20	0	20	52.6
광주 Gwangju	34	15	1	16	47.1
대전 Daejeon	19	9	0	9	47.4
울산 Ulsan	18	11	0	11	61.1
경기 Gyeonggi	173	82	4	86	49.7
강원 Gangwon	26	12	0	12	46.2
충북 Chungbuk	31	12	1	13	41.9
충남 Chungnam	41	20	0	20	48.8
전북 Jeonbuk	27	10	0	10	37.0
전남 Jeonnam	37	17	1	18	48.6
경북 Gyeongbuk	44	19	1	20	45.5
경남 Gyeongnam	55	33	1	34	61.8
제주 Jeju	13	6	0	6	46.2
Total	823	410	17	427	51.9

* 투석의료기관 수에서 비윤리 의료기관 및 소수 환자 수 의료기관은 제외함.

의료기관의 증가와 의료기관별 등록률

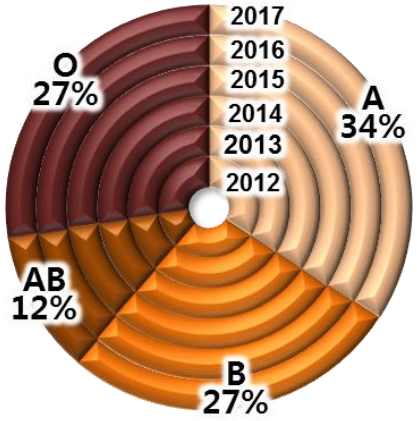


Gender Ratio of Dialysis Patients

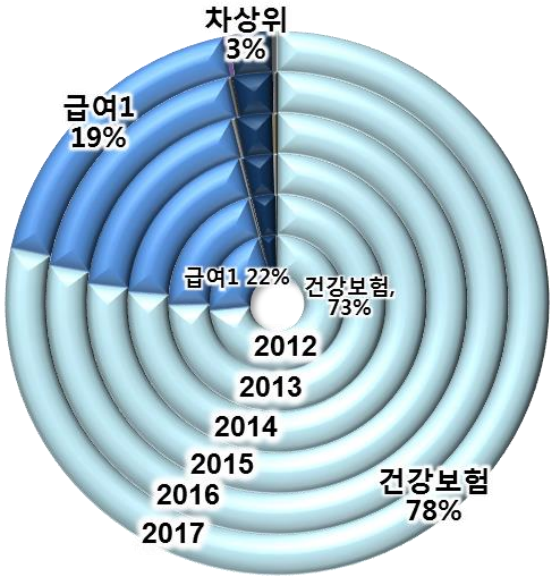


ABO Blood type, Hepatitis virus, Insurance

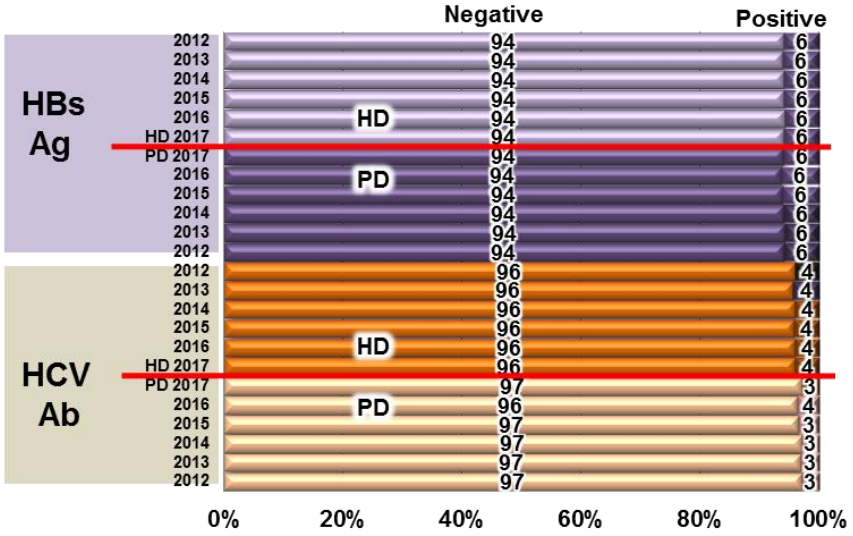
ABO Blood Type



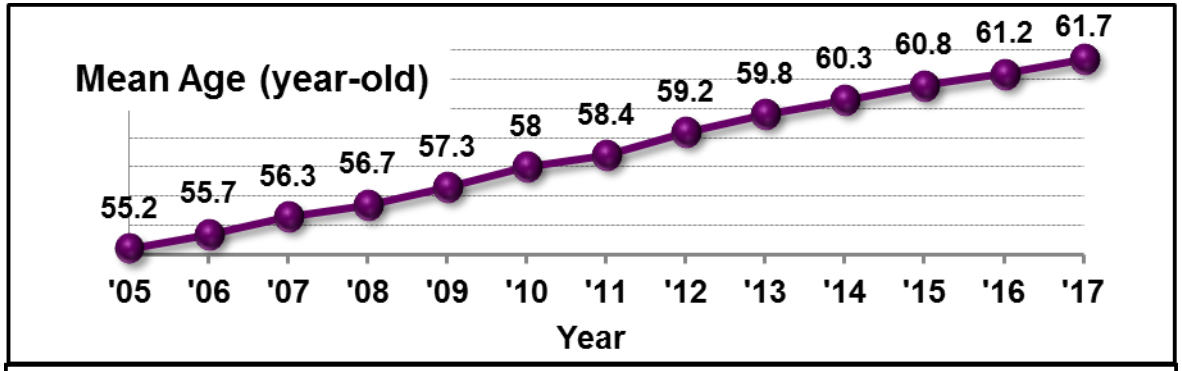
Insurance

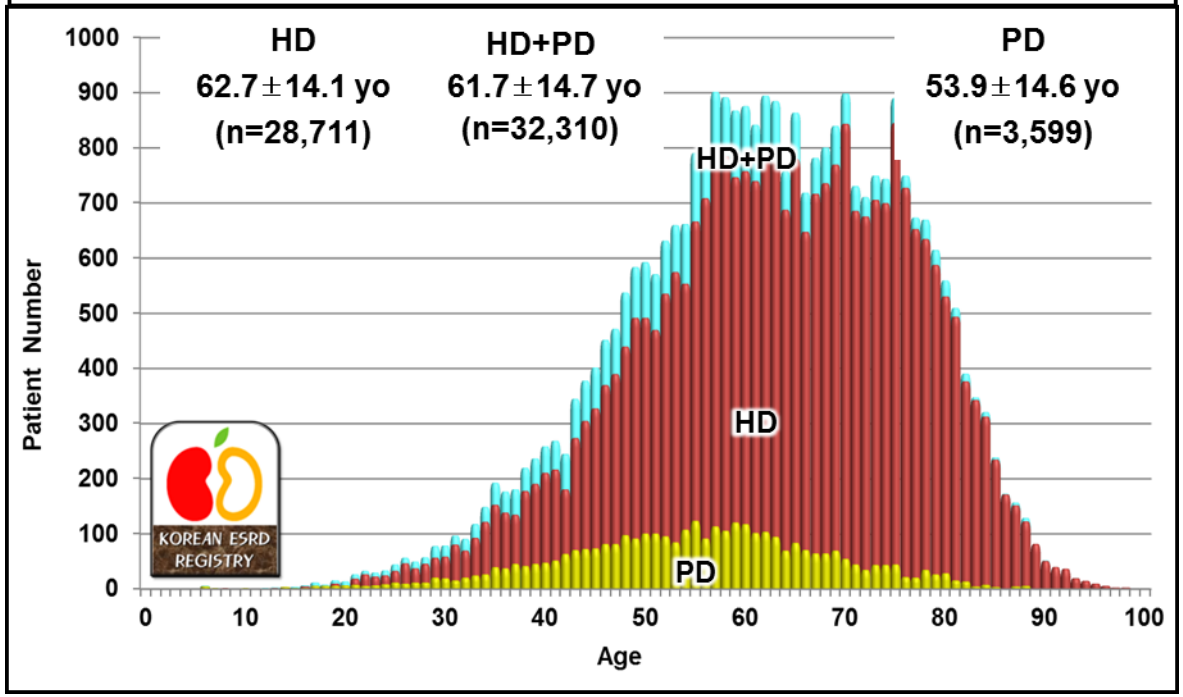


Hepatitis Virus

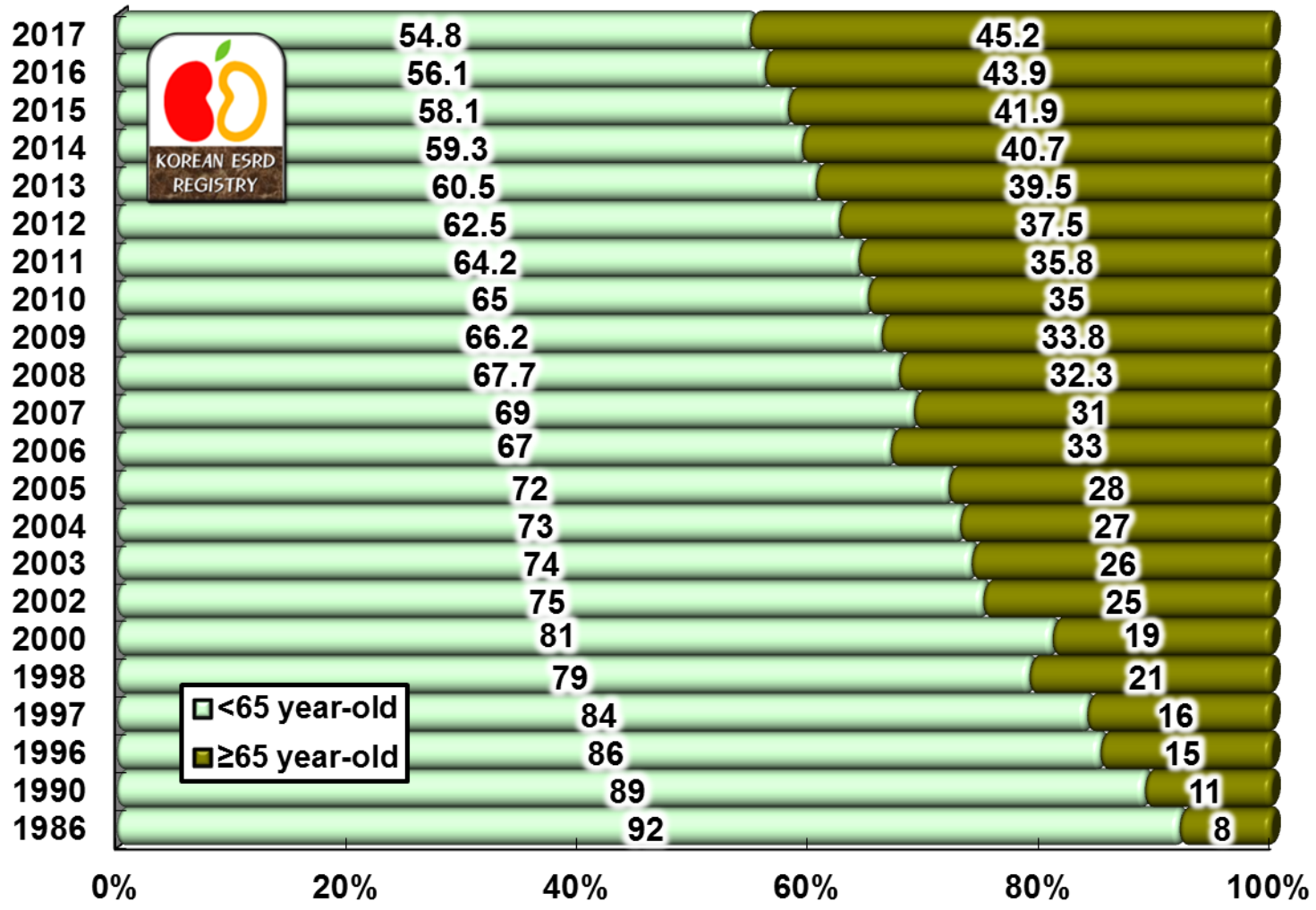


Age Distribution of Dialysis Patients

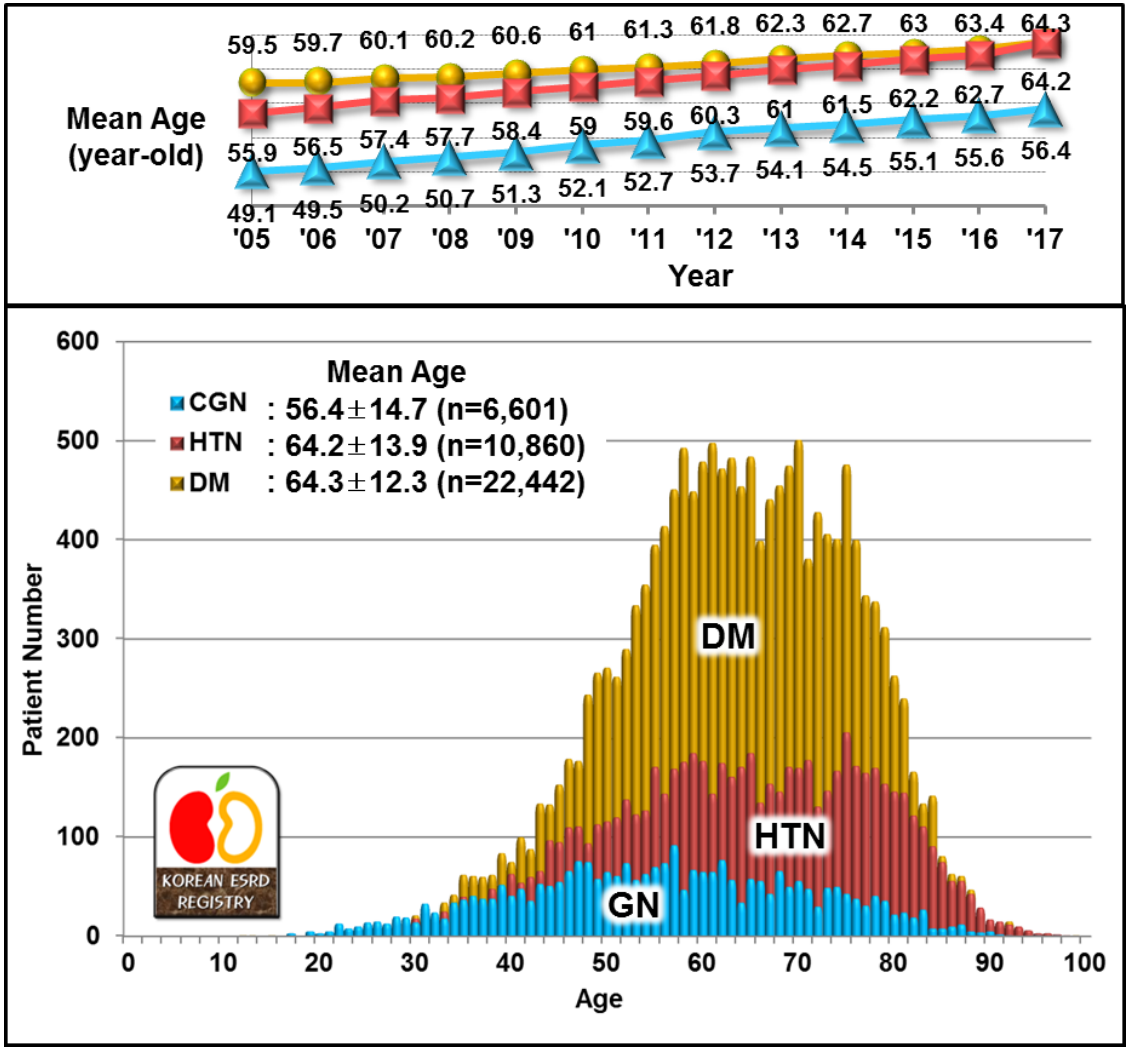




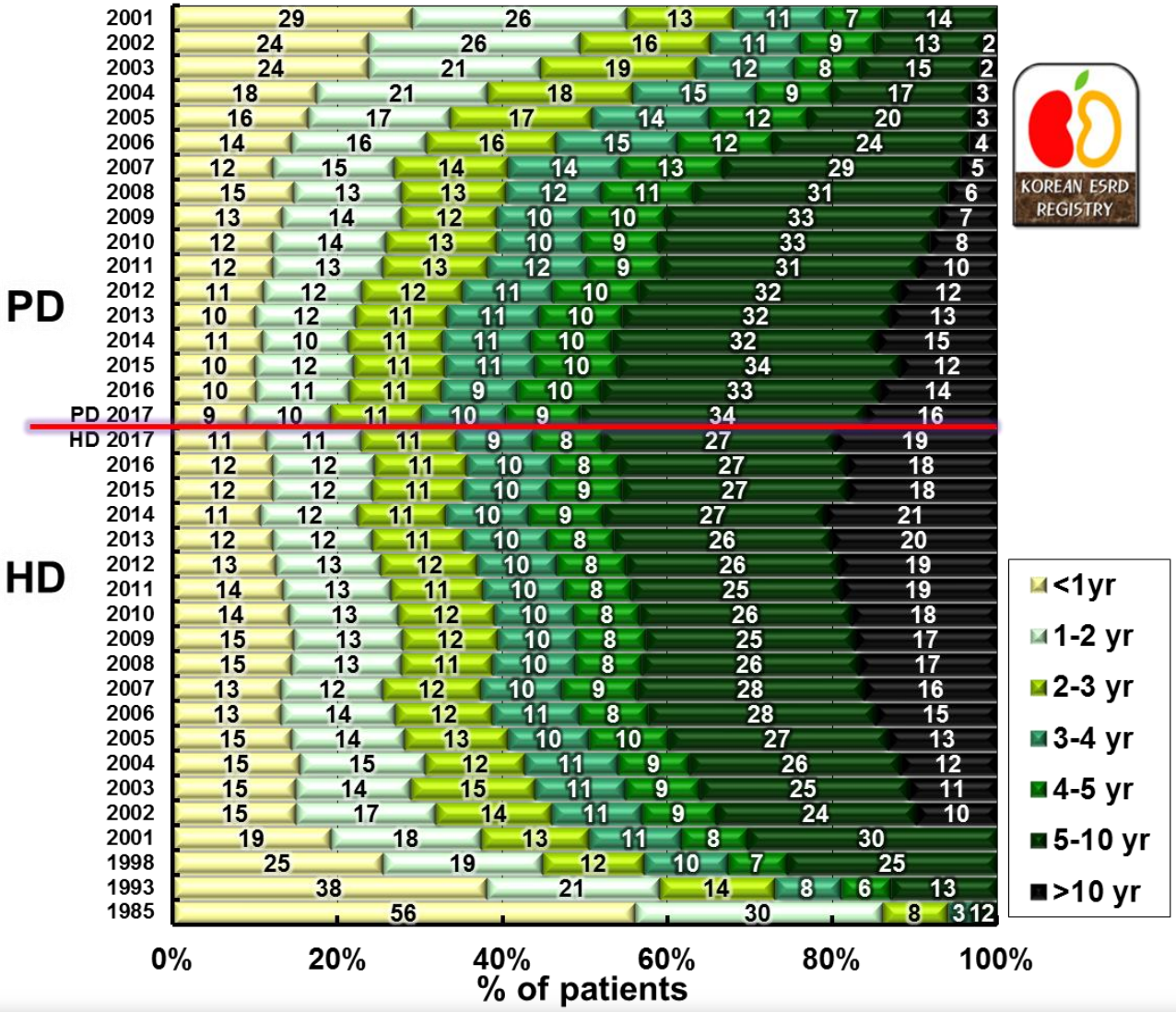
Percent of Elderly Dialysis Patients



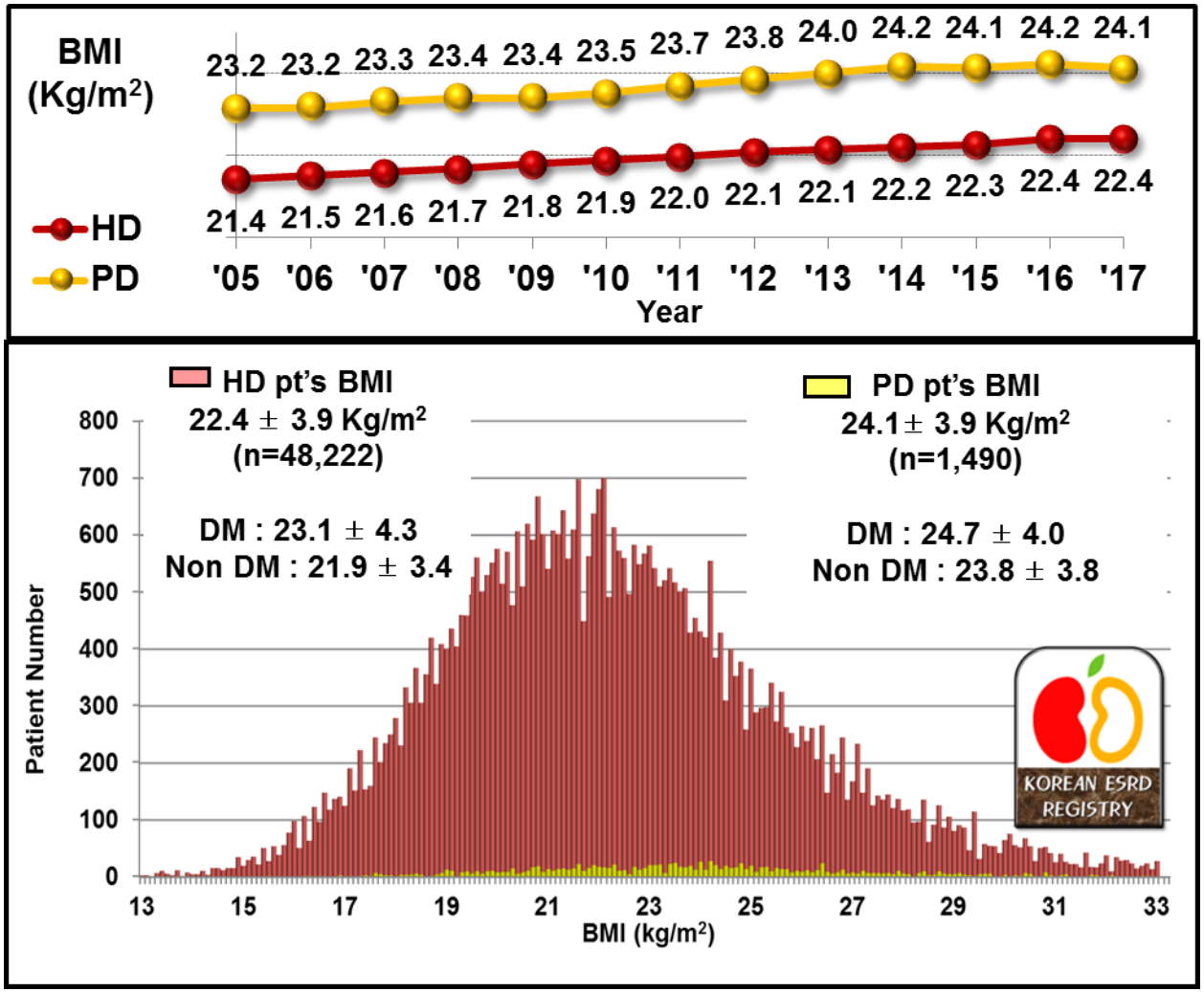
Age Distribution according to ESRD Causes



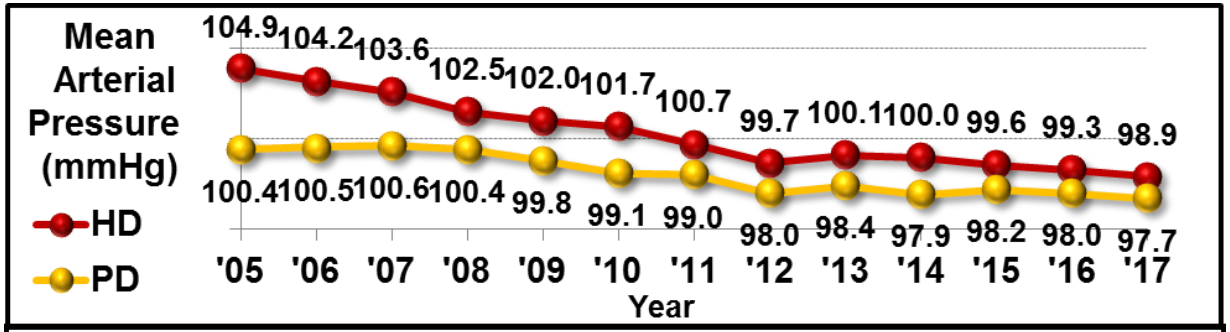
Duration of Dialysis Maintenance

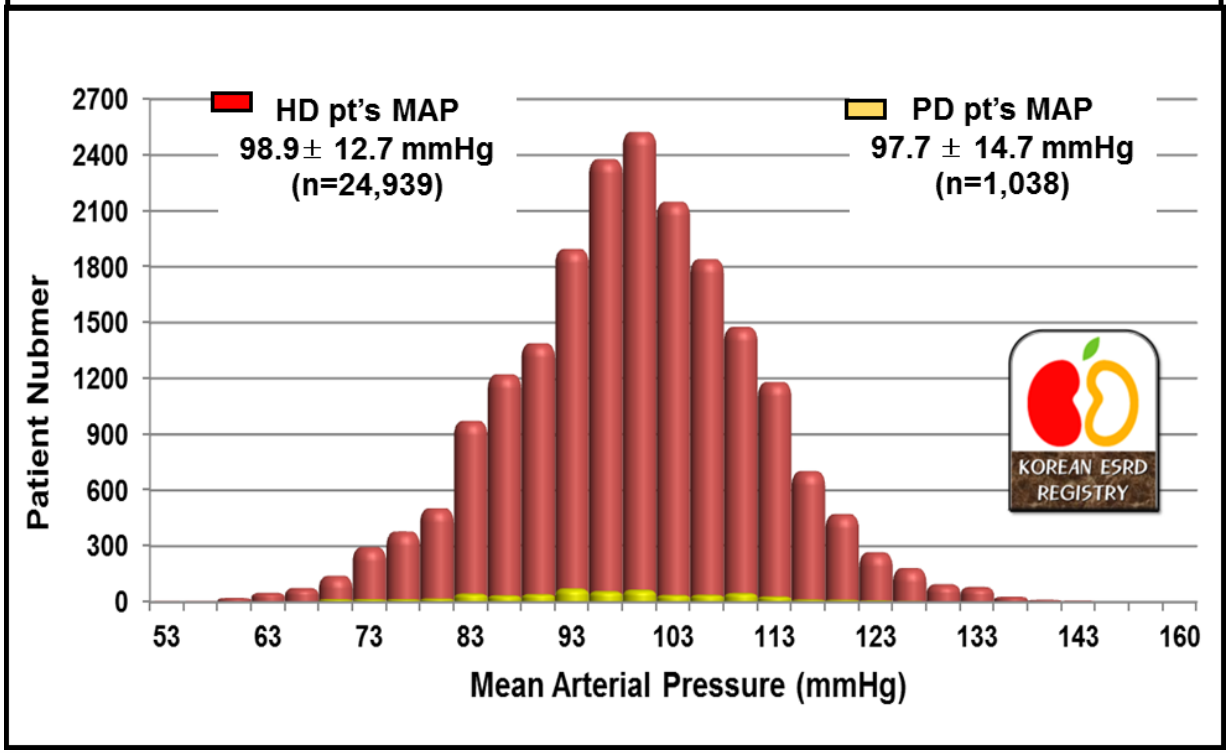


Body Mass Index : HD & PD

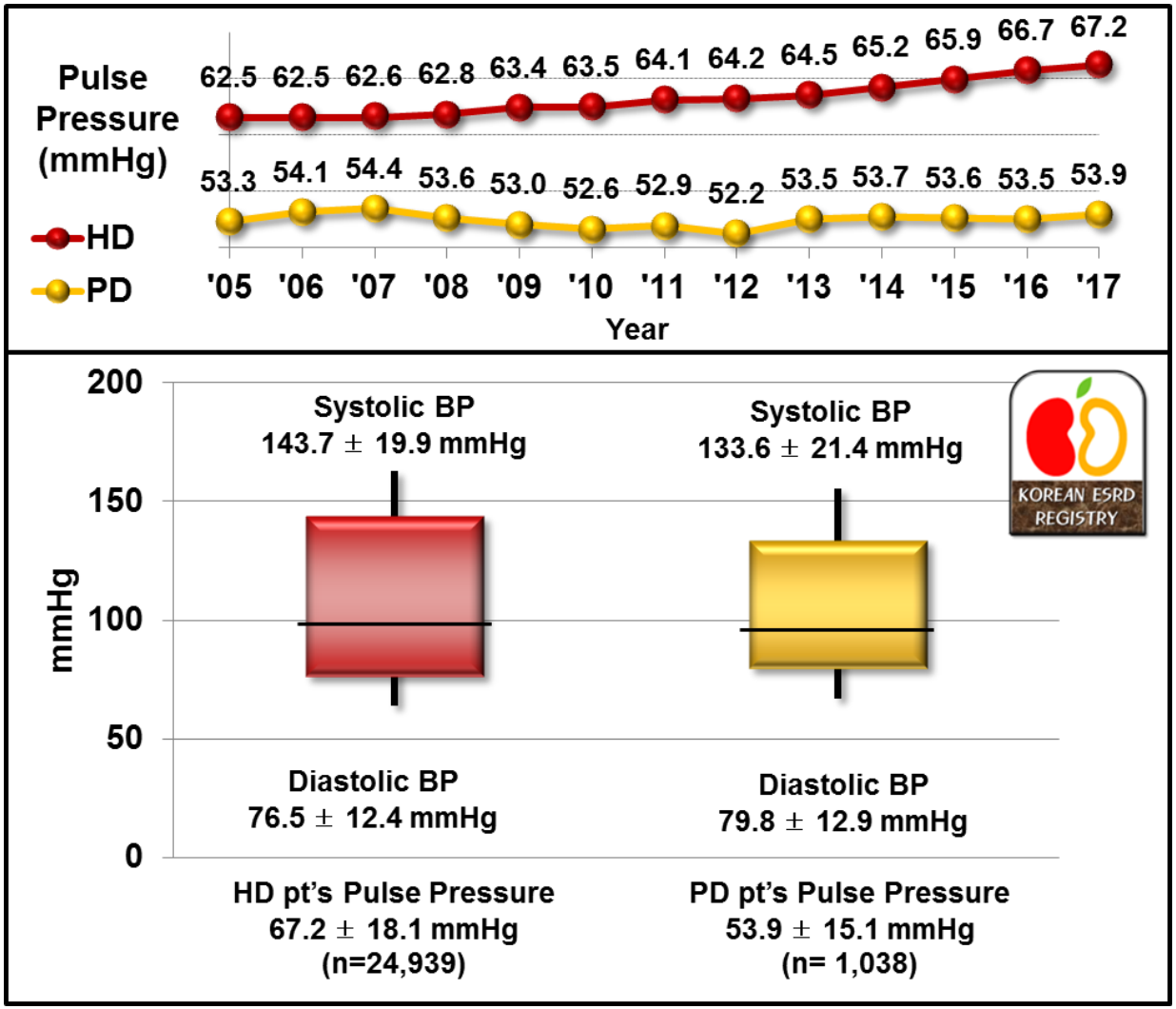


Mean Blood Pressure : HD & PD



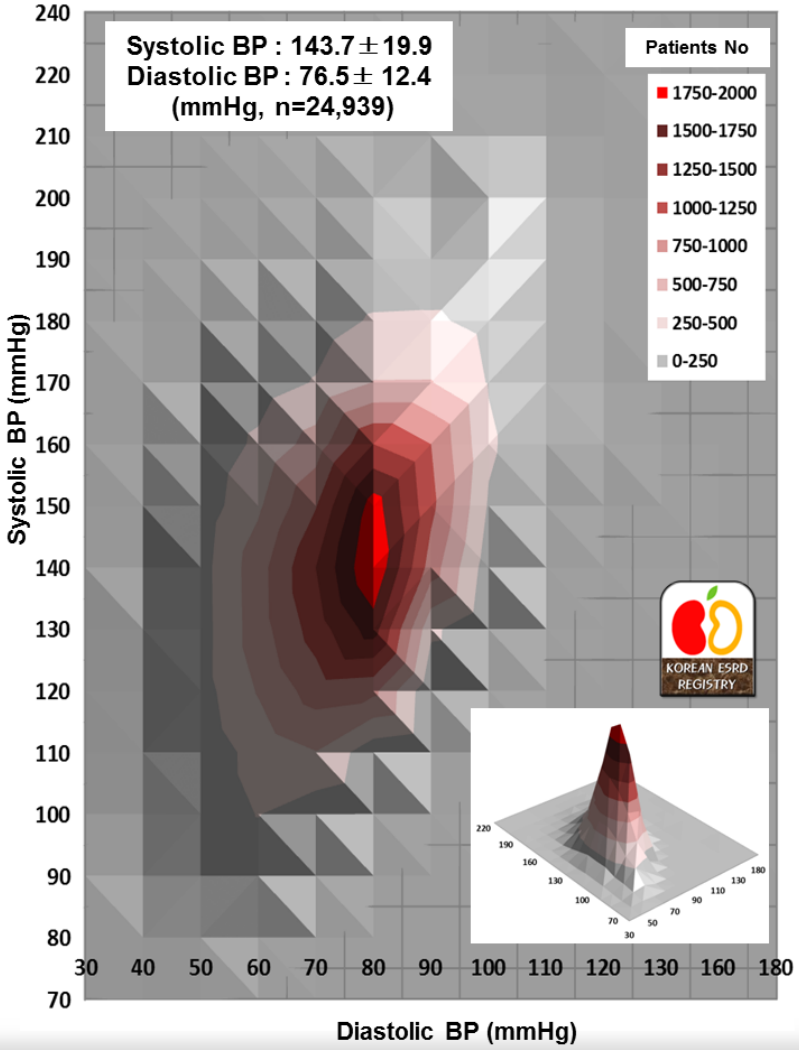


Pulse Pressure : HD & PD

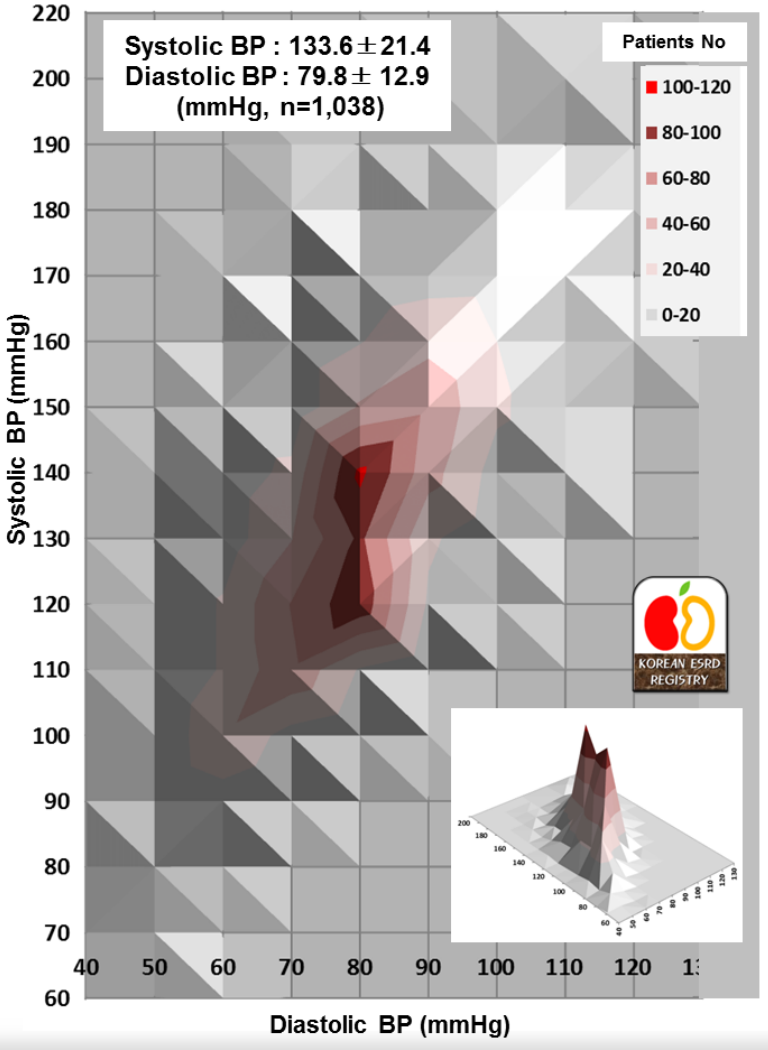


Patients' Distribution according to BP

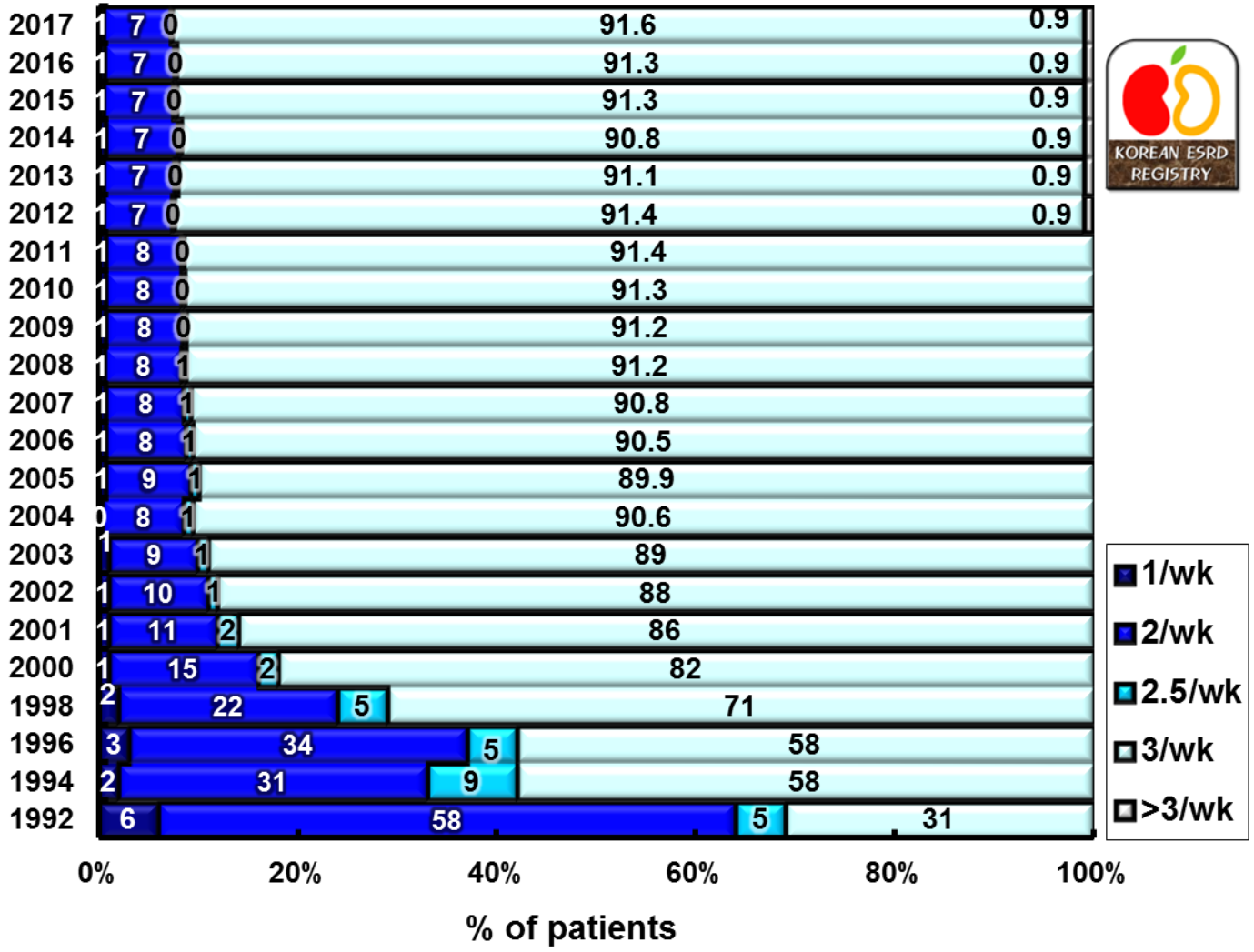
HD



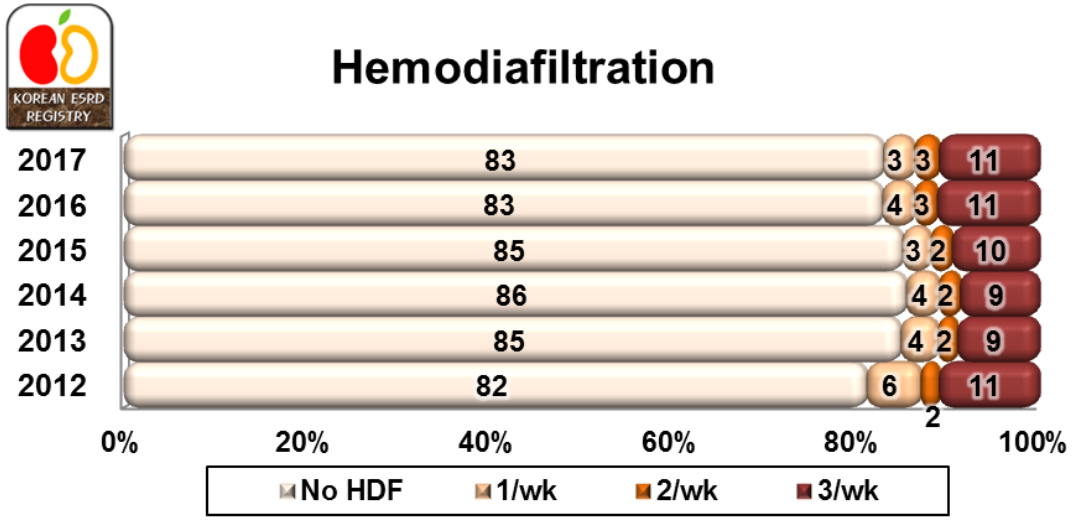
PD

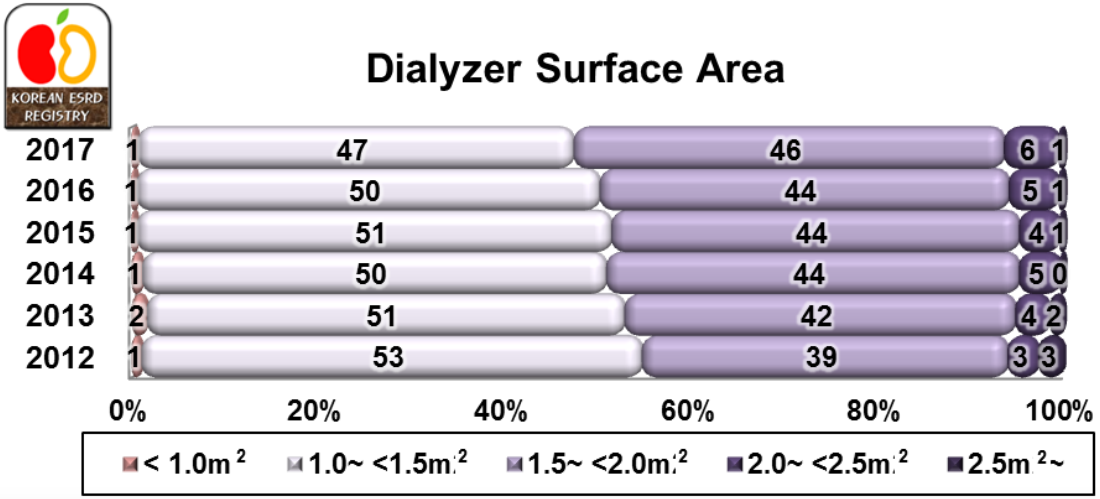


Frequency of HD per Week

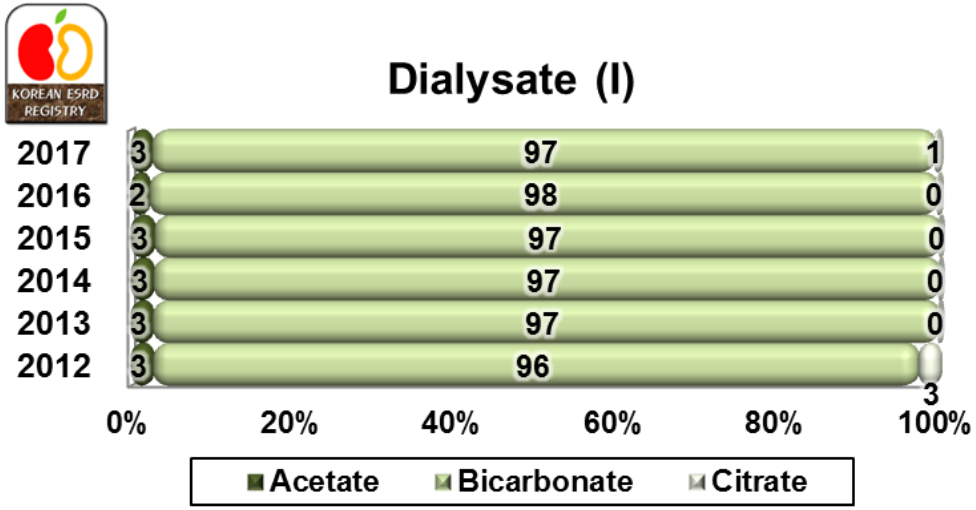


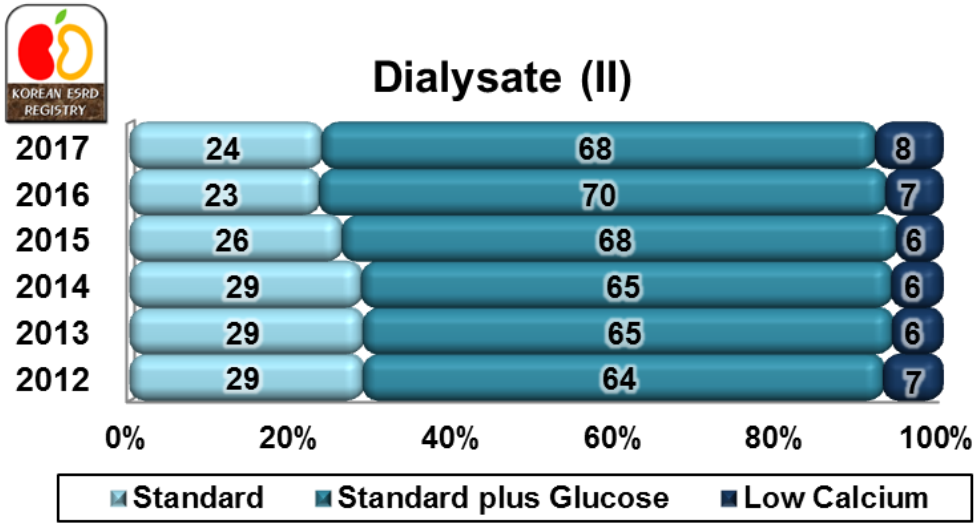
Hemodiafiltration & Dialyzer



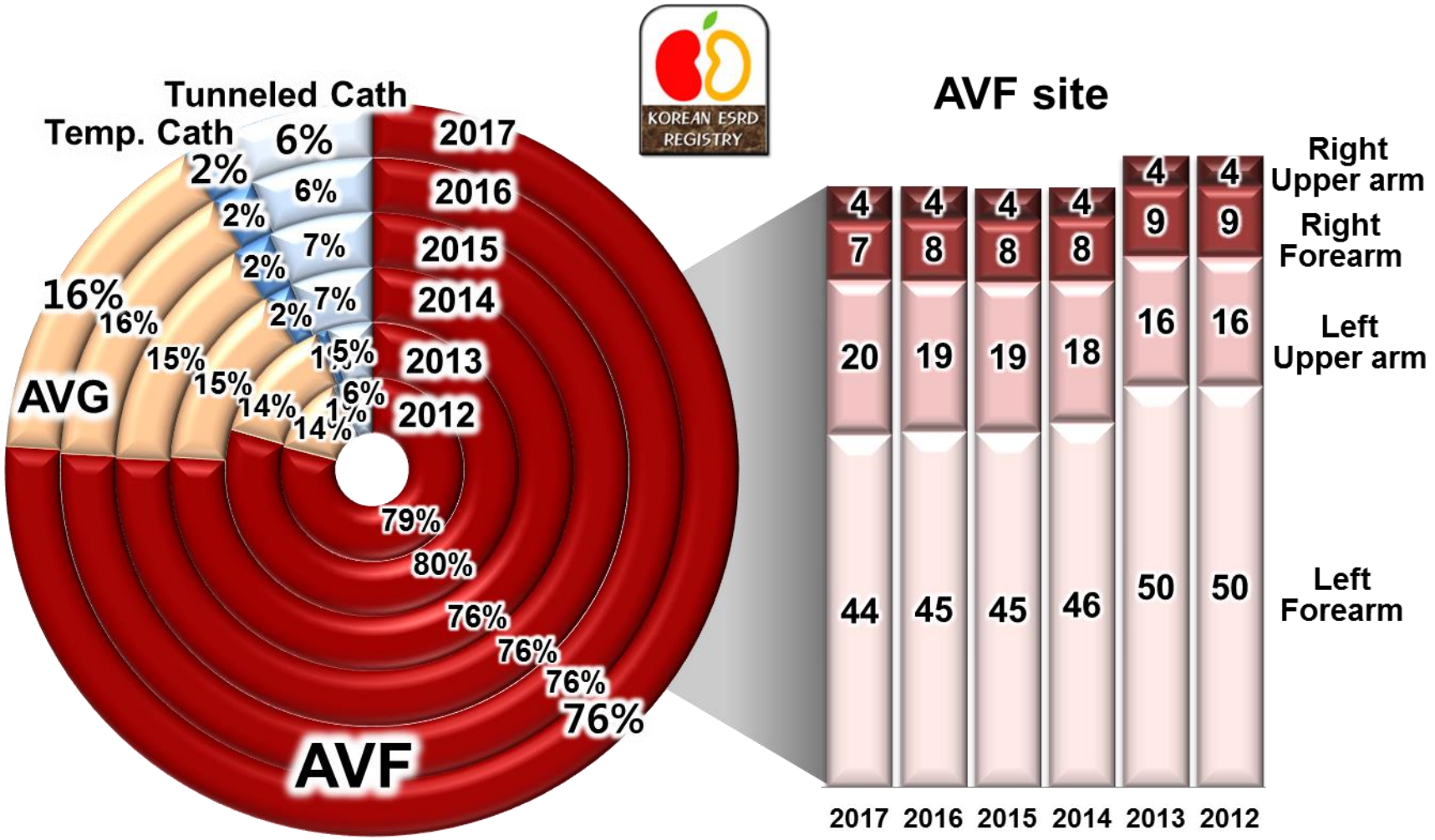


HD Dialysate



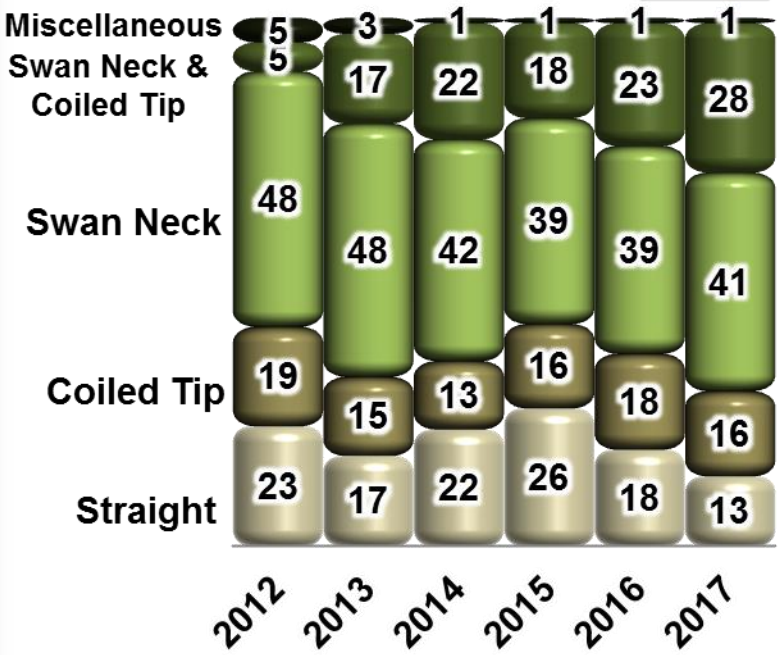


Vascular Access

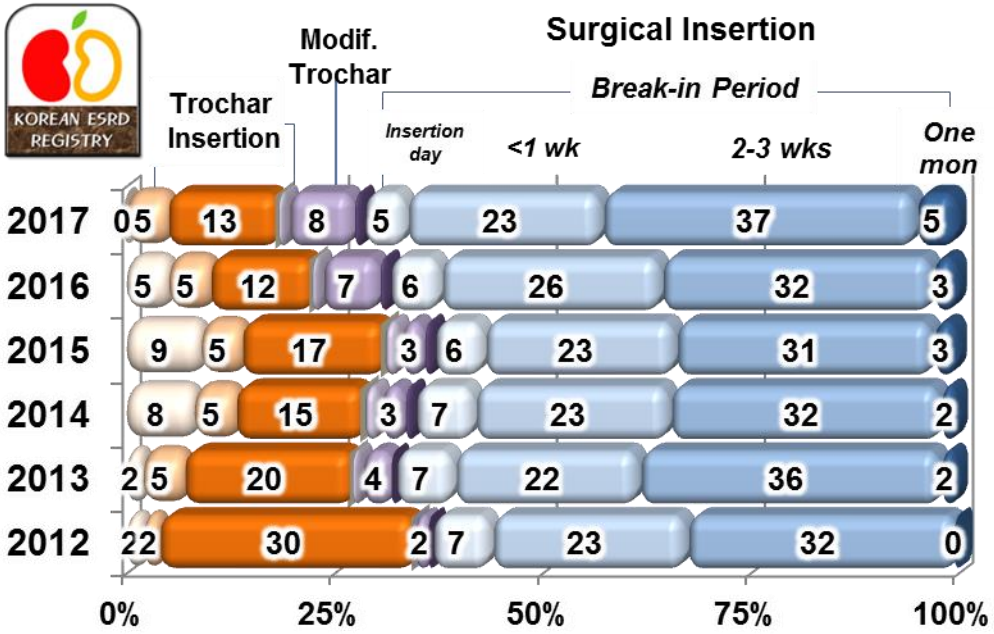


PD Catheter

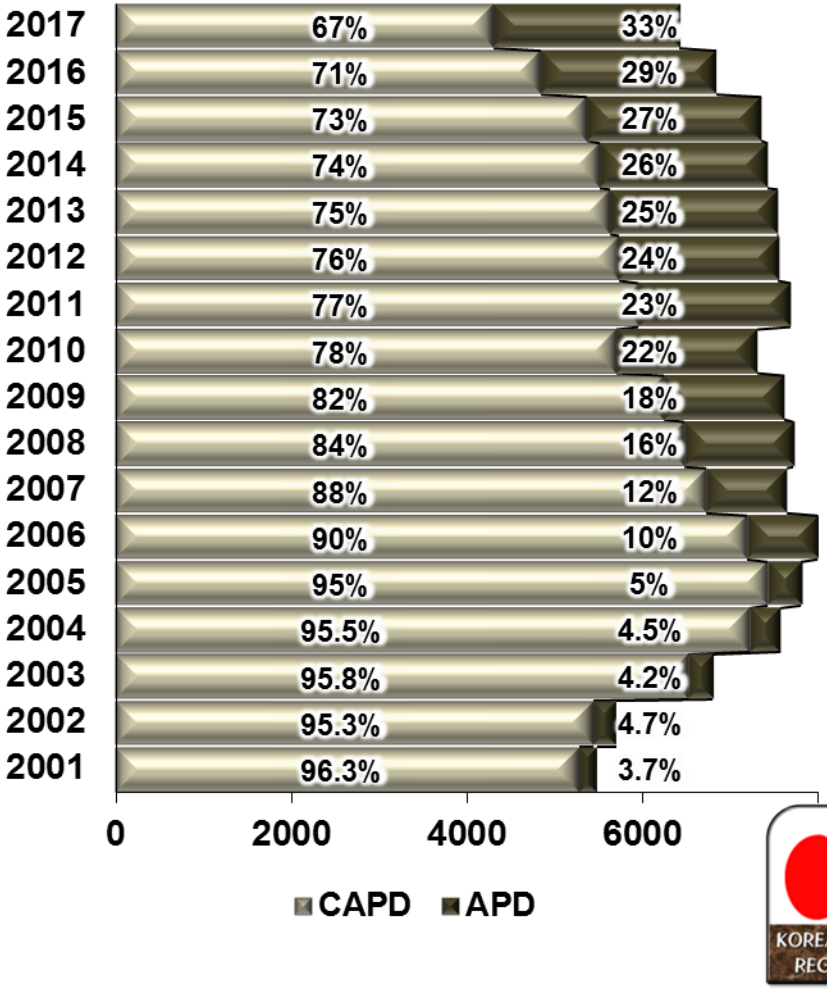
PD Catheter Type

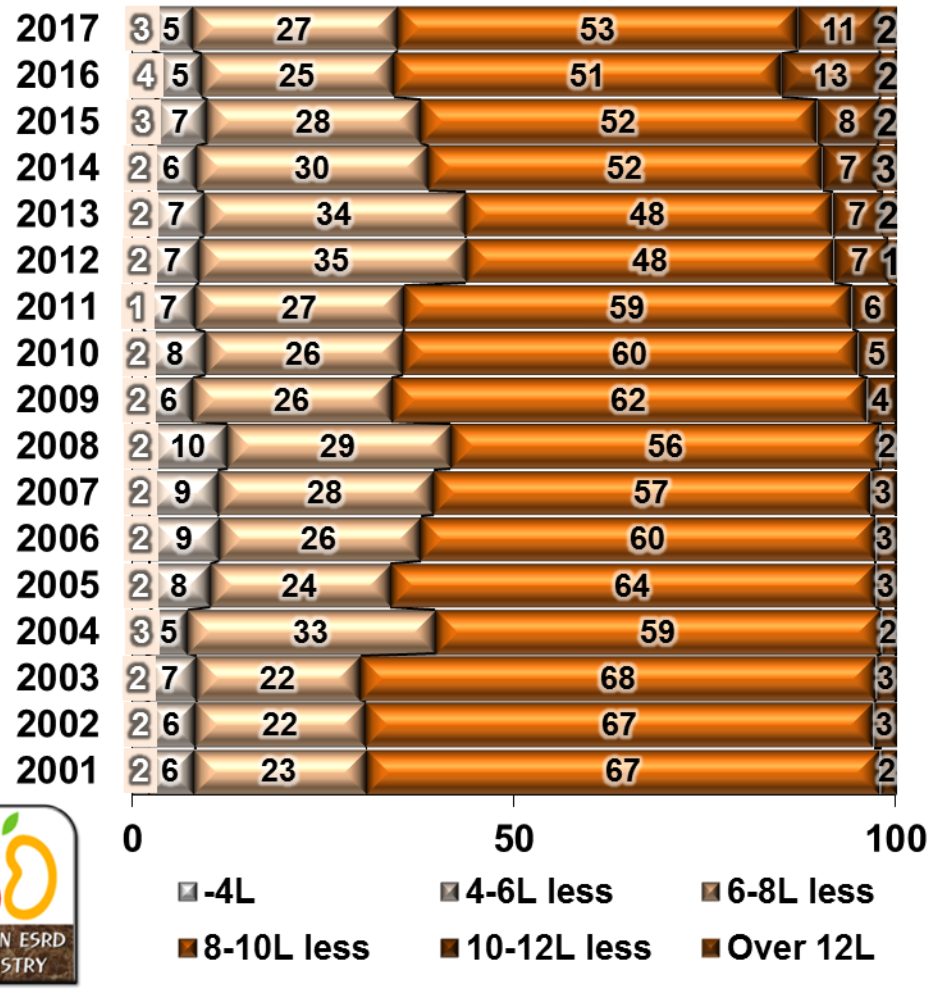


PD Catheter Insertion Method & Break-In Period



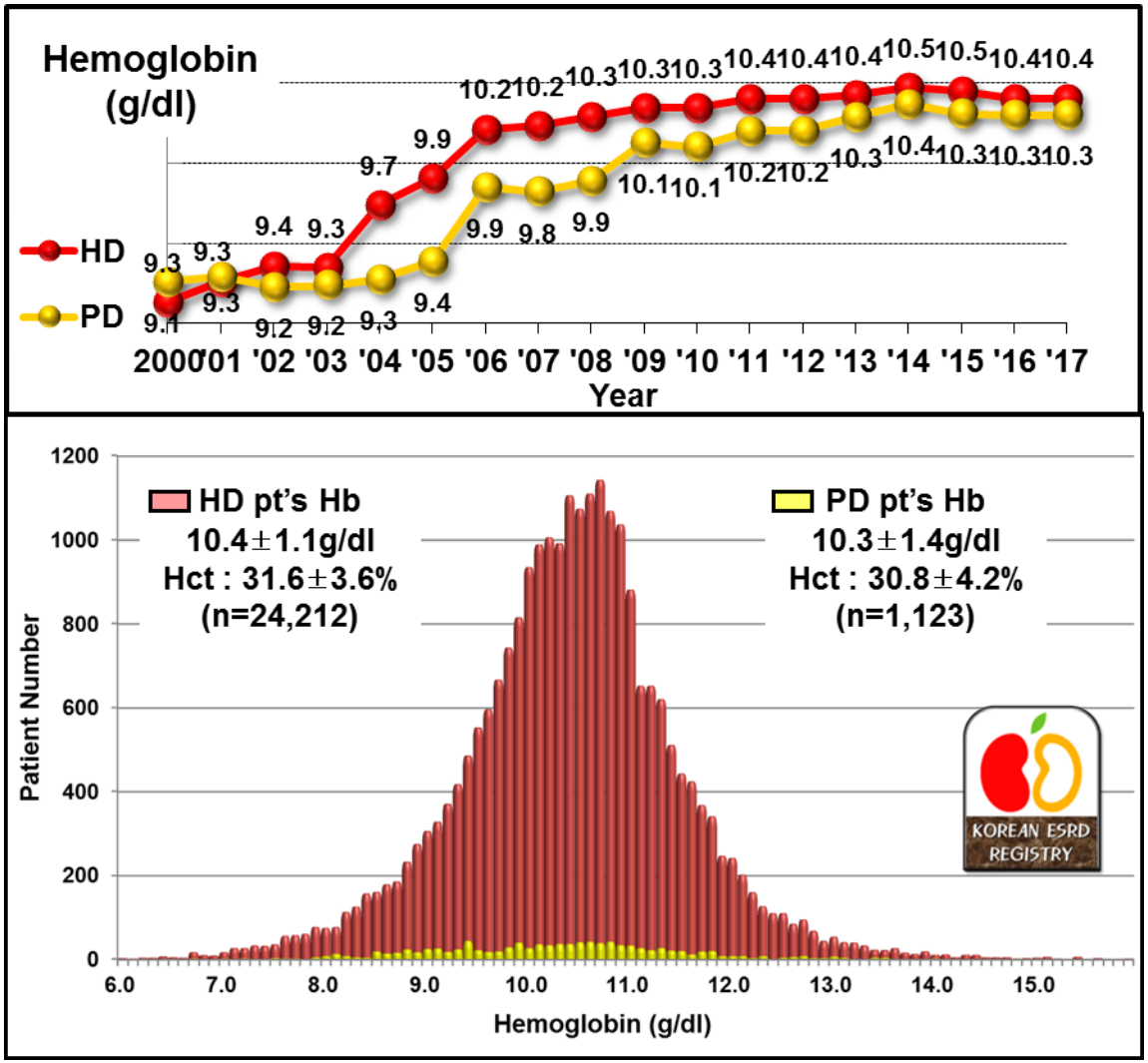
PD Type & Doses



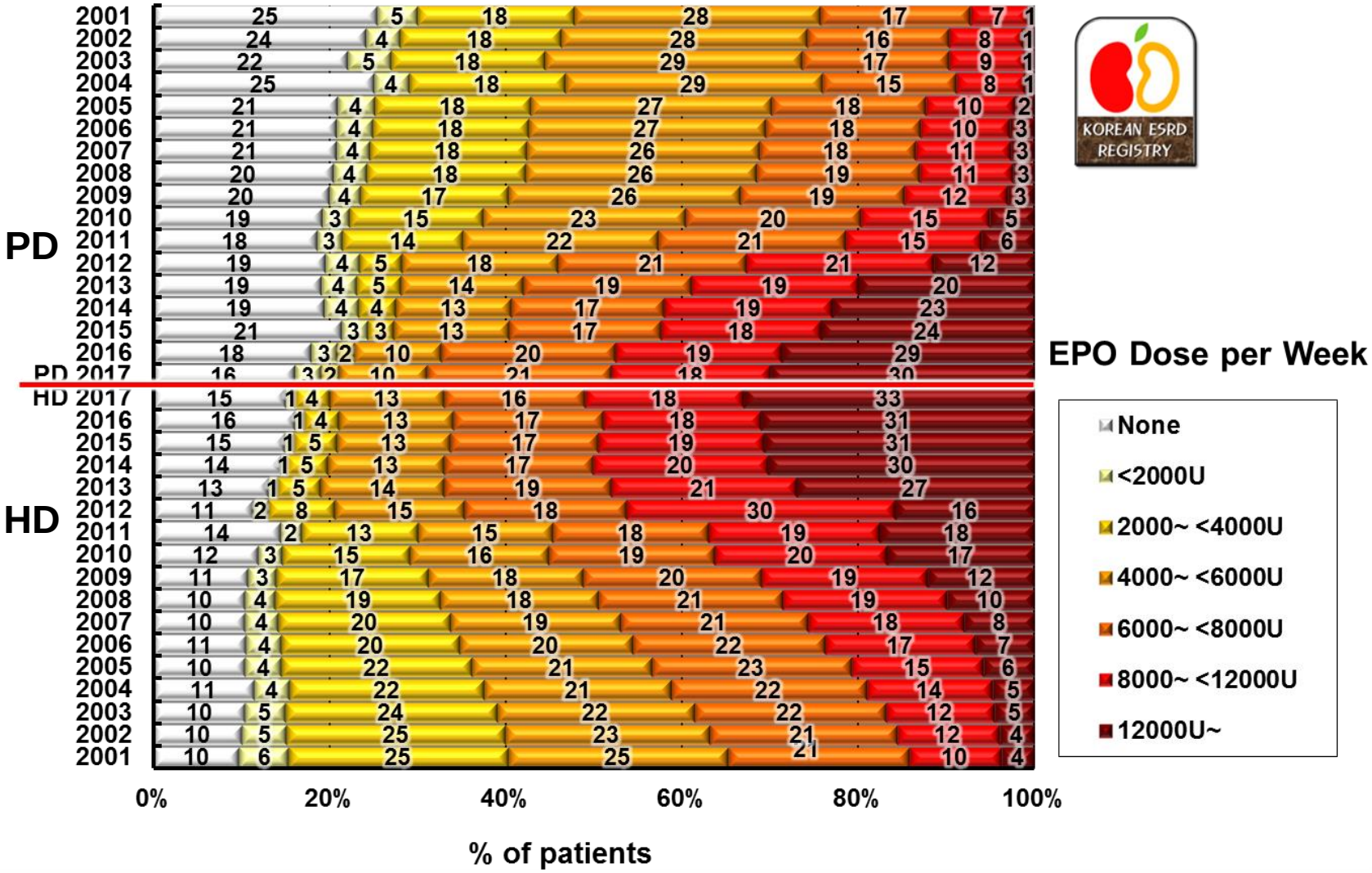


KOREAN ESRD REGISTRY

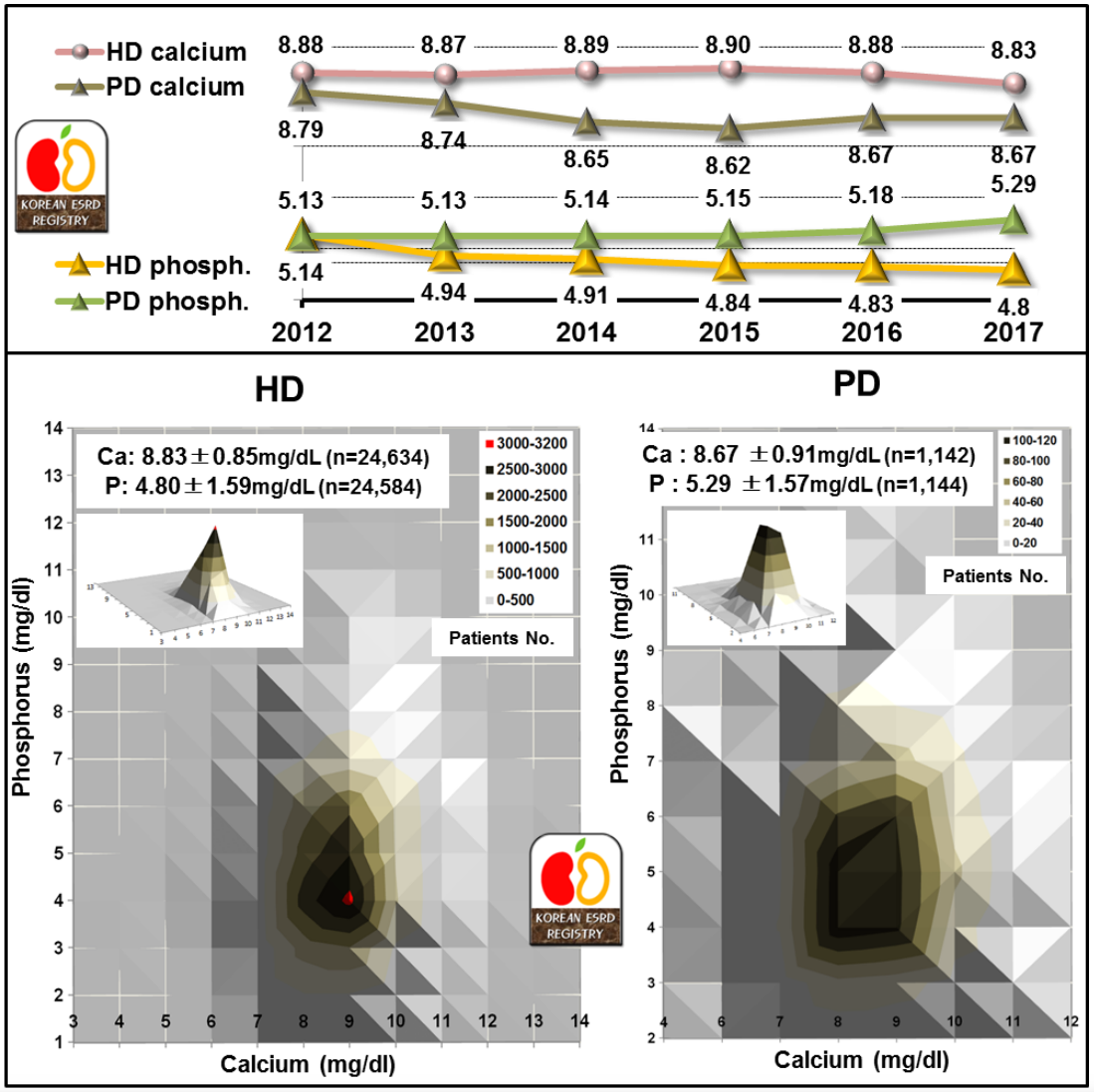
Hemoglobin : HD & PD



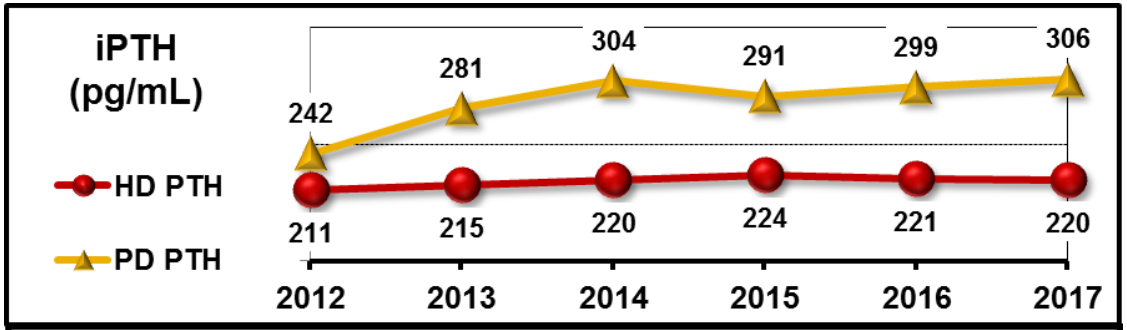
Erythropoietin Doses

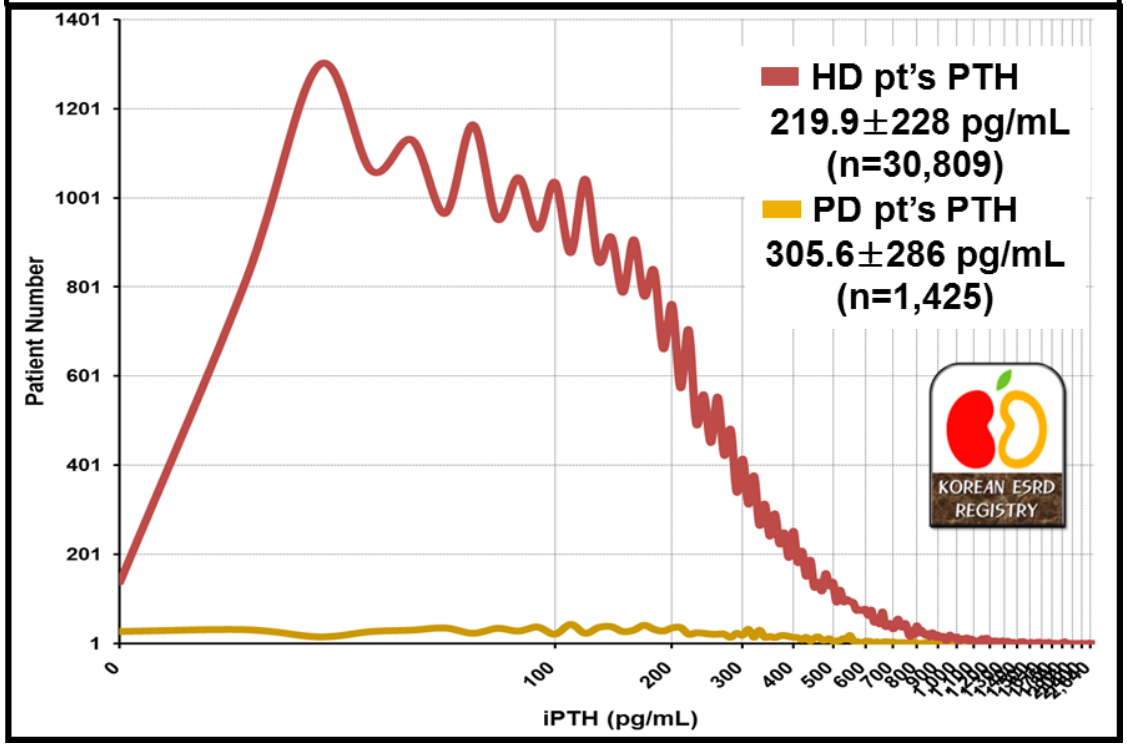


Calcium & Phosphorus



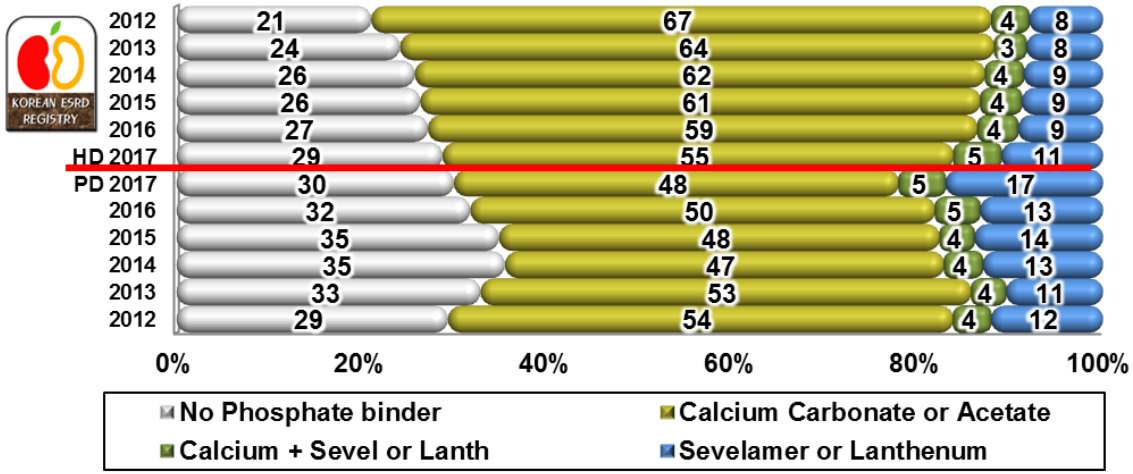
PTH


iPTH
(pg/mL)
HD PTH
PD PTH
242
281
304
291
299
306
211
215
220
224
221
220
2012
2013
2014
2015
2016
2017

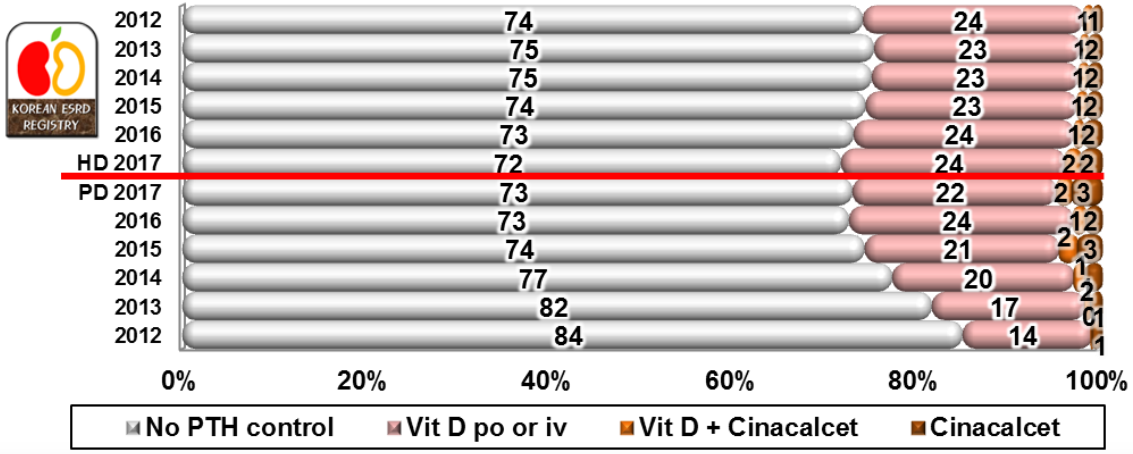

HD pt's PTH
219.9±228 pg/mL
(n=30,809)
PD pt's PTH
305.6±286 pg/mL
(n=1,425)
Patient Number
iPTH (pg/mL)
KOREAN ESRD REGISTRY

Phosphate Binders & PTH Control

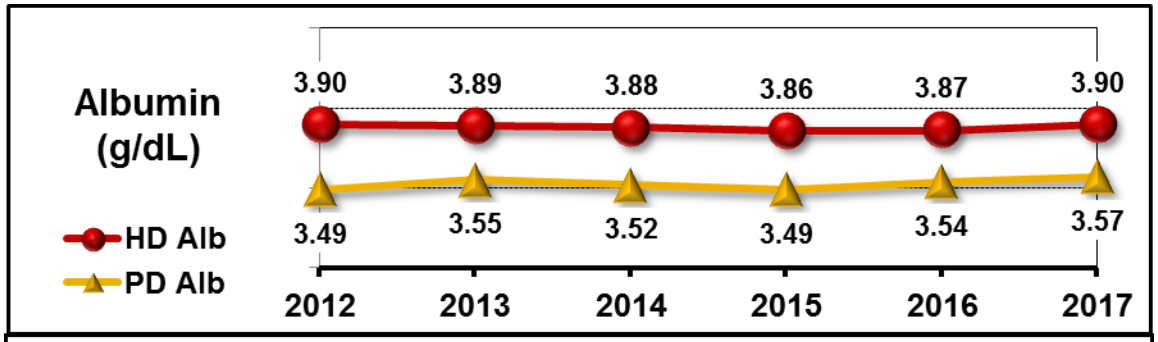
Phosphate Binders

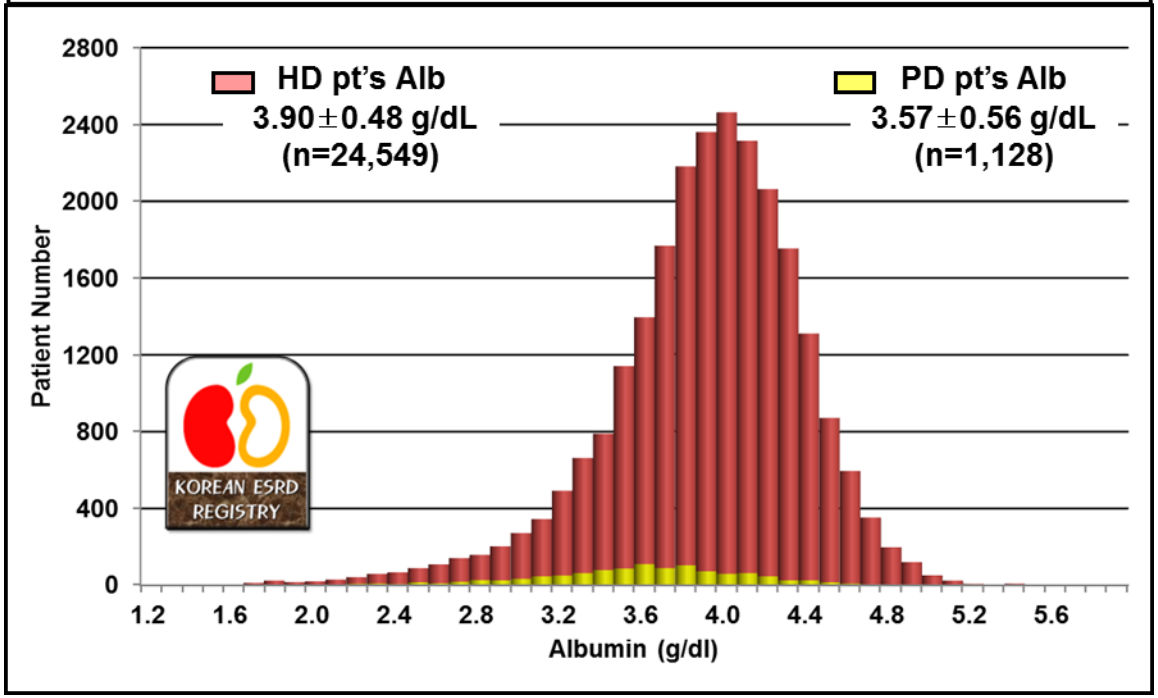


PTH Control

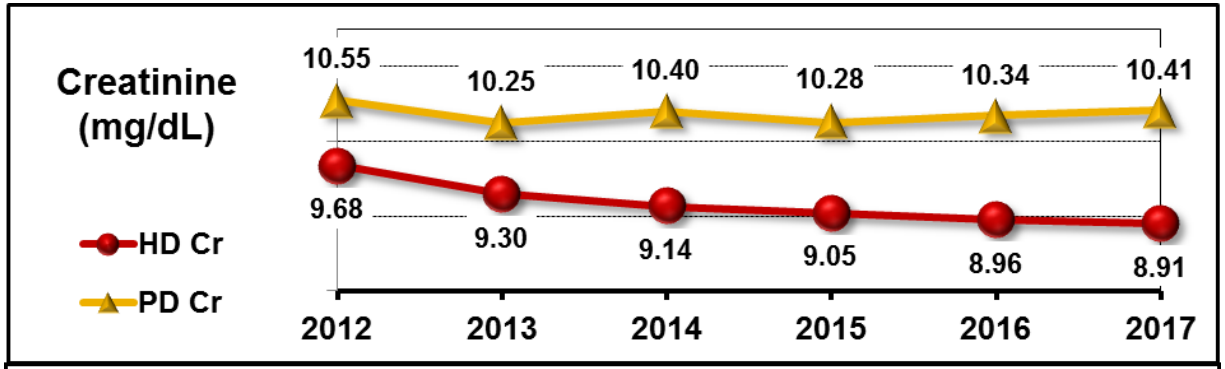


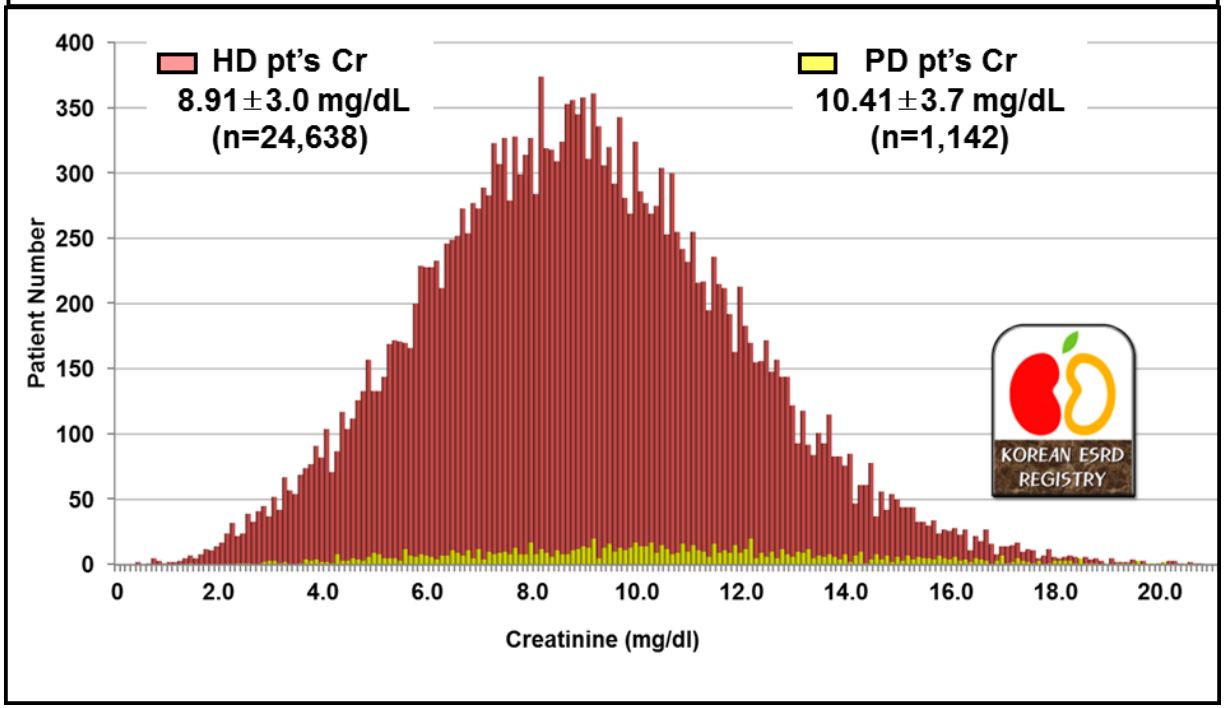
Serum Albumin



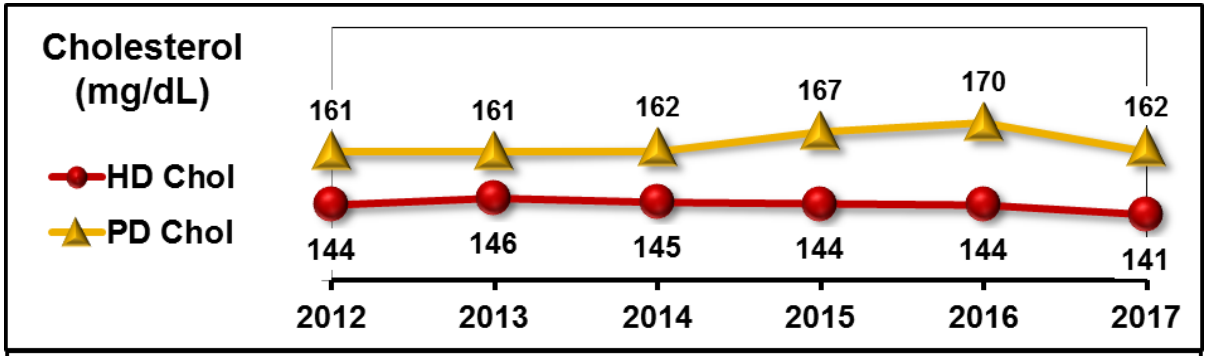


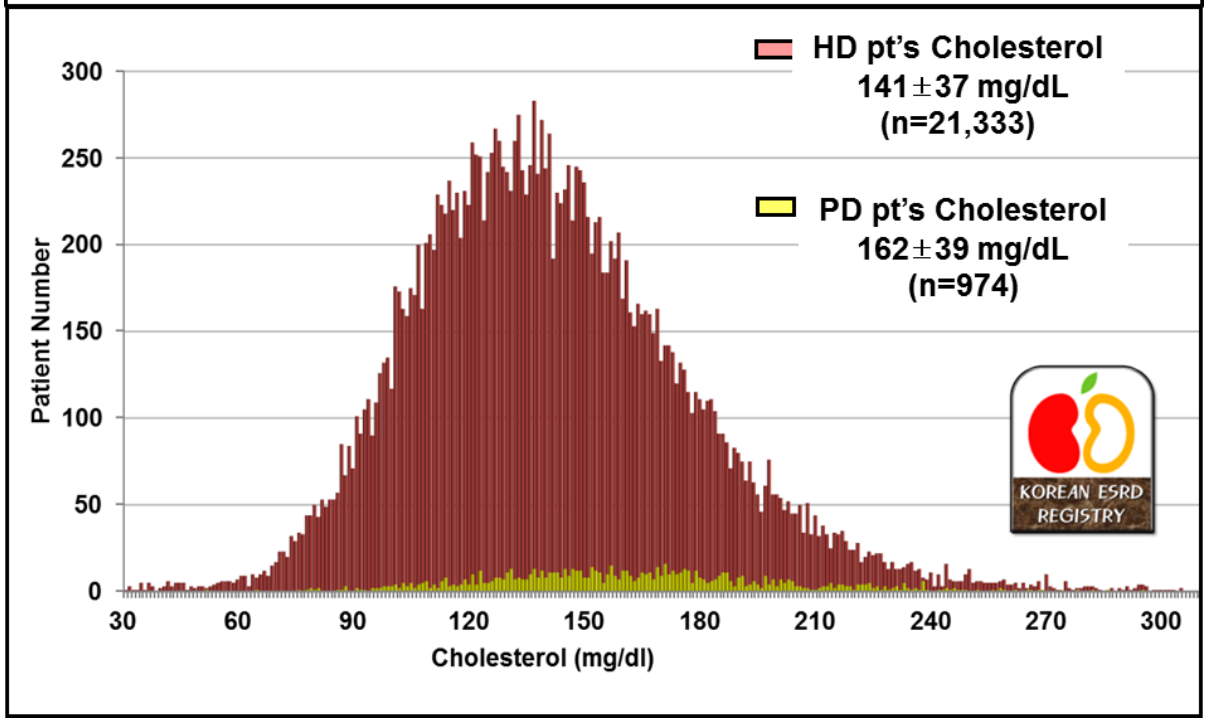
Serum Creatinine



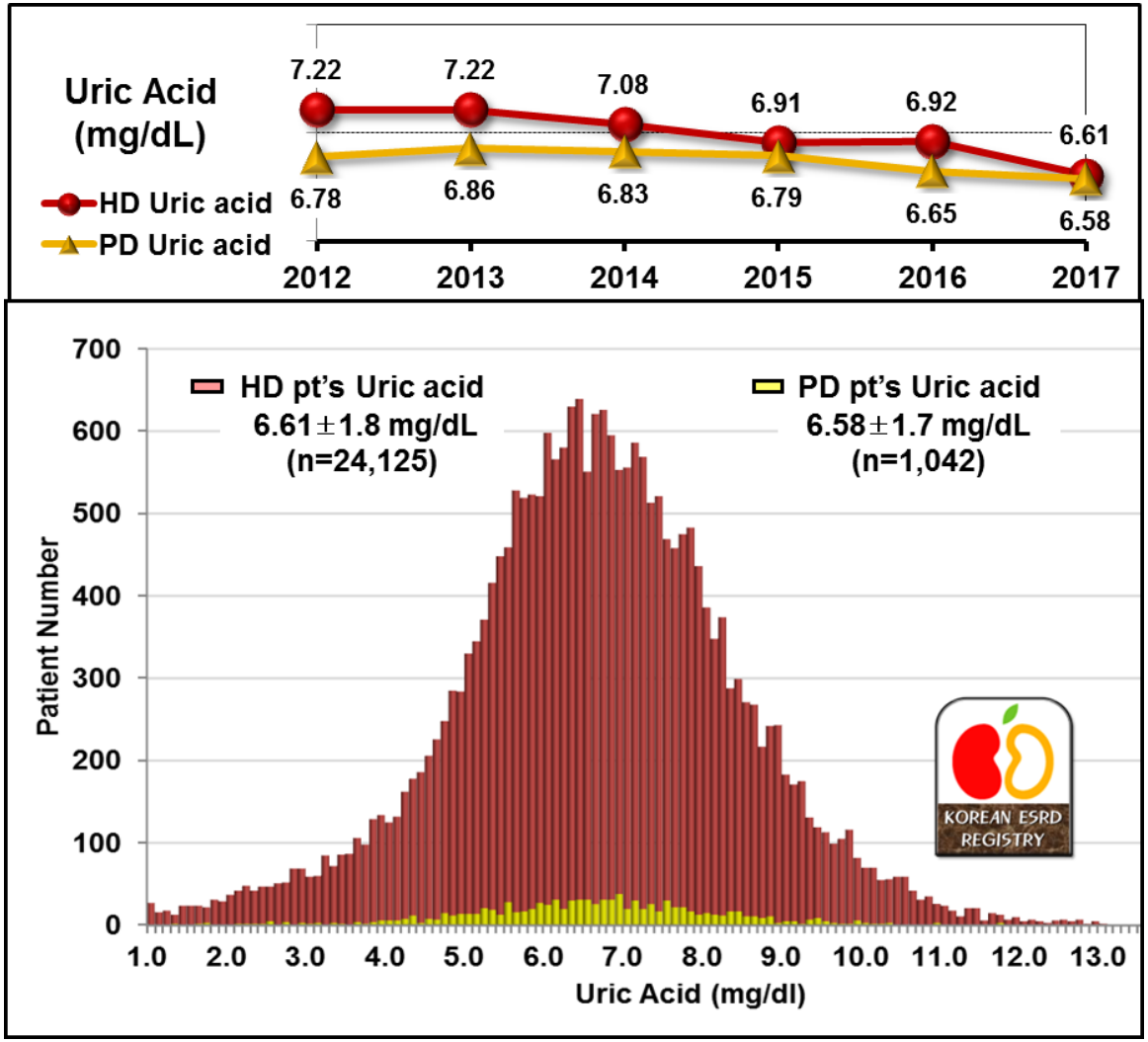


Total Cholesterol

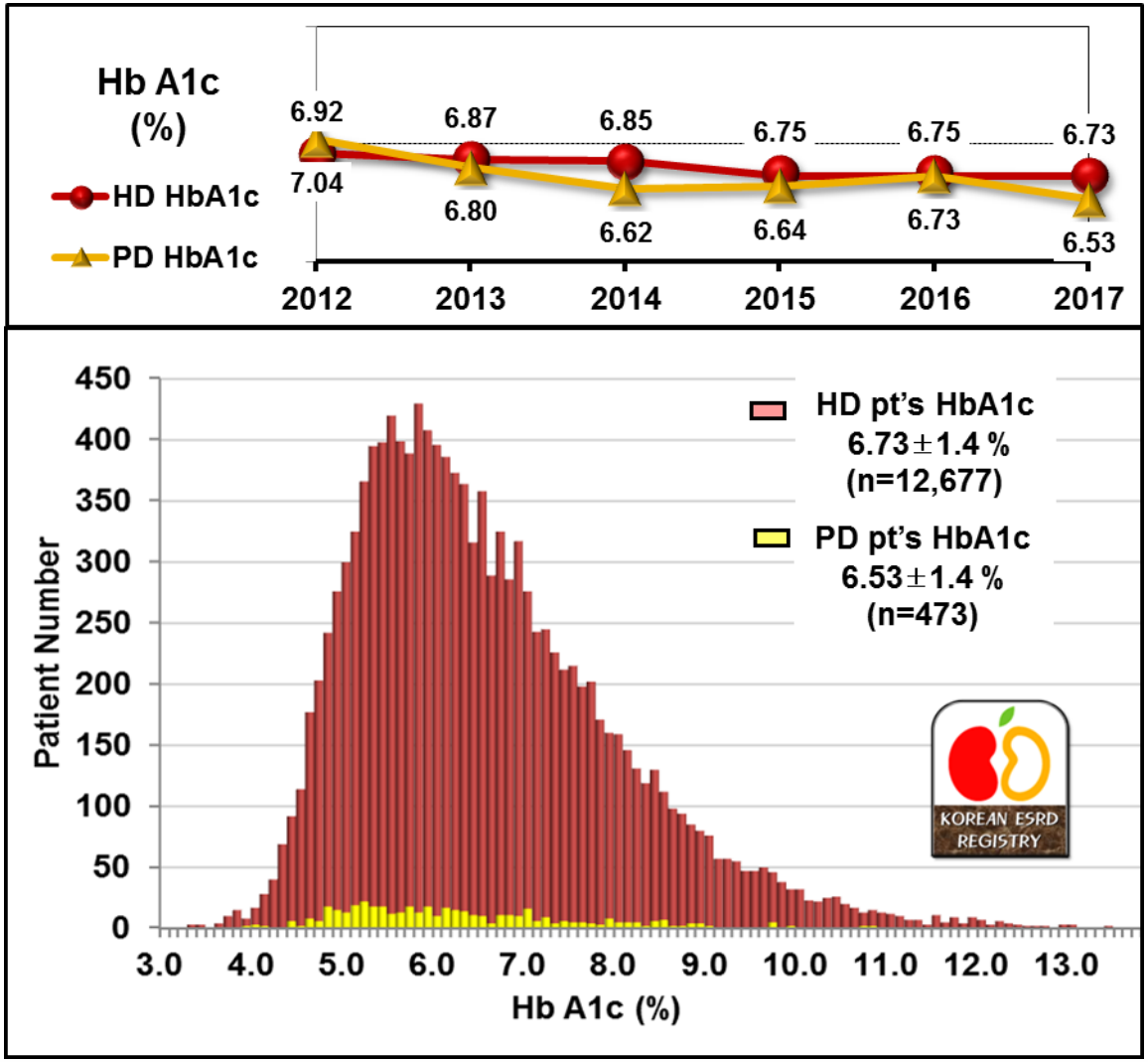




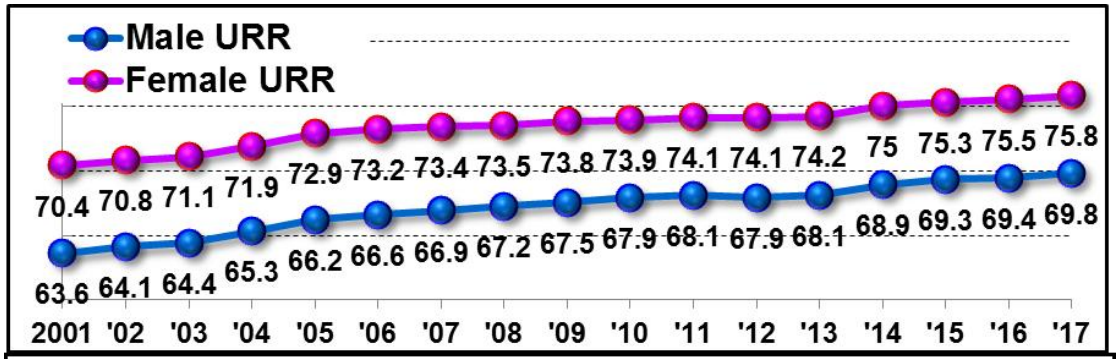
Uric Acid

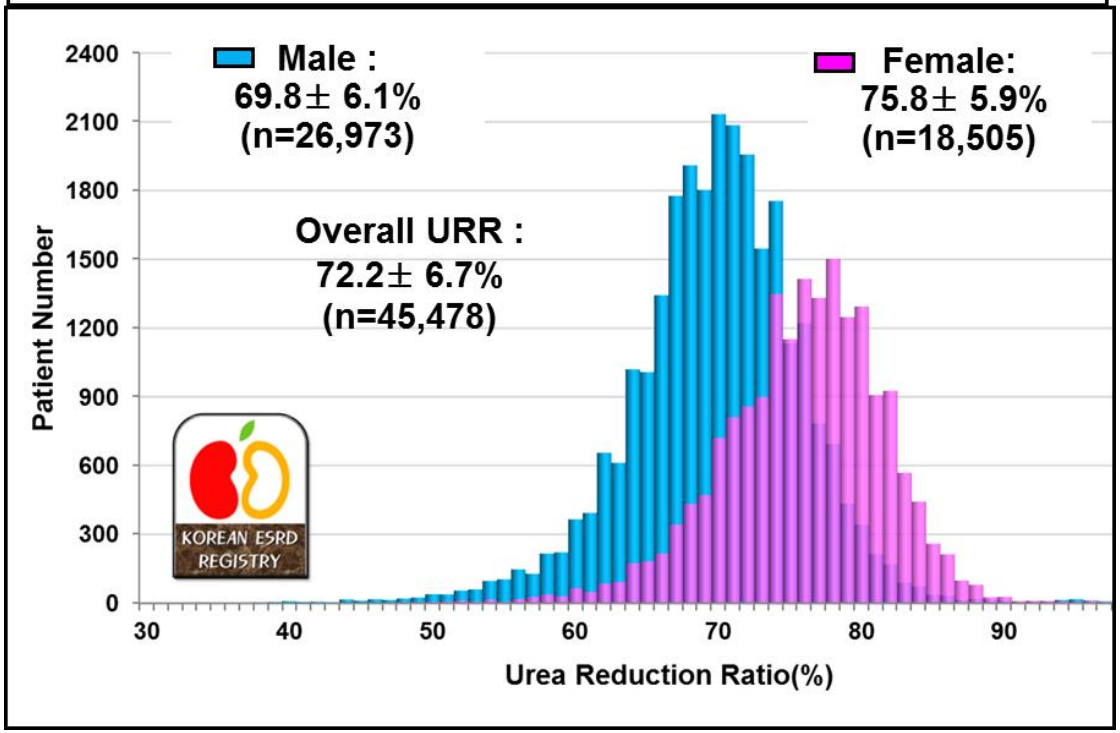

Uric Acid (mg/dL)
HD Uric acid
PD Uric acid
7.22
7.22
7.08
6.91
6.92
6.61
6.78
6.86
6.83
6.79
6.65
6.58
2012
2013
2014
2015
2016
2017
HD pt's Uric acid
6.61±1.8 mg/dL
(n=24,125)
PD pt's Uric acid
6.58±1.7 mg/dL
(n=1,042)
Patient Number
Uric Acid (mg/dl)
KOREAN ESRD REGISTRY

Hb A1c

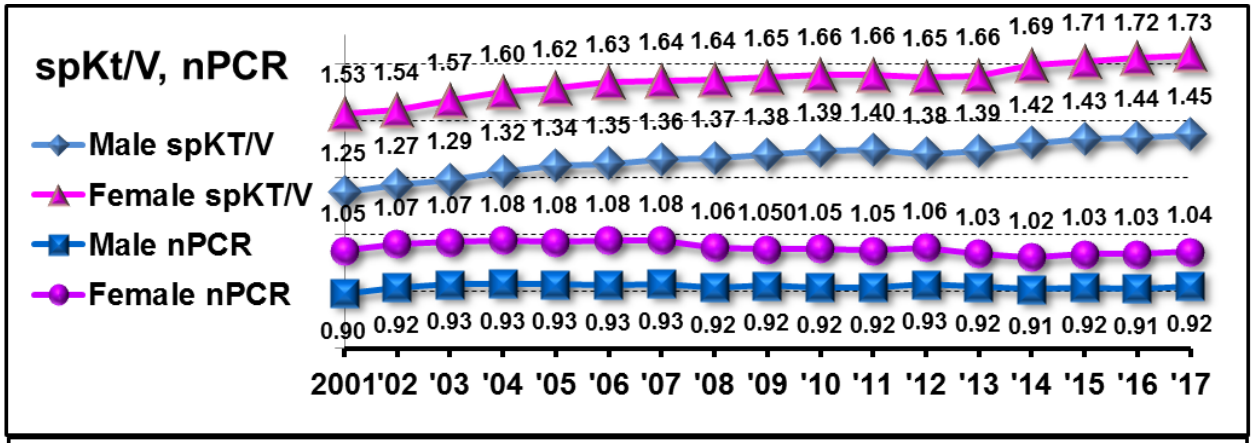

Hb A1c (%)
HD HbA1c
PD HbA1c
6.92
6.87
6.85
6.75
6.75
6.73
7.04
6.80
6.62
6.64
6.73
6.53
2012
2013
2014
2015
2016
2017
Patient Number
450
400
350
300
250
200
150
100
50
0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
Hb A1c (%)
HD pt's HbA1c
6.73±1.4 %
(n=12,677)
PD pt's HbA1c
6.53±1.4 %
(n=473)
KOREAN ESRD REGISTRY

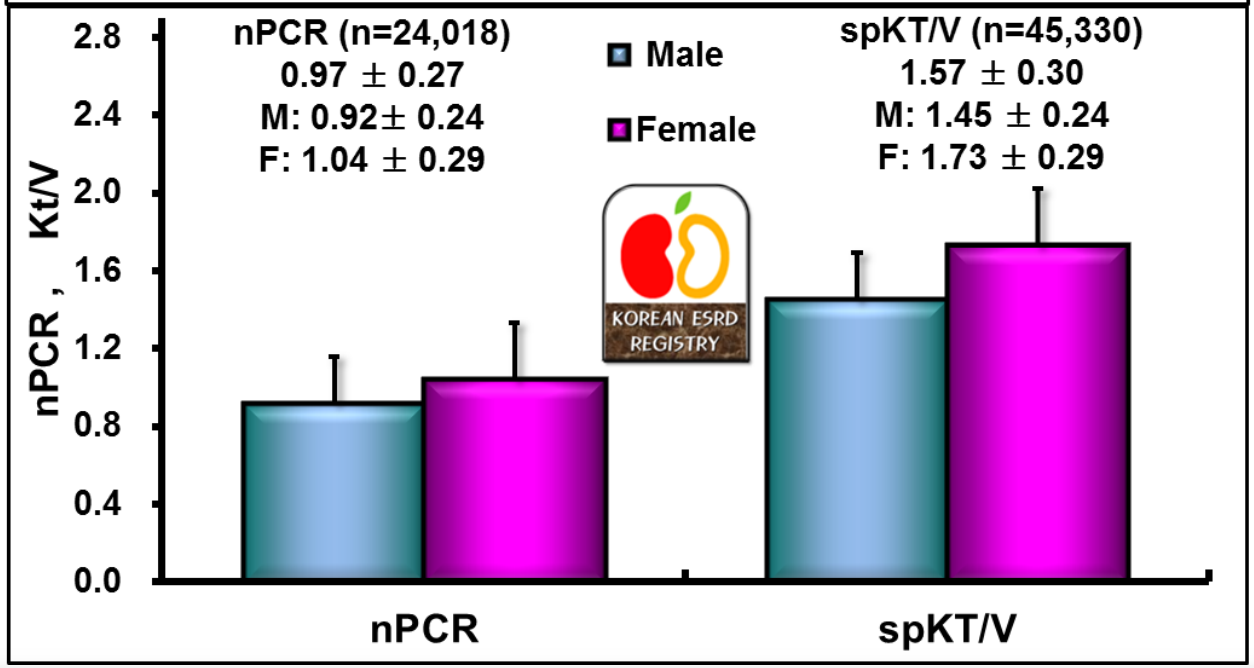
Urea Reduction Ratio



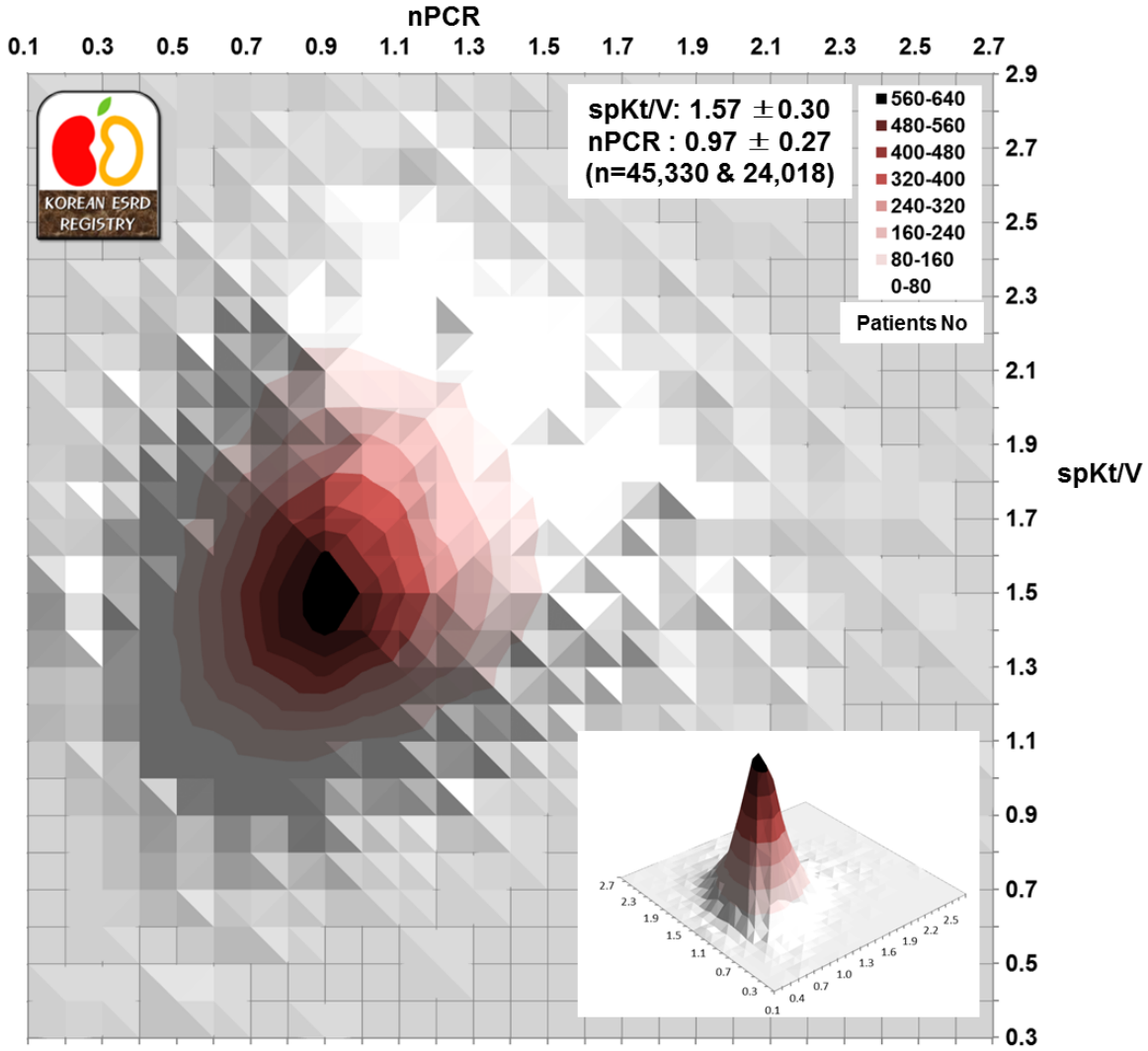


HD Adequacy

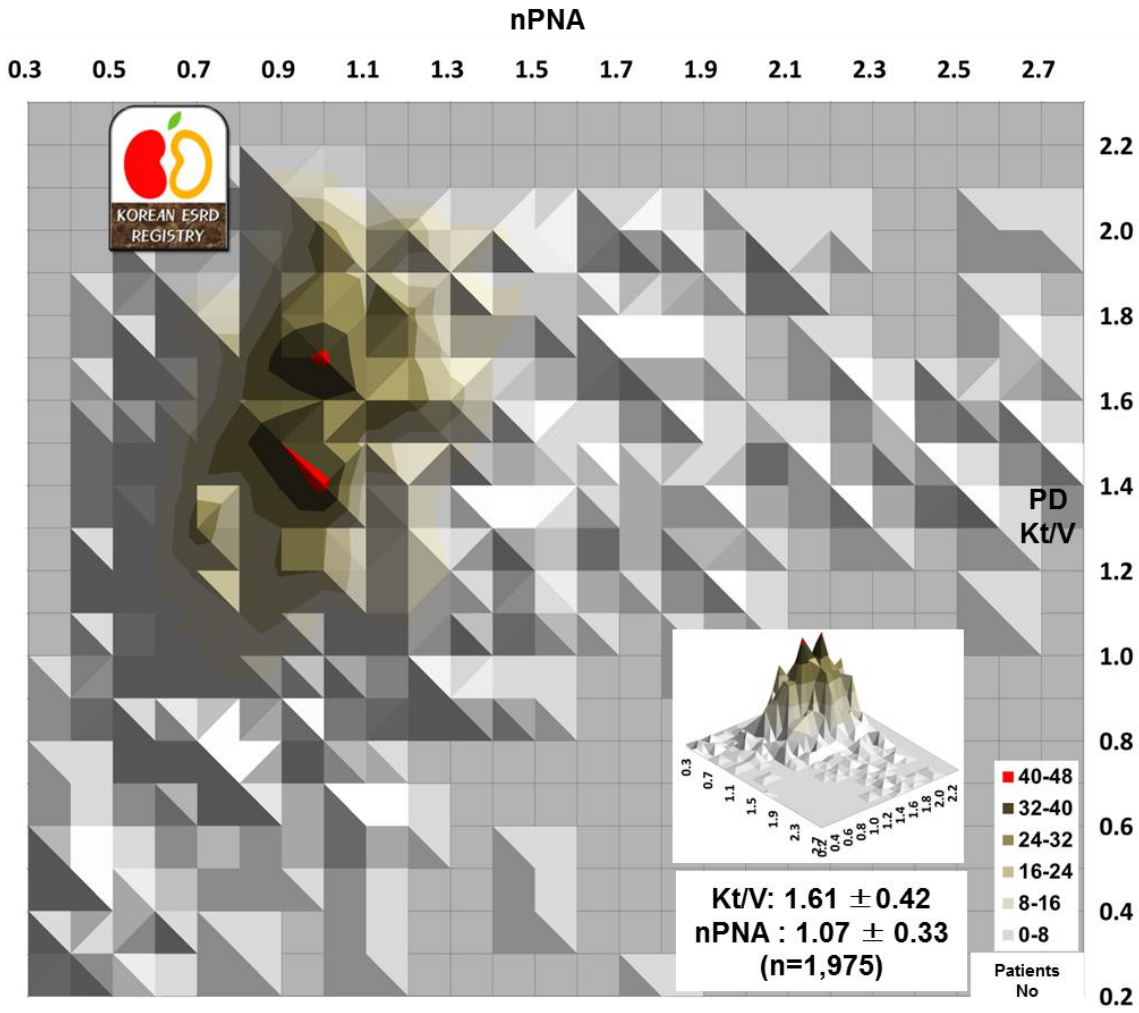

spKt/V, nPCR
Male spKT/V
Female spKT/V
Male nPCR
Female nPCR
1.53 1.54 1.57 1.60 1.62 1.63 1.64 1.64 1.65 1.66 1.66 1.65 1.66 1.69 1.71 1.72 1.73
1.25 1.27 1.29 1.32 1.34 1.35 1.36 1.37 1.38 1.39 1.40 1.38 1.39 1.42 1.43 1.44 1.45
1.05 1.07 1.07 1.08 1.08 1.08 1.08 1.06 1.05 01.05 1.05 1.06 1.03 1.02 1.03 1.03 1.04
0.90 0.92 0.93 0.93 0.93 0.93 0.93 0.92 0.92 0.92 0.92 0.93 0.92 0.91 0.92 0.91 0.92
2001'02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17


nPCR (n=24,018)
0.97 ± 0.27
M: 0.92± 0.24
F: 1.04 ± 0.29
Male
Female
spKT/V (n=45,330)
1.57 ± 0.30
M: 1.45 ± 0.24
F: 1.73 ± 0.29
KOREAN ESRD REGISTRY
nPCR , Kt/V
2.8
2.4
2.0
1.6
1.2
0.8
0.4
0.0
nPCR
spKT/V

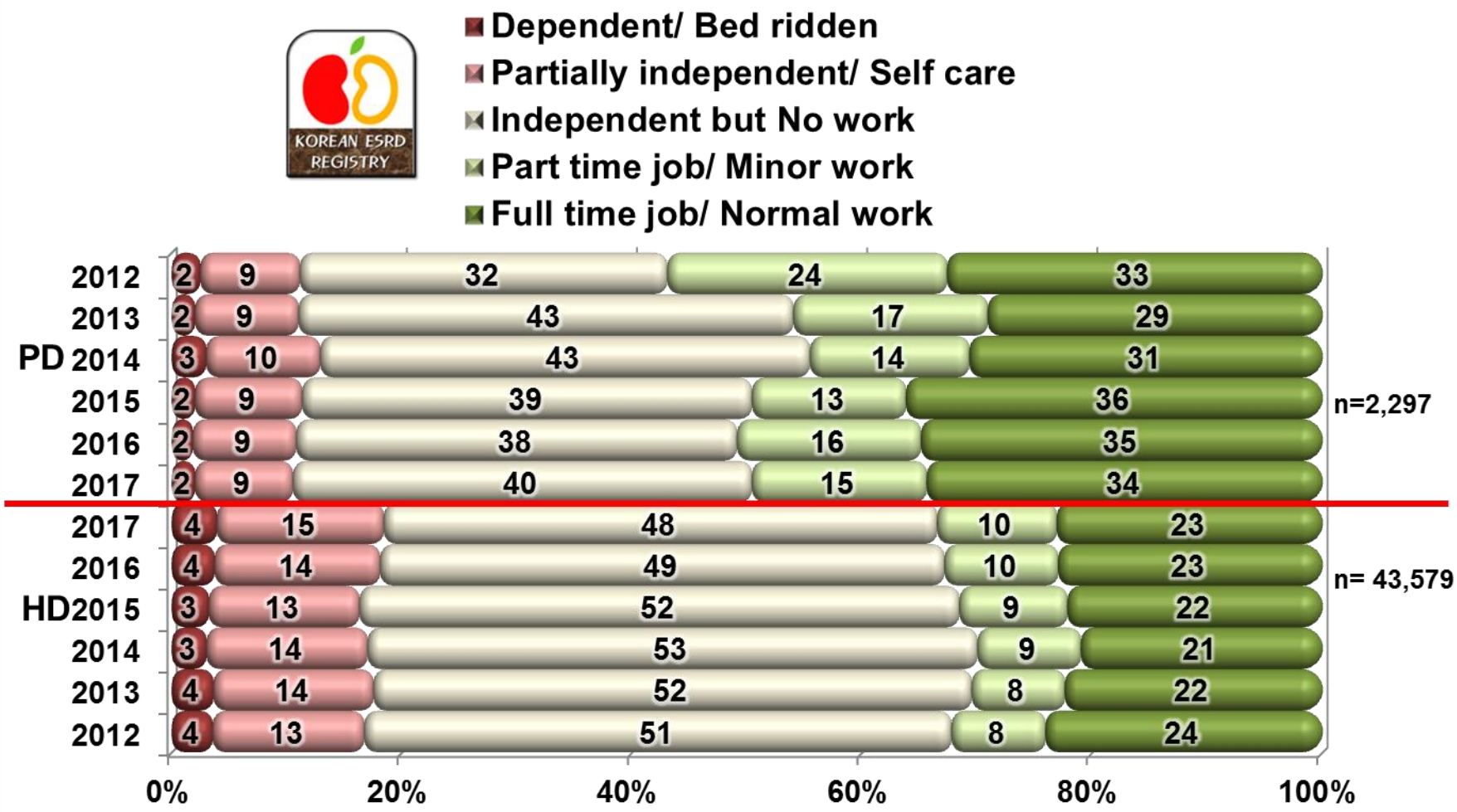
HD Adequacy : spKt/V vs nPCR



PD Adequacy : Kt/V vs nPNA



Rehabilitation of Dialysis Patients



Co-Morbidity of Dialysis Patients

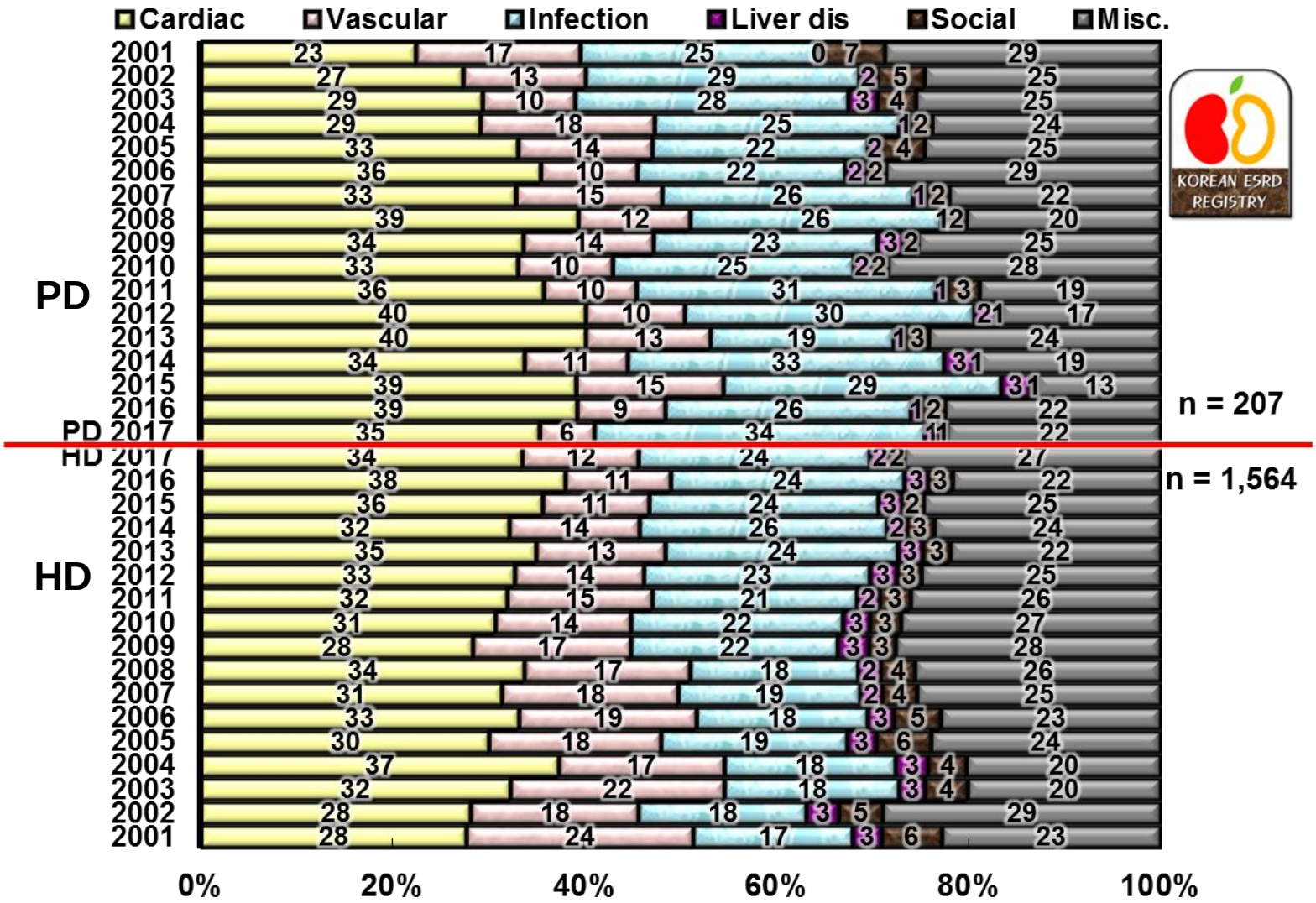
	HD (%, n=40,929)		PD (%, n=1,484)	
Cardiac	**16.8**		**14.9**	
Coronary Artery Disease		8.7		7.3
Congestive Heart Failure		4.0		5.5
Pericardial Effusion		0.3		0.3
Arrythmia		3.7		1.7
Vascular	**49.7**		**53.3**	
Cerebrovascular accident		3.5		3.4
Hypertension		44.2		48.7
Other vascular disease		2.0		1.3
Infection	**5.4**		**14.5**	
Pneumonia		1.6		2.3
Tuberculosis		0.4		0.7
Peritonitis		0.2		8.4
Herpes zoster		0.3		0.3
Access/ exit site infection		0.7		1.1
Other Infection		2.2		1.7
Liver disease	**5.3**		**4.6**	
Hepatitis B		3.1		3.3
Hepatitis C		1.8		0.8
Congestive Liver		0.1		0.1
Hemochromatosis		0.0		0.0
Other liver diseases		0.3		0.4
Gastrointestinal	**15.1**		**7.5**	
Gastric Ulcer		2.0		0.7
Duodenal Ulcer		0.3		0.0
Constipation		5.4		3.8
Other Gastrointestinal Diseases		7.3		2.9
Miscellaneous	**7.8**		**5.3**	
Malnutrition (Alb<2.5g/dl)		0.2		0.7
Malignancy		1.1		0.8
Hypertensive Retinopathy		0.5		0.0
Uremic Dermatitis		1.9		0.8
Uremic Neuritis		0.7		0.1
Uremic Dementia		0.2		0.0
Uremic Ascites / Pleural Effusion		0.3		0.1
Osteodystrophy		0.5		0.5
COPD & other pulm disease		0.6		0.3
Decubitus ulcer/ DM foot		1.9		2.0

Causes of Death (%), 1994-2017

	1994-96	1998	2001	2003	2005	2007	2009	2011	2013	2014	2015	2016	2017
Cardiac	**27.4**	**27.4**	**26.9**	**31.7**	**30.7**	**31.7**	**29.5**	**32.7**	**35.8**	**32.5**	**36.1**	**38.1**	**33.7**
Myocardial infarction	6.4	6.4	7.7	7.4	8	7.5	8.0	6.6	7.5	5.7	8.0	5.5	6.5
Cardiac arrest, uremia associated	13.7	13.7	11.2	11.7	10.4	10.8	8.5	11.0	14.2	14.1	13.1	13.3	12.7
Cardiac arrest, other cause	7.2	7.2	8.1	12.5	12.4	13.3	13	15.0	14.2	12.6	15.0	19.3	14.5
Vascular	**17.2**	**17.2**	**22.7**	**19.5**	**17**	**17.8**	**15.9**	**14.1**	**13.3**	**13.2**	**11.8**	**10.8**	**11.4**
Cerebrovascular accident	14.3	14.3	15.1	14.5	12.3	13	11	8.7	8.7	8.5	6.5	6.2	6.2
Pulmonary embolus	0.2	0.2	0.5	0.1	0.6	0.5	0.2	0.2	0.2	0.2	0.9	0.4	0.3
Gastrointestinal hemorrhage	1.7	1.7	2.7	3.2	1.7	2.7	2.3	2.2	1.2	1.7	1.4	2.0	0.8
Gastrointestinal embolism	0.1	0.1	0.1	0	0.5	0.1	0.5	0.1	0.2	0.2	0.7	0.3	0.3
Other vascular disease	0.9	0.9	4.3	1.6	1.9	1.6	1.9	3.0	3.0	2.6	2.4	1.9	3.7
Infection	**13.5**	**13.5**	**17.8**	**20.5**	**20.1**	**20.2**	**21.9**	**23.1**	**23.5**	**26.8**	**24.6**	**24.5**	**25.2**
Pulmonary infection	2.5	2.5	4.5	3.6	4.5	4.4	5.9	8.4	8.4	9.0	8.9	9.3	7.7
Septicemia	6.6	6.6	6.9	9.7	9.6	11.7	10.4	9.7	11.9	13.6	11.0	10.2	12.2
Tuberculosis	0.3	0.3	0.8	0.2	0.3	0.2	0.3	0.1	0.1	0.1	1.1	0.1	0.2
Peritonitis	2.1	2.1	1.1	2	1.4	1.1	0.8	1.0	0.5	0.7	1.1	1.2	0.7
Other Infection	2	2	4.5	4.9	4.3	2.9	4.5	4.0	2.7	3.4	2.4	3.6	4.5
Liver disease	**3.4**	**3.4**	**2.6**	**2.8**	**2.7**	**2.2**	**3.1**	**2.1**	**2.4**	**2.2**	**2.6**	**2.3**	**2.0**
Liver failure due to hepatitis B	1.8	1.8	1.6	1.8	1.5	1.3	2.2	1.0	1.3	1.0	1.1	0.9	1.1
Liver failure due to other cause	1.6	1.6	1	1	1.2	0.8	0.9	1.1	1.1	1.2	1.5	1.5	1.0
Social	**6.2**	**6.2**	**6.3**	**4.4**	**5.4**	**3.3**	**2.5**	**3.3**	**2.8**	**2.5**	**2.0**	**2.5**	**1.5**
Patient refused further treatment	2.9	2.9	2.1	1	1.1	1.1	0.5	0.4	0.3	0.3	0.3	0.5	0.1
Suicide	2.5	2.5	3.3	2.3	3.3	1.5	1.3	1.4	1.3	1.6	1.0	1.5	0.8
Therapy ceased for other reason	0.8	0.8	0.9	1	1	0.7	0.8	1.5	1.2	0.7	0.8	0.5	0.6
Miscellaneous	**32**	**32**	**23.7**	**21.3**	**24**	**24.8**	**27.1**	**24.7**	**22.2**	**22.9**	**23.0**	**21.8**	**26.2**
Cachexia	2.9	2.9	8.1	6.6	4	4.4	3.3	2.7	1.6	1.5	1.4	0.9	1.0
Malignant disease	2.1	2.1	4.4	3.5	6.4	5.7	5.7	6.0	5.7	6.0	5.8	6.5	6.6
Accident	1.2	1.2	0.9	1.1	1.4	1.2	1.3	1.6	1.4	2.0	1.0	1.0	1.1
Uncertain	25.8	25.8	10.3	10.1	12.3	13.4	16.8	14.5	13.4	13.4	14.8	13.4	17.6

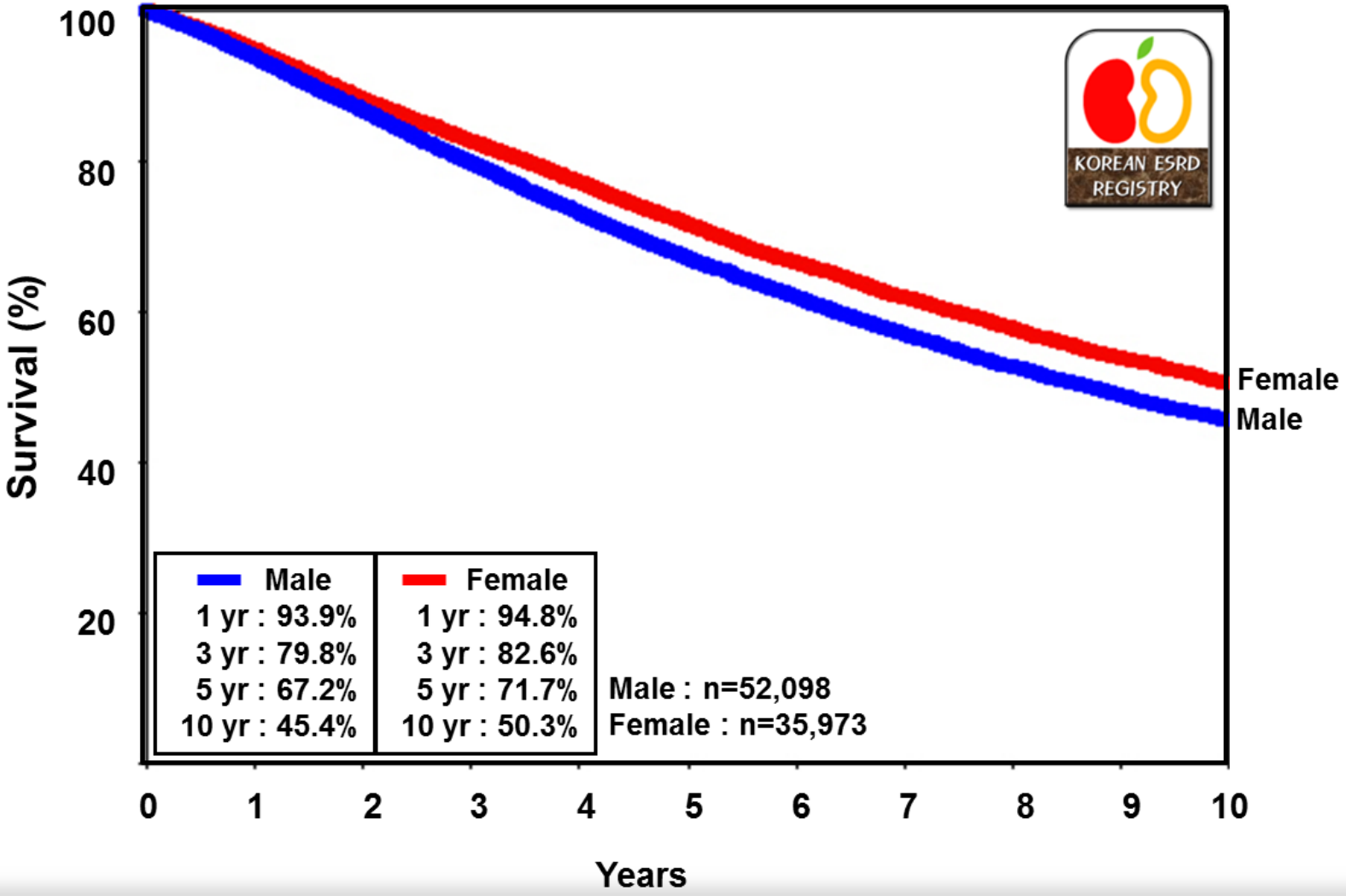
*Number of patients :1994-1996=981, 1998=911, 2001=761, 2003=894, 2005=1,256, 2007=1,531, 2009=1,727, 2011=1,828, 2013=1,604, 2014=1,534, 2015=891, 2016=1,849, 2017=1,771.

Causes of Death, HD & PD (%)



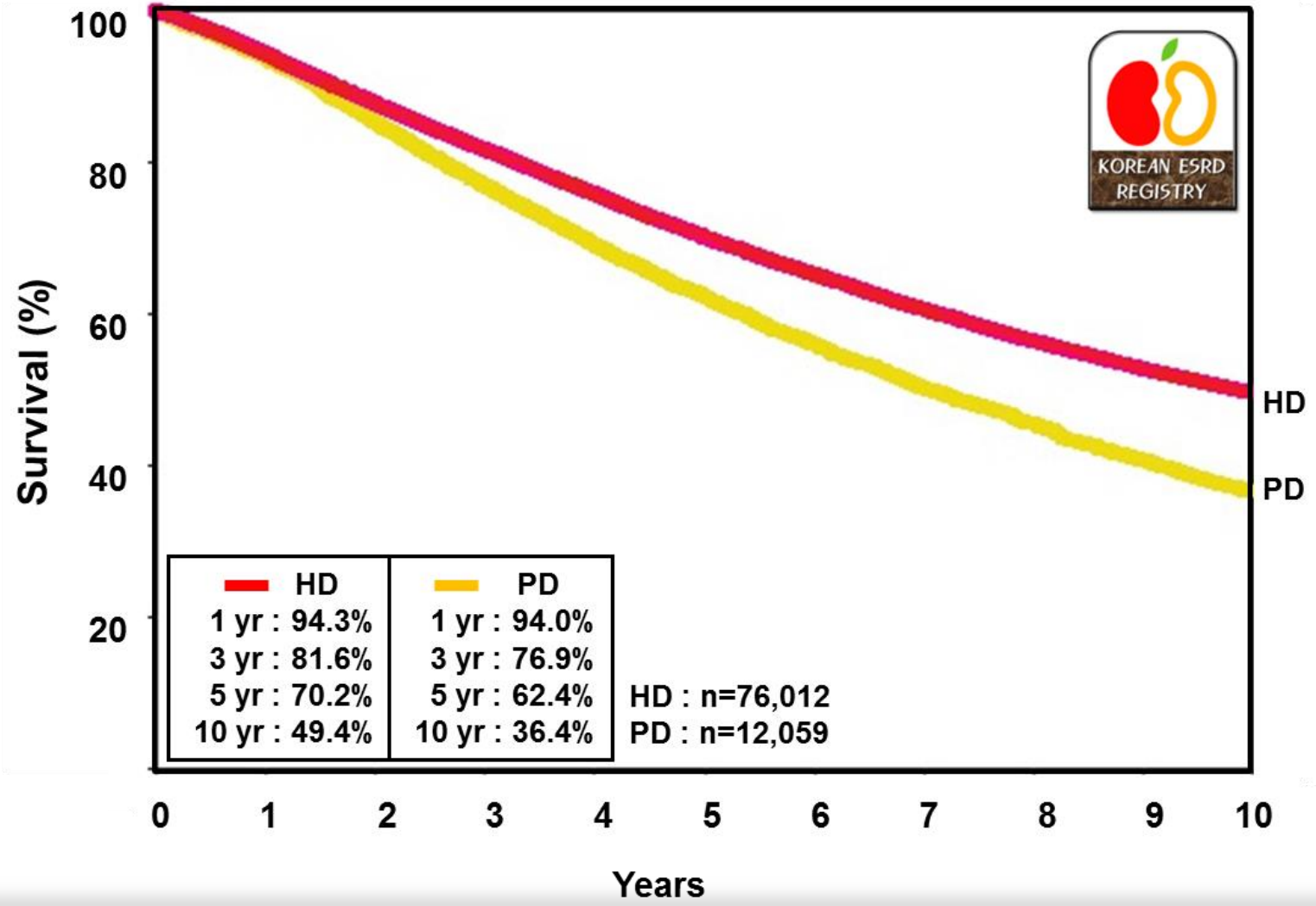
Overall Patient Survival

Registered dialysis patient since 2007.



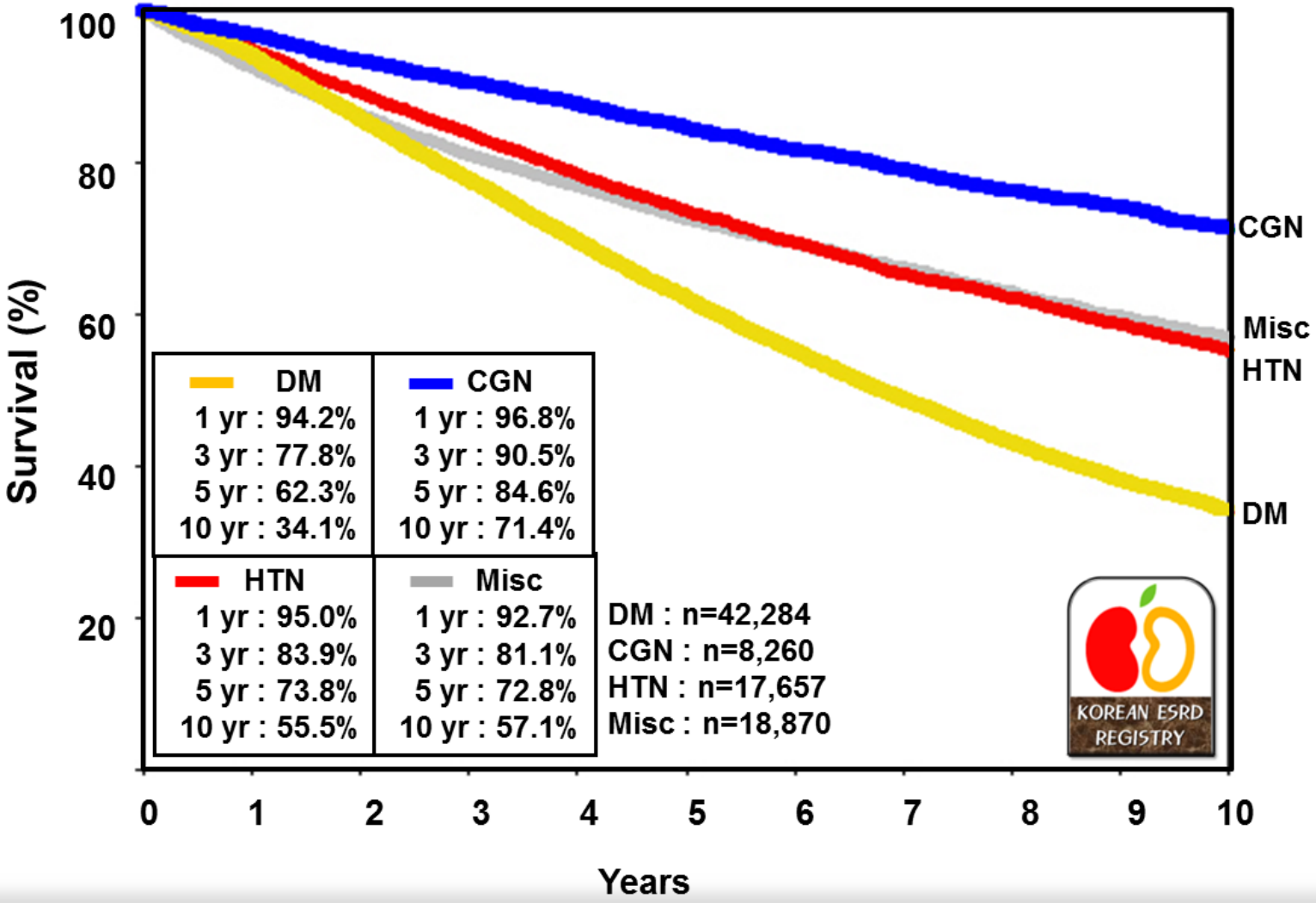
Patient Survival : HD vs PD

Registered dialysis patient since 2007.

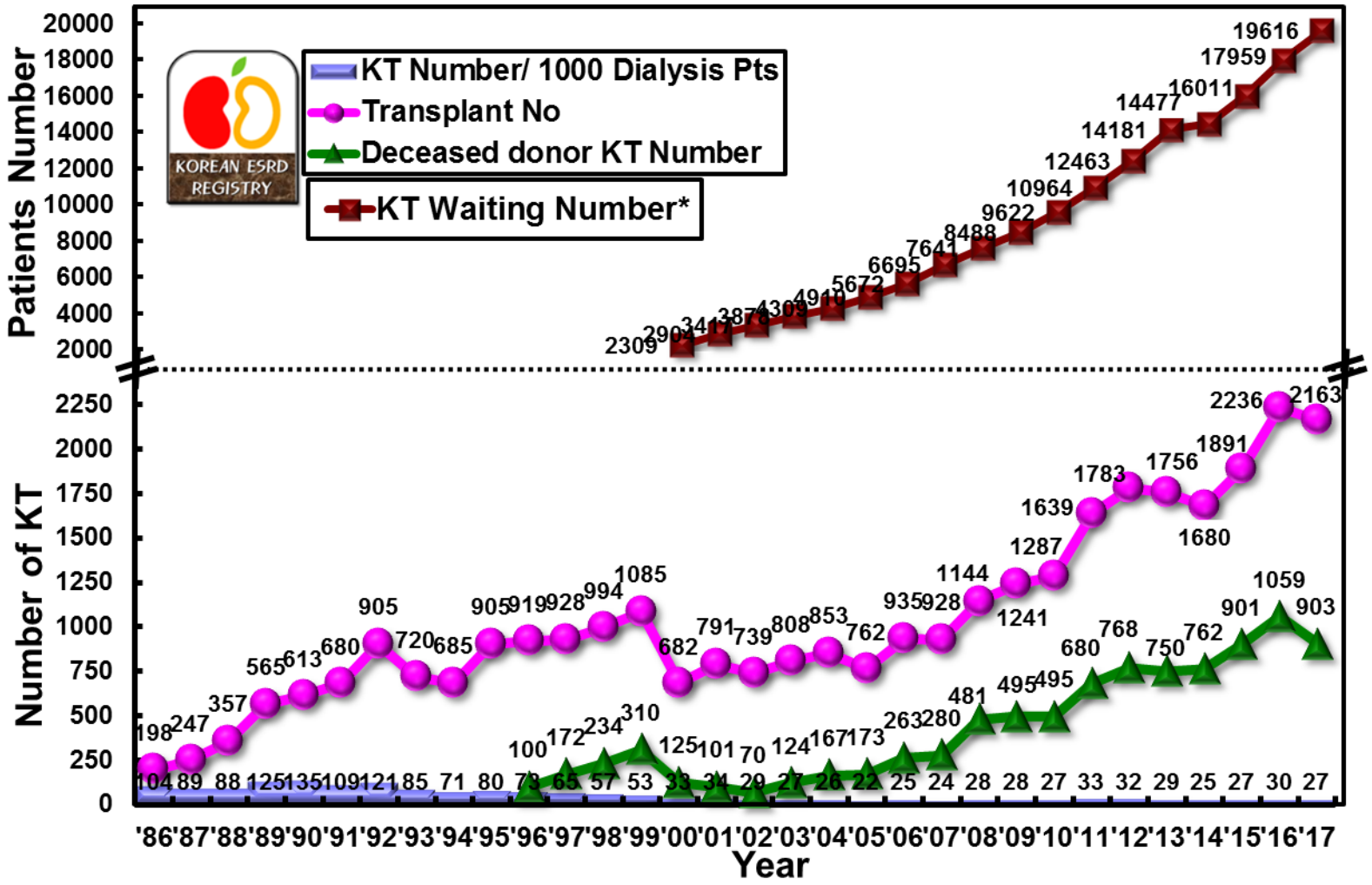


Patients Survival : Cause of ESRD

Registered dialysis patient since 2007.

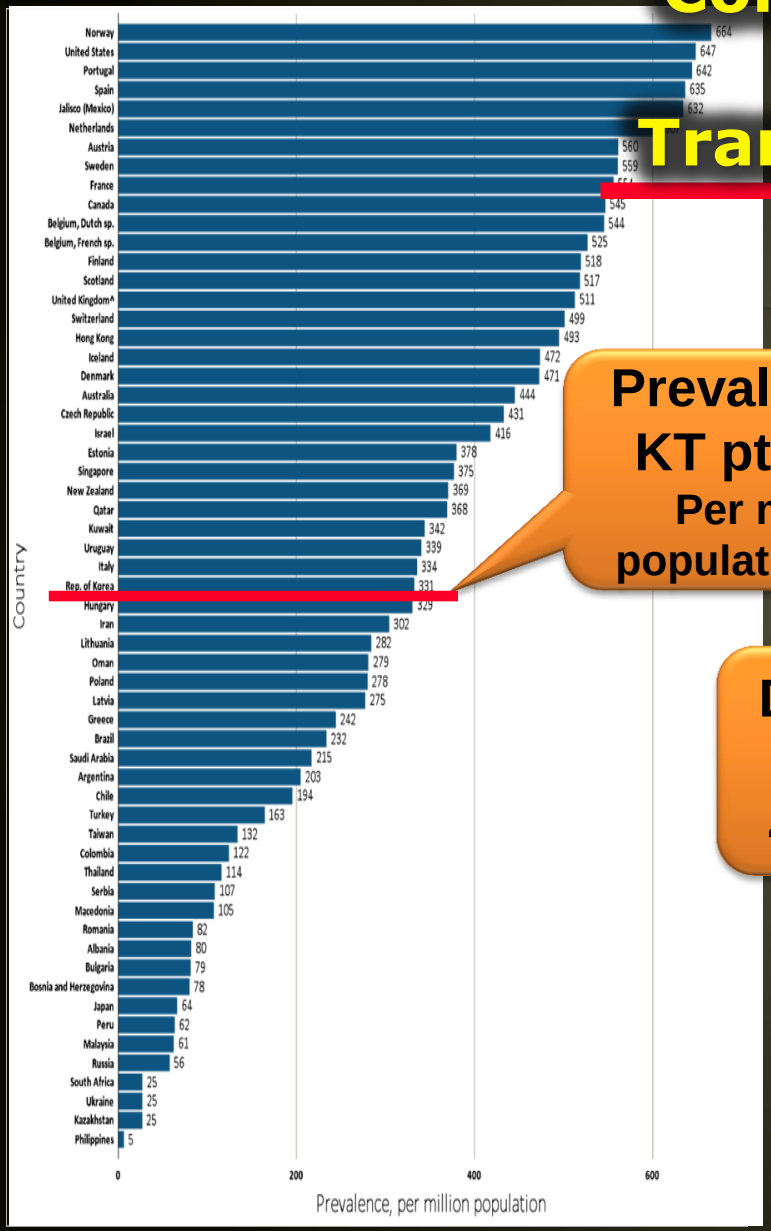


Kidney Transplantation

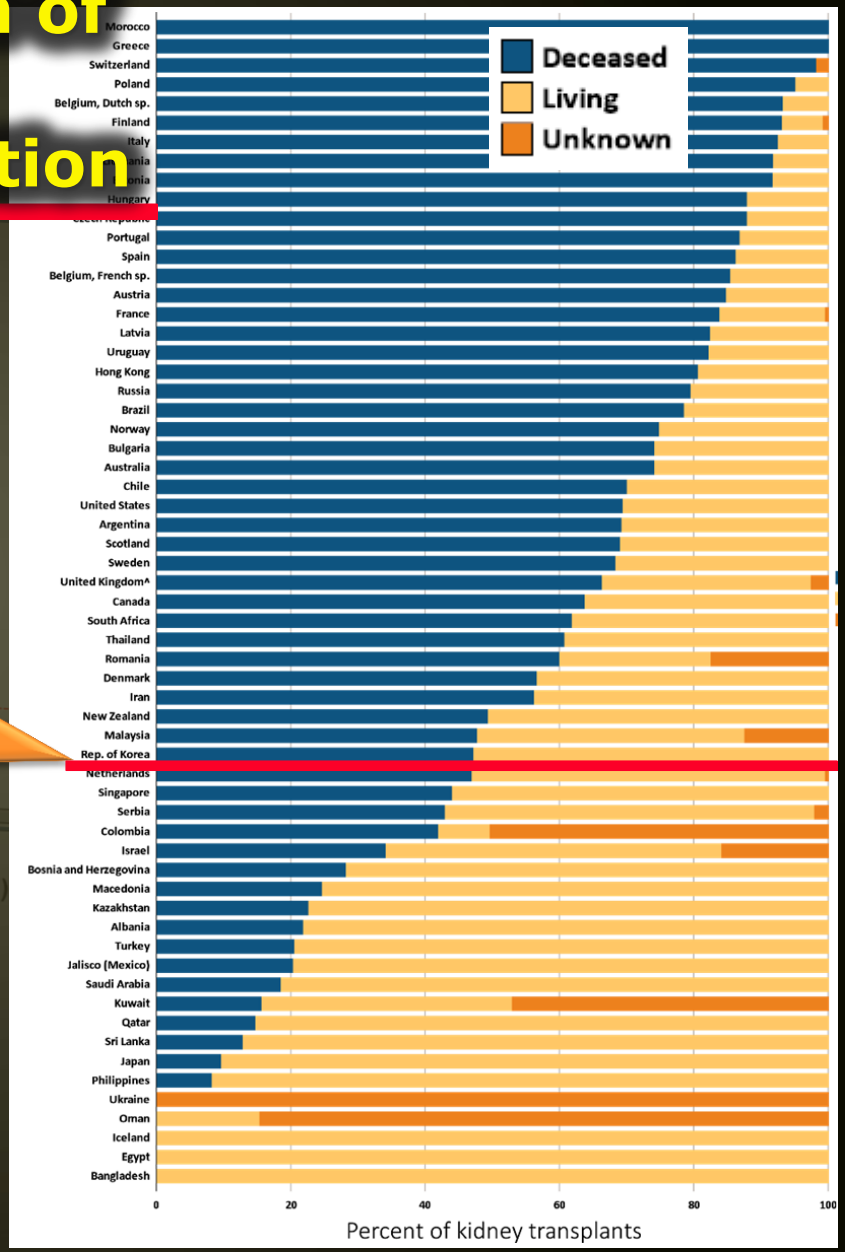


KOREAN ESRD REGISTRY

International Comparison of Kidney Transplantation



Prevalence of KT pts, 331
Per million population, 2015

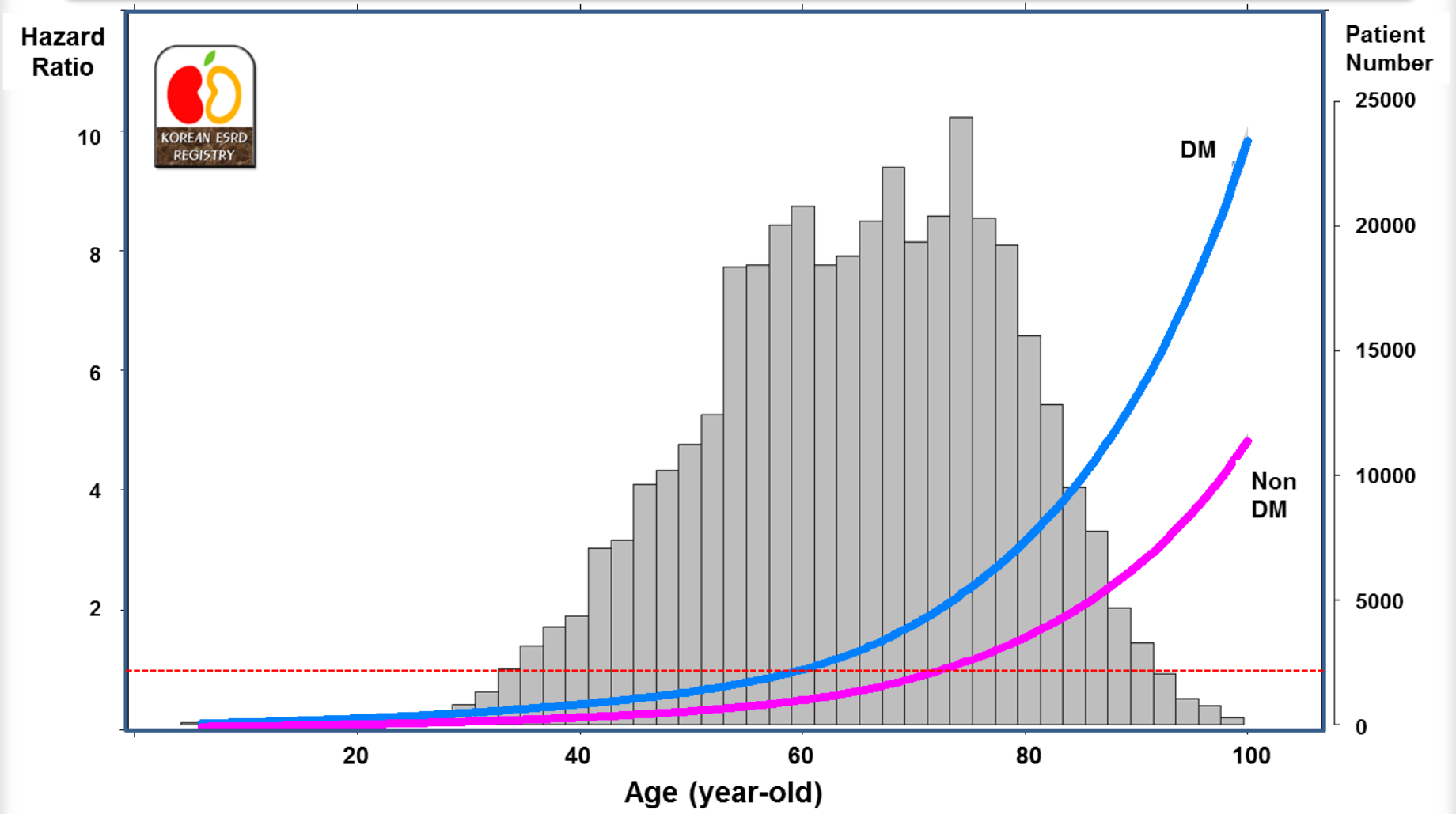


Deceased Donor 48%, 2015

USRDS
UNITED STATES RENAL DATA SYSTEM

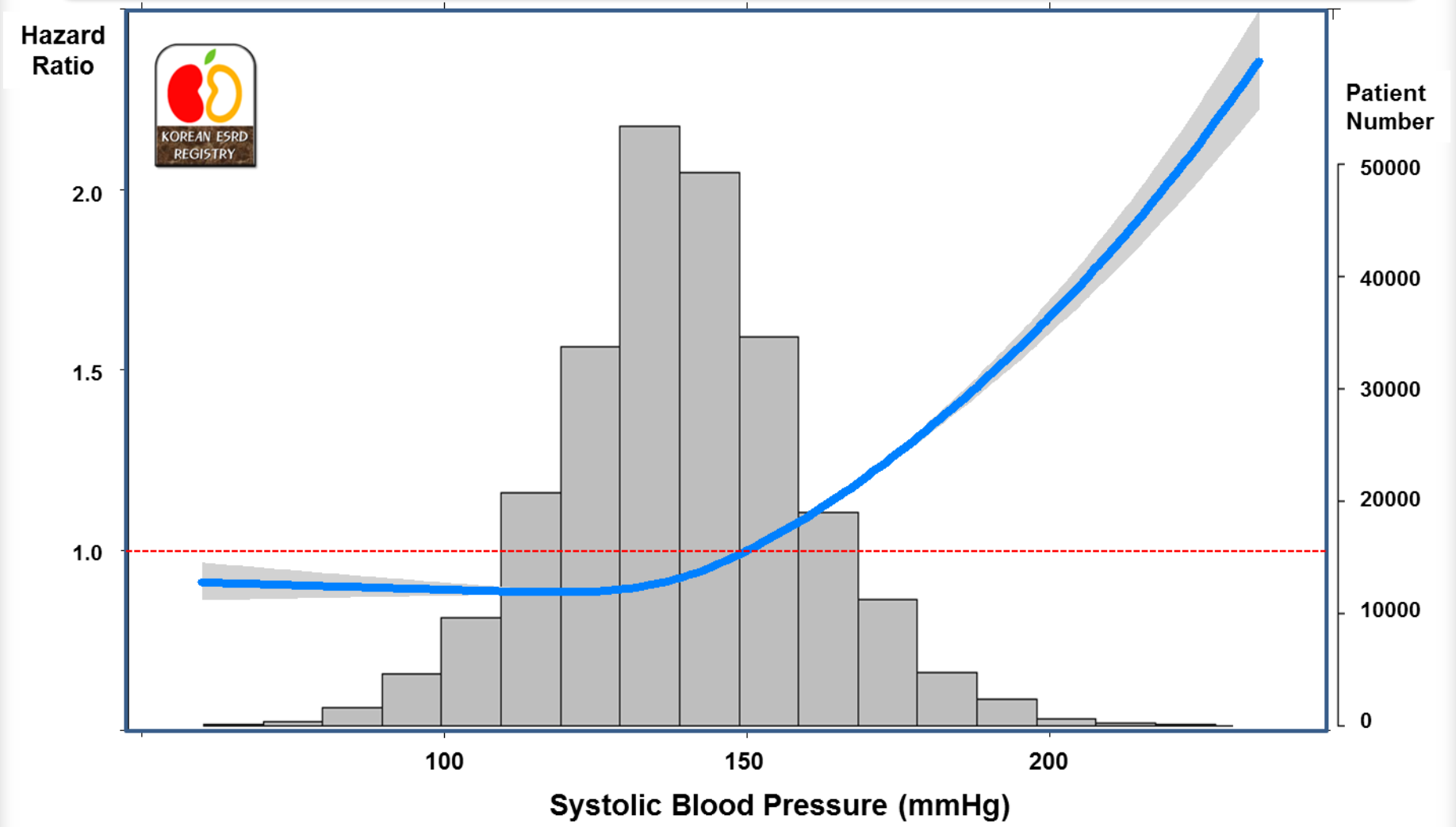
USRDS Report 2017

Mortality Hazard Ratio according to Age

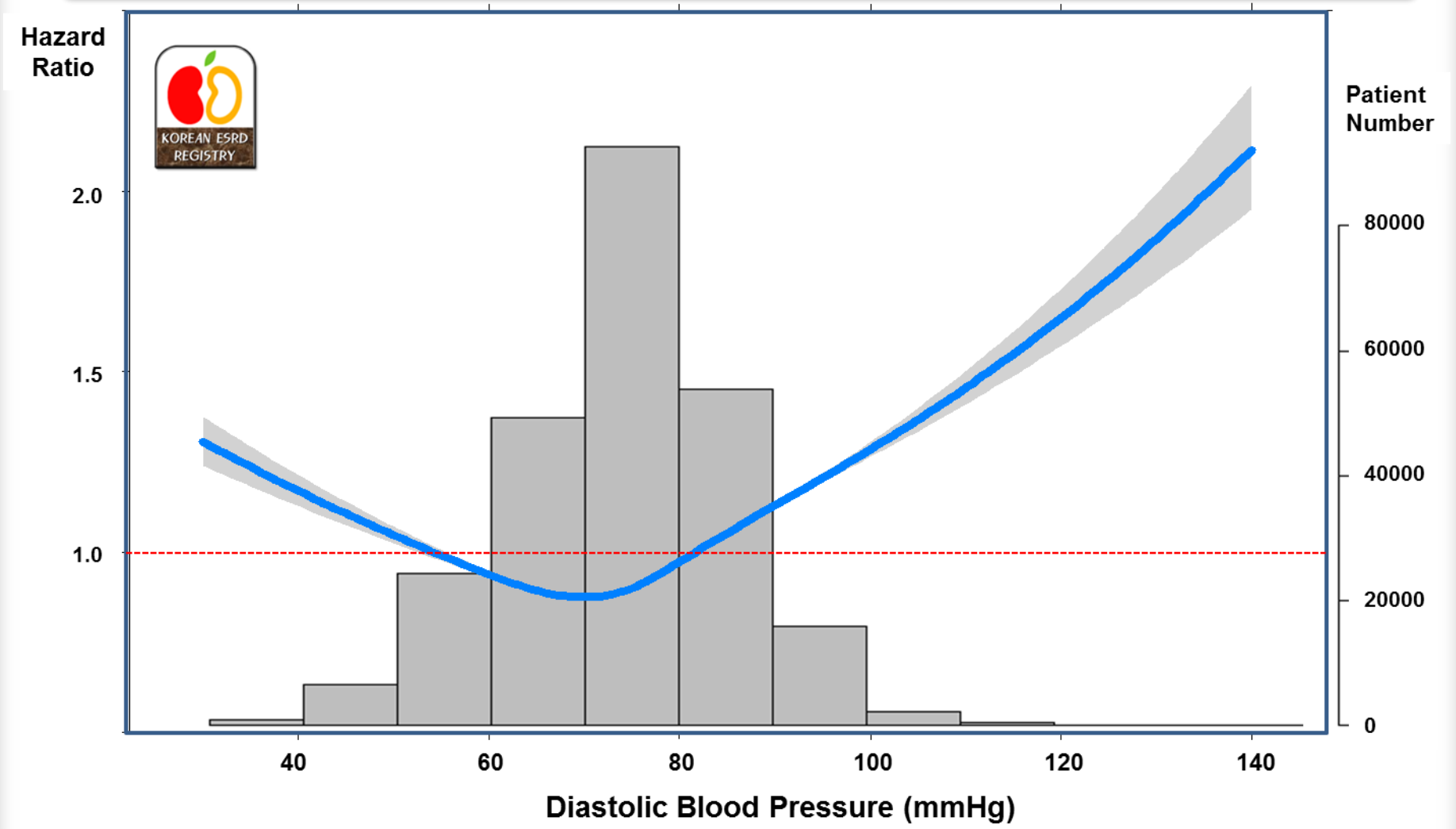


Cox proportional hazard model in R-project

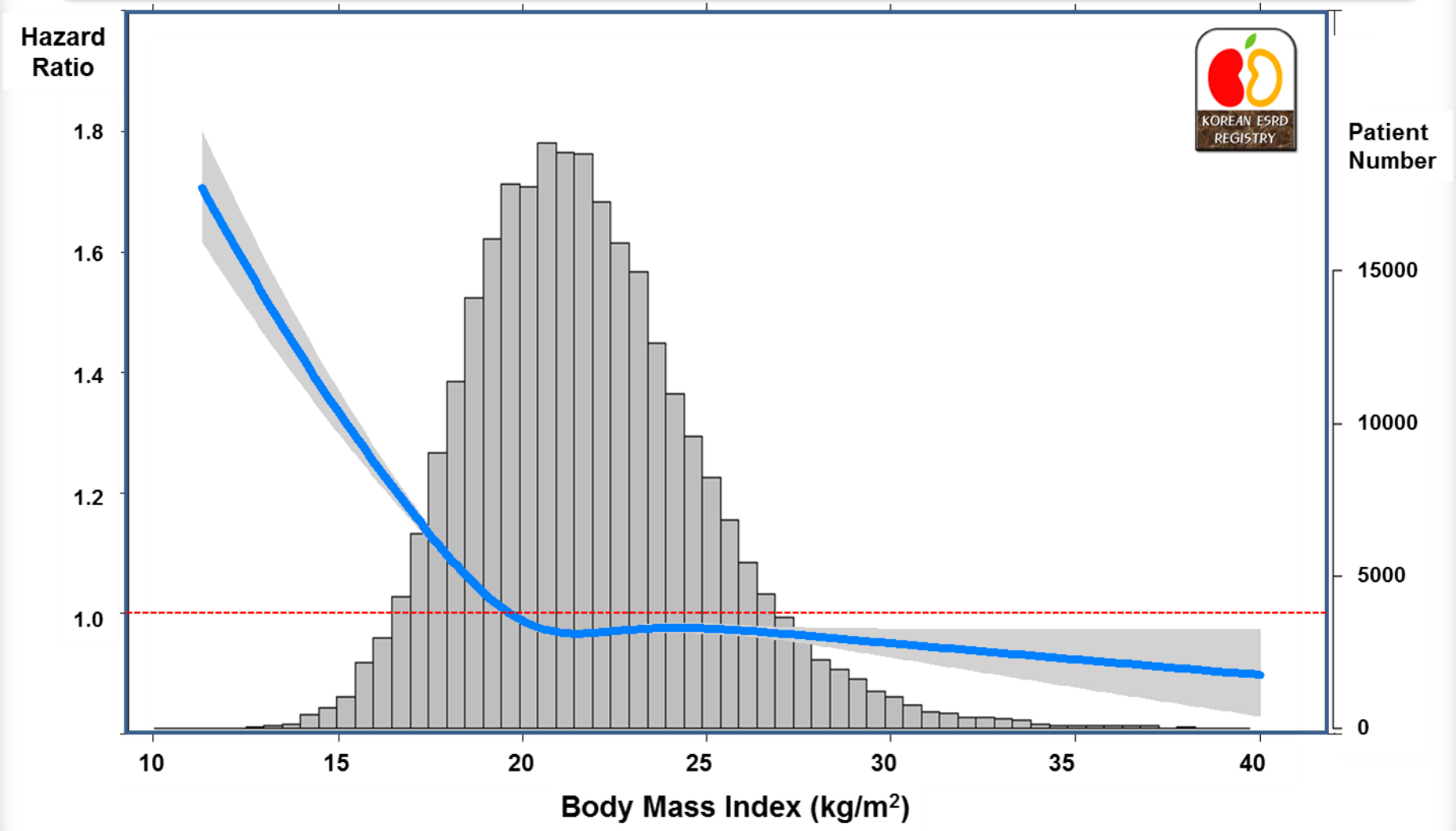
Mortality Hazard Ratio according to Systolic BP



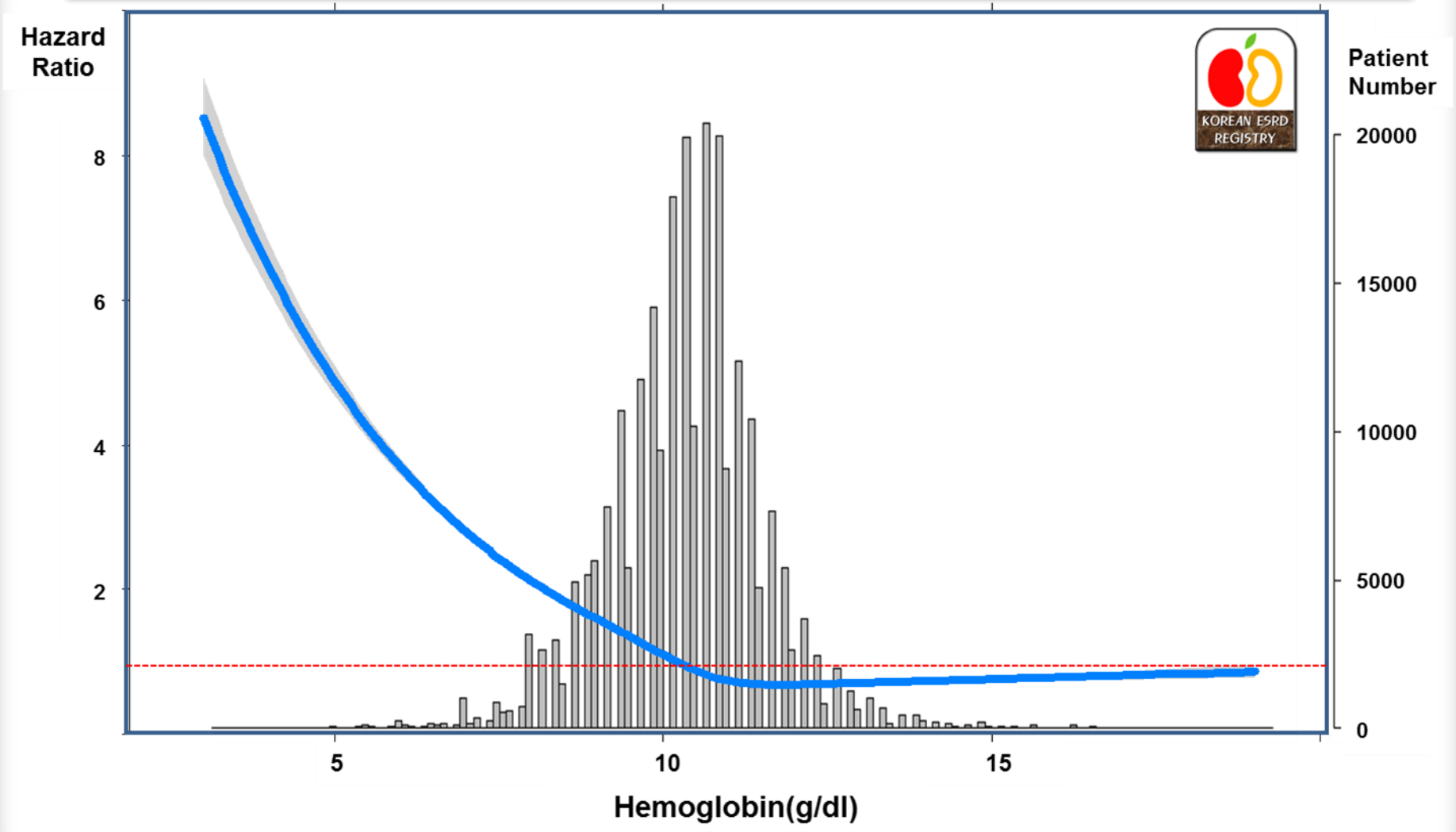
Mortality Hazard Ratio according to Diastolic BP



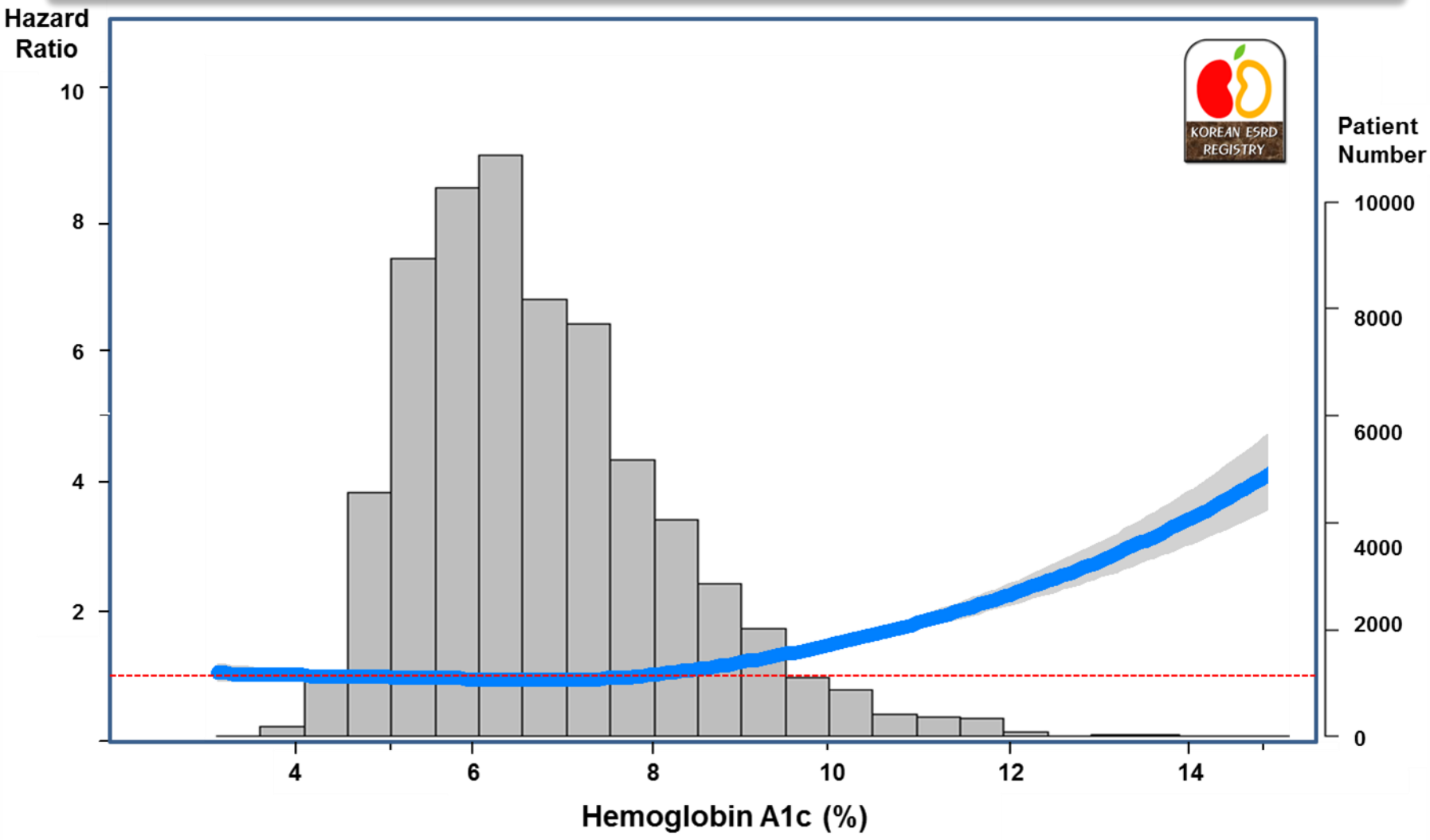
Mortality Hazard Ratio according to Body Mass Index



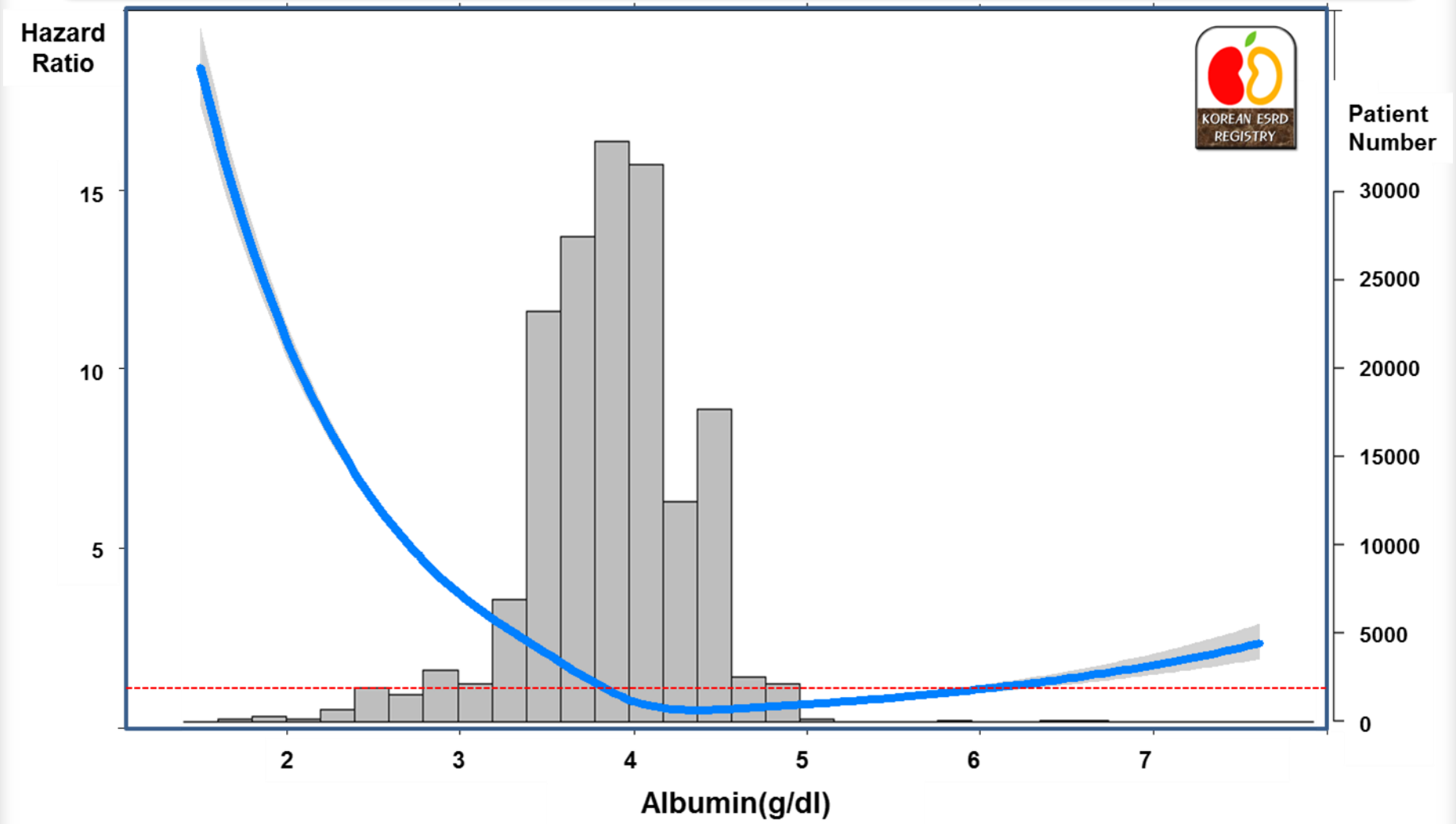
Mortality Hazard Ratio according to Hemoglobin



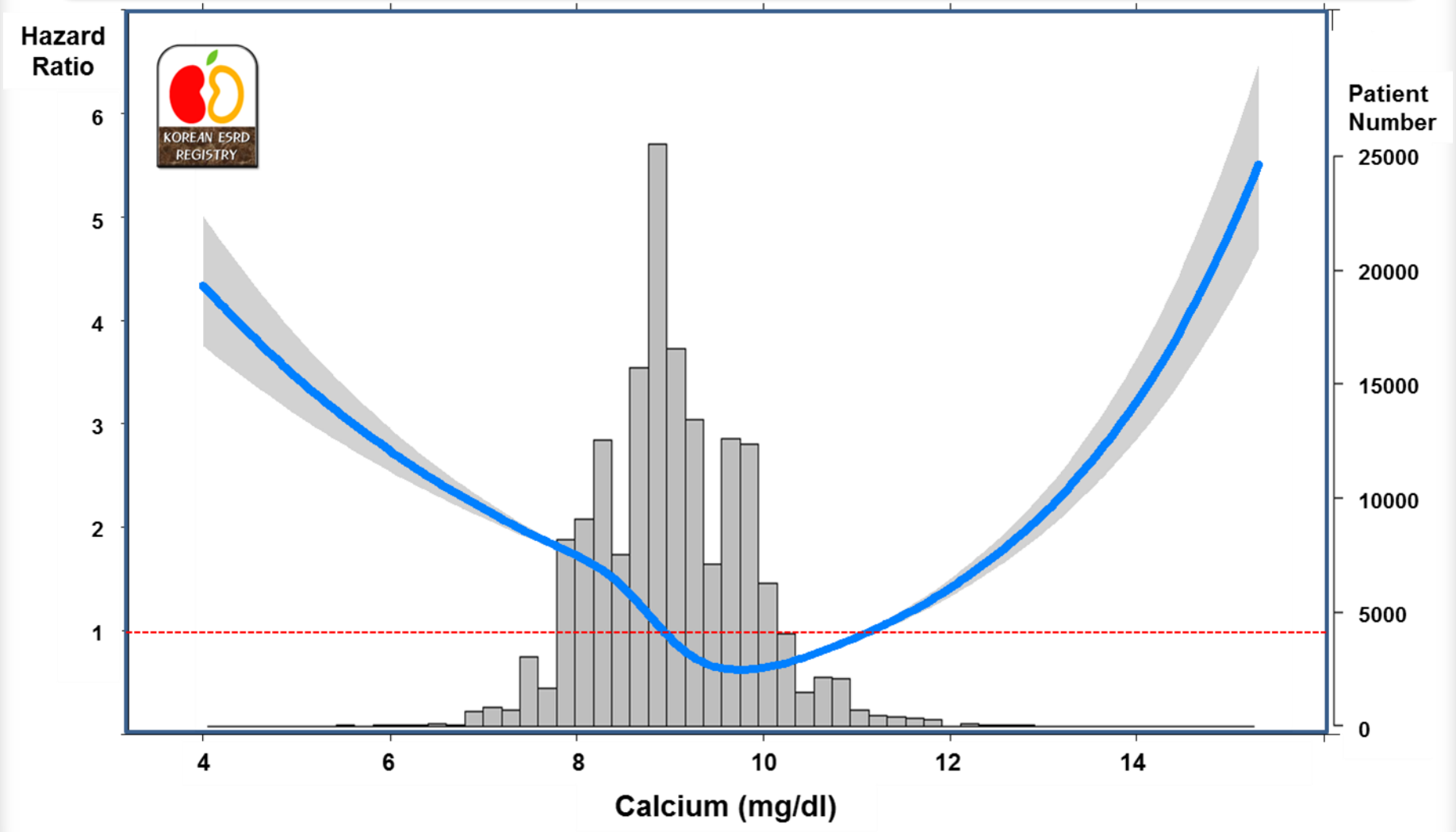
Mortality Hazard Ratio according to HbA1c



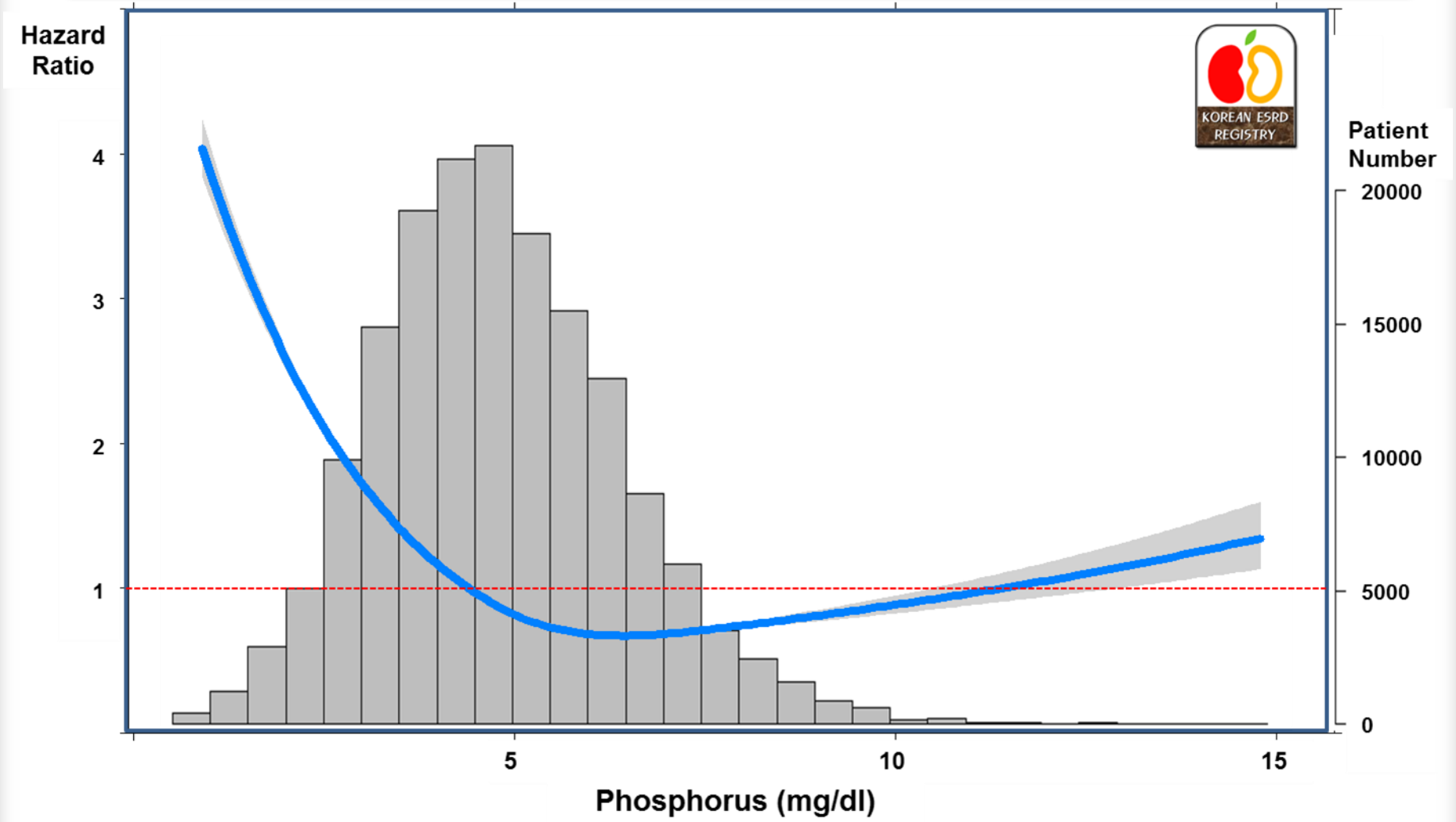
Mortality Hazard Ratio according to Albumin



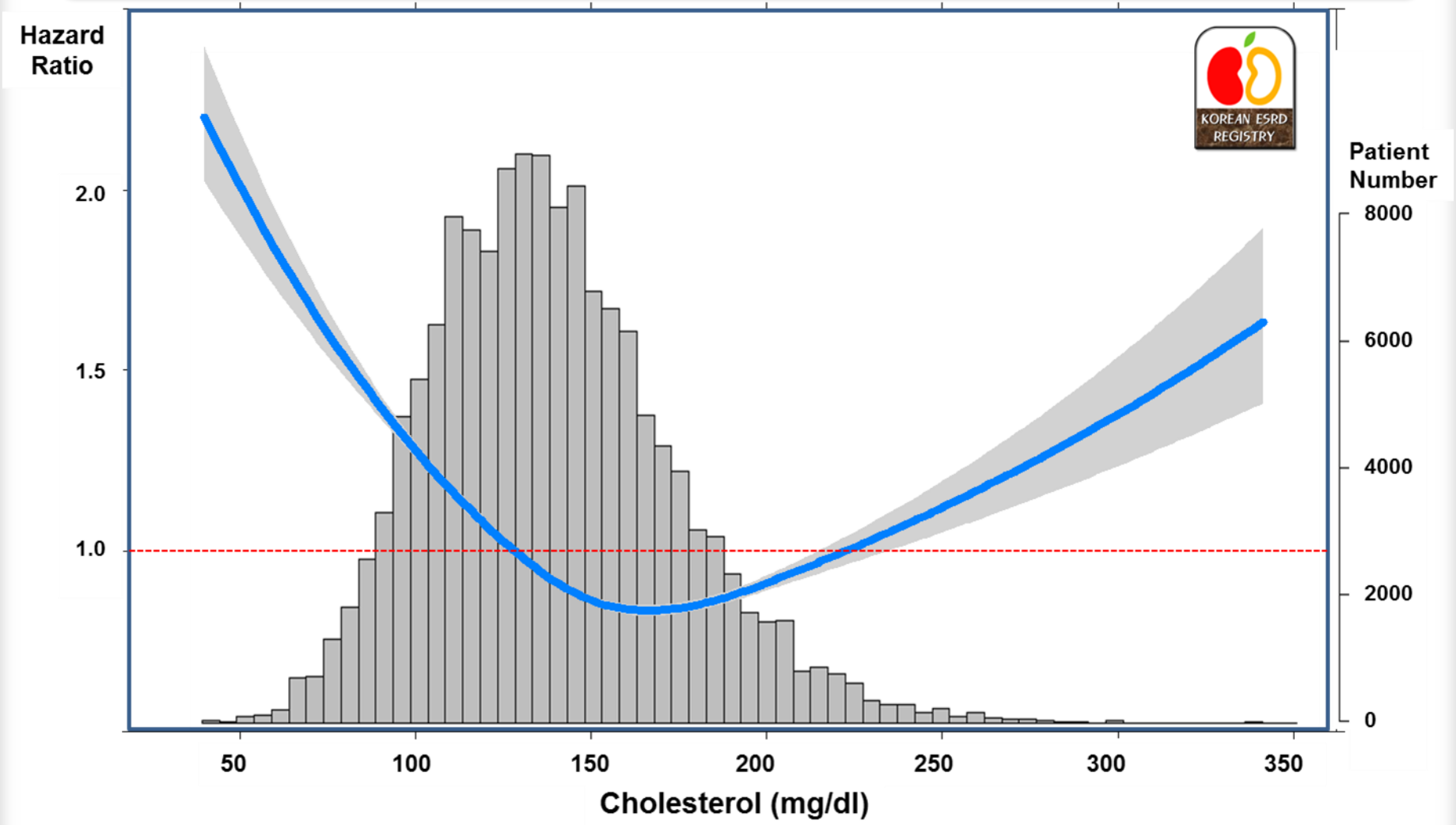
Mortality Hazard Ratio according to Calcium



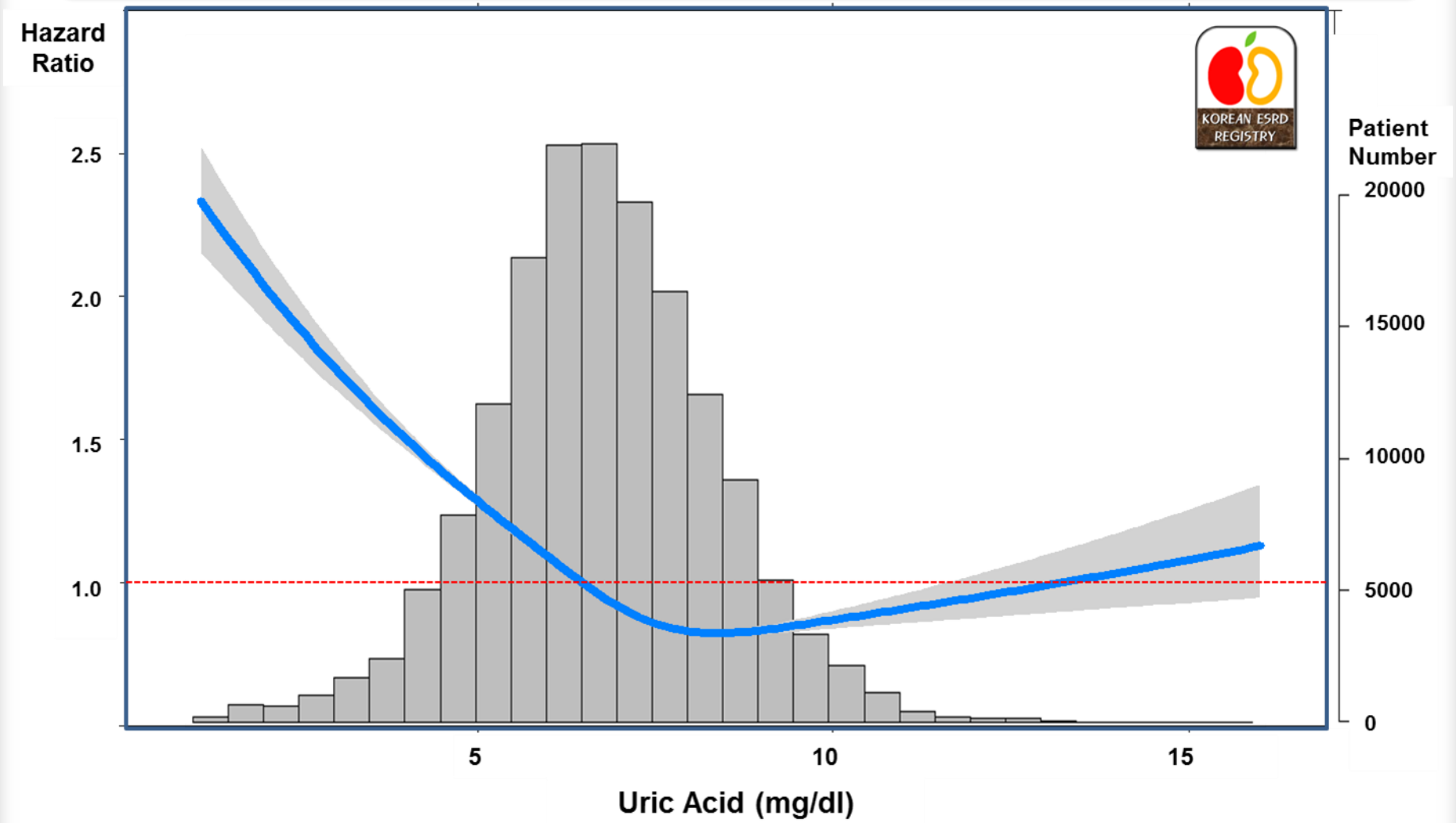
Mortality Hazard Ratio according to Phosphorus



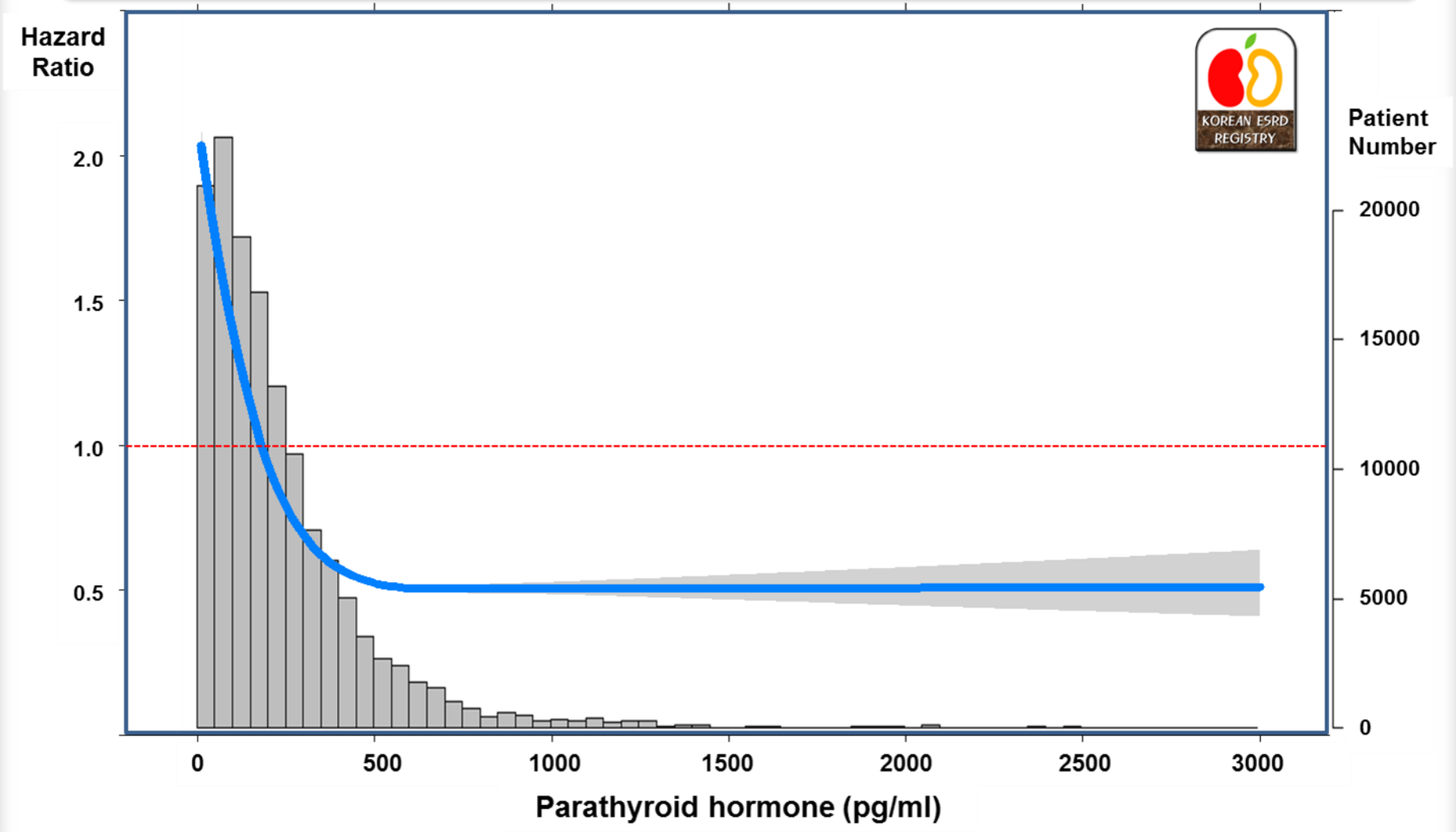
Mortality Hazard Ratio according to Cholesterol



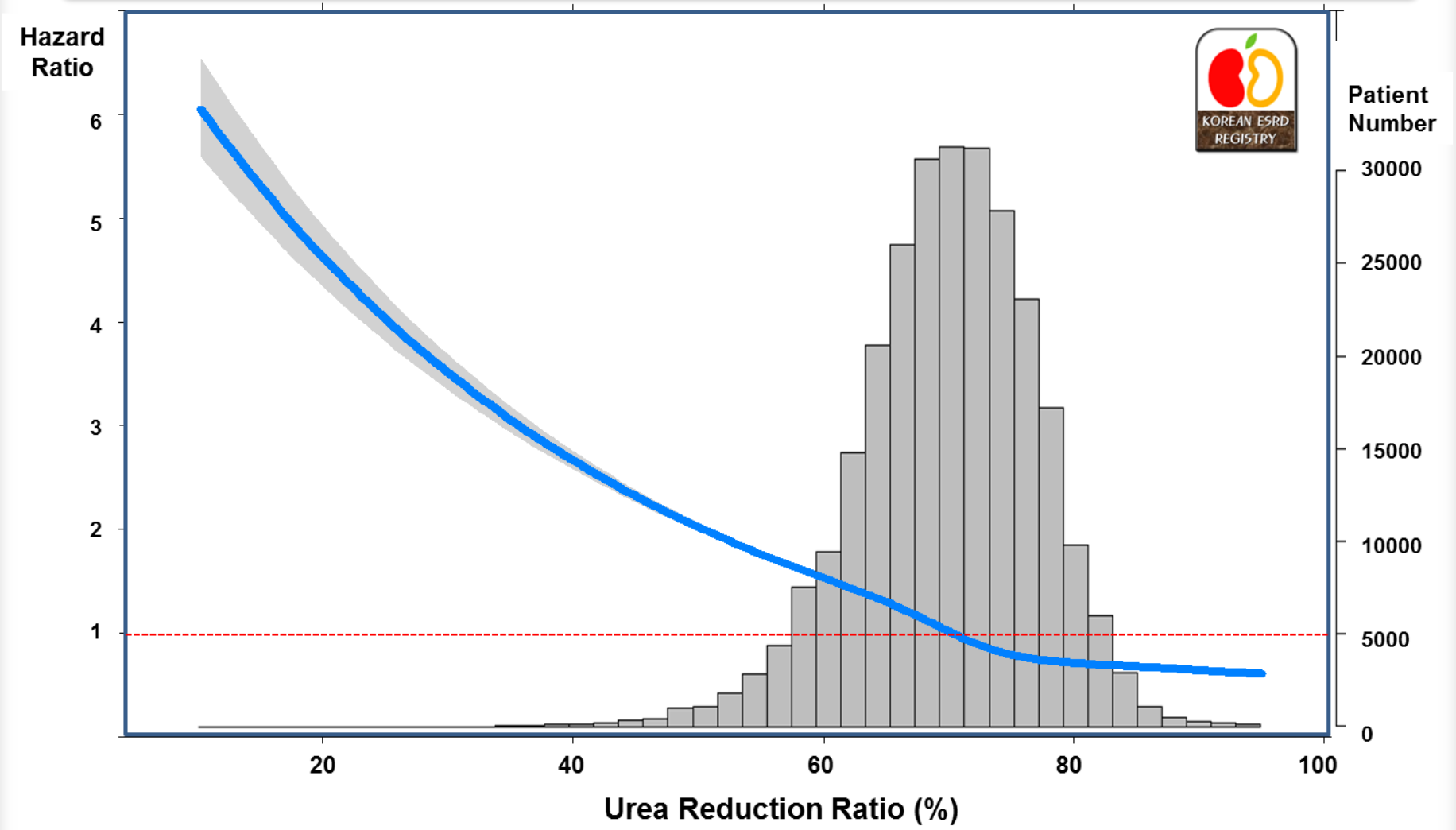
Mortality Hazard Ratio according to Uric Acid



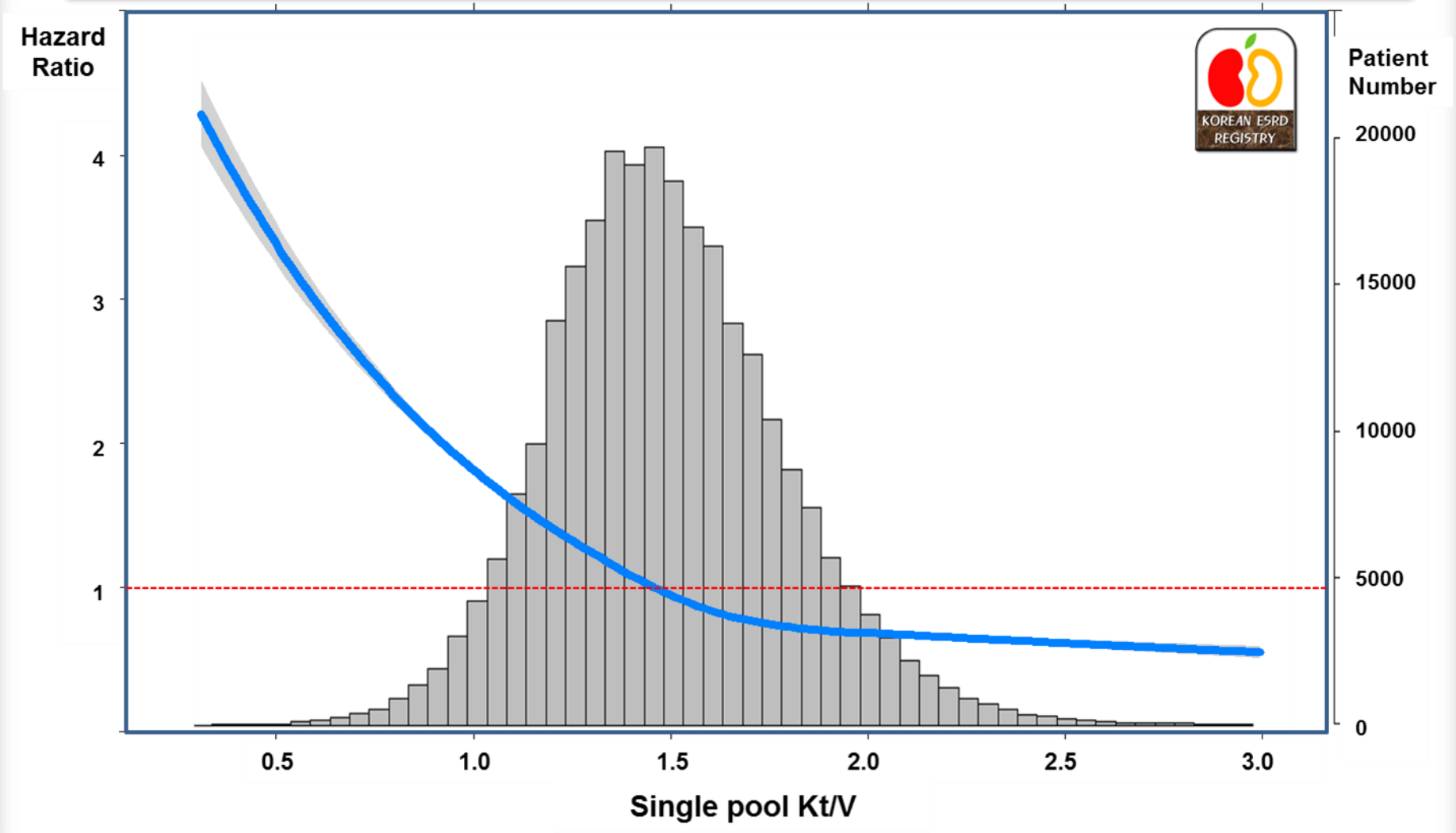
Mortality Hazard Ratio according to PTH



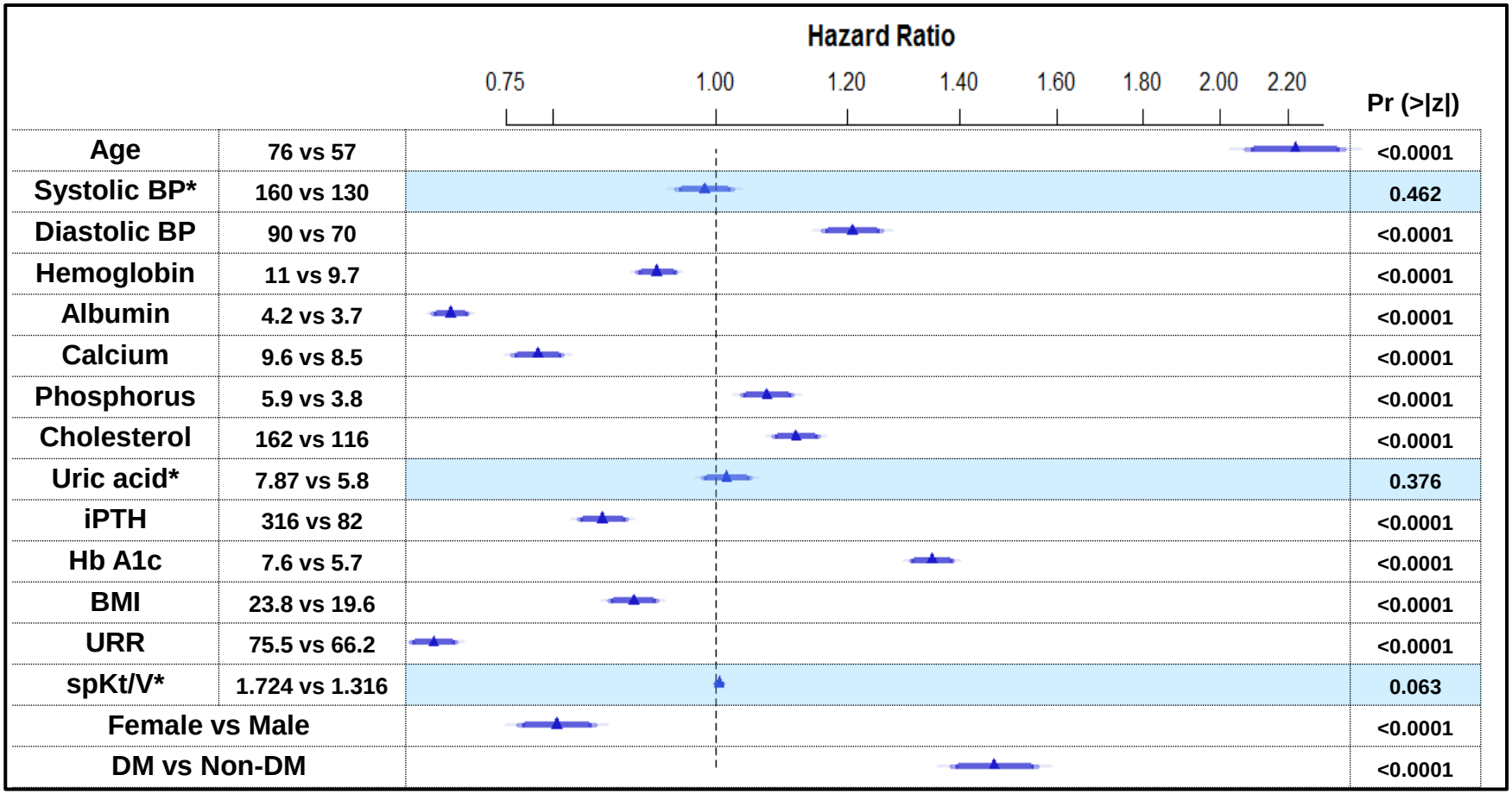
Mortality Hazard Ratio according to URR



Mortality Hazard Ratio according to spKt/V



Mortality Hazard Ratio of Hemodialysis Patients



* The factors are not statistically significant.

특 징 요 약

- 전체 투석환자 및 혈액투석기관수의 계속적 빠른 증가
- 요양병원 증가, 등록률 감소
- 복막투석의 감소 및 혈액투석 비율의 증가
- 원인 신질환에서 당뇨병성 신증의 비율 높게 유지
- 혈액투석 효율 점진적 향상, 혈압저하, 인 결합제 변화
- 사망위험율 분석: 체질량 지수, 혈색소, 알부민, 혈청 인, 콜레스테롤, 투석효율이 낮을 수록 사망위험율이 높음.

감사의 글

- 전국의 인공신장실 담당의료진
- 대한신장학회 사무국
- 투석용 의료물품 공급업체 자료

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