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Overview of Regular Dialysis Treatment in Japan (as of 31 December 2005)

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Abstract: A statistical survey conducted at the end of 2005 covered 3985 medical facilities across Japan, and 3940 facilities (98.87%) responded. The dialysis population in Japan at the end of 2005 was 257 765, which showed an increase of 9599 patients (3.87%) from the end of the previous year. The number of patients per million was 2017.6. The crude death rate for one year (from the end of 2004 to the end of 2005) was 9.5%. The mean age of the patients who began dialysis (in 2005) was 66.2 years, and the mean age of the entire dialysis population was 63.9 years. The primary diseases of the patients who began dialysis were diabetic renal disease (42.0%) and chronic glomerulonephritis (27.3%). The mean (±SD) serum ferritin concentration of all the dialysis patients was 191 (±329) ng/mL. The percentages of antihypertensive agents administered to the hemodialysis patients were as follows: calcium-channel blocker, 50.3%; angiotensin-converting enzyme inhibitor, 11.5%; and angiotensin II-receptor blocker, 33.9%. Of the peritoneal dialysis patients, 33.4% used automated peritoneal dialysis devices. Moreover, 7.3% of the peritoneal dialysis patients received dialysis treatment only in the daytime, and 15% received the treatment only at night. Icodextrin solution was used by 37.2% of the peritoneal dialysis patients. The average amount of dialysis solution used by the peritoneal dialysis patients was 7.43 (±2.52) L/day and the average amount of removal fluid was 0.81 (±0.60) L/day. A peritoneal equilibration test was conducted on 67% of the patients, and the mean dialysate to plasma creatinine ratio was 0.65 (±0.13). The annual incidence of peritonitis in the peritoneal dialysis patients was 19.7%. Of the 126 040 patients who responded to the inquiry of the therapeutic situation of peritoneal dialysis, 676 (0.7%) had a history of encapsulated peritoneal sclerosis and 66 (0.1%) were treated for encapsulated peritoneal sclerosis. The mean life expectancy of the dialysis population in 2003 was calculated according to sex and age. Results showed that the mean life expectancy of the dialysis population was approximately 40–60% of that of the general population of the same sex and age. **Key Words:** Ambulatory peritoneal dialysis, Encapsulated peritoneal sclerosis, Life expectancy, Peritoneal equilibrium test.

The Japanese Society for Dialysis Therapy has conducted a statistical survey of dialysis facilities across the country once a year since 1968. A nationwide statistical survey of 3985 dialysis facilities was conducted at the end of 2005, and 3940 facilities (98.87%) responded. The population undergoing dialysis at the end of 2005, counted on the basis of the survey results from dialysis facilities, was 257 765, an increase of 9599 patients (3.87%) from that in 2004. The crude death rate of dialysis patients in 2005 was 9.5%, which is nearly the same as those in the previous years (1).

In the first part of this report, we summarize basic data on chronic dialysis patients in Japan at the end of 2005. Then in the second part, we summarize data on the following newly surveyed items: the current status of renal anemia therapy including iron

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metabolism, the current status of circulatory dynamics during dialysis including pulse and use of antihypertensive drugs, and the current status of peritoneal dialysis.

Finally, in the third part, we describe the results of an attempt to calculate the life expectancy of dialysis patients. The survival rate of patients after introduction to dialysis in each year is not necessarily increasing. The reason underlying this observation is that there is an increase in the number of patients with a low life expectancy, such as diabetic patients and elderly patients. According to the results of the statistical survey of the Japanese Society for Dialysis Therapy at the end of 2001, when the life expectancy is compared after mathematical correction for the effect of increases in the numbers of diabetic patients and elderly patients, the life expectancy of patients after introduction to dialysis is improving every year (2). However, these findings are derived from the comparison of life expectancy between past dialysis patients and present dialysis patients.

There are very few studies on the comparison of life expectancy between dialysis patients and the general population (healthy subjects) in Japan. To the best of our knowledge, there is only one report by Held et al. in 1994 (3). According to their report, whereas the life expectancy of the general population of 45–64 years of age in Japan in 1989 was 27.4 years, that of dialysis patients of the same age range was 12.2 years (44.5% of the life expectancy of the general population). In that study a similar analysis was conducted for dialysis patients in the United States. Whereas the life expectancy of the general population of the same age range in the United States was 27.0 years, that of dialysis patients of the same age range in the United States was 4.1 years (only 15.3% of that of the general population). However, this report was published more than 10 years ago.

Life expectancy is an index indicating the death rate of a certain population regardless of its age structure. Therefore, even populations of different age structures, such as dialysis patients and the general population, can be precisely compared in terms of death rate. We calculated the life expectancies of dialysis patients in various age ranges in Japan, and compared them with those of the general population.

PATIENTS AND METHODS

This survey is conducted every year by sending questionnaires to individual dialysis facilities at the end of each year. The 3985 facilities surveyed at the end of 2005 consisted of member facilities of the Japanese Society for Dialysis Therapy and additional non-member facilities offering dialysis for patients with chronic kidney diseases. The number of facilities in the present survey increased by 53 (1.35%) from that in the preceding year's survey.

The questionnaires were mainly sent and collected by mail, although they were also faxed to some of the facilities. Moreover, a floppy disk, instead of the paper questionnaire, was sent to facilities that had earlier indicated a preference for it.

This survey was of two types. One was a facility survey in which items related to the details of dialysis facilities, such as the number of patients, staff members, and dialyzers at individual facilities (these were determined using the questionnaire referred to as "Sheet I"). The other was a patient survey in which the epidemiological background, treatment conditions, and outcome of treatment of individual dialysis patients were investigated (using the questionnaires referred to as "Sheets II, III and IV").

The response rate for the survey (collection rate of the questionnaire [Sheet I] at the end of 2005) was 98.87% (3940 facilities), which was almost identical to that for the 2004 survey (98.73%). The 45 facilities that did not respond stated their reasons as follows: it is the policy of the facility, they were too busy, they were non-member facilities, and they abided by the law for the protection of personal information. The number of facilities that did not respond to the patient survey questionnaires (Sheets II, III and IV) was 205, which was slightly increased from last year's 138 facilities. However, on the whole, the collection rate of the survey is considered to be sufficient to ensure the quality of the data collected as statistical material representing the current status of chronic dialysis patients.

I. Tabulation of basic data on chronic dialysis patients at the end of 2005

Data on dialysis patient population dynamics for the year 2005 were tabulated mainly on the basis of the results of the facility survey. The data included the number of new patients introduced to dialysis, the number of patients who died, the total number of dialysis patients at the end of 2005, and the gross death rate for the year 2005. The cumulative survival rate after introduction to dialysis was actuarially calculated on the basis of the results of the patient survey (4).

II. Tabulation of data on new items surveyed

Items investigated for the first time in this survey were iron-metabolism-related items, including serum

iron concentration, total iron binding capacity, and serum ferritin concentration; items related to circulation dynamics during dialysis, including pulses at the start of dialysis, at the end of dialysis, and at the time when blood pressure is lowest (hereinafter, at the lowest blood pressure) during dialysis, as well as the usage of antihypertensive drugs; and items related to peritoneal dialysis, including treatment status of peritoneal dialysis, treatment mode of peritoneal dialysis, dialysate solution used, total amount of dialysate solution used per day, mean amount of water removed per day, the dialysate/plasma creatinine ratio (D/P ratio) determined by the peritoneal equilibrium test (PET), and history of encapsulated peritoneal sclerosis (EPS).

Because they were related to the above new items surveyed, the following items were resurveyed: weekly dose of recombinant human erythropoietin preparation (EPO dose), blood hemoglobin concentration prior to dialysis, serum C-reactive protein (CRP) concentration, blood pressure indices at the start of dialysis, at the end of dialysis, and at the lowest blood pressure during dialysis, treatment for dialysis hypotension, and the number of occurrences of peritonitis in peritoneal dialysis patients per year.

The EPO dose was surveyed by asking a question to which there were seven alternative answers: "not used", "1–1499 units/week", "1500–2999 units/week", "3000–4499 units/week", "4500–5999 units/week", "6000–8999 units/week", and "9000 units or more/week". The usage of antihypertensive agents was surveyed by asking about the usage or non-usage of each of the following antihypertensive drugs: a calcium-channel blocker (CCB), an angiotensin-converting enzyme inhibitor (ACEI), an angiotensin II receptor blocker (ARB), and other antihypertensive drugs. The general name and dose of each agent were not surveyed.

The status of dialysis hypotension treatment was surveyed by asking about the usage/non-usage of the following items: infusion of physiological saline solution, infusion of concentrated NaCl solution, infusion of concentrated glycerin solution, use of oral antihypotensive drugs, use of transvenous antihypotensive drugs, and low-temperature dialysis. The status of peritoneal dialysis was surveyed by asking a question to which there were four alternative answers, from which only one was selected: "undergoing peritoneal dialysis alone", "in combination with hemodialysis", "underwent peritoneal dialysis in the past", "not yet undergoing peritoneal dialysis".

The mode of peritoneal dialysis was surveyed by asking a question to which there were six alternative answers, from which only one was selected: (i) "24-h continuous ambulatory peritoneal dialysis, with manual bag exchange" (hereinafter, "CAPD"); (ii) "peritoneal dialysis only during daytime using an automated peritoneal dialysis device (APDD)" (hereinafter, "daytime-only using an APDD"); (iii) "peritoneal dialysis only during daytime without using an APDD" (hereinafter, "daytime-only without using an APDD"); (iv) "peritoneal dialysis only during night-time using an APDD" (hereinafter, "night-time-only using an APDD"); (v) "peritoneal dialysis only during night-time without using an APDD" (hereinafter, "night-time-only without using an APDD"); and (vi) "24- h continuous peritoneal dialysis, with manual + APDD" (= continuous cycling peritoneal dialysis, "CCPD").

The dialysate solution was surveyed by asking a question to which there were nine alternative answers, from which only one was selected, with respect to the glucose concentration in the dialysate solution: "1.5% solution alone", "combination of 1.5% solution and 2.5% solution", "2.5% solution alone", "1.5% solution + icodextrin solution", "1.5% solution + 2.5% solution + icodextrin solution", "2.5% solution + icodextrin solution", "icodextrin solution alone", "4.25% solution is used, regardless of the above-mentioned seven alternative solutions", and "use of dialysate solutions other than the above-mentioned alternative solutions, without using 4.25% solution". The occurrence of EPS was surveyed by asking a question to which there were four alternative answers, from which only one was selected: "without previous history", "with previous history", "currently under treatment", "currently suspected of, or was suspected in the past of having the disease".

III. Calculation of life expectancy of the dialysis patient population

Life expectancy is the "expected time remaining to live" on average for people at each age, assuming that the death rate in a standard year would not change in the future. Among the life expectancies across ages, that at birth is specifically called the life span. The life expectancy of a given population is calculated using a life table describing the population's death rate, the number of surviving individuals, the number of deceased individuals, and the static population. Generally, a life table is first produced for individuals at birth, then subsequently for individuals in older age ranges; however, since life expectancy is a value calculated from a static population of x years or older divided by the number of surviving individuals at the age of x, the life expectancy at any specified year or older can be calculated correctly.

TABLE 1. *Current status of chronic dialysis therapy in Japan (as of 31 December 2005)*

Number of facilities	3 940	Increase of 58 (1.5%)
Equipment		
Number of patient station	100 552	Increase of 3186 (3.3%)
Capacity		
Simultaneous dialysis (people)	99 883	Increase of 3343 (3.5%)
Maximum accommodation capacity (people)	339 415	Increase of 10 617 (3.2%)
Chronic dialysis patients†	257 765	Increase of 9599
Daytime dialysis	206 340 (80.0%)	
Night-time dialysis	41 871 (16.2%)	
Home dialysis	127 (0.0%)	
CAPD	9 243 (3.6%)	
IPD	188 (0.1%)	
Number of patients newly introduced to dialysis	36 036	Increase of 979 (2.8%)
Number of deceased patients	23 983	Increase of 1268 (5.6%)

Years on dialysis‡	Male	Female	Unknown	Total
0–4	76 996	44 726	81	121 803 (50.6%)
5–9	35 824	23 465	6	59 295 (24.7%)
10–14	16 483	12 065	2	28 550 (11.9%)
15–19	8 035	6 569	1	14 605 (6.1%)
20–24	4 799	4 039	0	8 838 (3.7%)
25–29	3 064	2 367	0	5 431 (2.3%)
≥30	1 236	755	0	1 991 (0.8%)
Total	146 437	93 986	90	240 513 (100.0%)
Patients per million	2 017.6	Increase of 74.1		
Longest dialysis history	38 years and 0 months			

†The total number of chronic dialysis patients is the total of the column for the number of patients in Sheet I, and does not necessarily agree with the total number of patients counted according to the method of treatment. ‡The number of dialysis patients was calculated from questionnaire Sheets II to IV. CAPD, continuous ambulatory peritoneal dialysis; IPD, intermittent peritoneal dialysis.

The dialysis patient population is small in individuals younger than 30 years old. Accordingly, the life expectancies calculated for individuals younger than 30 years contain large errors. Similarly, those for individuals 90 years or older contain large errors, again owing to the small population. Therefore, life expectancies for the dialysis patient population in this survey were calculated for the age range between 29 and 90 years, for which a sufficient number of patients were available to ensure a reliable calculation of the death rate. As of April 2006, when this life expectancy calculation was first performed, the latest available life expectancies for the general population were those for 2003 (http://www.mhlw.go.jp/toukei/saikin/hw/life/life03/index.html, April 2006). Accordingly, the life expectancies of the dialysis patient population in this survey were calculated for the year 2003.

To calculate life expectancy, we need the number of dialysis patients by age group in the "middle" of a specified year. However, this statistical survey is performed at the end of each year. Therefore, we calculated the number of those in the middle of 2003 by averaging the number of dialysis patients at the end of 2002 (which is close to the beginning of 2003) and that at the end of 2003 (5,6).

Life expectancy was calculated for both males and females. However, because populations became too small, differences in primary disease and duration of dialysis were not taken into account. Accordingly, the life expectancies calculated in this survey contained the effect of an increase in the number of diabetic patients in the dialysis patient population.

RESULTS AND DISCUSSION

I. Tabulation of basic data on chronic dialysis patients at the end of 2005

1. Number of patients

Table 1 shows a summary of the dynamics of the dialysis patient population in Japan at the end of 2005 obtained from the present survey. Only the totals of the durations of dialysis and the duration of the longest dialysis shown in this table were obtained from the patient survey, whereas the totals of other parameters were obtained from the facility survey. The total number of dialysis patients in Japan at the end of 2005 was 257 765, as determined from the facility survey. The number of dialysis patients in Japan at the end of 2004 was 248 166, showing that an increase of 3.87% (9599 patients) was recorded from the end of 2004 to the end of 2005. During the past 10 years, the increase in the number of dialysis patients in each year was almost constant at about 10 000 patients. Consequently, the rate of increase in

TABLE 2. *Number of chronic dialysis patients per prefecture*

Names of administrative divisions	Daytime	Night-time	Home hemodialysis	CAPD	IPD	Total†
Hokkaido	10 729	1 429	3	442	21	12 622
Aomori prefecture	2 419	219	0	143	1	2 780
Iwate prefecture	1 989	402	0	145	3	2 539
Miyagi prefecture	3 211	728	0	114	2	4 055
Akita prefecture	1 568	155	0	92	0	1 813
Yamagata prefecture	1 624	263	0	143	3	2 033
Fukushima prefecture	3 283	497	0	231	4	4 015
Ibaraki prefecture	4 878	803	1	172	3	5 858
Tochigi prefecture	3 943	775	1	60	0	4 782
Gunma prefecture	3 589	778	0	103	7	4 477
Saitama prefecture	10 305	1 861	6	398	2	12 574
Chiba prefecture	8 667	1 934	2	230	11	10 842
Tokyo	19 533	4 768	3	807	31	25 142
Kanagawa prefecture	11 854	2 909	9	544	4	15 319
Niigata prefecture	3 297	1 082	1	123	5	4 508
Toyama prefecture	1 669	303	0	89	0	2 061
Ishikawa prefecture	1 905	322	0	86	0	2 313
Fukui prefecture	1 257	193	0	68	0	1 518
Yamanashi prefecture	1 671	181	0	40	0	1 892
Nagano prefecture	3 282	595	1	160	3	4 043
Gifu prefecture	3 012	557	0	164	5	3 739
Shizuoka prefecture	6 614	1 314	3	329	1	8 261
Aichi prefecture	9 546	3 165	35	466	7	13 219
Mie prefecture	2 736	626	1	109	3	3 473
Shiga prefecture	1 804	483	3	56	1	2 347
Kyoto prefecture	3 889	1 168	0	196	3	5 256
Osaka prefecture	15 047	3 109	44	696	2	18 896
Hyogo prefecture	8 548	1 659	2	350	17	10 578
Nara prefecture	2 336	269	3	115	0	2 723
Wakayama prefecture	2 207	230	1	33	3	2 474
Tottori prefecture	919	125	0	136	2	1 182
Shimane prefecture	967	169	0	85	1	1 222
Okayama prefecture	3 238	500	0	268	2	4 007
Hiroshima prefecture	5 059	572	1	377	4	6 012
Yamaguchi prefecture	2 452	332	0	137	1	2 922
Tokushima prefecture	1 722	284	0	175	1	2 182
Kagawa prefecture	1 841	314	4	195	4	2 358
Ehime prefecture	2 426	463	0	147	10	3 047
Kochi prefecture	1 603	229	0	57	1	1 890
Fukuoka prefecture	9 004	2 311	0	285	10	11 610
Saga prefecture	1 412	271	0	19	0	1 702
Nagasaki prefecture	2 765	491	1	140	7	3 404
Kumamoto prefecture	4 373	878	0	149	2	5 400
Oita prefecture	2 812	351	0	121	0	3 285
Miyazaki prefecture	2 593	584	0	66	1	3 244
Kagoshima prefecture	3 916	517	2	98	0	4 533
Okinawa prefecture	2 826	703	0	84	0	3 613
Total	206 340	41 871	127	9243	188	257 765

†The total number of chronic dialysis patients is the total of the column for the number of patients in Sheet I, and does not necessarily agree with the total number of patients counted according to the method of treatment. CAPD, continuous ambulatory peritoneal dialysis; IPD, intermittent peritoneal dialysis.

the number of dialysis patients is decreasing slightly each year. In addition, the rate of increase in the number of new patients introduced to dialysis in each year tended to decrease, and the rate of increase in the number of patients who died in each year tended to increase (data not shown).

Table 2 shows the total number of dialysis patients in each prefecture of Japan obtained from the facility survey. The number of dialysis patients per million people at the end of 2005 was 2017.6. Table 3 shows changes in the number of dialysis patients per million people. The number of patients per million people is increasing each year.

2. Mean age

Dialysis patients in Japan are aging yearly. The patient survey showed that the mean age of new patients introduced to dialysis in 2005 was 66.2 years, and the mean age of the entire dialysis patient population at the end of 2005 was 63.9 years (Table 4). The

TABLE 3. *Changes in the number of patients per million*

Year	Patients per million	Year	Patients per million
1983	443.7	1995	1229.7
1984	497.5	1996	1328.4
1985	547.8	1997	1394.9
1986	604.4	1998	1472.5
1987	658.8	1999	1556.7
1988	721.1	2000	1624.1
1989†	790.0	2001	1721.9
1990	835.7	2002	1801.2
1991	937.6	2003	1852.7
1992	995.8	2004	1943.5
1993	1076.4	2005	2017.6
1994	1149.4		

†The collection rate is corrected at 86%, i.e. rounded off at the 100th order.

dialysis patient population aged by 7.7 years from the end of 1985 to the end of 1995, but aged by only 5.9 years from the end of 1995 to the end of 2005. The rate of aging of the dialysis patient population has decreased. The mean age of new patients introduced to dialysis increased by 6.6 years from the end of 1985 to the end of 1995, but increased by only 5.2 years from the end of 1995 to the end of 2005. These findings show that the rate of aging of new patients introduced to dialysis has also decreased.

Table 5 shows the sex and age distributions of new patients introduced to dialysis in 2005. Table 6 shows the sex and age distributions of all dialysis patients at the end of 2005. Tables 7 and 8 show the age distribution according to the primary disease. The data in these tables were obtained from the patient survey.

3. Primary diseases of new patients introduced to dialysis

Table 7 shows the summary of primary diseases of new patients introduced to dialysis in 2005. Table 8 shows the summary of primary diseases of all the patients at the end of 2005. Tables 9 and 10 show changes in the percentage of patients according to the main primary disease from 1983 to 2005.

Patients with end-stage renal failure due to diabetes as the primary disease made up the largest number of new patients introduced to dialysis in 1998. The number of patients with diabetic nephropathy has since continuously and markedly increased. These patients accounted for 42.0% of new patients introduced to dialysis in 2005. In contrast to this, the percentage of patients with chronic glomerulonephritis as the primary disease tended to decrease year by year. Patients with chronic glomerulonephritis as the primary disease accounted for 27.3% of new patients introduced to dialysis in 2005. Patients with an "undetermined" primary disease accounted for 9.5% of new patients introduced to dialysis in 2005, and were

TABLE 4. *Changes in the number of patients newly introduced to dialysis annually and in the mean age of patients at the end of the year*

	Mean age of patients newly introduced to dialysis treatment		Mean age of patients at the end of each year	
Year	Mean	±SD	Mean	±SD
1983	51.9	15.5	48.3	13.8
1984	53.2	15.3	49.2	13.8
1985	54.4	15.4	50.3	13.7
1986	55.1	15.2	51.1	13.6
1987	55.9	14.9	52.1	13.7
1988	56.9	14.9	52.9	13.6
1989	57.4	14.7	53.8	13.5
1990	58.1	14.6	54.5	13.5
1991	58.1	14.6	55.3	13.5
1992	59.5	14.5	56.0	13.5
1993	59.8	14.4	56.6	13.5
1994	60.4	14.3	57.3	13.5
1995	61.0	14.2	58.0	13.4
1996	61.5	14.2	58.6	13.4
1997	62.2	14.0	59.2	13.4
1998	62.7	13.9	59.9	13.3
1999	63.4	13.9	60.6	13.3
2000	63.8	13.9	61.2	13.2
2001	64.2	13.7	61.6	13.1
2002	64.7	13.6	62.2	13.0
2003	65.4	13.5	62.8	12.9
2004	65.8	13.4	63.3	12.9
2005	66.2	13.4	63.9	12.8

TABLE 5. *Patients newly introduced to dialysis in 2004 and their age and sex*

Age of the patients when newly introduced to dialysis	Male (%)†	Female (%)†	Sub-total (%)†	No information available	Total (%)†
Younger than 5 years old	8 (0.0)	11 (0.1)	19 (0.1)	0	19 (0.1)
5–9 years old	0 (0.0)	3 (0.0)	3 (0.0)	0	3 (0.0)
10–14 years old	4 (0.0)	7 (0.1)	11 (0.0)	0	11 (0.0)
15–19 years old	28 (0.1)	16 (0.1)	44 (0.1)	0	44 (0.1)
20–24 years old	58 (0.3)	33 (0.3)	91 (0.3)	0	91 (0.3)
25–29 years old	135 (0.6)	82 (0.7)	217 (0.6)	0	217 (0.6)
30–34 years old	270 (1.2)	150 (1.2)	420 (1.2)	1	421 (1.2)
35–39 years old	407 (1.8)	200 (1.6)	607 (1.8)	1	608 (1.8)
40–44 years old	615 (2.8)	301 (2.4)	916 (2.7)	1	917 (2.7)
45–49 years old	895 (4.1)	475 (3.8)	1 370 (4.0)	3	1 373 (4.0)
50–54 years old	1 659 (7.5)	776 (6.3)	2 435 (7.1)	2	2 437 (7.1)
55–59 years old	2 626 (11.9)	1 097 (8.9)	3 723 (10.8)	4	3 727 (10.8)
60–64 years old	2 841 (12.9)	1 296 (10.5)	4 137 (12.0)	8	4 145 (12.0)
65–69 years old	3131 (14.2)	1 638 (13.2)	4 769 (13.9)	10	4 779 (13.9)
70–74 years old	3 616 (16.4)	1 801 (14.6)	5 417 (15.7)	6	5 423 (15.7)
75–79 years old	3 063 (13.9)	2 013 (16.3)	5 076 (14.8)	3	5 079 (14.7)
80–84 years old	1 742 (7.9)	1 515 (12.3)	3 257 (9.5)	6	3 263 (9.5)
85–89 years old	734 (3.3)	758 (6.1)	1 492 (4.3)	0	1 492 (4.3)
90–94 years old	180 (0.8)	168 (1.4)	348 (1.0)	0	348 (1.0)
Older than 95 years old	25 (0.1)	27 (0.2)	52 (0.2)	0	52 (0.2)
Total	22 037 (100.0)	12 367 (100.0)	34 404 (100.0)	45	34 449 (100.0)
No information available	69	48	117	2	119
Total	22 106	12 415	34 521	47	34 568
Mean	65.39	67.64	66.20	64.56	66.20
SD	1 2.99	13.86	13.36	11.50	13.35

†The value in parentheses on the right-hand side of each number is the percentage of patients with respect to the total of the column.

TABLE 6. *Number of new patients introduced to dialysis in 2005 and their age and sex*

Age	Male (%)†	Female (%)†	Sub-total (%)†	No information available	Total (%)†
Younger than 5 years old	14 (0.0)	21 (0.0)	35 (0.0)	0	35 (0.0)
5–9 years old	13 (0.0)	14 (0.0)	27 (0.0)	0	27 (0.0)
10–14 years old	23 (0.0)	13 (0.0)	36 (0.0)	0	36 (0.0)
15–19 years old	98 (0.1)	57 (0.1)	155 (0.1)	0	155 (0.1)
20–24 years old	312 (0.2)	204 (0.2)	516 (0.2)	0	516 (0.2)
25–29 years old	867 (0.6)	458 (0.5)	1 325 (0.6)	1	1 326 (0.6)
30–34 years old	1 953 (1.3)	1 080 (1.1)	3 033 (1.3)	3	3 036 (1.3)
35–39 years old	3 408 (2.3)	1 783 (1.9)	5 191 (2.2)	1	5 192 (2.2)
40–44 years old	5 093 (3.5)	2 836 (3.0)	7 929 (3.3)	3	7 932 (3.3)
45–49 years old	7 538 (5.1)	4 323 (4.6)	11 861 (4.9)	5	11 866 (4.9)
50–54 years old	13 177 (9.0)	7 841 (8.3)	21 018 (8.7)	6	21 024 (8.7)
55–59 years old	21 940 (15.0)	12 804 (13.6)	34 744 (14.5)	11	34 755 (14.5)
60–64 years old	21 182 (14.5)	12 474 (13.3)	33 656 (14.0)	10	33 666 (14.0)
65–69 years old	21 928 (15.0)	13 344 (14.2)	35 272 (14.7)	18	35 290 (14.7)
70–74 years old	21 091 (14.4)	12 861 (13.7)	33 952 (14.1)	14	33 966 (14.1)
75–79 years old	15 565 (10.6)	11 196 (11.9)	26 761 (11.1)	6	26 767 (11.1)
80–84 years old	8 074 (5.5)	7 783 (8.3)	15 857 (6.6)	8	15 865 (6.6)
85–89 years old	3 191 (2.2)	3 706 (3.9)	6 897 (2.9)	3	6 900 (2.9)
90–95 years old	844 (0.6)	1 054 (1.1)	1 898 (0.8)	0	1 898 (0.8)
Older than 95 years old	87 (0.1)	115 (0.1)	202 (0.1)	0	202 (0.1)
Total	146 398 (100.0)	93 967 (100.0)	240 365 (100.0)	89	240 454 (100.0)
No information available	39	19	58	1	59
Total	146 437	93 986	240 423	90	240 513
Mean	63.19	64.95	66.20	63.80	66.20
SD	12.59	13.09	13.36	12.94	13.35

†The value in parentheses on the right-hand side of each number is the percentage of patients with respect to the total of the column.

TABLE 7. *Numbers and mean ages of new patients introduced to dialysis in 2005 in terms of primary disease*

Primary disease	Number of patients (%)†	No information available (%)†	Total (%)†	Mean age	SD
Chronic glomerulonephritis	9 340 (27.3)	28 (30.8)	9 368 (27.4)	65.85	14.60
Chronic pyelonephritis	345 (1.0)	0 (0.0)	345 (1.0)	63.30	15.66
Rapidly progressive glomerulonephritis	378 (1.1)	1 (1.1)	379 (1.1)	68.25	13.78
Nephropathy of pregnancy/pregnancy toxemia	45 (0.1)	0 (0.0)	45 (0.1)	55.11	15.61
Other nephritides that cannot be classified	110 (0.3)	0 (0.0)	110 (0.3)	55.52	19.89
Polycystic kidney	794 (2.3)	1 (1.1)	795 (2.3)	60.44	12.59
Renal sclerosis	3 069 (9.0)	2 (2.2)	3 071 (9.0)	73.34	11.16
Malignant hypertension	218 (0.6)	1 (1.1)	219 (0.6)	63.94	16.87
Diabetic nephropathy	14 350 (42.0)	37 (40.7)	14 387 (42.0)	64.94	11.33
Systemic lupus erythematosus nephritis	282 (0.8)	0 (0.0)	282 (0.8)	59.69	15.17
Amyloidal kidney	158 (0.5)	0 (0.0)	158 (0.5)	66.26	10.67
Gouty kidney	91 (0.3)	0 (0.0)	91 (0.3)	65.38	10.91
Renal failure due to congenital abnormality of metabolism	13 (0.0)	0 (0.0)	13 (0.0)	36.85	19.97
Kidney and urinary tract tuberculosis	14 (0.0)	0 (0.0)	14 (0.0)	74.50	8.51
Kidney and urinary tract stone	85 (0.2)	0 (0.0)	85 (0.2)	69.76	12.17
Kidney and urinary tract tumor	136 (0.4)	1 (1.1)	137 (0.4)	69.18	13.74
Obstructive urinary tract disease	110 (0.3)	1 (1.1)	111 (0.3)	67.04	17.16
Myeloma	123 (0.4)	0 (0.0)	123 (0.4)	69.72	10.06
Hypoplastic kidney	47 (0.1)	0 (0.0)	47 (0.1)	36.13	26.85
Reintroduction after transplantation	3 228 (9.5)	14 (15.4)	3 242 (9.5)	69.54	13.50
Others	219 (0.6)	4 (4.4)	223 (0.7)	53.98	16.57
Undetermined	1 002 (2.9)	1 (1.1)	1 003 (2.9)	66.38	15.51
Total	34 157 (100.0)	91 (100.0)	34 248 (100.0)	66.19	13.35
No information available	292	28		67.67	13.71
Total	34 449	119	34 248	66.20	13.35

†The value in parentheses on the right-hand side of each number is the percentage of patients with respect to the total of the column.

TABLE 8. *Numbers and mean ages of patients at the end of 2005 according to primary disease*

Primary disease	Number of patients (%)†	No information available (%)†	Total (%)†	Mean age	SD
Chronic glomerulonephritis	104 729 (43.6)	25 (45.5)	104 754 (43.6)	62.44	12.99
Chronic pyelonephritis	2 981 (1.2)	3 (5.5)	2 984 (1.2)	61.75	14.39
Rapidly progressive glomerulonephritis	1 506 (0.6)	0 (0.0)	1 506 (0.6)	64.15	14.22
Nephropathy of pregnancy/pregnancy toxemia	1 701 (0.7)	0 (0.0)	1 701 (0.7)	58.39	9.85
Other nephritides that cannot be classified	1 080 (0.4)	0 (0.0)	1 080 (0.4)	55.61	17.04
Polycystic kidney	8 031 (3.3)	1 (1.8)	8 032 (3.3)	62.21	10.83
Renal sclerosis	14 266 (5.9)	1 (1.8)	14 267 (5.9)	72.52	11.95
Malignant hypertension	1780 (0.7)	1 (1.8)	1 781 (0.7)	62.15	14.06
Diabetic nephropathy	75 322 (31.4)	23 (41.8)	75 345 (31.4)	65.09	10.87
Systemic lupus erythematosus nephritis	2 125 (0.9)	0 (0.0)	2 125 (0.9)	55.64	13.45
Amyloidal kidney	450 (0.2)	0 (0.0)	450 (0.2)	64.35	11.64
Gouty kidney	1 199 (0.5)	0 (0.0)	1 199 (0.5)	64.56	11.34
Renal failure due to congenital abnormality of metabolism	228 (0.1)	0 (0.0)	228 (0.1)	46.54	17.42
Kidney and urinary tract tuberculosis	418 (0.2)	0 (0.0)	418 (0.2)	68.24	10.00
Kidney and urinary tract stone	518 (0.2)	0 (0.0)	518 (0.2)	67.02	11.17
Kidney and urinary tract tumor	560 (0.2)	0 (0.0)	560 (0.2)	68.42	11.63
Obstructive urinary tract disease	649 (0.3)	0 (0.0)	649 (0.3)	58.97	18.63
Myeloma	196 (0.1)	0 (0.0)	196 (0.1)	69.46	11.49
Hypoplastic kidney	488 (0.2)	0 (0.0)	488 (0.2)	38.49	19.06
Reintroduction after transplantation	15 961 (6.6)	0 (0.0)	15 961 (6.6)	66.19	13.61
Others	1 685 (0.7)	1 (1.8)	1 686 (0.7)	51.23	12.57
Undetermined	4 200 (1.7)	0 (0.0)	4 200 (1.7)	61.65	16.31
Total	240 073 (100.0)	55 (100.0)	240 128 (100.0)	63.88	12.82
No information available	381	4	385	64.83	13.72
Total	240 454	59	240 513	63.88	12.82

†The value in parentheses on the right-hand side of each number is the percentage of patients with respect to the total of the column.

TABLE 9. *Changes in the percentage of new patients introduced to dialysis each year according to primary disease*

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Diabetic nephropathy	15.6	17.4	19.6	21.3	22.1	24.3	26.5	26.2	28.1	28.4	29.9	30.7
Chronic glomerulonephritis	60.5	58.7	56.0	54.8	54.2	49.9	47.4	46.1	44.2	42.2	41.4	40.5
Renal sclerosis	3.0	3.3	3.5	3.7	3.9	3.9	4.1	5.4	5.5	5.9	6.2	6.1
Polycystic kidney	2.8	2.8	3.1	2.9	3.2	3.1	3.1	2.9	3.0	2.7	2.6	2.5
Chronic pyelonephritis	2.4	2.2	2.1	2.0	1.8	1.8	1.5	1.5	1.7	1.6	1.1	1.4
Rapidly progressive glomerulonephritis	0.9	0.7	0.9	1.0	0.8	0.9	0.8	0.7	0.6	0.7	0.8	0.8
Systemic lupus erythematosus nephritis	1.1	1.1	1.1	1.2	0.9	0.9	1.0	1.1	1.3	1.3	1.2	1.2
Undetermined	4.4	4.0	4.8	4.2	4.1	3.8	4.0	3.3	3.7	3.7	3.3	3.9

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Diabetic nephropathy	31.9	33.1	33.9	35.7	36.2	36.6	38.1	39.1	41.0	41.3	42.0
Chronic glomerulonephritis	39.4	38.9	36.6	35.0	33.6	32.5	32.4	31.9	29.1	28.1	27.3
Renal sclerosis	6.3	6.4	6.8	6.7	7.0	7.6	7.6	7.9	8.5	8.8	9.0
Polycystic kidney	2.4	2.5	2.4	2.4	2.2	2.4	2.3	2.4	2.3	2.7	2.3
Chronic pyelonephritis	1.2	1.1	1.2	1.1	1.1	1.0	1.1	0.9	1.0	0.9	1.0
Rapidly progressive glomerulonephritis	0.8	0.8	1.1	0.9	0.9	1.0	1.0	1.1	1.2	1.1	1.1
Systemic lupus erythematosus nephritis	1.1	1.3	1.0	1.1	1.2	0.9	1.0	0.9	0.7	0.8	0.8
Undetermined	4.5	5.0	5.5	5.6	6.1	7.6	9.0	8.4	8.8	9.3	9.5

the third largest in number following those with chronic glomerulonephritis. It is desirable that the primary diseases be identified whenever possible to reduce the number of patients categorized into those with "undetermined" primary diseases. The number of patients with nephrosclerosis as the primary disease also increased steadily to 9.0% of new patients introduced to dialysis. The numbers of patients with polycystic kidney disease, pyelonephritis, and systemic lupus erythematosus (SLE) as the primary diseases were smaller than those with the primary diseases described above, but the percentages of patients with these diseases were nearly the same as those in preceding years.

When changes in the percentage of patients with renal failure as the primary disease among all the dialysis patients at the end of 2005 were assessed, the number of patients with chronic glomerulonephritis

TABLE 10. *Changes in the percentage of patients at the end of each year according to primary disease*

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Diabetic nephropathy	7.4	8.4	9.4	10.5	11.7	12.8	14.0	14.9	16.4	17.1	18.2	19.2
Chronic glomerulonephritis	74.5	72.1	72.3	70.6	69.4	67.9	65.9	64.1	61.7	60.4	58.8	57.7
Renal sclerosis	1.5	1.7	1.9	2.0	2.1	2.1	2.3	2.6	2.9	3.1	3.4	3.6
Polycystic kidney	2.7	2.9	3.0	3.1	3.1	3.2	3.2	3.3	3.3	3.3	3.3	3.2
Chronic pyelonephritis	3.1	3.3	2.6	2.4	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.8
Rapidly progressive glomerulonephritis	0.5	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Systemic lupus erythematosus nephritis	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.1	1.1	1.1
Undetermined	2.2	2.3	2.3	2.5	2.6	2.5	2.6	2.6	2.9	2.9	2.9	3.1

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Diabetic nephropathy	20.4	21.6	22.7	24.0	25.1	26.0	27.2	28.1	29.2	30.2	31.4
Chronic glomerulonephritis	56.6	55.4	54.1	52.5	51.1	49.7	49.6	48.3	46.6	45.1	43.6
Renal sclerosis	3.8	4.0	4.2	4.4	4.5	4.8	5.0	5.1	5.3	5.7	5.9
Polycystic kidney	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.3
Chronic pyelonephritis	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.2
Rapidly progressive glomerulonephritis	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Systemic lupus erythematosus nephritis	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9
Undetermined	3.2	3.9	3.9	4.2	4.4	5.0	5.6	5.9	6.3	6.4	6.6

TABLE 11. *Classification of the causes of death of patients introduced to dialysis in 2005*

Cause of death	Male (%)	Female (%)	Total (%)	No information available	Total (%)
Cardiac failure	422 (22.2)	312 (27.7)	734 (24.3)	0	734 (24.3)
Cerebrovascular disease	127 (6.7)	70 (6.2)	197 (6.5)	0	197 (6.5)
Infectious disease	463 (24.4)	255 (22.6)	718 (23.7)	0	718 (23.7)
Hemorrhage	50 (2.6)	27 (2.4)	77 (2.5)	0	77 (2.5)
Malignant tumor	197 (10.4)	87 (7.7)	284 (9.4)	0	284 (9.4)
Cachexia/Uremia	53 (2.8)	37 (3.3)	90 (3.0)	0	90 (3.0)
Cardiac infarction	76 (4.0)	38 (3.4)	114 (3.8)	0	114 (3.8)
Potassium poisoning/Moribund	67 (3.5)	39 (3.5)	106 (3.5)	1	107 (3.5)
Chronic hepatitis/Cirrhosis	41 (2.2)	21 (1.9)	62 (2.0)	0	62 (2.0)
Encephalopathy	2 (0.1)	1 (0.1)	3 (0.1)	0	3 (0.1)
Suicide/Refusal of treatment	18 (0.9)	12 (1.1)	30 (1.0)	0	30 (1.0)
Intestinal obstruction	11 (0.6)	8 (0.7)	19 (0.6)	0	19 (0.6)
Lung thrombus/Pulmonary embolus	14 (0.7)	6 (0.5)	20 (0.7)	0	20 (0.7)
Death due to disaster	7 (0.4)	1 (0.1)	8 (0.3)	0	8 (0.3)
Others	204 (10.8)	124 (11.0)	328 (10.8)	0	328 (10.8)
Undetermined	145 (7.6)	90 (8.0)	235 (7.8)	0	235 (7.8)
Total	1897 (100.0)	1128 (100.0)	3025 (100.0)	1	3026 (100.0)
No information available	26	12	38	0	38
Total	1923	1140	3063	1	3064

as the primary disease in the entire dialysis patient population was still the largest, accounting for 43.6% of patients. However, the number of patients with chronic glomerulonephritis as the primary disease decreased steadily year by year, and the number of patients with diabetic nephropathy as the primary disease began to increase in place of chronic glomerulonephritis patients at the end of 2005. The number of patients with diabetic nephropathy as the primary disease accounted for 31.4% of the entire dialysis patient population at the end of 2005. Assuming that the dynamics of the dialysis patient population in Japan continues to show these trends, the dialysis patient population with chronic glomerulonephritis as the primary disease and that with diabetic nephropathy are estimated to become equal in a few years. The third largest number of patients in the dialysis patient population consisted of those with an "undetermined" primary disease, and is increasing steadily. Reflecting the trend among new patients introduced to dialysis, the number of patients with nephrosclerosis as the primary disease has been increasing steadily in the dialysis patient population, although their absolute number was still small. Many patients with polycystic kidney disease and collagen disease as the primary diseases were observed following the patients with the above-mentioned primary diseases, but the percentages of these patients among all the dialysis patients at the end of 2005 were nearly the same as those in preceding years.

4. Causes of death

Table 11 shows the classification of the causes of death of new patients who were introduced to dialysis in 2005 and who died by the end of 2005. Table 12 shows the classification of the causes of death of patients who died in 2005 in the entire dialysis patient population. Table 13 shows the changes in the percentages of the leading causes of death. The classification of the causes of death was changed on the basis of the International Classification of Diseases (ICD)-10 classification, starting with the survey at the end of 2003.

The causes of death of new patients introduced to dialysis in 2005 were cardiac failure (24.3%), infectious diseases (23.7%), malignant tumors (9.4%), cerebrovascular disorder (6.5%), and cardiac infarction (3.8%). The percentage of dialysis patients who died from infectious diseases increased steadily from 1990. The effects of aging of new patients introduced to dialysis and the increase in the number of diabetic patients are considered to be the factors that account for these findings. On the other hand, the percentage of patients who died from cardiac failure decreased relatively rapidly from 1994 to 1996, but subsequently remained at a nearly constant level of approximately 23%. The incidence of death from cardiac infarction tended to decline from 2002. This may reflect advances in the treatment of cardiac infarction, including catheter intervention.

The number of patients who died from "other causes" has increased steadily. It is necessary to clarify whether their causes of death were not adequately identified or whether the number of patients who died from indeterminate causes has increased.

The leading cause of death within the entire dialysis patient population was cardiac failure, accounting

TABLE 12. *Classification of the causes of death of patients who died in 2005*

Cause of death	Male (%)	Female (%)	Total (%)	No information available	Total (%)
Cardiac failure	3 306 (24.4)	2290 (28.3)	5 596 (25.8)	5	5 601 (25.8)
Cerebrovascular disease	1 289 (9.5)	828 (10.2)	2 117 (9.8)	0	2 117 (9.8)
Infectious disease	2 632 (19.4)	1533 (18.9)	4 165 (19.2)	5	4 170 (19.2)
Hemorrhage	259 (1.9)	156 (1.9)	415 (1.9)	1	416 (1.9)
Malignant tumor	1 382 (10.2)	566 (7.0)	1 948 (9.0)	2	1 950 (9.0)
Cachexia/Uremia	362 (2.7)	290 (3.6)	652 (3.0)	1	653 (3.0)
Cardiac infarction	736 (5.4)	374 (4.6)	1 110 (5.1)	1	1 111 (5.1)
Potassium poisoning/Moribund	740 (5.5)	379 (4.7)	1 119 (5.2)	1	1 120 (5.2)
Chronic hepatitis/Cirrhosis	221 (1.6)	91 (1.1)	312 (1.4)	0	312 (1.4)
Encephalopathy	13 (0.1)	9 (0.1)	22 (0.1)	0	22 (0.1)
Suicide/Refusal of treatment	130 (1.0)	71 (0.9)	201 (0.9)	0	201 (0.9)
Intestinal obstruction	113 (0.8)	92 (1.1)	205 (0.9)	1	206 (1.0)
Lung thrombus/Pulmonary embolus	53 (0.4)	30 (0.4)	83 (0.4)	0	83 (0.4)
Death due to disaster	107 (0.8)	33 (0.4)	140 (0.6)	0	140 (0.6)
Others	1 189 (8.8)	786 (9.7)	1 975 (9.1)	0	1 975 (9.1)
Undetermined	1 021 (7.5)	569 (7.0)	1 590 (7.3)	1	1 591 (7.3)
Total	13 553 (100.0)	8097 (100.0)	21 650 (100.0)	18	21 668 (100.0)
No information available	183	95	278	0	278
Total	13 736	8192	21 928	18	21 946

for 25.8% of all the patients who died. The incidence of death from cardiac failure among all the patients who died tended to decrease up to 2000 but slightly increased from 2001. The second leading cause of death was infectious diseases. The incidence of death from infectious diseases tended to increase from 1990, and reached 18.8% in 2004. These tendencies were similar to those for the causes of death of new patients introduced to dialysis. The increases in the number of elderly patients, who have less resistance to disease, and in the number of diabetic patients are considered to have contributed to the increase in the incidence of death from infections diseases.

In contrast to the above-mentioned causes of death, the percentage of patients who died from cerebrovascular disorder tended to decrease, and the incidence of death from cerebrovascular disorder was 9.8% in 2005. This may reflect an improvement in the control of blood pressure in dialysis patients. The percentage of patients who died from cardiac infarction also clearly decreased during the past three years. Although the percentages of elderly and diabetic patients thought to have complications from vascular calcification and coronary artery sclerosis increased markedly, the percentage of patients who died from cardiac infarction decreased; this may indicate the good outcome of the spread of therapies for ischemic cardiac disease, including catheter intervention and coronary artery bypass grafting (CABG), and an improvement in their therapeutic effect.

5. Annual crude death rate

The annual crude death rate was calculated from the facility survey results. The annual crude death

TABLE 13. *Changes in primary diseases in patients introduced to dialysis annually*

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Cardiac failure	30.3	30.5	31.3	33.2	32.7	36.5	33.4	30.4	30.5	31.1	29.9	28.2
Infectious disease	11.0	11.5	11.5	12.0	12.0	12.2	11.7	11.6	12.1	11.3	12.2	12.6
Cerebrovascular disease	14.2	15.4	14.2	14.0	14.2	12.9	13.2	13.9	13.7	13.6	13.5	14.1
Malignant tumor	7.7	6.9	6.4	6.9	5.8	6.9	7.6	8.2	7.6	7.1	7.4	7.3
Cardiac infarction	5.3	4.8	5.3	6.1	6.0	5.4	5.3	5.8	5.8	5.8	5.7	7.1
Others	5.1	4.9	5.7	4.7	5.2	4.8	4.4	4.6	4.4	4.5	4.1	4.5
Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
Cardiac failure	25.4	24.1	23.9	24.1	24.3	23.2	25.5	25.1	25.0	25.1	25.8	
Infectious disease	13.8	14.6	14.9	15.0	16.3	16.6	16.3	15.9	18.5	18.8	19.2	
Cerebrovascular disease	13.5	12.9	12.6	12.1	11.3	11.3	11.6	11.2	10.7	10.6	9.8	
Malignant tumor	7.2	7.7	8.1	7.7	7.6	8.3	8.5	8.5	8.5	9.0	9.0	
Cardiac infarction	7.5	7.4	8.4	7.9	7.4	7.0	7.4	7.4	6.2	5.4	5.1	
Others	5.8	6.3	6.7	7.0	7.7	7.9	9.1	9.0	9.7	10.3	9.1	

TABLE 14. *Changes in annual crude death rate*

Year	Crude death rate (%)	Year	Crude death rate (%)
1983	9.0	1995	9.7
1984	8.9	1996	9.4
1985	9.1	1997	9.4
1986	9.0	1998	9.2
1987	8.5	1999	9.7
1988	9.2	2000	9.2
1989	7.9	2001	9.3
1990	9.6	2002	9.2
1991	8.9	2003	9.3
1992	9.7	2004	9.4
1993	9.4	2005	9.5
1994	9.5		

rate (%) is the number of patients who died with respect to the mean annual number of dialysis patients. The annual crude death rate in 2005, that is, the number of patients who died in 2005 with respect to the mean number of dialysis patients at the end of 2004 and at the end of 2005 (= the mean number of dialysis patient in 2005), was 9.5%.

Changes in the annual crude death rate from 1983 are shown in Table 14. The crude death rates during the past decade ranged from 9.2% to 9.7%, and no definite tendency to increase or decrease was observed. The life expectancy of dialysis patients in Japan is considered to have begun to improve substantially, despite the increase in the numbers of diabetic patients, who generally have a lower life expectancy, and elderly patients.

6. Cumulative survival rate of new patients introduced to dialysis in each year

Cumulative survival rates of new patients introduced to dialysis in each year since 1983 are shown (Table 15). The survival rates were calculated actuarially (4).

The survival rates of new patients introduced to dialysis in each year showed that the one-year survival rate of new patients introduced to dialysis was usually 0.8 or higher. The simple average of one-year survival rates from 1983 was 0.856. The one-year survival rates for the past few years were higher than this average. This indicates that the one-year survival rate improved in the past few years. As mentioned above, the percentage of dialysis patients whose primary disease was difficult to control, such as elderly patients and diabetic patients, increased among the new patients introduced to dialysis. With this background taken into account, the above-mentioned findings suggest that the one-year survival rate of dialysis patients improved substantially.

The five-year survival rate of new patients introduced to dialysis in 2000 was 0.631. The simple average of the five-year survival rates of new patients introduced to dialysis from 1983, as assessed similarly to the simple average of the one-year survival rates, was 0.606. The average of five-year survival rates of new patients introduced to dialysis from 1995 was higher than that from 1983.

The 10-year survival rate of new patients introduced to dialysis in 1995 was 0.407. The 15-year survival rate of new patients introduced to dialysis in 1990 was 0.289, and the 20-year survival rate of new patients introduced to dialysis in 1985 was 0.232. These survival rates in the long term of 10 years or more unfortunately tended to decrease year by year.

II. Tabulation of data on new items surveyed

A. Blood hemoglobin concentration prior to dialysis

Table 16 shows blood hemoglobin concentrations prior to dialysis. The mean hemoglobin concentration prior to dialysis of the entire dialysis patient population was 10.23 ± 1.37 (mean ± SD) g/dL. According to the guidelines on the treatment of anemia in Japan (7), a blood hemoglobin concentration of 10–11 g/dL is recommended. Among the entire dialysis patient population, the number of patients having a blood hemoglobin concentration within this range was the largest. The percentage of patients having a blood hemoglobin concentration of 10 g/dL or higher was 61.0%, and that lower than 10 g/dL was 38.8%. According to the guidelines of the National Kidney Foundation – Dialysis Outcomes Quality Initiative, a blood hemoglobin concentration of 11–12 g/dL is recommended (8). The percentage of patients having a blood hemoglobin concentration in this recommended range was 19.5%, and the percentage of patients having a blood hemoglobin concentration lower than 11 g/dL was 72.0%.

However, the collection of blood hemoglobin concentrations in this survey did not take into consideration the time point of blood collection (whether

TABLE 15. *Survival rates of patients on dialysis since 1983*

Year when patients were newly introduced to dialysis	Number of patients	1-year survival rate	2-year survival rate	3-year survival rate	4-year survival rate	5-year survival rate	6-year survival rate	7-year survival rate	8-year survival rate	9-year survival rate	10-year survival rate	11-year survival rate	12-year survival rate	13-year survival rate	14-year survival rate	15-year survival rate	16-year survival rate	17-year survival rate	18-year survival rate	19-year survival rate	20-year survival rate	21-year survival rate	22-year survival rate
1983	11 044	0.837	0.773	0.714	0.669	0.629	0.598	0.567	0.531	0.503	0.473	0.444	0.421	0.398	0.379	0.357	0.338	0.321	0.304	0.288	0.271	0.257	0.241
1984	12 050	0.837	0.764	0.705	0.659	0.619	0.584	0.546	0.514	0.486	0.458	0.429	0.405	0.380	0.359	0.339	0.321	0.302	0.287	0.273	0.256	0.241	
1985	12 971	0.816	0.748	0.694	0.646	0.604	0.564	0.530	0.490	0.459	0.433	0.409	0.384	0.360	0.338	0.319	0.300	0.281	0.264	0.249	0.232		
1986	14 246	0.821	0.754	0.701	0.657	0.608	0.565	0.527	0.493	0.458	0.429	0.403	0.379	0.357	0.335	0.317	0.298	0.280	0.265	0.252			
1987	15 432	0.836	0.767	0.707	0.648	0.601	0.554	0.512	0.477	0.446	0.418	0.392	0.368	0.347	0.324	0.304	0.288	0.268	0.249				
1988	16 962	0.845	0.770	0.702	0.644	0.592	0.547	0.506	0.470	0.435	0.406	0.380	0.356	0.333	0.310	0.290	0.272	0.257					
1989	16 917	0.868	0.789	0.721	0.656	0.604	0.557	0.513	0.475	0.441	0.410	0.384	0.358	0.335	0.313	0.294	0.276						
1990	19 373	0.858	0.777	0.709	0.649	0.598	0.548	0.507	0.469	0.435	0.405	0.376	0.350	0.327	0.308	0.289							
1991	21 432	0.848	0.765	0.698	0.640	0.585	0.537	0.496	0.461	0.430	0.399	0.372	0.345	0.323	0.303								
1992	23 258	0.843	0.759	0.689	0.631	0.577	0.532	0.490	0.454	0.421	0.392	0.365	0.339	0.319									
1993	24 586	0.854	0.774	0.705	0.642	0.591	0.543	0.501	0.463	0.429	0.398	0.369	0.344										
1994	25 353	0.852	0.774	0.708	0.648	0.593	0.544	0.502	0.464	0.427	0.395	0.365											
1995	27 138	0.863	0.786	0.719	0.657	0.604	0.557	0.514	0.475	0.439	0.407												
1996	29 619	0.856	0.783	0.716	0.658	0.606	0.560	0.510	0.472	0.435													
1997	30 480	0.862	0.787	0.724	0.668	0.613	0.564	0.520	0.478														
1998	32 172	0.868	0.799	0.737	0.679	0.620	0.571	0.523															
1999	33 765	0.874	0.805	0.743	0.681	0.625	0.575																
2000	36 809	0.879	0.808	0.746	0.687	0.631																	
2001	38 236	0.877	0.805	0.741	0.678																		
2002	38 650	0.878	0.807	0.744																			
2003	39 175	0.878	0.807																				
2004	40 090	0.884																					
All	559 758	0.862	0.786	0.720	0.660	0.606	0.557	0.513	0.474	0.439	0.407	0.378	0.353	0.330	0.308	0.288	0.270	0.253	0.237	0.223	0.207	0.192	0.176

TABLE 16. *Hemoglobin concentrations prior to dialysis (g/dL) and doses of erythropoietin (U/week) (entire dialysis patient population)*

Doses of erythropoietin (U/week)	Hemoglobin concentrations prior to dialysis (g/dL)														
	<5	5.0–5.9	6.0–6.9	7.0–7.9	8.0–8.9	9.0–9.9	10.0–10.9	11.0–11.9	12.0–12.9	13.0–13.9	14.0–14.9	Sub-total	No information available	Total	Mean	SD
Not used (%)	57	73	87	191	681	2 449	5 129	5 377	3031	1209	545	18 829	763	19 592	11.09	1.51
	(0.3)	(0.4)	(0.5)	(1.0)	(3.6)	(13.0)	(27.2)	(28.6)	(16.1)	(6.4)	(2.9)	(100.0)				
1–1499 (%)	7	8	13	31	137	745	1 461	1 035	366	44	15	3 862	120	3 982	10.64	1.14
	(0.2)	(0.2)	(0.2)	(0.3)	(0.8)	(3.5)	(19.3)	(37.8)	(26.8)	(9.5)	(1.1)	(0.4)	(100.0)			
1500–2999 (%)	34	61	49	146	739	3 826	6 866	4 550	1279	252	55	17 857	618	18 475	10.55	1.14
	(0.2)	(0.3)	(0.3)	(0.8)	(4.1)	(21.4)	(38.4)	(25.5)	(7.2)	(1.4)	(0.3)	(100.0)				
3000–4499 (%)	47	68	90	241	1 152	4 565	7 265	4 108	966	157	36	18 695	654	19 349	10.35	1.15
	(0.3)	(0.4)	(0.5)	(1.3)	(6.2)	(24.4)	(38.9)	(22.0)	(5.2)	(0.8)	(0.2)	(100.0)				
4500–5999 (%)	63	80	87	379	1 879	6 742	9 239	4 820	1099	191	35	24 614	882	25 496	10.25	1.14
	(0.3)	(0.3)	(0.4)	(1.5)	(7.6)	(27.4)	(37.5)	(19.6)	(4.5)	(0.8)	(0.1)	(100.0)				
6000–8999 (%)	69	71	205	644	2 175	5 538	6 453	3 063	675	117	24	19 034	635	19 669	10.00	1.25
	(0.4)	(0.4)	(1.1)	(3.4)	(11.4)	(29.1)	(33.9)	(16.1)	(3.5)	(0.6)	(0.1)	(100.0)				
≥9000 (%)	127	233	823	2368	5 549	8 934	7 467	2 879	638	119	33	29 170	1 095	30 265	9.50	1.37
	(0.4)	(0.8)	(2.8)	(8.1)	(19.0)	(30.6)	(25.6)	(9.9)	(2.2)	(0.4)	(0.1)	(100.0)				
Sub-total (%)	404	594	1354	4000	12 312	32 799	43 880	25 832	8054	2089	743	132 061	4 767	136 828	10.23	1.36
	(0.3)	(0.4)	(1.0)	(3.0)	(9.3)	(24.8)	(33.2)	(19.6)	(6.1)	(1.6)	(0.6)	(100.0)				
Undetermined (%)	0	1	2	5	10	64	104	66	22	9	2	285	60	345	10.57	1.21
	(0.0)	(0.4)	(0.7)	(1.8)	(3.5)	(22.5)	(36.5)	(23.2)	(7.7)	(3.2)	(0.7)	(100.0)				
No information available (%)	21	10	36	137	385	922	1 247	710	288	68	23	3 847	27 092	30 939	10.24	1.43
	(0.5)	(0.3)	(0.9)	(3.6)	(10.0)	(24.0)	(32.4)	(18.5)	(7.5)	(1.8)	(0.6)	(100.0)				
Total (%)	425	605	1392	4142	12 707	33 785	45 231	26 608	8364	2166	768	136 193	31 919	168 112	10.23	1.37
	(0.3)	(0.4)	(1.0)	(3.0)	(9.3)	(24.8)	(33.2)	(19.5)	(6.1)	(1.6)	(0.6)	(100.0)				

Values in parentheses under each figure represent the percentage relative to the total of each row.

collected prior to dialysis at the beginning of the week, or prior to dialysis in the middle of the week), nor the position of the patient during blood collection (whether the patient was in a sitting or recumbent position). Therefore, we consider it problematic to simply compare the recommended values in the guidelines of the United States with the current collected data.

B. Dose of erythropoietin

The distribution of patients according to the dose of erythropoietin is shown in Table 16. For dialysis patients administered erythropoietin at a dose of 9000 units per week, the dose was distributed into three administrations of 3000 units per week. The number of such patients accounted for 22.1% of the entire dialysis patient population, which was the highest number among those in the erythropoietin-dose category in this survey. The number of patients administered erythropoietin at a dose of 4500–5999 units per week was the second largest at 18.6%. Patients not administered erythropoietin accounted for 14.3%.

C. Erythropoietin dose and iron-metabolism-related indices

Tables 17–21 show the relationships between erythropoietin dose and the various iron-metabolism-related indices surveyed. In general, a transferrin saturation (TSAT) lower than 20%, or a serum ferritin concentration lower than 100 ng/mL, is considered to indicate a deficiency in iron. Of the entire dialysis patient population, the percentage of patients with a TSAT lower than 20% was 34.4%, and the percentage of patients with a serum ferritin concentration lower than 100 ng/mL was 50.4%. Namely, the percentage of patients who were determined to have iron deficiency was 34.4% in terms of TSAT, and 50.4% in terms of serum ferritin concentration.

The mean TSAT of the entire dialysis patient population was 26.50%, which was higher than the cut-off value for determining iron deficiency – that is, 20%. Although approximately one-half of the patients had a serum ferritin concentration lower than 100 ng/mL, the mean serum ferritin concentration of the entire dialysis patient population was fairly high at 191 ng/mL. This may be because the number of patients with a serum ferritin concentration of 200 ng/mL or higher was not small (27.9% of the total). Indeed, the standard deviation of serum ferritin concentration was 329 ng/mL, which is much higher than the mean concentration of 191 ng/mL.

As the erythropoietin dose increased, the mean TSAT tended to decrease. This suggests that many of the patients given a high erythropoietin dose lack iron. In contrast, the TSAT of patients not administered erythropoietin was lower than that of the patients administered with erythropoietin. This will be discussed together with serum ferritin concentration.

The relationship between serum ferritin concentration and erythropoietin dose differs from that between the TSAT and the erythropoietin dose. The mean serum ferritin concentration was lowest in the patients administered an erythropoietin dose of 4500–5999 units/week, and the mean serum ferritin concentration of patients administered a higher or lower erythropoietin dose was higher than this value; however, this relationship is not particularly strong. The finding of a high serum ferritin concentration in patients administered a low erythropoietin dose suggests that the required dose of erythropoietin decreases for patients with a sufficient amount of stored iron. On the other hand, the finding that the serum ferritin concentration was also high in patients administered a high erythropoietin dose may indicate a tendency that patients administered a high dose of erythropoietin tend to have a disorder in the use of stored iron.

Chronic inflammation is known to inhibit the use of stored iron. In Tables 17–21, the relationship between serum CRP concentration and serum ferritin concentration was not tabulated. However, the serum CRP concentration of patients given a high erythropoietin dose is clearly higher than that of patients given a low erythropoietin dose. This indicates that many of the patients with a high serum CRP concentration show decreased ability to respond to erythropoietin. If we assume that, on the basis of the above findings, many of the patients given a high erythropoietin dose show non-responsiveness to erythropoietin, this assumption does not contradict the above interpretation that many of the patients administered a high dose of erythropoietin have a disorder in the use of stored iron. Rather, the two are considered to be consistent.

In contrast, the serum ferritin concentration and TSAT of patients not administered erythropoietin were lower than those of patients administered erythropoietin. This finding suggests that the former patients have a sufficient amount of endogenous erythropoietin, which enables the maintenance of serum hemoglobin concentration at low iron storage. In fact, the blood hemoglobin concentration of patients not administered erythropoietin was higher than that of patients administered erythropoietin.

TABLE 17. *Doses of erythropoietin and serum iron concentrations (entire dialysis patient population)*

Serum iron concentrations (μg/dL)	Doses of erythropoietin (U/week)							Sub-total	Undetermined	No information available	Total
	Not used	1–1499	1500–2999	3000–4499	4500–5999	6000–8999	≥9000				
<20 (%)	299	39	113	138	252	271	833	1 945	2	60	2 007
	(15.4)	(2.0)	(5.8)	(7.1)	(13.0)	(13.9)	(42.8)	(100.0)			
20–39 (%)	3 092	383	1 713	1 991	3 727	3 055	7 612	21 573	23	588	22 184
	(14.3)	(1.8)	(7.9)	(9.2)	(17.3)	(14.2)	(35.3)	(100.0)			
40–59 (%)	4 873	991	4 689	5 177	8 055	5 830	9 366	38 981	30	1 016	40 027
	(12.5)	(2.5)	(12.0)	(13.3)	(20.7)	(15.0)	(24.0)	(100.0)			
60–79 (%)	4 068	986	4 819	4 926	5 857	4 264	4 782	29 702	25	835	30 562
	(13.7)	(3.3)	(16.2)	(16.6)	(19.7)	(14.4)	(16.1)	(100.0)			
80–99 (%)	2 300	568	2 631	2 572	2602	1 911	1 754	14 338	15	445	14 798
	(16.0)	(4.0)	(18.3)	(17.9)	(18.1)	(13.3)	(12.2)	(100.0)			
100–119 (%)	1 028	248	1 086	992	968	762	744	5 828	3	169	6 000
	(17.6)	(4.3)	(18.6)	(17.0)	(16.6)	(13.1)	(12.8)	(100.0)			
120–139 (%)	461	118	442	383	385	287	330	2 406	5	96	2 507
	(19.2)	(4.9)	(18.4)	(15.9)	(16.0)	(11.9)	(13.7)	(100.0)			
140–159 (%)	228	42	221	206	179	155	182	1 213	3	51	1 267
	(18.8)	(3.5)	(18.2)	(17.0)	(14.8)	(12.8)	(15.0)	(100.0)			
160–179 (%)	121	26	112	89	101	81	101	631	0	32	663
	(19.2)	(4.1)	(17.7)	(14.1)	(16.0)	(12.8)	(16.0)	(100.0)			
≥180 (%)	100	28	98	90	71	73	128	588	1	22	611
	(17.0)	(4.8)	(16.7)	(15.3)	(12.1)	(12.4)	(21.8)	(100.0)			
Sub-total (%)	16 570	3429	15 924	16 564	22 197	16 689	25 832	117 205	107	3 314	120 626
	(14.1)	(2.9)	(13.6)	(14.1)	(18.9)	(14.2)	(22.0)	(100.0)			
No information available (%)	3 022	553	2 551	2 785	3 299	2 980	4 433	19 623	238	27 625	47 486
	(15.4)	(2.8)	(13.0)	(14.2)	(16.8)	(15.2)	(22.6)	(100.0)			
Total (%)	19 592	3982	18 475	19 349	25 496	19 669	30 265	136 828	345	30 939	168 112
	(14.3)	(2.9)	(13.5)	(14.1)	(18.6)	(14.4)	(22.1)	(100.0)			
Mean	64.66	69.75	69.20	67.11	61.52	61.25	53.53	62.24	65.50	64.76	62.31
SD	31.53	31.55	29.35	29.09	26.79	28.06	28.26	29.32	32.31	31.45	29.38

Values in parentheses under each figure represent the percentage relative to the total of each row.

TABLE 18. *Doses of erythropoietin and total iron binding capacities (entire dialysis patient population)*

Total iron binding capacities (μg/dL)	Doses of erythropoietin (U/week)							Sub-total	Undetermined	No information available	Total
	Not used	1–1499	1500–2999	3000–4499	4500–5999	6000–8999	≥9000				
<50 (%)	26	3	18	16	40	29	48	180	1	2	183
	(14.4)	(1.7)	(10.0)	(8.9)	(22.2)	(16.1)	(26.7)	(100.0)			
50–99 (%)	40	11	23	33	52	60	133	352	5	15	372
	(11.4)	(3.1)	(6.5)	(9.4)	(14.8)	(17.0)	(37.8)	(100.0)			
100–149 (%)	178	47	207	228	428	396	1 031	2 515	22	106	2 643
	(7.1)	(1.9)	(8.2)	(9.1)	(17.0)	(15.7)	(41.0)	(100.0)			
150–199 (%)	1 110	300	1 784	2 082	2 770	2 224	3 820	14 090	23	434	14 547
	(7.9)	(2.1)	(12.7)	(14.8)	(19.7)	(15.8)	(27.1)	(100.0)			
200–249 (%)	2 985	906	4 228	4 405	5 617	4 129	5 498	27 768	19	685	28 472
	(10.7)	(3.3)	(15.2)	(15.9)	(20.2)	(14.9)	(19.8)	(100.0)			
250–299 (%)	3 263	692	3 137	3 010	4 032	2 893	3 908	20 935	12	536	21 483
	(15.6)	(3.3)	(15.0)	(14.4)	(19.3)	(13.8)	(18.7)	(100.0)			
300–349 (%)	2 314	327	1 233	1 189	1 764	1 190	2 193	10 210	0	287	10 497
	(22.7)	(3.2)	(12.1)	(11.6)	(17.3)	(11.7)	(21.5)	(100.0)			
350–399 (%)	997	99	346	330	517	381	744	3414	0	86	3 500
	(29.2)	(2.9)	(10.1)	(9.7)	(15.1)	(11.2)	(21.8)	(100.0)			
400–449 (%)	248	25	64	55	87	93	167	739	0	17	756
	(33.6)	(3.4)	(8.7)	(7.4)	(11.8)	(12.6)	(22.6)	(100.0)			
450–499 (%)	44	5	17	9	13	10	27	125	0	2	127
	(35.2)	(4.0)	(13.6)	(7.2)	(10.4)	(8.0)	(21.6)	(100.0)			
≥500 (%)	13	2	6	10	14	8	8	61	0	2	63
	(21.3)	(3.3)	(9.8)	(16.4)	(23.0)	(13.1)	(13.1)	(100.0)			
Sub-total (%)	11 218	2417	11 063	11 367	15 334	11 413	17 577	80 389	82	2172	82 643
	(14.0)	(3.0)	(13.8)	(14.1)	(19.1)	(14.2)	(21.9)	(100.0)			
No information available (%)	8 374	1565	7 412	7 982	10 162	8 256	12 688	56 439	263	28 767	85 469
	(14.8)	(2.8)	(13.1)	(14.1)	(18.0)	(14.6)	(22.5)	(100.0)			
Total (%)	19 592	3982	18 475	19 349	25 496	19 669	30 265	136 828	345	30 939	168 112
	(14.3)	(2.9)	(13.5)	(14.1)	(18.6)	(14.4)	(22.1)	(100.0)			
Mean	271.11	252.15	245.81	242.49	243.21	240.46	238.65	246.24	177.56	241.61	246.05
SD	67.62	57.25	57.06	61.91	63.36	65.16	65.60	64.38	58.32	62.97	64.38

Values in parentheses under each figure represent the percentage relative to the total of each row.

TABLE 19. *Doses of erythropoietin and transferrin saturation (entire dialysis patient population)*

Transferrin saturation (TSAT; %)	Doses of erythropoietin (U/week)							Sub-total	Undetermined	No information available	Total
	Not used	1–1499	1500–2999	3000–4499	4500–5999	6000–8999	≥9000				
<10 (%)	1 103	101	281	316	615	500	1 544	4 460	1	136	4 597
	(24.7)	(2.3)	(6.3)	(7.1)	(13.8)	(11.2)	(34.6)	(100.0)			
10–19 (%)	3 362	547	2 432	2 533	4 380	3 165	6 609	23 028	14	588	23 630
	(14.6)	(2.4)	(10.6)	(11.0)	(19.0)	(13.7)	(28.7)	(100.0)			
20–29 (%)	3 333	792	3 845	4 198	5 665	4 084	5 384	27 301	17	684	28 002
	(12.2)	(2.9)	(14.1)	(15.4)	(20.8)	(15.0)	(19.7)	(100.0)			
30–39 (%)	1 891	530	2 622	2 584	2 757	2 191	2 246	14 821	18	418	15 257
	(12.8)	(3.6)	(17.7)	(17.4)	(18.6)	(14.8)	(15.2)	(100.0)			
40–49 (%)	782	228	1 052	981	1 034	795	815	5 687	14	175	5 876
	(13.8)	(4.0)	(18.5)	(17.2)	(18.2)	(14.0)	(14.3)	(100.0)			
≥50 (%)	670	175	737	645	771	585	822	4 405	14	160	4 579
	(15.2)	(4.0)	(16.7)	(14.6)	(17.5)	(13.3)	(18.7)	(100.0)			
Sub-total (%)	11 141	2 373	10 969	11 257	15 222	11 320	17 420	79 702	78	2 161	81 941
	(14.0)	(3.0)	(13.8)	(14.1)	(19.1)	(14.2)	(21.9)	(100.0)			
No information available (%)	8 451	1 609	7 506	8 092	10 274	8 349	12 845	57 126	267	28 778	86 171
	(14.8)	(2.8)	(13.1)	(14.2)	(18.0)	(14.6)	(22.5)	(100.0)			
Total (%)	19 592	3 982	18 475	19 349	25 496	19 669	30 265	136 828	345	30 939	168 112
	(14.3)	(2.9)	(13.5)	(14.1)	(18.6)	(14.4)	(22.1)	(100.0)			
Mean	25.53	28.82	29.17	28.53	26.44	26.66	23.59	26.46	36.58	27.66	26.50
SD	14.62	14.38	13.80	13.32	13.10	13.24	13.71	13.77	18.94	15.17	13.82

Values in parentheses under each figure represent the percentage relative to the total of each row.

TABLE 20. *Doses of erythropoietin and serum ferritin concentrations (entire dialysis patient population)*

Serum ferritin concentrations (ng/mL)	Doses of erythropoietin (U/week)							Sub-total	Undetermined	No information available	Total
	Not used	1–1499	1500–2999	3000–4499	4500–5999	6000–8999	≥9000				
<100 (%)	10 065	1614	7 034	7 332	10 389	7 914	11 918	56 266	130	1308	57 704
	(17.9)	(2.9)	(12.5)	(13.0)	(18.5)	(14.1)	(21.2)	(100.0)			
100–199 (%)	2 557	685	3 444	3 925	4 677	3 867	4 947	24 102	64	567	24 733
	(10.6)	(2.8)	(14.3)	(16.3)	(19.4)	(16.0)	(20.5)	(100.0)			
200–299 (%)	1 168	374	1 799	1 975	2 407	1 768	2 625	12 116	38	239	12 393
	(9.6)	(3.1)	(14.8)	(16.3)	(19.9)	(14.6)	(21.7)	(100.0)			
300–399 (%)	594	192	987	986	1 245	874	1 480	6 358	16	136	6 510
	(9.3)	(3.0)	(15.5)	(15.5)	(19.6)	(13.7)	(23.3)	(100.0)			
400–499 (%)	331	115	561	557	731	546	973	3 814	20	89	3 923
	(8.7)	(3.0)	(14.7)	(14.6)	(19.2)	(14.3)	(25.5)	(100.0)			
500–799 (%)	482	148	749	747	827	717	1 173	4 843	4	127	4 974
	(10.0)	(3.1)	(15.5)	(15.4)	(17.1)	(14.8)	(24.2)	(100.0)			
800–999 (%)	156	48	215	220	239	231	424	1 533	6	46	1 585
	(10.2)	(3.1)	(14.0)	(14.4)	(15.6)	(15.1)	(27.7)	(100.0)			
1000–4999 (%)	258	86	340	354	351	318	662	2 369	3	142	2 514
	(10.9)	(3.6)	(14.4)	(14.9)	(14.8)	(13.4)	(27.9)	(100.0)			
≥5000 (%)	7	0	7	15	5	12	19	65	0	1	66
	(10.8)	(0.0)	(10.8)	(23.1)	(7.7)	(18.5)	(29.2)	(100.0)			
Sub-total (%)	15 618	3262	15 136	16 111	20 871	16 247	24 221	111 466	281	2 655	114 402
	(14.0)	(2.9)	(13.6)	(14.5)	(18.7)	(14.6)	(21.7)	(100.0)			
No information available (%)	3 974	720	3 339	3 238	4 625	3 422	6 044	25 362	64	28 284	53 710
	(15.7)	(2.8)	(13.2)	(12.8)	(18.2)	(13.5)	(23.8)	(100.0)			
Total (%)	19 592	3982	18 475	19 349	25 496	19 669	30 265	136 828	345	30 939	168 112
	(14.3)	(2.9)	(13.5)	(14.1)	(18.6)	(14.4)	(22.1)	(100.0)			
Mean	144.64	194.98	202.33	203.65	180.32	190.48	210.12	190.07	173.40	244.60	191.29
SD	307.30	285.35	310.31	345.96	280.37	330.62	368.78	326.54	198.73	437.26	329.38

Values in parentheses under each figure represent the percentage relative to the total of each row.

TABLE 21. *Doses of erythropoietin and serum CRP concentrations (entire dialysis patient population)*

Serum CRP concentrations (ng/mL)	Doses of erythropoietin (U/week)							Sub-total	Undetermined	No information available	Total
	Not used	1–1499	1500–2999	3000–4499	4500–5999	6000–8999	≥9000				
<0.2 (%)	7 772	1704	8 577	8 675	11 448	8 094	10 247	56 517	170	1 788	58 475
	(13.8)	(3.0)	(15.2)	(15.3)	(20.3)	(14.3)	(18.1)	(100.0)			
0.2–0.4 (%)	3 232	597	2 767	2 895	3 975	3 177	4 843	21 486	51	732	22 269
	(15.0)	(2.8)	(12.9)	(13.5)	(18.5)	(14.8)	(22.5)	(100.0)			
0.5–0.9 (%)	1 473	269	1 087	1 195	1 677	1 497	2 794	9 992	28	336	10 356
	(14.7)	(2.7)	(10.9)	(12.0)	(16.8)	(15.0)	(28.0)	(100.0)			
1.0–1.9 (%)	861	137	575	690	963	890	2 033	6 149	17	236	6 402
	(14.0)	(2.2)	(9.4)	(11.2)	(15.7)	(14.5)	(33.1)	(100.0)			
2.0–3.9 (%)	456	70	336	366	616	572	1 454	3 870	12	147	4 029
	(11.8)	(1.8)	(8.7)	(9.5)	(15.9)	(14.8)	(37.6)	(100.0)			
4.0–5.9 (%)	169	32	86	109	187	223	596	1 402	3	48	1 453
	(12.1)	(2.3)	(6.1)	(7.8)	(13.3)	(15.9)	(42.5)	(100.0)			
6.0–7.9 (%)	63	4	38	60	86	88	304	643	1	18	662
	(9.8)	(0.6)	(5.9)	(9.3)	(13.4)	(13.7)	(47.3)	(100.0)			
8.0–9.9 (%)	33	3	22	30	54	44	181	367	1	20	388
	(9.0)	(0.8)	(6.0)	(8.2)	(14.7)	(12.0)	(49.3)	(100.0)			
10.0–14.9 (%)	31	4	29	32	52	65	215	428	3	15	446
	(7.2)	(0.9)	(6.8)	(7.5)	(12.1)	(15.2)	(50.2)	(100.0)			
≥15.0 (%)	44	0	17	25	21	35	132	274	0	13	287
	(16.1)	(0.0)	(6.2)	(9.1)	(7.7)	(12.8)	(48.2)	(100.0)			
Sub-total (%)	14 134	2820	13 534	14 077	19 079	14 685	22 799	101 128	286	3 353	104 767
	(14.0)	(2.8)	(13.4)	(13.9)	(18.9)	(14.5)	(22.5)	(100.0)			
No information available (%)	5 458	1162	4 941	5 272	6 417	4 984	7 466	35 700	59	27 586	63 345
	(15.3)	(3.3)	(13.8)	(14.8)	(18.0)	(14.0)	(20.9)	(100.0)			
Total (%)	19 592	3982	18 475	19 349	25 496	19 669	30 265	136 828	345	30 939	168 112
	(14.3)	(2.9)	(13.5)	(14.1)	(18.6)	(14.4)	(22.1)	(100.0)			
Mean	0.57	0.40	0.41	0.47	0.49	0.62	1.02	0.63	0.58	0.71	0.63
SD	2.06	0.93	1.61	1.89	1.72	2.02	2.72	2.08	1.50	2.56	2.10

Values in parentheses under each figure represent the percentage relative to the total of each row.

D. Blood pressure indices and pulse rate at the start of dialysis, at the end of dialysis, and at the lowest blood pressure during dialysis

Tables 22–24 show blood pressure (BP) indices and pulse rates at the start of dialysis, at the end of dialysis, and at the lowest blood pressure during dialysis. Regarding the systolic BP at the start of dialysis, the number of patients having a systolic BP of "140–159 mm Hg" is the largest, accounting for 32.7% of the entire dialysis patient population. According to the report of the survey at the end of 2003 (6), a systolic BP of less than 120 mm Hg at the start of dialysis was shown to be a significant risk factor of the death of the patient. The number of patients classified into this category accounted for 7.3% of the entire dialysis patient population.

The percentage of the entire dialysis patient population with a diastolic BP of 60–99 mm Hg at the start of dialysis was 86.5%. Eighty-two percent (82.0%) of the entire dialysis patient population had a pulse rate of 60–89 beats/min at the start of dialysis. Table 25 shows the groups of patients classified in terms of blood pressure at the start of dialysis on the basis of the Japanese Society of Hypertension guidelines for the management of hypertension (JSH 2004) (9). The percentage of patients classified into the group having "normal blood pressure" (a systolic BP lower than 130 mm Hg and a diastolic BP lower than 85 mm Hg) was 14.5% of the entire dialysis patient population. In addition, the percentage of patients classified into the group having an "optimum blood pressure" (a systolic BP lower than 120 mm Hg and a diastolic BP lower than 80 mm Hg) was 6.8% of the entire dialysis patient population. The percentage of the entire dialysis patient population classified into other groups on the basis of the type of hypertension was 74.5%. Among the patients with hypertension, the percentage of patients classified into the group having "severe hypertension" (a systolic BP of 180 mm Hg or more, or a diastolic BP of 110 mm Hg or more) was 14.9% of the entire dialysis patient population. Moreover, the percentage of patients classified into the group having "systolic hypertension" (a systolic BP of 140 mm Hg or more and a diastolic BP lower than 90 mm Hg) accounted for 52.4% of the entire dialysis patient population.

The mean values of blood pressure indices were compared between those at the start of dialysis, at the end of dialysis and at the lowest blood pressure during dialysis. Whereas the mean systolic BP at the start of dialysis was 153 mm Hg, the mean systolic BP at the end of dialysis was 138 mm Hg; thus the systolic BP decreased by approximately 10% from the

TABLE 22. *Distributions of systolic blood pressure, diastolic blood pressure, and pulse at the start of dialysis (patients subjected to dialysis with extracorporeal circulation*[†]*)*

Systolic BP at the start of dialysis (mm Hg)	<60	60–79	80–99	100–119	120–139	140–159	160–179	180–199	200–219	≥220	Sub-total	No information available	Total	Mean	SD
Number of patients (%)	41 (0.0)	341 (0.2)	2221 (1.1)	11 591 (6.0)	37 298 (19.3)	63 203 (32.7)	51 302 (26.5)	20 992 (10.8)	5393 (2.8)	1163 (0.6)	193 545 (100.0)	36 392	229 937	153.47	24.16
Diastolic BP at the start of dialysis (mm Hg)	<20	20–39	40–59	60–79	80–99	100–119	120–139	≥140			Sub-total				
Number of patients (%)	184 (0.1)	420 (0.2)	10 839 (5.7)	84 176 (43.9)	81 760 (42.6)	13 350 (7.0)	821 (0.4)	202 (0.1)			191 752 (100.0)	40 474	232 226	78.52	14.13
Pulse at the start of dialysis (beats/min)	<40	40–49	50–59	60–69	70–79	80–89	90–99	100–109	110–119	≥120	Sub-total				
Number of patients (%)	89 (0.1)	1270 (0.7)	10 554 (6.2)	43 421 (25.3)	65 354 (38.1)	31 855 (18.6)	13 476 (7.9)	4056 (2.4)	998 (0.6)	506 (0.3)	171 579 (100.0)	60 647	232 226	74.53	12.10

[†]Including facility hemodialysis, hemodialysis filtration, hemofiltration, hemoadsorption dialysis, and home hemodialysis patients.

TABLE 23. *Distributions of systolic blood pressure, diastolic blood pressure, and pulse at the end of dialysis (patients subjected to dialysis with extracorporeal circulation†)*

Systolic BP at the end of dialysis (mm Hg)	<60	60–79	80–99	100–119	120–139	140–159	160–179	180–199	200–219	≥220	Sub-total	No information available	Total	Mean	SD
Number of patients (%)	140 (0.1)	1416 (0.7)	8098 (4.2)	30 020 (15.7)	55 708 (29.2)	55 497 (29.1)	30 008 (15.7)	8336 (4.4)	1528 (0.8)	241 (0.1)	190 992 (100.0)	41 234	232 226	138.46	24.75
Diastolic BP at the end of dialysis (mm Hg)	<20	20–39	40–59	60–79	80–99	100–119	120–139	≥140			Sub-total				
Number of patients (%)	260 (0.1)	866 (0.5)	18 922 (10.1)	98 184 (52.2)	62 524 (33.2)	6874 (3.7)	386 (0.2)	94 (0.0)			188 110 (100.0)	44 116	232 226	73.99	13.80
Pulse at the end of dialysis (beats/min)	<40	40–49	50–59	60–69	70–79	80–89	90–99	100–109	110–119	≥120	Sub-total				
Number of patients (%)	89 (0.1)	1204 (0.8)	8495 (5.7)	32 667 (21.8)	55 163 (36.8)	29 850 (19.9)	14 581 (9.7)	5382 (3.6)	1640 (1.1)	860 (0.6)	149 931 (100.0)	82 295	232 226	76.11	13.04

†Including facility hemodialysis, hemodialysis filtration, hemofiltration, hemoadsorption dialysis, and home hemodialysis patients.

TABLE 24. *Distributions of systolic blood pressure, diastolic blood pressure, and pulse at the lowest blood pressure during dialysis (patients subjected to dialysis with extracorporeal circulation†)*

Systolic BP at the lowest BP (mm Hg)	<60	60–79	80–99	100–119	120–139	140–159	160–179	180–199	200–219	≥220	Sub-total	No information available	Total	Mean	SD
Number of patients (%)	660 (0.4)	5227 (2.9)	20 357 (11.1)	46 523 (25.4)	61 346 (33.5)	37 692 (20.6)	9809 (5.4)	1312 (0.7)	132 (0.1)	27 (0.0)	183 085 (100.0)	49 141	232 226	123.41	23.38
Diastolic BP at the lowest BP (mm Hg)	<20	20–39	40–59	60–79	80–99	100–119	120–139	≥140			Sub-total				
Number of patients (%)	401 (0.2)	2502 (1.4)	32 855 (18.5)	99 969 (56.2)	39 422 (22.1)	2638 (1.5)	148 (0.1)	90 (0.1)			178 025 (100.0)	54 201	232 226	68.52	13.93
Pulse at the lowest BP (beats/min)	<40	40–49	50–59	60–69	70–79	80–89	90–99	100–109	110–119	≥120	Sub-total				
Number of patients (%)	103 (0.1)	1542 (1.0)	9929 (6.6)	33 756 (22.5)	48 767 (32.5)	25 552 (17.0)	12 158 (8.1)	4208 (2.8)	1281 (0.9)	582 (0.4)	137 878 (92.0)	94 348	232 226	74.68	12.98

†Including facility hemodialysis, hemodialysis filtration, hemofiltration, hemoadsorption dialysis, and home hemodialysis patients.

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TABLE 25. *Classification of patients according to blood pressure (BP) at the start of dialysis based on the Japanese Society of Hypertension guidelines for the management of hypertension (JSH 2004) (patients subjected to dialysis with extracorporeal circulation[†])*

Group according to BP	BP at the start of dialysis (mm Hg) Systolic BP		Diastolic BP	Number of patients[‡]	(%)
Optimum BP	<120	and	<80	13 129	(6.8)
Normal BP	<130	and	<85	27 751	(14.5)
High normal BP	130–139	or	85–89	21 456	(11.2)
Mild hypertension	140–159	or	90–99	62 340	(32.5)
Moderate hypertension	160–179	or	100–109	51 645	(26.9)
Severe hypertension	≥180	or	≥110	28 515	(14.9)
Systolic hypertension	≥140	and	<90	100 362	(52.4)
Total number of subject patients[§]				191 707	(100.0)

[†]Including facility hemodialysis, hemodialysis filtration, hemofiltration, hemoadsorption dialysis, and home hemodialysis patients. [‡]Number of patients belonging to one group according to BP; because a patient can be classified into multiple groups, the sum of the numbers of patients in each category does not agree with the "Total number of subject patients". [§]Number of patients from whom both the systolic BP and diastolic BP data were obtained.

start to the end of dialysis. In addition, the mean systolic BP at the lowest blood pressure was 123 mm Hg, which was lower than the mean systolic BP at the start of dialysis by approximately 20%. There were no significant differences in mean pulse rates at the start of dialysis, at the end of dialysis, or at the lowest blood pressure.

E. Antihypertension agent usage

Table 26 shows the usage of various antihypertensive drugs by facility dialysis patients. Although not shown in this table, patients who responded "not used" for any of the antihypertensive agents surveyed this time (namely, patients who do not use antihypertensive agents) accounted for approximately 35% of

TABLE 26. *Antihypertension agents used (facility hemodialysis patients)*

Usage	CCB	ACEI	ARB	Other antihypertension agents
Not used (%)	84 928 (49.7)	150 142 (88.5)	112 096 (66.1)	122 760 (72.6)
Used (%)	85 988 (50.3)	19 427 (11.5)	57 491 (33.9)	46 440 (27.4)
Sub-total (%)	170 916 (100.0)	169 569 (100.0)	169 587 (100.0)	169 200 (100.0)
Undetermined	1120	1 223	1 625	1 566
No information available	44 844	46 088	45 668	46 114
Total	216 880	216 880	216 880	216 880

ACEI, angiotensin-converting enzyme inhibitor; ARB, angiotensin II-receptor blocker; CCB, calcium channel blocker.

TABLE 27. *Treatment of dialysis hypotension (facility hemodialysis patients)*

Usage	Use of oral antihypotension drugs	Infusion of physiological saline solution	Use of concentrated NaCl solution	Use of concentrated glycerin solution	Low-temperature dialysis	Use of transvenous antihypotension drugs
Not used (%)	143 031 (83.9)	137 504 (81.4)	153 217 (89.8)	165 890 (97.1)	158 588 (93.8)	158 464 (93.3)
Used (%)	27 495 (16.1)	31 448 (18.6)	17 439 (10.2)	4 971 (2.9)	10 562 (6.2)	11 346 (6.7)
Sub-total (%)	170 526 (100.0)	168 952 (100.0)	170 656 (100.0)	170 861 (100.0)	169 150 (100.0)	169 810 (100.0)
Undetermined	871	1 758	808	775	1 218	972
No information available	45 483	46 170	45 416	45 244	46 512	46 098
Total	216 880	216 880	216 880	216 880	216 880	216 880

TABLE 28. *Status of peritoneal dialysis (PD)*

	Status of PD							
	Use of PD alone	Combination of PD and hemodialysis	PD was applied in the past	Not applied (in the past or at present)	Sub-total	Undetermined	No information available	Total
Number of patients (%)	4525 (3.6)	994 (0.8)	3724 (3.0)	116 797 (92.7)	126 040 (100.0)	1268	113 205	240 513

Tabulated for all dialysis patients.

the entire dialysis patient population (note that Table 26 shows data of facility dialysis patients, not the entire dialysis patient population). In contrast, approximately 65% of the entire dialysis patient population takes some type of antihypertensive drug. In the report of the survey at the end of 2000, data on "antihypertensive drug usage" were described (10). According to the report, patients who said they were "taking antihypertensive drugs" accounted for 60.9% of the entire dialysis patient population, which is almost identical to that of the current tabulation results. Regarding the type of antihypertensive drug used, CCB were administered to approximately one-half (50.3%) of the facility dialysis patients. ACEI and ARB were administered to 11.5% and 33.9%, respectively, of the patients. Although not shown in Table 26, the percentage of patients who were administered either ACEI or ARB was approximately 40% of the entire dialysis patient population. Patients who were administered both ACEI and ARB accounted for approximately 5% of the entire dialysis patient population.

F. Treatment of dialysis hypotension

In the report of the survey at the end of 2001, data on "antihypotensive treatment during dialysis" were reported (2). In this report, data on antihypotensive treatment during dialysis for 141 013 facility dialysis patients who responded to this survey item were as follows: without antihypotensive treatment, 68.5%; use of oral antihypotensive drugs, 7.0%; infusion of physiological saline solution, 18.3%; use of concentrated NaCl solution, 8.5%; use of concentrated glycerin solution, 2.1%; and use of transvenous antihypotensive drugs, 6.3%. Low-temperature dialysis was not surveyed in this report. The comparison of these data with the current data (shown in Table 27) indicated that the percentage of patients who responded that they used oral antihypotensive drugs increased from 7.0% at the end of 2001 to 16.1% in the current survey (at the end of 2005), which was a greater than twofold increase. In contrast, almost no differences were observed in data between the survey at the end of 2001 and the current survey (at the end of 2005) regarding the use of physiological saline solution for infusion, the use of concentrated NaCl solution, the use of concentrated glycerin solution, or the use of transvenous antihypotensive drugs. The reason why the number of patients who used oral antihypotensive drugs doubled during these four years was undetermined.

G. Status of peritoneal dialysis

Data on the status of peritoneal dialysis from 126 040 patients who responded showed that the percentage of patients who were undergoing peritoneal dialysis alone was 3.6%, that of patients undergoing the combination of hemodialysis and peritoneal dialysis was 0.8%, and that of patients who had previously undergone peritoneal dialysis was 3.0% (Table 28).

H. Mode of CAPD

In the patient survey, for the 8103 patients who responded that their treatment method was "CAPD", data on the mode of CAPD and age of patients were collected and are shown in Table 29. First, a summary of the data for the entire CAPD patient population in terms of the presence or absence of the use of APDD showed that the percentage of patients with manual peritoneal dialysis without using APDDs was 66.6%, whereas that of patients who used both manual peritoneal dialysis and APDD was 33.4%. This percentage of APDD usage is similar to that observed in foreign countries. Next, a summary of the treatment durations showed that 77.7% of the patients underwent a 24-h continuous peritoneal dialysis; 7.3% of the patients underwent peritoneal dialysis during daytime only, and 15.0% of the patients underwent the dialysis during night-time only.

Here, in terms of the percentage of APDD usage and treatment duration, their relationship with age was summarized. For reference, data on these items are shown in Table 30. In patients younger than 30 years old, the APDD usage percentages were high

TABLE 29. *Peritoneal dialysis modes and ages of patients*

Age (years)	24-h continuous PD		Daytime-only PD		Night-time-only PD		Sub-total	No information available	Total
	CAPD	CCPD	Without APDD	With APDD	Without APDD	With APDD			
<15 (%)	5	12	0	2	0	20	39	45	84
	(12.8)	(30.8)	(0.0)	(5.1)	(0.0)	(51.3)	(100.0)		
15–29 (%)	56	36	4	1	2	30	129	92	221
	(43.4)	(27.9)	(3.1)	(0.8)	(1.6)	(23.3)	(100.0)		
30–44 (%)	349	148	19	7	5	80	608	356	964
	(57.4)	(24.3)	(3.1)	(1.2)	(0.8)	(13.2)	(100.0)		
45–59 (%)	1188	430	78	28	29	267	2020	995	3015
	(58.8)	(21.3)	(3.9)	(1.4)	(1.4)	(13.2)	(100.0)		
60–74 (%)	1172	277	123	36	27	228	1863	924	2787
	(62.9)	(14.9)	(6.6)	(1.9)	(1.4)	(12.2)	(100.0)		
75–89 (%)	393	55	65	18	13	95	639	336	975
	(61.5)	(8.6)	(10.2)	(2.8)	(2.0)	(14.9)	(100.0)		
≥90 (%)	14	2	4	3	0	5	28	26	54
	(50.0)	(7.1)	(14.3)	(10.7)	(0.0)	(17.9)	(100.0)		
Sub-total (%)	3177	960	293	95	76	725	5326	2774	8100
	(59.7)	(18.0)	(5.5)	(1.8)	(1.4)	(13.6)	(100.0)		
No information available	0	0	0	0	0	0	0	3	3
Total	3177	960	293	95	76	725	5326	2777	8103
Mean	59.50	54.28	64.64	62.72	61.26	56.97	58.58	57.60	58.25
SD	13.29	13.81	13.42	16.15	13.56	16.99	14.24	15.75	14.78

Tabulated for patients whose PD mode was "CAPD", as indicated in the patient survey. APDD, automated peritoneal dialysis device; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; PD, peritoneal dialysis.

and many patients underwent peritoneal dialysis only during the night-time. These results suggest that many young patients can learn the operation of APDDs easily without any problem, and that they tend to select night-time APDD to be able to carry out daytime activities. The APDD usage percentage was lowest among patients in the age range of 75–89 years. This suggests that it becomes more difficult to learn the operation of APDDs with aging. However, the percentage of APDD usage was conversely slightly higher among patients aged 90 years or older. In addition, the percentage of patients who underwent peritoneal dialysis only during the night-time was slightly higher among elderly patients aged 75 years or older. This suggests that for elderly patients with end-stage kidney failure, peritoneal dialysis with APDD, which is less laborious, tends to be applied during night-time. The peritoneal dialysis modes for patients aged 30–74 years were similar to those of the entire peritoneal dialysis patient population.

I. Dialysate solution used by peritoneal dialysis patients

Table 31 shows the relationship between the type of dialysate solution used and the mode of peritoneal dialysis. The percentages of patients who used 1.5% solution alone were 30–40% of the total in most of the peritoneal dialysis modes. However, for CCPD, the percentage of patients who used 1.5% solution alone was only 16.5% of the total. Among CCPD patients, the number of those who used 2.5% dialy-

TABLE 30. *Subtabulation of PD modes of patients (based on Table 29)*

Age (years)	Usage rate of APDD	PD duration per day		
		24-h continuous PD	Daytime only	Night-time only
<15	87.2	43.6	5.1	51.3
15–29	51.9	71.3	3.9	24.8
30–44	38.7	81.7	4.3	14.0
45–59	35.9	80.1	5.2	14.7
60–74	29.0	77.8	8.5	13.7
75–89	26.3	70.1	13.0	16.9
≥90	35.7	57.1	25.0	17.9
Total	33.4	77.7	7.3	15.0

This is a re-tabulation based on Table 29. Values in the table represent percentage relative to the number of patients belonging to each age range.

TABLE 31. *Peritoneal dialysis modes and dialysate solution used in patients*

	24-h continuous PD		Daytime-only PD		Night-time-only PD				
Dialysate solution	CAPD	CCPD	Without APDD	With APDD	Without APDD	With APDD	Sub-total	No information available	Total
1.5% alone (%)†	982	158	121	33	21	275	1590	12	1602
	(31.3)	(16.5)	(42.8)	(34.7)	(27.6)	(38.4)	(30.2)	(27.9)	(30.2)
1.5% + 2.5% (%)†	859	219	78	32	5	217	1410	16	1426
	(27.4)	(22.9)	(27.6)	(33.7)	(6.6)	(30.3)	(26.8)	(37.2)	(26.9)
2.5% alone (%)†	131	28	22	5	2	43	231	0	231
	(4.2)	(2.9)	(7.8)	(5.3)	(2.6)	(6.0)	(4.4)	(0.0)	(4.4)
1.5% + icodextrin (%)†	492	221	33	15	10	85	856	1	857
	(15.7)	(23.1)	(11.7)	(15.8)	(13.2)	(11.9)	(16.3)	(2.3)	(16.2)
1.5% + 2.5% + icodextrin (%)†	433	232	12	6	3	55	741	10	751
	(13.8)	(24.3)	(4.2)	(6.3)	(3.9)	(7.7)	(14.1)	(23.3)	(14.2)
2.5% + icodextrin (%)†	180	86	11	1	8	25	311	2	313
	(5.7)	(9.0)	(3.9)	(1.1)	(10.5)	(3.5)	(5.9)	(4.7)	(5.9)
icodextrin alone (%)†	10	4	3	0	27	7	51	2	53
	(0.3)	(0.4)	(1.1)	(0.0)	(35.5)	(1.0)	(1.0)	(4.7)	(1.0)
Use of 4.25% (%)†	19	5	0	2	0	1	27	0	27
	(0.6)	(0.5)	(0.0)	(2.1)	(0.0)	(0.1)	(0.5)	(0.0)	(0.5)
Solutions other than those above (%)†	28	3	3	1	0	8	43	0	43
	(0.9)	(0.3)	(1.1)	(1.1)	(0.0)	(1.1)	(0.8)	(0.0)	(0.8)
Sub-total (%)†	3134	956	283	95	76	716	5260	43	5303
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
No information available	43	0	9	10	4	0	66	2734	2800
Total	3177	956	292	105	80	716	5326	2777	8103
Use of 1.5% (%)†	2766	830	244	86	39	632	4597	39	4636
	(88.3)	(86.8)	(86.2)	(90.5)	(51.3)	(88.3)	(87.4)	(90.7)	(87.4)
Use of 2.5% (%)†	1603	565	123	44	18	340	2693	28	2721
	(51.1)	(59.1)	(43.5)	(46.3)	(23.7)	(47.5)	(51.2)	(65.1)	(51.3)
Use of icodextrin (%)†	1115	543	59	22	48	172	1959	15	1974
	(35.6)	(56.8)	(20.8)	(23.2)	(63.2)	(24.0)	(37.2)	(34.9)	(37.2)

†Values in parentheses represent percentage of the number of patients using one of the PD modes with respect to the total number of patients. APDD, automated peritoneal dialysis device; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; PD, peritoneal dialysis.

sate solution was fairly large, and the number of patients who used icodextrin solution was also large, as will be described later. These findings suggest that there are many CCPD patients who have a poor water removal function.

Examination of the simultaneous use of other dialysate solutions showed that in most of the peritoneal dialysis modes 85–90% of the patients use 1.5% solution, and approximately one-half of the patients use 2.5% solution. However, in the group of "night-time-only peritoneal dialysis (manual)" patients, the percentage of patients who use 1.5% solution was only 51.3%, and that of the 2.5% solution was only 23.7%. This is because many of the patients in the group of "night-time-only peritoneal dialysis (manual)" use icodextrin solution alone. Icodextrin solution is used by 20–30% patients in many of the peritoneal dialysis modes. However, in the above-mentioned group of "night-time-only peritoneal dialysis (manual)" patients and the CCPD group, approximately 60% of the patients used icodextrin solution. On the other hand, 4.25% solution was used only rarely.

J. Total daily amount of dialysate solution used

Table 32 shows the modes of peritoneal dialysis and the total daily amounts of dialysate solution used. The mean total amount of dialysate solution used by the entire peritoneal dialysis patient population was 7.43 L/day. The percentage of patients using 6 L to less than 10 L dialysate solution per day was 65.8%. The percentage of patients who used 10 L or more per day was 18.1%.

Hereafter, the amount of dialysate solution used in the peritoneal dialysis mode is examined. CCPD patients used the largest amount of dialysate solution, with a mean value of 9.83 L/day. In more than 80% of the CCPD patients, the total daily amount of dialysate solution used was 8 L/day or more, and 26.9% of the patients used more than 12 L of dialysate solution. This suggests that CCPD is used to obtain high dialysis efficiency and high water removal efficiency.

Patients having the second largest total amount of dialysate solution used were those in the group undergoing peritoneal dialysis using an APDD only during the night-time. The mean amount of dialysate

TABLE 32. *Peritoneal dialysis modes and total amounts of dialysate solution used in peritoneal dialysis patients*

Amount of dialysate solution used (L/day)	24-h continuous PD		Daytime-only PD		Night-time-only PD				
	CAPD	CCPD	Without APDD	With APDD	Without APDD	With APDD	Sub-total	No information available	Total
<1.5 (%)†	16	7	5	0	2	9	39	1	40
	(0.5)	(0.7)	(1.8)	(0.0)	(2.7)	(1.3)	(0.8)	(2.3)	(0.8)
1.5–2.9 (%)†	35	10	29	2	36	15	127	9	136
	(1.1)	(1.1)	(10.6)	(2.5)	(48.0)	(2.2)	(2.5)	(20.9)	(2.6)
3.0–4.4 (%)†	118	12	51	1	10	23	215	0	215
	(3.9)	(1.3)	(18.6)	(1.3)	(13.3)	(3.3)	(4.2)	(0.0)	(4.2)
4.5–5.9 (%)†	289	24	48	12	5	57	435	6	441
	(9.4)	(2.6)	(17.5)	(15.2)	(6.7)	(8.2)	(8.5)	(14.0)	(8.5)
6.0–7.9 (%)†	1199	132	80	24	9	211	1655	11	1666
	(39.2)	(14.0)	(29.2)	(30.4)	(12.0)	(30.5)	(32.3)	(25.6)	(32.3)
8.0–9.9 (%)†	1196	244	59	35	5	184	1723	9	1732
	(39.1)	(26.0)	(21.5)	(44.3)	(6.7)	(26.6)	(33.6)	(20.9)	(33.5)
10.0–11.9 (%)†	181	258	2	2	4	144	591	4	595
	(5.9)	(27.4)	(0.7)	(2.5)	(5.3)	(20.8)	(11.5)	(9.3)	(11.5)
≥12.0 (%)†	28	253	0	3	4	49	337	3	340
	(0.9)	(26.9)	(0.0)	(3.8)	(5.3)	(7.1)	(6.6)	(7.0)	(6.6)
Sub-total (%)†	3062	940	274	79	75	692	5122	43	5165
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
No information available	115	20	19	16	1	33	204	2734	2938
Total	3177	960	293	95	76	725	5326	2777	8103
Mean	6.90	9.83	5.26	6.94	4.14	7.86	7.44	6.35	7.43
SD	1.79	2.78	2.11	2.03	3.31	2.55	2.52	3.25	2.52

Tabulated for patients whose PD mode was "CAPD", as indicated in the patient survey. †Values in parentheses represent percentage relative to the total of each column. APDD, automated peritoneal dialysis device; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; PD, peritoneal dialysis.

solution used by this group was 7.86 L/day, and the percentage of patients using 6–12 L of dialysate solution per day was 77.9%. This finding suggests that for patients who are undergoing peritoneal dialysis using an APDD only during the night-time, a dialysis mode for obtaining high dialysis efficiency and high water removal efficiency in a limited time at night is applicable. However, perhaps because the dialysis treatment time is limited to the night-time, the percentage of patients who used 12 L of dialysate solution or more per day was only 7.1%. The patients who used the third largest total amount of dialysate solution were those in the group with daytime-only peritoneal dialysis using an APDD, wherein an average of 6.94 L/day was used. As described above, the top three daily amounts of dialysate solution used were for the modes using APDDs, suggesting that APDDs are essential for PD requiring large amounts of dialysate solution.

Following the top three groups, the group using conventional CAPD (24-h continuous peritoneal dialysis without APDDs) used the fourth largest amount of dialysate solution, with the average amount used being 6.90 L/day. Approximately 80% of these patients used 6L to less than 10 L dialysate solution per day. However, the percentage of patients who used 10 L or more per day was only 6.8%. Currently, commercially available dialysate-solution bags for manual exchange are the main type of 2-L preparation in a bag. Considering this with the above findings, most of the CAPD patients who use 10 L or more of dialysate solution per day would have to change their bags 5 times or more per day. Namely, the present data suggest that the changing of bags 5 times or more per day is actually difficult in CAPD with manual operation. In contrast, the groups undergoing peritoneal dialysis only during daytime or night-time with manual operation without APDDs used fairly small amounts of dialysate solutions.

K. Mean daily amount of water removed

Table 33 shows the modes of peritoneal dialysis and the mean daily amount of water removed of the entire peritoneal dialysis patient population was 0.81 L. The percentage of patients with a daily amount of water removed less than 1.2 L was 80.4%. By contrast, the percentage of patients with a daily amount of water removed of 1.2 L or more was only 19.6%. By peritoneal dialysis modes, the CCPD group had the largest daily amount of water removed, with a mean value of 0.94 L; and the percentage of patients with a daily water-removal amount of 1.2 L or more was 26.2%. After the CCPD group, the group of daytime-only peritoneal dialysis using APDD showed the second largest daily amount of water removed, with a mean value of 0.85 L; the

TABLE 33. *Peritoneal dialysis modes and mean daily amounts of water removed in peritoneal dialysis patients*

Daily amount of water removed (L/day)	24-h continuous PD		Daytime-only PD		Night-time-only PD		Sub-total	No information available	Total
	CAPD	CCPD	Without APDD	With APDD	Without APDD	With APDD			
<0.4 (%)†	449	71	101	14	17	96	748	5	753
	(16.4)	(8.4)	(41.6)	(20.6)	(25.8)	(15.8)	(16.4)	(22.7)	(16.4)
0.4–0.7 (%)†	852	251	52	14	27	236	1432	6	1438
	(31.1)	(29.6)	(21.4)	(20.6)	(40.9)	(38.9)	(31.3)	(27.3)	(31.3)
0.8–1.1 (%)†	908	304	59	24	16	186	1497	8	1505
	(33.1)	(35.8)	(24.3)	(35.3)	(24.2)	(30.7)	(32.7)	(36.4)	(32.8)
1.2–1.5 (%)†	409	157	23	13	6	68	676	3	679
	(14.9)	(18.5)	(9.5)	(19.1)	(9.1)	(11.2)	(14.8)	(13.6)	(14.8)
1.6–1.9 (%)†	71	34	5	0	0	11	121	0	121
	(2.6)	(4.0)	(2.1)	(0.0)	(0.0)	(1.8)	(2.6)	(0.0)	(2.6)
≥2.0 (%)†	53	31	3	3	0	9	99	0	99
	(1.9)	(3.7)	(1.2)	(4.4)	(0.0)	(1.5)	(2.2)	(0.0)	(2.2)
Sub-total (%)†	2742	848	243	68	66	606	4573	22	4595
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
No information available	435	112	50	27	10	119	753	2755	3508
Total	3177	960	293	95	76	725	5326	2777	8103
Mean	0.80	0.94	0.58	0.85	0.63	0.77	0.81	0.68	0.81
SD	0.58	0.68	0.47	0.59	0.37	0.61	0.60	0.39	0.60

Tabulated for patients whose PD mode was "CAPD", as indicated in the patient survey. †Values in parentheses represent percentage relative to the total of each column. APDD, automated peritoneal dialysis device; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; PD, peritoneal dialysis.

percentage of patients with a daily water-removal amount of 1.2 L or more was 23.5%. The conventional CAPD group (24-h continuous peritoneal dialysis without APDD) showed the third largest daily water-removal amount, with a mean value of 0.80 L; the percentage of patients who showed a daily water-removal amount of 1.2 L or more was 19.4%. These values are mostly identical to those observed for the entire peritoneal dialysis patient population. The peritoneal dialysis modes with a small amount of water removed were found in the groups undergoing peritoneal dialysis without using APDDs during daytime only or night-time only.

The above-mentioned tendencies are mostly identical to those of the amount of dialysate solution used, indicating that the amount of water removed is strongly related to the amount of dialysate solution used. However, different from the amount of dialysate solution used, the conventional CAPD group showed the third largest water-removal amount, which is larger than that of the group undergoing peritoneal dialysis using APDDs during the night-time only; thus, the data also suggest that the peritoneal dialysis duration is also related to the water-removal amount.

L. D/P ratio of the peritoneal equilibrium test (PET D/P ratio)

Table 34 shows the modes of PD and the D/P ratio of the peritoneal equilibrium test (PET D/P ratio). Among the 3041 patients who responded to this item, a peritoneal equilibrium test (PET) was carried out on 2030 patients (67%). The D/P ratio calculated from the PET is an index of the solute permeability of the peritoneal membrane; that is, the higher the D/P ratio, the higher the solute permeability. Twardowski classified patients on the basis of the D/P ratio as follows: "Low (D/P ratio <0.50)", "Low Average (D/P ratio = 0.50–0.65)", "High Average (D/P ratio = 0.65–0.81)", and "High (D/P ratio = 0.81)" (11). The mean D/P ratio of all patients who were subjected to the PET was 0.65. This value is precisely the boundary between the Low Average and High Average according to the Twardowski criteria; therefore, it is truly the "Average".

There were no large differences in the D/P ratio among different peritoneal dialysis modes. However, the patients undergoing CCPD showed the highest mean D/P ratio, and those undergoing peritoneal dialysis without using APDDs during night-time only had the lowest mean D/P ratio. Examination of the duration of 24-h continuous, daytime only, and night-time only peritoneal dialysis showed that the D/P ratios of patients using APDDs tended to be higher than those not using APDDs. These results suggest that peritoneal dialysis using APDDs, in which dialysate solution is frequently changed within a short period, tended to be applied to patients having a high D/P ratio, i.e. those with a peritoneal membrane with high solute permeability.

TABLE 34. *Peritoneal dialysis modes and dialysate/plasma creatinine ratio of the peritoneal equilibrium test in peritoneal dialysis patients*

	24-h continuous PD		Daytime-only PD		Night-time-only PD				
PET D/P ratio	CAPD	CCPD	Without APDD	With APDD	Without APDD	With APDD	Sub-total	No information available	Total
<0.50 (Low) (%)†	114	39	11	2	4	40	210	0	210
	(9.5)	(8.8)	(13.3)	(8.7)	(23.5)	(15.4)	(10.4)	(0.0)	(10.3)
0.50–1.64 (Low Average) (%)†	480	159	31	9	5	92	776	1	777
	(39.9)	(35.9)	(37.3)	(39.1)	(29.4)	(35.5)	(38.3)	(50.0)	(38.3)
0.65–0.80 (High Average) (%)†	447	195	31	10	7	90	780	0	780
	(37.2)	(44.0)	(37.3)	(43.5)	(41.2)	(34.7)	(38.5)	(0.0)	(38.4)
≥0.81 (High) (%)†	162	50	10	2	1	37	262	1	263
	(13.5)	(11.3)	(12.0)	(8.7)	(5.9)	(14.3)	(12.9)	(50.0)	(13.0)
Sub-total (%)†	1203	443	83	23	17	259	2028	2	2030
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
No application of PET	598	163	67	16	23	137	1004	7	1011
No information available	1376	354	143	56	36	329	2294	2768	5062
Total	3177	960	293	95	76	725	5326	2777	8103
Mean	0.65	0.66	0.64	0.65	0.60	0.64	0.65	0.70	0.65
SD	0.13	0.13	0.14	0.11	0.12	0.14	0.13	0.18	0.13

Tabulated for patients whose PD mode was "CAPD", as indicated in the patient survey. †Values in parentheses represent percentage relative to the total of each column. APDD, automated peritoneal dialysis device; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; PD, peritoneal dialysis; PET, peritoneal equilibrium test; PET D/P ratio, dialysate/plasma creatinine ratio of the peritoneal equilibrium test.

M. Frequency of peritonitis

Table 35 shows the frequencies of peritonitis in each year. For the entire peritoneal dialysis patient population, the annual frequency of peritonitis was 19.7%. The percentage of patients who had peritonitis twice or more per year was 6.3%. The incidences of peritonitis in the 24-h CAPD group and in the group with daytime-only peritoneal dialysis were

TABLE 35. *Peritoneal dialysis modes and annual incidences of peritonitis in peritoneal dialysis patients*

	24-h continuous PD		Daytime-only PD		Night-time-only PD				
Frequency of peritonitis	CAPD	CCPD	Without APDD	With APDD	Without APDD	With APDD	Sub-total	No information available	Total
No occurrence (%)†	2363	716	229	63	67	575	4013	36	4049
	(79.3)	(80.3)	(81.5)	(79.7)	(88.2)	(84.9)	(80.5)	(64.3)	(80.3)
Once (%)†	428	114	39	9	7	72	669	7	676
	(14.4)	(12.8)	(13.9)	(11.4)	(9.2)	(10.6)	(13.4)	(12.5)	(13.4)
Twice (%)†	113	39	9	3	1	16	181	8	189
	(3.8)	(4.4)	(3.2)	(3.8)	(1.3)	(2.4)	(3.6)	(14.3)	(3.7)
3 times (%)†	44	10	4	4	0	6	68	3	71
	(1.5)	(1.1)	(1.4)	(5.1)	(0.0)	(0.9)	(1.4)	(5.4)	(1.4)
4 times (%)†	15	8	0	0	0	4	27	1	28
	(0.5)	(0.9)	(0.0)	(0.0)	(0.0)	(0.6)	(0.5)	(1.8)	(0.6)
5 times (%)†	10	3	0	0	1	2	16	0	16
	(0.3)	(0.3)	(0.0)	(0.0)	(1.3)	(0.3)	(0.3)	(0.0)	(0.3)
6 times (%)†	4	0	0	0	0	1	5	1	6
	(0.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	(1.8)	(0.1)
7 times (%)†	1	1	0	0	0	0	2	0	2
	(0.0)	(0.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
8 times (%)†	1	0	0	0	0	0	1	0	1
	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
9 times or more (%)†	1	1	0	0	0	1	3	0	3
	(0.0)	(0.1)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	(0.0)	(0.1)
Sub-total (%)†	2980	892	281	79	76	677	4985	56	5041
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)
No information available	197	68	12	16	0	48	341	2721	3062
Total	3177	960	293	95	76	725	5326	2777	8103

Tabulated for patients whose PD mode was "CAPD", as indicated in the patient survey. †Values in parentheses represent percentage relative to the total of each column. APDD, automated peritoneal dialysis device; CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; PD, peritoneal dialysis.

TABLE 36. *Status of peritoneal dialysis (PD) and history of encapsulated peritoneal sclerosis (EPS) (only for patients who responded to the question on "status of peritoneal dialysis")*

	History of EPS							
Status of peritoneal dialysis	Without history	With history	Currently under treatment	Suspected, or was suspected of having the disease	Sub-total	Undetermined	No information available	Total
On peritoneal dialysis alone (%)	4 083 (98.1)	27 (0.6)	1 (0.0)	52 (1.2)	4 163 (100.0)	134	228	4 525
Combination of PD and hemodialysis (%)	818 (91.8)	51 (5.7)	5 (0.6)	17 (1.9)	891 (100.0)	18	85	994
Peritoneal dialysis was applied in the past (%)	2 328 (79.8)	363 (12.4)	57 (2.0)	168 (5.8)	2 916 (100.0)	328	480	3 724
Peritoneal dialysis has not yet been applied (%)	88 470 (99.3)	235 (0.3)	3 (0.0)	358 (0.4)	89 066 (100.0)	3711	24 020	116 797
Total (%)	95 699 (98.6)	676 (0.7)	66 (0.1)	595 (0.6)	97 036 (100.0)	4191	24 813	126 040

almost the same, that is, approximately 20%, but those in the night-time-only treatment group were slightly lower at 11–15%. The percentage of patients who had peritonitis twice or more per year in the night-time-only peritoneal dialysis group tended to be lower as well.

N. Encapsulated peritoneal sclerosis (EPS)

Table 36 shows results of the survey on the previous history of EPS at the end of 2005, together with the status of peritoneal dialysis. As shown in the table, 0.7% of the entire dialysis patient population had a "previous history", 0.1% of the patients were "under treatment", and 0.6% of the patients were "suspected of having the disease". A large number of the patients with a previous history were found in the groups "underwent peritoneal dialysis in the past" and "combination of hemodialysis and peritoneal dialysis".

III. Calculation of life expectancy of the dialysis patient population

Tables 37 and 38 show the life expectancies of male and female dialysis patient populations in 2003, which we previously reported. For comparison, the life expectancies of the general population published by the Ministry of Health, Labor and Welfare are also listed in the tables. In the general population, life expectancies are higher for females than for males. Similarly in the dialysis patient population, life expectancies were higher for females than for males in all age ranges. The life expectancy of the dialysis patient population was "approximately one-half" that of the general population of the same sex and age, in all age ranges. These results demonstrate that there is still much room for improvement in life expectancies of the dialysis patient population compared with those of the general population.

The ratios of life expectancies of the dialysis patient population to those of the general population (%) in terms of sex and age range were calculated and are shown in Tables 37 and 38. Absolute values of life expectancies indicate that female patients have a higher life expectancy than male patients. However, the difference in life expectancy between the dialysis patient population and the general population was smaller for males than for females (i.e. the life-expectancy ratios were higher for males than for females). Furthermore, this difference is larger in the older age range of 60–80 years, and smaller in young patients and in the older age range of 80 years or more. The factors underlying these findings are still unclear.

In the previously described report by Held et al. (3), the age range for the life-expectancy calculation was wide, 45–64 years, and no distinction was made between males and females. Therefore, it is difficult to directly compare their results with the current results. The ratio of the life expectancy of dialysis patients relative to that of the general population in Japan in 1989, the year in which Held et al.'s survey was carried out, was 44.5%, as mentioned above. Examining the current calculation results, we noted that life expectancies of male dialysis patients in the same age range were generally higher than those reported by Held et al. Those of female patients in the age range of 45–53 were similar or higher, but those in the age range of 54–64 were lower.

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TABLE 37. *Average life expectancies of male dialysis patients (in 2003)*

Age *x*	Death rate *nqx*	Number of surviving patients *lx*	Number of dead patients *ndx*	Static population *nLx*	Static population *Tx*	Life expectancy *ex*	Life expectancy of general population *ex*	Ratio of life expectancy of dialysis patients to that of general population (%)
29	0.007	100 000	650	99 675	2 818 311	28.18	50.19	56.2
30	0.008	99 350	838	98 930	2 718 636	27.36	49.23	55.6
31	0.003	98 511	264	98 379	2 619 706	26.59	48.27	55.1
32	0.016	98 247	1581	97 457	2 521 326	25.66	47.31	54.2
33	0.010	96 666	974	96 179	2 423 869	25.07	46.35	54.1
34	0.016	95 692	1570	94 907	2 327 690	24.32	45.39	53.6
35	0.006	94 122	584	93 830	2 232 783	23.72	44.43	53.4
36	0.021	93 538	1926	92 575	2 138 953	22.87	43.47	52.6
37	0.023	91 612	2088	90 568	2 046 379	22.34	42.52	52.5
38	0.019	89 524	1691	88 678	1 955 811	21.85	41.57	52.6
39	0.013	87 832	1177	87 244	1 867 133	21.26	40.62	52.3
40	0.020	86 656	1760	85 776	1 779 889	20.54	39.67	51.8
41	0.014	84 896	1185	84 303	1 694 113	19.96	38.73	51.5
42	0.024	83 711	2013	82 704	1 609 809	19.23	37.79	50.9
43	0.015	81 698	1244	81 076	1 527 105	18.69	36.86	50.7
44	0.018	80 454	1473	79 717	1 446 029	17.97	35.93	50.0
45	0.022	78 981	1750	78 106	1 366 312	17.30	35.01	49.4
46	0.025	77 231	1956	76 253	1 288 206	16.68	34.09	48.9
47	0.031	75 275	2306	74 122	1 211 954	16.10	33.18	48.5
48	0.028	72 969	2041	71 949	1 137 832	15.59	32.27	48.3
49	0.035	70 928	2473	69 692	1 065 883	15.03	31.36	47.9
50	0.039	68 456	2653	67 129	996 191	14.55	30.47	47.8
51	0.033	65 802	2139	64 733	929 062	14.12	29.58	47.7
52	0.037	63 664	2332	62 498	864 329	13.58	28.70	47.3
53	0.037	61 332	2261	60 201	801 832	13.07	27.83	47.0
54	0.040	59 071	2370	57 886	741 630	12.55	26.97	46.6
55	0.048	56 701	2728	55 337	683 744	12.06	26.12	46.2
56	0.053	53 973	2885	52 530	628 408	11.64	25.28	46.1
57	0.043	51 088	2219	49 978	575 877	11.27	24.44	46.1
58	0.050	48 869	2450	47 644	525 899	10.76	23.61	45.6
59	0.055	46 419	2542	45 148	478 256	10.30	22.79	45.2
60	0.057	43 877	2493	42 630	433 108	9.87	21.98	44.9
61	0.058	41 383	2399	40 184	390 479	9.44	21.18	44.5
62	0.066	38 984	2557	37 705	350 295	8.99	20.38	44.1
63	0.074	36 427	2693	35 080	312 590	8.58	19.58	43.8
64	0.076	33 734	2565	32 451	277 509	8.23	18.80	43.8
65	0.078	31 168	2434	29 951	245 058	7.86	18.02	43.6
66	0.088	28 734	2521	27 474	215 107	7.49	17.26	43.4
67	0.092	26 213	2416	25 005	187 633	7.16	16.51	43.4
68	0.098	23 797	2335	22 630	162 627	6.83	15.77	43.3
69	0.107	21 462	2288	20 318	139 998	6.52	15.05	43.3
70	0.103	19 174	1967	18 191	119 679	6.24	14.35	43.5
71	0.110	17 207	1892	16 261	101 488	5.90	13.67	43.1
72	0.123	15 315	1882	14 374	85 227	5.56	13.00	42.8
73	0.135	13 434	1808	12 529	70 853	5.27	12.35	42.7
74	0.143	11 625	1662	10 794	58 323	5.02	11.72	42.8
75	0.153	9 963	1527	9 200	47 529	4.77	11.09	43.0
76	0.163	8 437	1378	7 748	38 329	4.54	10.49	43.3
77	0.171	7 058	1208	6 454	30 581	4.33	9.90	43.8
78	0.193	5 850	1131	5 284	24 127	4.12	9.33	44.2
79	0.191	4 719	900	4 269	18 843	3.99	8.78	45.5
80	0.189	3 819	723	3 458	14 574	3.82	8.26	46.2
81	0.198	3 096	615	2 789	11 117	3.59	7.75	46.3
82	0.222	2 482	551	2 206	8 328	3.36	7.26	46.2
83	0.254	1 931	490	1 686	6 121	3.17	6.80	46.6
84	0.258	1 442	373	1 255	4 435	3.08	6.36	48.4
85	0.228	1 069	243	947	3 179	2.97	5.95	50.0
86	0.303	826	250	701	2 232	2.70	5.57	48.5
87	0.272	576	157	497	1 531	2.66	5.21	51.1
88	0.323	419	135	351	1 034	2.47	4.87	50.7
89	0.326	284	93	238	683	2.40	4.55	52.9
90	0.333	191	64	159	445	2.33	4.26	54.6

TABLE 38. *Average life expectancies of female dialysis patients (in 2003)*

Age *x*	Death rate *nqx*	Number of surviving patients *lx*	Number of dead patients *ndx*	Static population *nLx*	Static population *Tx*	Life expectancy *ex*	Life expectancy of general population *ex*	Ratio of life expectancy of dialysis patients to that of general population (%)
29	0.012	100 000	1198	99 401	3 097 648	30.98	56.95	54.4
30	0.011	98 802	1046	98 280	2 998 247	30.35	55.97	54.2
31	0.009	97 757	895	97 309	2 899 968	29.67	54.99	53.9
32	0.000	96 862	0	96 862	2 802 658	28.93	54.01	53.6
33	0.004	96 862	361	96 682	2 705 796	27.93	53.03	52.7
34	0.016	96 501	1534	95 734	2 609 114	27.04	52.05	51.9
35	0.014	94 967	1374	94 280	2 513 380	26.47	51.08	51.8
36	0.015	93 593	1389	92 898	2 419 100	25.85	50.10	51.6
37	0.017	92 204	1543	91 433	2 326 202	25.23	49.13	51.4
38	0.014	90 661	1252	90 035	2 234 769	24.65	48.16	51.2
39	0.008	89 409	758	89 030	2 144 734	23.99	47.19	50.8
40	0.022	88 651	1923	87 690	2 055 704	23.19	46.22	50.2
41	0.007	86 728	613	86 421	1 968 014	22.69	45.26	50.1
42	0.014	86 115	1174	85 528	1 881 593	21.85	44.29	49.3
43	0.021	84 941	1746	84 068	1 796 065	21.14	43.33	48.8
44	0.025	83 196	2120	82 136	1 711 996	20.58	42.37	48.6
45	0.018	81 076	1434	80 359	1 629 860	20.10	41.41	48.5
46	0.014	79 642	1154	79 065	1 549 502	19.46	40.46	48.1
47	0.019	78 488	1471	77 753	1 470 436	18.73	39.51	47.4
48	0.019	77 017	1490	76 272	1 392 684	18.08	38.56	46.9
49	0.018	75 527	1345	74 855	1 316 412	17.43	37.62	46.3
50	0.028	74 183	2111	73 127	1 241 557	16.74	36.68	45.6
51	0.025	72 072	1816	71 164	1 168 429	16.21	35.74	45.4
52	0.029	70 256	2026	69 243	1 097 266	15.62	34.81	44.9
53	0.030	68 230	2015	67 223	1 028 022	15.07	33.88	44.5
54	0.028	66 216	1878	65 276	960 799	14.51	32.96	44.0
55	0.033	64 337	2153	63 261	895 523	13.92	32.04	43.4
56	0.036	62 184	2238	61 065	832 262	13.38	31.13	43.0
57	0.039	59 946	2317	58 788	771 197	12.86	30.22	42.6
58	0.039	57 630	2250	56 505	712 409	12.36	29.31	42.2
59	0.040	55 380	2209	54 275	655 904	11.84	28.40	41.7
60	0.042	53 171	2217	52 063	601 629	11.31	27.49	41.2
61	0.050	50 954	2539	49 685	549 566	10.79	26.59	40.6
62	0.055	48 415	2651	47 090	499 881	10.32	25.70	40.2
63	0.060	45 765	2729	44 400	452 791	9.89	24.80	39.9
64	0.057	43 036	2462	41 805	408 390	9.49	23.92	39.7
65	0.061	40 574	2480	39 333	366 586	9.04	23.04	39.2
66	0.078	38 093	2961	36 613	327 252	8.59	22.16	38.8
67	0.067	35 133	2340	33 962	290 639	8.27	21.30	38.8
68	0.077	32 792	2527	31 529	256 677	7.83	20.44	38.3
69	0.089	30 265	2681	28 925	225 148	7.44	19.59	38.0
70	0.097	27 584	2664	26 252	196 223	7.11	18.75	37.9
71	0.100	24 919	2501	23 669	169 972	6.82	17.92	38.1
72	0.108	22 419	2430	21 204	146 303	6.53	17.10	38.2
73	0.106	19 989	2115	18 931	125 099	6.26	16.30	38.4
74	0.118	17 874	2108	16 820	106 168	5.94	15.50	38.3
75	0.117	15 766	1850	14 841	89 348	5.67	14.72	38.5
76	0.132	13 916	1833	13 000	74 507	5.35	13.95	38.4
77	0.137	12 083	1661	11 253	61 508	5.09	13.19	38.6
78	0.163	10 422	1704	9 571	50 255	4.82	12.46	38.7
79	0.154	8 719	1344	8 047	40 684	4.67	11.74	39.7
80	0.171	7 375	1259	6 745	32 638	4.43	11.04	40.1
81	0.169	6 116	1032	5 600	25 892	4.23	10.37	40.8
82	0.190	5 083	968	4 600	20 293	3.99	9.72	41.1
83	0.201	4 116	829	3 701	15 693	3.81	9.10	41.9
84	0.191	3 287	627	2 973	11 992	3.65	8.51	42.9
85	0.242	2 660	645	2 338	9 018	3.39	7.95	42.6
86	0.226	2 015	455	1 788	6 681	3.32	7.42	44.7
87	0.251	1 560	392	1 365	4 893	3.14	6.91	45.4
88	0.236	1 169	276	1 031	3 528	3.02	6.44	46.9
89	0.251	893	224	781	2 497	2.80	5.99	46.7
90	0.280	669	187	575	1 717	2.57	5.57	46.1

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