

Overview of Regular Dialysis Treatment in Japan (as of 31 December 2009)

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Abstract: A nationwide statistical survey of 4196 dialysis facilities was conducted at the end of 2009, and 4133 facilities (98.5%) responded. The number of patients undergoing dialysis at the end of 2009 was determined to be 290 661, an increase of 7240 patients (2.6%) compared with that of 2008. The number of dialysis patients per million at the end of 2009 was 2279.5. The crude death rate of dialysis patients from the end of 2008 to the end of 2009 was 9.6%. The mean age of the new patients introduced into dialysis was 67.3 years old and the mean age of the entire dialysis patient population was 65.8 years old. Primary diseases such as diabetic nephropathy and chronic glomerulonephritis for new dialysis patients, showed a percentage of 44.5% and 21.9%, respectively. Based on the facilities surveyed, 84.2% of the facilities that responded to the questionnaire satisfied the microbiological quality standard for dialysis fluids for the Japanese Society for Dialysis Therapy (JSDT), with an endotoxin concentration of less than

0.05 EU/mL in the dialysis fluid. Similarly, 98.2% of the facilities surveyed satisfied another standard of the society of a bacterial count of less than 100 cfu/mL in the dialysis fluid. The facility survey indicated that the number of patients who were treated by blood purification by both peritoneal dialysis and extracorporeal circulation, such as hemodialysis, was 1720. Among the total number of patients, 24.8% were satisfied with the management target recommended in the treatment guidelines for secondary hyperparathyroidism. These standards are set by the JSDT, based on the three parameters, i.e. serum calcium concentration, serum phosphorus concentration, and serum intact parathyroid hormone concentration. According to the questionnaire, 9.8% of the patients were considered to have a complication of dementia. **Key Words:** Combined use, Peritoneal dialysis, Dementia, Dialysis, Patient population, Survey, Survival rate.

The Japanese Society for Dialysis Therapy (JSDT) has been conducting a statistical survey of dialysis facilities across the country annually since 1968. In this survey, conducted at the end of 2009, new members were added to the District Cooperative Committee to implement the survey, which includes a registry of

patients who undergo peritoneal dialysis (PD), i.e. the PD registry. Facilities that offer only PD were excluded from the previous survey but were included as targets of this survey. The purpose of this inclusion was to clarify the current status of PD therapy in Japan more accurately than before. JSDT called the facilities that offer only PD in advance and confirmed whether they had PD patients as of the end of 2009. Then, questionnaires were sent only to facilities that were confirmed to have PD patients as of the end of 2009. As a result, the number of facilities that participated in the 2009 survey was 4196, an increase of 72 facilities from 2008 (4124 facilities). This increase in the number of target facilities was the largest in the last few years.

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The following items were newly added to the 2009 survey. First, the facility and patient surveys included, for the first time, a detailed investigation of the current status of patients who underwent both PD and other therapies such as hemodialysis (HD) and hemodiafiltration (HDF). As guidelines for the treatment of chronic kidney disease-mineral and bone disorder (CKD-MBD), JSDT released "Clinical practice guideline for the management of secondary hyperparathyroidism in chronic dialysis patients." in 2008 (1). These guidelines are currently being revised. The data required for this revision were also newly investigated in the 2009 survey. Moreover, the dialysis population is aging yearly in Japan. In line with this background, dementia in dialysis patients is becoming a serious problem. With the aim of obtaining basic data required to cope with this problem, the current status of dialysis patients who have dementia as a complication was also surveyed. In addition to this, the activities of daily living (ADL) and place of residence of individual patients were surveyed again.

Similar to the 2008 survey, JSDT received candidate research topics from its regular members, among which five were selected for open recruitment research projects. The verification of the database of JSDT (database cleaning) started in 2004 and was ongoing in 2009.

In this report, we summarize data obtained from the 2009 survey on the following items:

- A. Basic demographics
- B. Current status of dialysis fluid quality
- C. Current status of PD therapy
- D. Items associated with CKD-MBD
- E. Items associated with dementia

Since our previous reports, we have received various questions and critical comments about our statistical surveys from JSDT members. The common comments and frequently asked questions include the following: (i) Is it necessary to conduct such surveys that require troublesome work? (ii) There are too many survey items. (iii) Why are the survey items changed every year? (iv) Disclosure of survey items in advance is preferable. (v) Is it effective to conduct the survey every year? The Committee of JSDT has answered each question as much as possible. Answers to these questions were given by Yoshiharu Tsubakihara, Chair of the Committee, as indicated below.

Is it necessary to conduct such surveys that require troublesome work?

In Article 4 (Objectives and Tasks) Chapter 2 of the Memorandum of JSDT, it is stated that this

society shall conduct research surveys on dialysis therapies, that is, blood purification therapies (e.g. HD, PD, hemofiltration, hemoadsorption, and plasma exchange) and the causes and clinical conditions of diseases treated by dialysis. Research on dialysis therapies will be promoted and information will be disseminated through the presentation of survey results, exchange of findings, and provision of information, thereby contributing to academic progress of dialysis therapy in Japan. Therefore, the implementation of statistical surveys is one objective of JSDT and one of the most important tasks. We conduct statistical surveys not because it is stated that such surveys shall be conducted in the Memorandum but because we believe that they are important. We consider that the discontinuation of our statistical surveys will lead to the loss of the direction of dialysis care in Japan.

There are too many survey items

This is related to question (iii). The items of our surveys are selected annually to satisfy various requirements, such as acquiring necessary information for the preparation of guidelines. As shown in paper questionnaires, the number of survey items is, in principle, limited so that they fit within one page. We make every effort to not increase the total number of survey items.

Why are the survey items changed every year?

The needs for survey items are changing every year. Survey items are determined in accordance with the changing needs. The number of items is appropriately controlled so that it does not continue to increase.

Disclosure of survey items in advance is preferable

It is very difficult to determine the survey items 2 years before the survey. To inform dialysis facilities about the determined survey items as early as possible, information on survey items is published in the journals published by JSDT in October, and it is also sent by fax to individual facilities.

Is it effective to conduct the survey every year?

We believe that our annual statistical survey is of great significance. For example, when this regular survey is carried out every other year, the motivation of surveyed facilities to respond to the questionnaires may decrease and lead to a decrease in the collection rate. We believe that this survey has a high collection rate because it is carried out annually.

However, we also recognize that complaints about this survey from the society members may come from

insufficient feedback of the survey and analysis results to the members who cooperated in this survey. To deal with this problem, we publish, on the JSDT homepage, this annual rapid report of survey results, i.e. "The Illustrated, Current Status of Chronic Dialysis in Japan," (reports since 2002 are available). Individual facilities are provided with only one printed copy. Moreover, we are devoting ourselves to the preparation of a CD-ROM that contains detailed data, which every member can use to search necessary information. We have received many proposals for open recruitment research projects started 2 years before. The results of accepted open recruitment research projects and research carried out by the Committee have been presented and appreciated at many conferences in Japan as well as the US and European countries. In addition, findings of this survey are used as the basis for the preparation of guidelines and contribute to the improvement of dialysis care in Japan.

PATIENTS AND METHODS

This survey is conducted every year by sending questionnaires to target dialysis facilities. A total of 4196 facilities surveyed were either member facilities of JSDT, nonmember facilities offering chronic HD, or facilities offering PD but not HD as of 31 December 2009. The number of facilities participating in this survey increased by 72 (1.7%) from the previous year.

The questionnaires were mainly sent and collected by postal mail; some were also faxed. Paper questionnaires and electronic media, i.e. universal serial bus (USB) memory drives, were sent to all the 4196 target facilities, 3352 of which responded using the USB memory drives.

In this survey, we used two sets of questionnaires. One was about the facilities (facility survey), in which items related to the details of dialysis facilities were investigated, such as the number of patients, the number of staff members, and the number of patient stations at individual facilities (using the questionnaire referred to as "Sheet I"). The other survey was about the patients (patient survey), in which the epidemiological background, treatment conditions, and outcome of treatment of individual dialysis patients were examined (using the questionnaires referred to as "Sheets II, III, and IV").

The collection rate of the questionnaire (Sheet I) in the 2009 survey was 98.5% (4133 facilities), which exceeded the goal of at least 98%. Moreover, the collection rate of both questionnaires, i.e. the facility

and patient surveys, from facilities was 96.0% (4029 facilities), which also exceeded the goal of at least 95%.

As mentioned above, the number of facilities that responded using electronic media was 3352 (81.1%), a continued increase from that of the 2008 survey (79.5%). This increase in the number of facilities that responded using electronic media contributes to the accurate and simple analysis of survey data.

The cumulative survival rates after introduction into dialysis were calculated using the mortality table method (2).

Additional survey items

In the 2009 survey, the following items were added to the facility survey.

- Number of bedside consoles equipped with endotoxin retentive filter (ETRF)
- Use or nonuse of ETRF for collecting dialysis fluid
- Site from which dialysis fluid was sampled for the dialysis fluid test
- Frequency of measurement of endotoxin concentration in dialysis fluid
- Endotoxin concentration in dialysis fluid
- Frequency of measurement of bacterial count in dialysis fluid
- Volume of sample for measurement of bacterial count in dialysis fluid
- Medium used for cultivation of bacteria in dialysis fluid
- Bacterial count in dialysis fluid
- Number of patients who did not undergo PD despite having a peritoneal catheter for PD (including those who underwent only peritoneal cleaning) among those who underwent daytime dialysis, nighttime dialysis, or home HD
- Number of patients who underwent both PD and other blood purification therapies using extracorporeal circulation such as HD and HDF
- Number of new patients who were started on PD within the survey period but introduced to other blood purification therapies within the same period

In the patient survey, the following items were investigated in addition to the basic survey items, such as, epidemiological background and patient outcomes.

- Current status of combined use of PD and other blood purification therapies using extracorporeal circulation such as HD and HDF
- Number of years on PD (PD period) (for patients who were receiving PD at the time of survey)

- Number of times of undergoing blood purification therapy per week (frequency of dialysis per week)
- Duration of one session of blood purification using extracorporeal circulation (dialysis duration)
- Calcium level in dialysis fluid
- Body height
- Predialysis and postdialysis weights
- Predialysis and postdialysis blood urea nitrogen (BUN) levels
- Predialysis and postdialysis serum creatinine levels
- Predialysis serum calcium level
- Predialysis serum phosphorus level
- Predialysis serum magnesium level
- Predialysis serum albumin level
- Predialysis serum C-reactive protein (CRP) level
- Predialysis blood hemoglobin level
- Predialysis serum alkaline phosphatase (ALP) level
- Measurement method for serum parathyroid hormone (PTH) level
- Serum PTH level
- Administration or nonadministration of sevelamer hydrochloride (HCl) drug
- Administration or nonadministration of calcium carbonate drug
- Administration or nonadministration of lanthanum carbonate drug
- Administration or nonadministration of other phosphate binders
- Administration or nonadministration of oral vitamin D supplements
- Administration or nonadministration of intravenous vitamin D supplements
- Administration or nonadministration of cinacalcet
- History of undergoing parathyroidectomy (PTx)
- History of undergoing percutaneous ethanol injection therapy (PEIT)
- Complications of dementia
- Activities of daily living (ADL)
- Place of residence
- History of myocardial infarction
- History of cerebral hemorrhage
- History of cerebral infarction
- History of amputation
- History of hip fracture

RESULTS AND DISCUSSION

Basic demographics

Number of patients

Table 1 shows a summary of the dynamics of the dialysis patient population in Japan at the end of 2009 obtained in this survey. Data on the number of years

on dialysis (dialysis period) and the longest period on dialysis were obtained from the patient survey. All the other results were obtained from the facility survey.

The total number of dialysis patients in Japan at the end of 2009 was 290 661, as determined from the facility survey. The number of dialysis patients in Japan at the end of 2008 was 283 421, an increase of 7240 patients (2.6%) from the end of 2008 to the end of 2009.

The number of facilities that responded to the questionnaire at the end of 2009 was 4133, an increase of 52 (1.3%) from the previous year. The number of bedside consoles at the end of 2009 was 114 979, an increase of 2981 (2.7%) from the previous year. The total number of patients for whom dialysis can be simultaneously provided at all the facilities was 113 487 and the maximum dialysis capacity was 383 530 patients, both of which increased in 2009.

The percentage of patients who underwent daytime dialysis increased slightly to 82.2%, whereas patients who underwent nighttime dialysis decreased further to 14.4%. The trends of increasing percentage of daytime dialysis patients and decreasing percentage of nighttime dialysis patients were continuously observed over the last 10 years. The number of patients who underwent home HD was 236, an increase of 43 (22.3%) from the previous year, but it was still a small number of patients.

As described above, the current status of patients who underwent both PD and other therapies such as HD and HDF was newly investigated in the present survey. According to the results of the facility survey, the number of patients who underwent both PD and other therapies such as HD and HDF in Japan at the end of 2009 was 1720 (0.6% of all the dialysis patients).

According to the patient survey, the longest period on dialysis was 41 years and 8 months. The number of dialysis patients per million at the end of 2009 was 2279.5. Table 2 shows changes in the number of dialysis patients per million. Table 3 shows the total number of chronic dialysis patients in each prefecture of Japan determined from the facility survey.

Mean age

The dialysis patient population in Japan is aging yearly. Table 4 shows changes in mean age of patients obtained from the patient survey. As shown in this table, the mean age of new patients who were started on dialysis in 2009 was 67.3 years (± 13.3 , \pm SD here and hereafter) and the mean age of all

TABLE 1. Current status of chronic dialysis therapy in Japan (as of 31 December 2009)

Number of facilities		4 133	Increase of 52 (1.3%)		
Equipment	Number of patient station	114 979	Increase of 2 981 (2.7%)		
Capacity	Simultaneous dialysis (people)	113 487	Increase of 2 889 (2.6%)		
	Maximum accommodation capacity (people)	383 530	Increase of 8 748 (2.3%)		
Chronic dialysis patients [†]		290 661	Increase of 7 240 (2.6%)		
	Daytime dialysis	238 848	(82.2%)		
	Nighttime dialysis	41 719	(14.4%)		
	Home dialysis	236	(0.1%)		
	Peritoneal dialysis	9 858	(3.4%)		
Number of patients who underwent PD with HD, HDF, etc.		1 720	(0.6%)		
Patients per million		2 279.5	Increase of 59.9 (2.7%)		
Number of patients newly introduced to dialysis		37 566	Decrease of 614 (1.6%)		
Number of decreased patients		27 646	Increase of 380 (1.4%)		
(The above data were obtained from the facility survey.)					
Duration of dialysis [‡]		Male	Female	Unknown	Total
0 ≤ < 5		88 603	48 331	0	136 934 (48.6%)
5 ≤ < 10		43 915	27 336	0	71 251 (25.3%)
10 ≤ < 15		20 642	14 432	0	35 074 (12.4%)
15 ≤ < 20		10 098	8 013	0	18 111 (6.4%)
20 ≤ < 25		5 339	4 537	0	9 876 (3.5%)
25 ≤		5 899	4 851	0	10 750 (3.8%)
Total		174 496	107 500	0	281 996 (100.0%)
Longest dialysis history		41 years and 8 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.

the dialysis patients in 2009 was 65.8 years (± 12.6). The dialysis patient population aged by 6.8 years from the end of 1989 to the end of 1999 and by 5.2 years from the end of 1999 to the end of 2009. Thus, the rate of aging of the dialysis patient population decreased. Similarly, the mean age of new

patients who were started on dialysis increased by 6.0 years from the end of 1989 to the end of 1999, but by only 3.9 years from the end of 1999 to the end of 2009. These findings show that the rate of aging of new patients who were started on dialysis also decreased.

TABLE 2. Changes in number of dialysis patients per million

Year	Number of patients per million	Year	Number of patients per million
1983	443.7	1997	1394.9
1984	497.5	1998	1472.5
1985	547.8	1999	1556.7
1986	604.4	2000	1624.1
1987	658.8	2001	1721.9
1988	721.1	2002	1801.2
1989 [†]	790.0	2003	1862.7
1990	835.7	2004	1943.5
1991	937.6	2005	2017.6
1992	995.8	2006	2069.9
1993	1076.4	2007	2154.2
1994	1149.4	2008	2219.6
1995	1229.7	2009	2279.5
1996	1328.4		

Tabulated results of facility survey. [†]1989: The collection rate was 86% and the obtained data were rounded off to the second decimal place.

TABLE 3. Numbers of chronic dialysis patients in prefectures

Names of administrative divisions	Daytime	Nighttime	Home hemodialysis	Peritoneal dialysis	Total [†]
Hokkaido	12 352	1 347	14	521	14 234
Aomori prefecture	2 820	254	0	102	3 176
Iwate prefecture	2 411	331	0	132	2 874
Miyagi prefecture	3 801	872	0	72	4 745
Akita prefecture	1 623	150	0	68	1 841
Yamagata prefecture	1 967	257	2	132	2 358
Fukushima prefecture	4 011	471	0	216	4 698
Ibaraki prefecture	5 793	875	1	154	6 823
Tochigi prefecture	4 528	742	2	52	5 324
Gunma prefecture	4 229	756	0	92	5 077
Saitama prefecture	12 170	1 866	41	391	14 468
Chiba prefecture	10 352	1 813	1	276	12 442
Tokyo	22 199	4 981	6	1011	28 197
Kanagawa prefecture	13 786	3 091	20	520	17 417
Niigata prefecture	3 563	1 004	1	160	4 728
Toyama prefecture	1 913	263	1	79	2 256
Ishikawa prefecture	1 999	327	0	93	2 419
Fukui prefecture	1 502	173	0	80	1 755
Yamanashi prefecture	1 864	201	1	60	2 126
Nagano prefecture	3 685	736	1	133	4 555
Gifu prefecture	3 389	636	5	141	4 171
Shizuoka prefecture	7 614	1 381	4	262	9 261
Aichi prefecture	12 075	3 169	33	623	15 900
Mie prefecture	3 169	610	3	125	3 907
Shiga prefecture	2 106	420	13	119	2 658
Kyoto prefecture	4 531	1 047	2	255	5 835
Osaka prefecture	17 399	2 875	39	664	20 977
Hyogo prefecture	9 961	1 664	17	304	11 946
Nara prefecture	2 728	234	5	100	3 067
Wakayama prefecture	2 435	260	1	31	2 727
Tottori prefecture	1 098	128	0	94	1 320
Shimane prefecture	1 170	147	0	97	1 414
Okayama prefecture	3 606	467	0	261	4 334
Hiroshima prefecture	5 892	557	5	488	6 942
Yamaguchi prefecture	2 793	363	0	151	3 307
Tokushima prefecture	2 065	275	0	177	2 517
Kagawa prefecture	2 063	160	6	241	2 470
Ehime prefecture	2 833	420	1	150	3 404
Kochi prefecture	1 892	236	0	41	2 169
Fukuoka prefecture	10 189	2 377	4	521	13 091
Saga prefecture	1 758	271	1	14	2 044
Nagasaki prefecture	3 072	459	3	163	3 697
Kumamoto prefecture	4 700	982	0	141	5 823
Oita prefecture	3 204	338	1	135	3 678
Miyazaki prefecture	3 007	539	0	46	3 592
Kagoshima prefecture	4 189	608	2	98	4 897
Okinawa prefecture	3 342	586	0	72	4 000
Total	238 848	41 719	236	9858	290 661

The number of dialysis patients was calculated based on facility survey data. [†]The total number of chronic dialysis patients is the total in the column for the number of patients in sheet I, and does not necessarily agree with the total number of patients counted in accordance with the method of dialysis.

Tables 5,6 show the gender and age distributions of new patients who were started on dialysis and all dialysis patients in 2009, respectively. Tables 7,8 show the summaries of the primary diseases of new patients who were started on dialysis and the dialysis patients in 2009, respectively. The data in these tables were obtained from the patient survey.

Primary disease of new patients who were started on dialysis

Table 7 shows a summary of the primary diseases of new patients who were started on dialysis in 2009. Table 8 shows a summary of the primary diseases of all dialysis patients at the end of 2009.

Table 9 shows changes in the percentage of new patients who were started on dialysis each year with

TABLE 4. Changes in mean ages of new patients started on dialysis and of patients at the end of each year

Year	Age of patients newly introduced into dialysis treatment (years)		Age of patients at the end of each year (years)	
	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
2006	66.4	13.4	64.4	12.8
2007	66.8	13.3	64.9	12.7
2008	67.2	13.3	65.3	12.7
2009	67.3	13.3	65.8	12.6

TABLE 5. Number of new patients started on dialysis in 2009 for different ages and both genders

Age of the patients when newly introduced into dialysis (years)	Male		Female		Subtotal	No information available	Total	
	(%) [†]		(%) [†]					
<5	8	(0.0)	9	(0.1)	17	(0.0)	17	(0.0)
5-9	6	(0.0)	0	(0.0)	6	(0.0)	6	(0.0)
10-14	7	(0.0)	4	(0.0)	11	(0.0)	11	(0.0)
15-19	24	(0.1)	18	(0.1)	42	(0.1)	42	(0.1)
20-24	53	(0.2)	23	(0.2)	76	(0.2)	76	(0.2)
25-29	103	(0.4)	52	(0.4)	155	(0.4)	155	(0.4)
30-34	249	(1.0)	114	(0.9)	363	(1.0)	363	(1.0)
35-39	493	(2.0)	227	(1.8)	720	(1.9)	720	(1.9)
40-44	683	(2.8)	300	(2.3)	983	(2.6)	983	(2.6)
45-49	1 028	(4.2)	409	(3.2)	1 437	(3.9)	1 437	(3.9)
50-54	1 426	(5.9)	601	(4.7)	2 027	(5.5)	2 027	(5.5)
55-59	2 423	(9.9)	1 032	(8.1)	3 455	(9.3)	3 455	(9.3)
60-64	3 254	(13.4)	1 384	(10.8)	4 638	(12.5)	4 638	(12.5)
65-69	3 600	(14.8)	1 627	(12.7)	5 227	(14.1)	5 227	(14.1)
70-74	3 656	(15.0)	1 883	(14.7)	5 539	(14.9)	5 539	(14.9)
75-79	3 639	(14.9)	2 048	(16.0)	5 687	(15.3)	5 687	(15.3)
80-84	2 565	(10.5)	1 766	(13.8)	4 331	(11.6)	4 331	(11.6)
85-89	943	(3.9)	1 022	(8.0)	1 965	(5.3)	1 965	(5.3)
90-94	185	(0.8)	250	(2.0)	435	(1.2)	435	(1.2)
95≤	23	(0.1)	46	(0.4)	69	(0.2)	69	(0.2)
Total	24 368	(100.0)	12 815	(100.0)	37 183	(100.0)	37 183	(100.0)
No information available	65		39		104		104	
Total	24 433		12 854		37 287		37 287	
Mean	66.37		69.08		67.31		67.31	
SD	13.04		13.61		13.30		13.30	

[†]The values in parentheses on the right side of each figure represent the percentage relative to the total in each column.

TABLE 6. Number of all dialysis patients in 2009 for different ages and both genders

Age (years)	Male	(%) [†]	Female	(%) [†]	Subtotal	(%) [†]	No information available	Total	(%) [†]
<5	24	(0.0)	21	(0.0)	45	(0.0)		45	(0.0)
5–9	16	(0.0)	15	(0.0)	31	(0.0)		31	(0.0)
10–14	22	(0.0)	10	(0.0)	32	(0.0)		32	(0.0)
15–19	62	(0.0)	45	(0.0)	107	(0.0)		107	(0.0)
20–24	246	(0.1)	126	(0.1)	372	(0.1)		372	(0.1)
25–29	626	(0.4)	348	(0.3)	974	(0.3)		974	(0.3)
30–34	1 620	(0.9)	822	(0.8)	2 442	(0.9)		2 442	(0.9)
35–39	3 513	(2.0)	1 732	(1.6)	5 245	(1.9)		5 245	(1.9)
40–44	5 684	(3.3)	2 791	(2.6)	8 475	(3.0)		8 475	(3.0)
45–49	8 090	(4.6)	4 125	(3.8)	12 215	(4.3)		12 215	(4.3)
50–54	11 869	(6.8)	6 448	(6.0)	18 317	(6.5)		18 317	(6.5)
55–59	20 209	(11.6)	11 348	(10.6)	31 557	(11.2)		31 557	(11.2)
60–64	27 690	(15.9)	15 292	(14.2)	42 982	(15.2)		42 982	(15.2)
65–69	27 776	(15.9)	16 156	(15.0)	43 932	(15.6)		43 932	(15.6)
70–74	25 503	(14.6)	15 670	(14.6)	41 173	(14.6)		41 173	(14.6)
75–79	21 589	(12.4)	14 016	(13.0)	35 605	(12.6)		35 605	(12.6)
80–84	13 482	(7.7)	10 865	(10.1)	24 347	(8.6)		24 347	(8.6)
85–89	5 063	(2.9)	5 764	(5.4)	10 827	(3.8)		10 827	(3.8)
90–94	1 237	(0.7)	1 620	(1.5)	2 857	(1.0)		2 857	(1.0)
95≤	167	(0.1)	277	(0.3)	444	(0.2)		444	(0.2)
Total	174 488	(100.0)	107 491	(100.0)	281 979	(100.0)		281 979	(100.0)
No information available	8		9		17			17	
Total	174 496		107 500		281 996			281 996	
Mean	65.00		67.00		65.76			65.76	
SD	12.45		12.83		12.63			12.63	

[†]The values in parentheses on the right side of each figure represent the percentage relative to the total in each column.

various primary causes of renal failure (primary diseases). The percentage of patients with diabetic nephropathy as the primary disease among the new patients who were started on dialysis continued to increase and reached 44.5% in 2009. The percentage of patients with chronic glomerulonephritis, which is currently the second most common primary disease, has declined annually as has the absolute number of such patients. The percentage of patients with “unspecified” primary diseases was the third highest (10.7%). In relation to the aging of new dialysis patients, the percentage of patients with nephrosclerosis continued to increase and reached 10.7%. The percentages of patients with polycystic kidney disease, rapidly progressive glomerulonephritis, systemic lupus erythematosus (SLE) nephritis, and chronic pyelonephritis as the primary diseases were nearly the same as in previous years.

Table 10 shows changes in the percentages of all dialysis patients at the end of each year with various primary diseases. Among all dialysis patients, chronic glomerulonephritis was still the most common primary disease. However, there was a clear decrease in the percentage of patients with this primary disease. In contrast, the percentage of patients with diabetic nephropathy among all dialysis patients con-

tinuously increased. The percentages of patients with chronic glomerulonephritis and diabetic nephropathy at the end of 2009 were 37.6 and 35.1%, respectively, a difference of 2.5 points. If the above trends continue, diabetic nephropathy will become the most common primary disease among all dialysis patients in a few years, similar to the trend among new dialysis patients. The primary diseases with the third and fourth highest percentages of patients among all dialysis patients in 2009 were unspecified primary diseases (7.7%) and nephrosclerosis (7.1%), respectively. The percentage of patients with nephrosclerosis among all dialysis patients was also increasing. The percentages of patients with polycystic kidney disease, chronic pyelonephritis, SLE nephritis, and rapidly progressive glomerulonephritis as the primary diseases were nearly the same as those in previous years.

Causes of death

Table 11 shows the classification of the causes of death of new patients who were started on dialysis in 2009 and who died by the end of 2009. Table 12 shows the classification of the causes of death of all the dialysis patients who died in 2009. Table 13 shows changes in the percentages of the leading causes of death in all dialysis patients. Since the 2003 survey,

TABLE 7. Number of new patients started on dialysis in 2009 for different primary diseases and their mean age

Primary disease	Number of patients	(%)	No information on birth date	(%)	Total	(%)	Mean age	SD
Chronic glomerulonephritis	8 117	(21.9)	38	(36.5)	8 155	(21.9)	66.91	14.52
Chronic pyelonephritis	261	(0.7)	1	(1.0)	262	(0.7)	67.85	13.93
Rapidly progressive glomerulonephritis	456	(1.2)	2	(1.9)	458	(1.2)	70.42	13.00
Nephropathy of pregnancy/pregnancy toxemia	45	(0.1)	0	(0.0)	45	(0.1)	59.51	13.47
Other nephritides that cannot be classified	172	(0.5)	1	(1.0)	173	(0.5)	64.60	17.89
Polycystic kidney	847	(2.3)	5	(4.8)	852	(2.3)	61.46	12.38
Nephrosclerosis	3 970	(10.7)	9	(8.7)	3 979	(10.7)	74.06	11.33
Malignant hypertension	287	(0.8)	2	(1.9)	289	(0.8)	63.75	16.85
Diabetic nephropathy	16 524	(44.5)	25	(24.0)	16 549	(44.5)	65.66	11.65
SLE nephritis	272	(0.7)	0	(0.0)	272	(0.7)	60.43	15.90
Amyloid kidney	144	(0.4)	0	(0.0)	144	(0.4)	66.90	11.76
Gouty kidney	86	(0.2)	0	(0.0)	86	(0.2)	64.53	12.84
Renal failure due to congenital abnormality of metabolism	25	(0.1)	0	(0.0)	25	(0.1)	46.32	20.60
Kidney and urinary tract tuberculosis	14	(0.0)	0	(0.0)	14	(0.0)	69.36	10.42
Kidney and urinary tract stone	62	(0.2)	0	(0.0)	62	(0.2)	69.68	10.74
Kidney and urinary tract tumor	156	(0.4)	1	(1.0)	157	(0.4)	70.90	12.51
Obstructive urinary tract disease	96	(0.3)	0	(0.0)	96	(0.3)	64.89	18.06
Myeloma	140	(0.4)	0	(0.0)	140	(0.4)	71.21	10.19
Hypoplastic kidney	52	(0.1)	2	(1.9)	54	(0.1)	39.73	28.15
Undetermined	3 963	(10.7)	13	(12.5)	3 976	(10.7)	70.89	13.20
Reintroduction after transplantation	199	(0.5)	1	(1.0)	200	(0.5)	54.65	16.22
Others	1 223	(3.3)	4	(3.8)	1 227	(3.3)	67.34	15.95
Total	37 111	(100.0)	104	(100.0)	37 215	(100.0)	67.30	13.31
No information available	72				72		70.92	11.31
Total	37 183		104		37 287		67.31	13.30

The values in parentheses under each figure represent the percentage relative to the total in each column. The column "No information on birth date" shows the number of patients who provided no date of birth, such that the calculation of age was impossible. SLE, systemic lupus erythematosus.

the classification of the causes of death was changed to the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10).

Similar to the results in 2008, the leading cause of death of new patients who were started on dialysis in 2009 was infectious diseases (26.1%). The second, third, fourth, and fifth leading causes were cardiac failure (21.8%), malignant tumors (10.4%), cerebrovascular disease (5.4%), and cardiac infarction (5.4%), respectively. The trend of increasing percentage of patients who died of infectious diseases was continuously observed in the last 20 years. In contrast, the percentage of patients who died of cardiac failure has gradually decreased. The percentage of patients who died of malignant tumors has remained steady at approximately 10% in recent years. The yearly percentages of patients who died of cerebrovascular

disease and cardiac infarction decreased over the last 10 years.

Among all dialysis patients, the leading cause of death was cardiac failure; the percentage of patients who died of cardiac failure was 23.6% in 2009. The percentage of patients who died of cardiac failure among all dialysis patients markedly decreased in the 1990s and remained at nearly 23–26% thereafter. The percentage of patients who died of infectious diseases among all dialysis patients was 20.7% in 2009 and has tended to gradually increase in the last 20 years. In contrast, the percentage of patients who died of cerebrovascular disease steadily decreased and reached 8.4% in 2009. The percentage of patients who died of cardiac infarction also gradually decreased from the peak of 8.4% in 1997 to 4.0% in 2009. The percentage of patients who died of malignant tumors tended to increase slightly and reached 9.4% in 2009.

TABLE 8. Number of all dialysis patients in 2009 for different primary diseases and their mean age

Primary disease	Number of patients	(%)	No information on birth date	(%)	Total	(%)	Mean age	SD
Chronic glomerulonephritis	106 000	(37.6)	2	(11.8)	106 002	(37.6)	64.51	12.75
Chronic pyelonephritis	3 069	(1.1)	0	(0.0)	3 069	(1.1)	63.74	14.23
Rapidly progressive glomerulonephritis	1 961	(0.7)	0	(0.0)	1 961	(0.7)	66.20	13.85
Nephropathy of pregnancy/pregnancy toxemia	1 755	(0.6)	0	(0.0)	1 755	(0.6)	61.10	9.87
Other nephritides that cannot be classified	1 315	(0.5)	0	(0.0)	1 315	(0.5)	59.29	16.98
Polycystic kidney	9 482	(3.4)	0	(0.0)	9 482	(3.4)	63.54	11.03
Nephrosclerosis	20 131	(7.1)	3	(17.6)	20 134	(7.1)	73.27	11.88
Malignant hypertension	2 177	(0.8)	1	(5.9)	2 178	(0.8)	63.19	14.61
Diabetic nephropathy	99 032	(35.1)	8	(47.1)	99 040	(35.1)	66.24	11.03
SLE nephritis	2 340	(0.8)	0	(0.0)	2 340	(0.8)	58.26	13.75
Amyloid kidney	516	(0.2)	0	(0.0)	516	(0.2)	65.97	11.24
Gouty kidney	1 251	(0.4)	0	(0.0)	1 251	(0.4)	66.37	11.69
Renal failure due to congenital abnormality of metabolism	263	(0.1)	0	(0.0)	263	(0.1)	48.68	16.89
Kidney and urinary tract tuberculosis	330	(0.1)	0	(0.0)	330	(0.1)	70.52	9.42
Kidney and urinary tract stone	568	(0.2)	0	(0.0)	568	(0.2)	69.29	11.41
Kidney and urinary tract tumor	727	(0.3)	1	(5.9)	728	(0.3)	70.38	11.89
Obstructive urinary tract disease	692	(0.2)	0	(0.0)	692	(0.2)	60.90	18.22
Myeloma	207	(0.1)	0	(0.0)	207	(0.1)	70.34	10.95
Hypoplastic kidney	585	(0.2)	0	(0.0)	585	(0.2)	41.30	19.66
Undetermined	21 824	(7.7)	2	(11.8)	21 826	(7.7)	68.10	13.39
Reintroduction after transplantation	2 048	(0.7)	0	(0.0)	2 048	(0.7)	54.22	12.76
Others	5 623	(2.0)	0	(0.0)	5 623	(2.0)	63.50	16.16
Total	281 896	(100.0)	17	(100.0)	281 913	(100.0)	65.76	12.63
No information available	83				83		68.47	12.16
Total	281 979		17		281 996		65.76	12.63

The values in parentheses under each figure represent the percentage relative to the total in each column. The column "No information on birth date" shows the number of patients who provided no date of birth, such that the calculation of age was impossible. SLE, systemic lupus erythematosus.

Annual crude death rate

The annual crude death rate was calculated from the facility survey data. It shows the percentage of patients who died in a given year with respect to the mean annual number of dialysis patients. The annual crude death rate in 2009 was 9.6%. Table 14 shows the trend of annual crude death rates since 1983. It is expected that the annual crude death rate will increase because of the increase in the number of patients with a poor prognosis, such as older patients who were started on dialysis and patients with diabetic nephropathy and nephrosclerosis. However, the annual crude death rate has remained at approximately 9.5% since 1992.

Cumulative survival rate of new patients who were started on dialysis for each year

The cumulative survival rates of new patients who were started on dialysis from 1983 are summarized by

year of introduction (Table 15). Moreover, the 1-, 5-, 10-, 15-, 20-, and 25-year survival rates of patients who were started on dialysis were extracted from the table and plotted in Figure 1.

The 1–10-year survival rates have been increasing since 1992 for patients who were started on dialysis in 1992 or later. This trend may be due to the improvement of anemia therapy using erythropoietin starting at the initial phase of dialysis because the clinical use of genetically modified erythropoietin started around this time.

Current status of dialysis fluid quality

Since 2006, the current status of bacteriological quality of dialysis fluid has been investigated in the facility survey. In the microbiological quality standard for dialysis fluids (3) established in 2008 by the Committee of Scientific Academy of JSDT, the unit

TABLE 9. Changes in percentage of new patients started on dialysis for each year with various primary diseases

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
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	31.9	33.1
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	39.4	38.9
Nephrosclerosis	3.0	3.3	3.5	3.7	3.9	3.9	4.1	5.4	5.5	5.9	6.2	6.1	6.3	6.4
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	2.4	2.5
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	0.8	0.8
SLE 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	1.1	1.3
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	1.2	1.1
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	4.5	5.0
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Diabetic nephropathy	33.9	35.7	36.2	36.6	38.1	39.1	41.0	41.3	42.0	42.9	43.4	43.3	44.5	
Chronic glomerulonephritis	36.6	35.0	33.6	32.5	32.4	31.9	29.1	28.1	27.4	25.6	23.8	22.8	21.9	
Nephrosclerosis	6.8	6.7	7.0	7.6	7.6	7.8	8.5	8.8	9.0	9.4	10.0	10.6	10.7	
Polycystic kidney	2.4	2.4	2.2	2.4	2.3	2.4	2.3	2.7	2.3	2.4	2.3	2.5	2.3	
Rapidly progressive glomerulonephritis	1.1	0.9	0.9	1.0	1.0	1.1	1.2	1.1	1.1	1.2	1.3	1.2	1.2	
SLE nephritis	1.0	1.1	1.2	0.9	1.0	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.7	
Chronic pyelonephritis	1.2	1.1	1.1	1.0	1.1	0.9	1.0	0.9	1.0	0.8	0.8	0.7	0.7	
Undetermined	5.5	5.6	6.1	7.6	9.0	8.4	8.8	9.3	9.5	9.9	10.2	10.6	10.7	

SLE, systemic lupus erythematosus.

TABLE 10. Changes in percentage of all the dialysis patients at the end of each year with various primary diseases

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
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	56.6	55.4
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	20.4	21.6
Nephrosclerosis	1.5	1.7	1.9	2.0	2.1	2.1	2.3	2.6	2.9	3.1	3.4	3.6	3.8	4.0
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	3.2	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	1.7	1.6
SLE 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	1.1	1.1
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	0.5	0.5
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	3.2	3.6
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Chronic glomerulonephritis	54.1	52.5	51.1	49.7	49.6	48.2	46.6	45.1	43.6	42.2	40.4	39.0	37.6	
Diabetic nephropathy	22.7	24.0	25.1	26.0	27.2	28.1	29.2	30.2	31.4	32.3	33.4	34.2	35.1	
Nephrosclerosis	4.2	4.4	4.5	4.8	5.0	5.1	5.3	5.7	5.9	6.2	6.5	6.8	7.1	
Polycystic kidney	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.3	3.4	3.4	3.4	3.4	
Chronic pyelonephritis	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1	
SLE nephritis	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	
Rapidly progressive glomerulonephritis	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	
Undetermined	3.9	4.2	4.4	5.0	5.6	5.9	6.3	6.4	6.6	7.0	7.4	7.6	7.7	

SLE, systemic lupus erythematosus.

TABLE 11. Classification of causes of death of new patients who were started on dialysis and died in 2009

Cause of death	Male	(%)	Female	(%)	Total	(%)	No information available	Total	(%)
Cardiac failure	413	(20.8)	254	(23.5)	667	(21.8)	0	667	(21.8)
Cerebrovascular disease	105	(5.3)	60	(5.5)	165	(5.4)	0	165	(5.4)
Infectious disease	535	(27.0)	266	(24.6)	801	(26.1)	0	801	(26.1)
Hemorrhage	44	(2.2)	30	(2.8)	74	(2.4)	0	74	(2.4)
Malignant tumor	219	(11.0)	101	(9.3)	320	(10.4)	0	320	(10.4)
Cachexia/Uremia	57	(2.9)	31	(2.9)	88	(2.9)	0	88	(2.9)
Cardiac infarction	71	(3.6)	36	(3.3)	107	(3.5)	0	107	(3.5)
Potassium poisoning/Moribund	57	(2.9)	30	(2.8)	87	(2.8)	0	87	(2.8)
Chronic hepatitis/Cirrhosis	41	(2.1)	16	(1.5)	57	(1.9)	0	57	(1.9)
Encephalopathy	6	(0.3)	3	(0.3)	9	(0.3)	0	9	(0.3)
Suicide/Refusal of treatment	24	(1.2)	11	(1.0)	35	(1.1)	0	35	(1.1)
Intestinal obstruction	22	(1.1)	7	(0.6)	29	(0.9)	0	29	(0.9)
Lung thrombus/Pulmonary embolus	7	(0.4)	4	(0.4)	11	(0.4)	0	11	(0.4)
Death due to disaster	7	(0.4)	4	(0.4)	11	(0.4)	0	11	(0.4)
Others	220	(11.1)	119	(11.0)	339	(11.1)	0	339	(11.1)
Undetermined	154	(7.8)	110	(10.2)	264	(8.6)	0	264	(8.6)
Total	1982	(100.0)	1082	(100.0)	3064	(100.0)	0	3064	(100.0)
No information available	7		3		10			10	
Total	1989		1085		3074		0	3074	

The values in parentheses under each figure represent the percentage relative to the total in each column.

of endotoxin concentration was changed from EU/L to EU/mL in accordance with ISO standards for dialysis related therapy. The survey at the end of 2008 also followed this standard, then the unit of endotoxin concentration was changed from EU/L to EU/mL. In the 2008 survey, however, many wrong values possibly resulting from misunderstanding of the unit of endotoxin concentration

were found. Therefore, the tabulated results on endotoxin concentration in the dialysis fluid were not included in the 2008 report (4). In the 2009 report, however, the tabulated results on endotoxin concentration in the dialysis fluid were provided because the change in the unit of endotoxin concentration was expected to be widely known already.

TABLE 12. Classification of causes of death of patients who died in 2009

Cause of death	Male	(%)	Female	(%)	Total	(%)	No information available	Total	(%)
Cardiac failure	3 639	(22.1)	2447	(26.4)	6 086	(23.6)	0	6 086	(23.6)
Cerebrovascular disease	1 348	(8.2)	812	(8.8)	2 160	(8.4)	0	2 160	(8.4)
Infectious disease	3 476	(21.1)	1859	(20.1)	5 335	(20.7)	0	5 335	(20.7)
Hemorrhage	296	(1.8)	195	(2.1)	491	(1.9)	0	491	(1.9)
Malignant tumor	1 761	(10.7)	650	(7.0)	2 411	(9.4)	0	2 411	(9.4)
Cachexia/Uremia	428	(2.6)	264	(2.9)	692	(2.7)	0	692	(2.7)
Cardiac infarction	717	(4.3)	324	(3.5)	1 041	(4.0)	0	1 041	(4.0)
Potassium poisoning/Moribund	774	(4.7)	413	(4.5)	1 187	(4.6)	0	1 187	(4.6)
Chronic hepatitis/Cirrhosis	218	(1.3)	82	(0.9)	300	(1.2)	0	300	(1.2)
Encephalopathy	23	(0.1)	9	(0.1)	32	(0.1)	0	32	(0.1)
Suicide/Refusal of treatment	171	(1.0)	69	(0.7)	240	(0.9)	0	240	(0.9)
Intestinal obstruction	138	(0.8)	101	(1.1)	239	(0.9)	0	239	(0.9)
Lung thrombus/Pulmonary embolus	45	(0.3)	21	(0.2)	66	(0.3)	0	66	(0.3)
Death due to disaster	117	(0.7)	41	(0.4)	158	(0.6)	0	158	(0.6)
Others	1 534	(9.3)	1050	(11.3)	2 584	(10.0)	0	2 584	(10.0)
Undetermined	1 799	(10.9)	921	(9.9)	2 720	(10.6)	0	2 720	(10.6)
Total	16 484	(100.0)	9258	(100.0)	25 742	(100.0)	0	25 742	(100.0)
No information available	46		25		71		0	71	
Total	16 530		9283		25 813		0	25 813	

The values in parentheses under each figure represent the percentage relative to the total in each column.

TABLE 13. Annual changes in major causes of death

Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
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	25.4	24.1
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	13.8	14.6
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	7.2	7.7
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	13.5	12.9
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	7.5	7.4
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	5.8	6.3
Unspecified	1.9	2.0	2.8	2.2	2.4	1.6	1.9	2.1	1.8	2.5	2.6	2.8	3.2	2.5
Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Cardiac failure	23.9	24.1	24.3	23.2	25.5	25.1	25.0	25.1	25.8	24.9	24.0	23.7	23.6	
Infectious disease	14.9	15.0	16.3	16.6	16.3	15.9	18.5	18.8	19.2	19.9	18.9	19.9	20.7	
Malignant tumor	8.1	7.7	7.6	8.3	8.5	8.5	8.5	9.0	9.0	9.2	9.2	9.2	9.4	
Cerebrovascular disease	12.6	12.1	11.3	11.3	11.6	11.2	10.7	10.6	9.8	9.4	8.9	8.6	8.4	
Cardiac infarction	8.4	7.9	7.4	7.0	7.4	7.4	6.2	5.4	5.1	4.4	4.4	4.1	4.0	
Others	6.7	7.0	7.7	7.9	9.1	9.0	9.7	10.3	9.1	9.5	9.7	9.7	10.0	
Unspecified	3.5	3.9	3.6	8.1	5.7	6.6	5.6	6.5	7.3	8.3	10.3	10.9	10.6	

Frequency of measurement of endotoxin concentration in dialysis fluid (Table 16)

There were 3809 facilities that responded to questions regarding the frequency of measurement of endotoxin concentration in the dialysis fluid. Table 16 shows a summary of the frequencies of measurement of endotoxin concentration in the dialysis fluid in different medical organizations. The measurement of endotoxin concentration in the dialysis fluid in all types of medical organization was moderately more frequent than in the previous year (4). Namely, in 2009, the endotoxin concentration in the dialysis fluid was measured at least once a year in 89.2% of the facilities that responded to the questionnaire, an increase of 1.7 points from the previous year (87.5%). Moreover, the percentage of facilities that carried out the measurement at least once a month, as recommended in the JSDT standard (3), was 36.0%, an increase of 2.9 points from 2008 (33.1%). However, these results are still unsatisfactory and the importance of frequent measurement of endotoxin in dialysis fluid should be continuously educated.

Endotoxin concentration in dialysis fluid (Table 17)

Table 17 shows a summary of endotoxin concentrations in the dialysis fluid used in different medical organizations. The JSDT standard for endotoxin concentration for standard dialysis fluid is less than 0.05 EU/mL, and the percentage of facilities that satisfied this standard was 84.2% (vs. 89.1% in the 2006 survey and 93.6% in the 2007 survey). Moreover, the percentage of facilities that reported an endotoxin concentration of 0.5 EU/mL or more was 3.2% (vs. 1.0% in the 2006 survey and 0.4% in the 2007 survey), suggesting that some facilities might have used the wrong unit of measurement of endotoxin concentration (3,5,6).

Frequency of measurement of bacterial count in dialysis fluid (Table 18)

There were 3627 facilities that responded to questions regarding the frequency of measurement of the bacterial count in the dialysis fluid. The number of facilities that measured bacterial count has been increasing since the start of the annual survey. A bacterial count was measured at 60.7% of the 3627 facilities, 6.2 points increase from the end of 2008 (54.5%) (4). The percentage of facilities that measured bacterial count was only 37.1% at the end of 2006, an increase of 23.6 points over the past 3 years (5).

The JSDT standard (3) recommends that the bacterial count measurement should be monitored at least once a month. The percentage of facilities that satisfied the standard was 25.8% in 2009, an increase

TABLE 14. *Change in annual crude death rate*

Year	Crude death rate (%)	Year	Crude death rate (%)
1983	9.0	1997	9.4
1984	8.9	1998	9.2
1985	9.1	1999	9.7
1986	9.0	2000	9.2
1987	8.5	2001	9.3
1988	9.2	2002	9.2
1989	7.9	2003	9.3
1990	9.6	2004	9.4
1991	8.9	2005	9.5
1992	9.7	2006	9.2
1993	9.4	2007	9.4
1994	9.5	2008	9.8
1995	9.7	2009	9.6
1996	9.4		

of 5.0 points from 2008 (20.8%) (4). Thus, while the measurement of the bacterial count in the dialysis fluid has become more common, the percentage of facilities that met the standard was still unsatisfactory, indicating that the importance of frequent measurement of bacterial count should be continuously educated.

Bacterial count in dialysis fluid (Table 19)

Bacterial counts in the dialysis fluid were reported by 2062 facilities, 98.2% of which satisfied the JSDT standard (3), that is, less than 100 cfu/mL. The percentage of facilities that satisfied a bacterial count of less than 0.1 cfu/mL, which ensures the entity of ultrapure dialysis fluid, was 54.5%. These percentages were greater than those in 2008 (97.6% for less than 100 cfu/mL and 50.7% for less than 0.1 cfu/mL) (4).

Cultivation media used for bacterial count in dialysis fluid (Table 19)

According to the JSDT standard, Reasoner's no. 2 agar (R2A) and tryptone glucose extract agar (TGEA) or equivalent media are recommended for the cultivation of bacteria in the dialysis fluid (3). The survey results showed that these media were used at 78.4% of the facilities. The results of the 2007 survey showed that 73.4% of the facilities used R2A or TGEA, indicating that the percentage of facilities that used a medium recommended in the standard increased by 5.0 points over the past 2 years.

Sampling volume for measurement of bacterial count in dialysis fluid (Table 20)

Generally, the sampling volume of dialysis fluid for measuring bacterial count in plate media is less than 1 mL. However, at least 10 mL of a dialysis fluid sample is required to measure a bacterial count of less than 0.1 cfu/mL, which ensures the entity of

ultrapure dialysate fluid (3). The percentage that sampled more than 10 mL for bacterial count was 57.2% of the facilities that responded to the questions regarding the volume of the sample. The percentages of facilities that sampled at least 10 mL of dialysis fluid were 46.5% in 2007 and 52.0% in 2008, increasing yearly (5,6).

Installation of ETRFs (Table 21)

There were 4050 facilities that responded to the questions regarding the installation of ETRFs. The percentage of facilities that installed ETRF was 86.9%, an increase of 2.9 points from 2008 (84.0%) (4).

Regarding the number of bedside consoles, 78 014 bedside consoles (68.4%) were equipped with an ETRF among 114 086 bedside consoles in the facilities that responded to the question about the number of ETRFs installed.

Current status of PD therapy

In the 2009 survey, non-member facilities that treated only PD patients were included in the survey although they were not included in the previous surveys. In this section, the tabulated results on the survey items related to PD are summarized.

Here, patients who underwent both PD and other blood purification therapies using extracorporeal circulation such as HD and HDF are referred to as "PD + other therapy patients." Patients who underwent only blood purification therapy using extracorporeal circulation such as HD and HDF are referred to as "non-PD patients." Patients who underwent blood purification therapy using extracorporeal circulation such as HD and HDF alone and have a catheter for PD inserted are referred to as "non-PD + catheter patients."

TABLE 15. Cumulative survival rates of new patients started on dialysis since 1983

Year of introduction	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	23-year survival rate	24-year survival rate	25-year survival rate	26-year survival rate
1983	9 889	0.819	0.747	0.682	0.633	0.589	0.556	0.523	0.485	0.456	0.425	0.396	0.372	0.348	0.329	0.307	0.288	0.272	0.255	0.241	0.226	0.214	0.200	0.189	0.179	0.167	0.156
1984	10 713	0.817	0.735	0.671	0.620	0.577	0.538	0.498	0.465	0.435	0.407	0.378	0.353	0.329	0.308	0.288	0.271	0.253	0.239	0.226	0.212	0.198	0.188	0.179	0.167	0.158	
1985	11 629	0.795	0.720	0.660	0.609	0.563	0.520	0.485	0.444	0.413	0.385	0.361	0.336	0.311	0.289	0.271	0.253	0.236	0.221	0.208	0.192	0.179	0.168	0.156	0.147		
1986	12 633	0.799	0.725	0.667	0.619	0.566	0.521	0.480	0.445	0.408	0.379	0.352	0.328	0.305	0.284	0.267	0.250	0.234	0.221	0.209	0.196	0.183	0.173	0.162			
1987	13 567	0.815	0.738	0.671	0.607	0.556	0.507	0.462	0.426	0.393	0.364	0.338	0.314	0.293	0.271	0.253	0.238	0.220	0.203	0.190	0.180	0.170	0.159				
1988	14 779	0.825	0.741	0.667	0.603	0.548	0.499	0.456	0.419	0.384	0.353	0.326	0.303	0.281	0.260	0.242	0.225	0.211	0.196	0.186	0.174	0.161					
1989	14 572	0.849	0.761	0.687	0.618	0.561	0.512	0.466	0.427	0.392	0.360	0.334	0.309	0.287	0.266	0.249	0.232	0.217	0.203	0.192	0.179						
1990	16 522	0.839	0.749	0.674	0.610	0.555	0.501	0.459	0.419	0.384	0.353	0.325	0.300	0.278	0.260	0.243	0.227	0.211	0.195	0.182							
1991	18 227	0.828	0.735	0.662	0.598	0.539	0.488	0.445	0.407	0.375	0.345	0.318	0.293	0.273	0.254	0.237	0.221	0.206	0.193								
1992	19 918	0.822	0.728	0.652	0.589	0.532	0.483	0.439	0.401	0.368	0.341	0.315	0.291	0.271	0.250	0.232	0.216	0.201									
1993	20 896	0.833	0.743	0.667	0.599	0.543	0.491	0.447	0.408	0.375	0.345	0.318	0.294	0.270	0.252	0.235	0.218										
1994	21 441	0.830	0.744	0.670	0.604	0.545	0.493	0.450	0.412	0.376	0.345	0.315	0.293	0.271	0.250	0.230											
1995	22 905	0.841	0.754	0.680	0.611	0.554	0.505	0.462	0.423	0.387	0.355	0.326	0.301	0.277	0.254												
1996	24 966	0.832	0.750	0.674	0.611	0.556	0.509	0.458	0.421	0.385	0.353	0.324	0.297	0.272													
1997	25 575	0.838	0.752	0.681	0.620	0.563	0.514	0.470	0.427	0.391	0.358	0.328	0.300														
1998	26 876	0.845	0.766	0.698	0.637	0.576	0.526	0.477	0.435	0.400	0.368	0.337															
1999	27 841	0.851	0.774	0.706	0.641	0.582	0.530	0.484	0.443	0.404	0.366																
2000	29 330	0.856	0.777	0.711	0.649	0.591	0.537	0.491	0.446	0.407																	
2001	30 948	0.855	0.775	0.707	0.641	0.587	0.535	0.487	0.445																		
2002	31 686	0.859	0.781	0.714	0.651	0.591	0.537	0.489																			
2003	32 756	0.860	0.783	0.716	0.654	0.596	0.542																				
2004	33 983	0.867	0.791	0.724	0.663	0.604																					
2005	35 072	0.863	0.788	0.720	0.658																						
2006	36 325	0.871	0.795	0.728																							
2007	37 157	0.868	0.797																								
2008	37 922	0.868																									

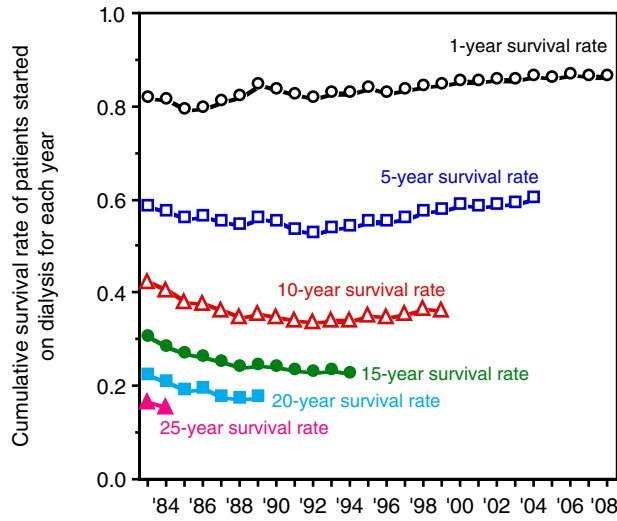


FIG. 1. Changes in cumulative survival rate of patients started on dialysis for each year.

Current status of combined use of PD and other therapies in different medical organizations (Tables 22,23)

According to the facility survey, the number of PD patients was 9858 at the end of 2009, an increase of 558 patients from the 2008 survey (9300 patients). Moreover, the number of non-PD + catheter patients was 437 and that of new patients who were started on PD in 2009 but introduced to other therapies in the same year was 196. The total number of these patients was 633. These 633 patients were not classified as PD patients in the previous surveys. The sum of these 633 patients and the abovementioned PD patients (i.e. the total number of PD-therapy-related patients) was 10 491 (Table 22).

The details of the combined use of PD and other therapies were investigated in the patient survey. According to the results, the number of PD + other therapy patients was 1569 (Table 23). It was considered that, in the abovementioned facility survey, most of these PD + other therapy patients were counted as PD patients but some were probably counted as patients who underwent HD or other therapies. According to the results of the patient survey at the end of 2009, the number of patients who responded that they underwent only PD (referred to as “PD-only patients”) was 6022. Therefore, the sum of this and the number of PD + other therapy patients (1569) (i.e. the total number of patients who underwent PD alone or with other therapies) was 7591. Among these 7591 PD-treated patients, 1197 patients (15.8%) underwent HD or other therapies once a week, 191 patients (2.5%) did so twice a week, and 53 patients (0.7%) did so three times a week. The

TABLE 16. Frequencies of measurement of endotoxin concentration in dialysis fluid in different medical organizations (number of bedside consoles ≥ 1)

Kind of facility	None	Every day	Every week	Every 2 weeks	Every month	Several times per year	Once a year	Subtotal	No information available		Total
									Unspecified	Total	
National public university hospital (%)	3 (6.0)	1 (2.0)	0 (0.0)	1 (2.0)	23 (46.0)	19 (38.0)	3 (6.0)	50 (100.0)	2	0	52
Private university hospital (%)	3 (4.9)	0 (0.0)	2 (3.3)	8 (13.1)	23 (37.7)	22 (36.1)	3 (4.9)	61 (100.0)	1	0	62
National hospital (%)	10 (27.8)	0 (0.0)	1 (2.8)	0 (0.0)	9 (25.0)	14 (38.9)	2 (5.6)	36 (100.0)	3	0	39
Prefectural Municipal Village hospital (%)	42 (10.6)	1 (0.3)	3 (0.8)	12 (3.0)	97 (24.4)	180 (45.2)	63 (15.8)	398 (100.0)	21	8	427
Social insurance hospital (%)	6 (9.5)	0 (0.0)	0 (0.0)	2 (3.2)	17 (27.0)	32 (50.8)	6 (9.5)	63 (100.0)	0	0	63
“Kouseiren” hospital (%)	8 (7.1)	0 (0.0)	1 (0.9)	5 (4.5)	43 (38.4)	38 (33.9)	17 (15.2)	112 (100.0)	7	1	120
Other public hospital (%)	16 (9.2)	1 (0.6)	6 (3.5)	3 (1.7)	61 (35.3)	68 (40.4)	18 (10.4)	173 (100.0)	6	1	180
Private general hospital (%)	13 (12.5)	1 (1.0)	2 (1.9)	7 (6.7)	29 (27.9)	40 (38.5)	12 (11.5)	104 (100.0)	5	1	110
Private hospital (%)	128 (12.2)	6 (0.6)	18 (1.7)	53 (5.1)	289 (27.6)	390 (37.3)	162 (15.5)	1046 (100.0)	61	7	1114
Private clinic (%)	181 (10.2)	11 (0.6)	51 (2.9)	138 (7.8)	448 (25.4)	666 (37.7)	271 (15.3)	1766 (100.0)	87	30	1883
Total (%)	410 (10.8)	21 (0.6)	84 (2.2)	229 (6.0)	1039 (27.3)	1469 (38.6)	557 (14.6)	3809 (100.0)	193	48	4050

Kouseiren: an association for welfare belonging to agricultural cooperative associations.

TABLE 17. Endotoxin concentration in dialysis fluid (EU/mL) in different medical organizations (number of bedside consoles ≥ 1)

Kind of facility	Endotoxin concentration (EU/mL) in dialysis fluid										Subtotal	Unspecified	No information available	Total
	Less than 0.001	0.001~	0.01~	0.05~	0.1~	0.25~	0.5~							
National Public university hospital (%)	24 (52.2)	10 (21.7)	6 (13.0)	3 (6.5)	2 (4.3)	0 (0.0)	1 (2.2)	46 (100.0)	2	4	52			
Private university hospital (%)	33 (57.9)	11 (19.3)	5 (8.8)	4 (7.0)	2 (3.5)	1 (1.8)	1 (1.8)	57 (100.0)	2	3	62			
National hospital (%)	14 (51.9)	6 (22.2)	3 (11.1)	0 (0.0)	2 (7.4)	1 (3.7)	1 (3.7)	27 (100.0)	2	10	39			
Prefectural Municipal Village hospital (%)	218 (62.5)	56 (16.0)	29 (8.3)	18 (5.2)	12 (3.4)	10 (2.9)	6 (1.7)	349 (100.0)	26	52	427			
Social insurance hospital (%)	31 (55.4)	12 (21.4)	5 (8.9)	2 (3.6)	3 (5.4)	1 (1.8)	2 (3.6)	56 (100.0)	0	7	63			
"Kouseiren" hospital (%)	56 (56.6)	20 (20.2)	7 (7.1)	7 (7.1)	2 (2.0)	3 (3.0)	4 (4.0)	99 (100.0)	11	10	120			
Other public hospital (%)	90 (60.0)	23 (15.3)	12 (8.0)	10 (6.7)	9 (6.0)	3 (2.0)	3 (2.0)	150 (100.0)	12	18	180			
Private general hospital (%)	43 (47.8)	14 (15.6)	10 (11.1)	7 (7.8)	6 (6.7)	6 (6.7)	4 (4.4)	90 (100.0)	5	15	110			
Private hospital (%)	473 (52.7)	179 (19.9)	86 (9.6)	61 (6.8)	42 (4.7)	24 (2.7)	33 (3.7)	898 (100.0)	78	138	1114			
Private clinic (%)	883 (56.9)	276 (17.8)	163 (10.5)	82 (5.3)	68 (4.4)	31 (2.0)	50 (3.2)	1553 (100.0)	115	215	1883			
Total (%)	1865 (56.1)	607 (18.3)	326 (9.8)	194 (5.8)	148 (4.5)	80 (2.4)	105 (3.2)	3325 (100.0)	253	472	4050			

Kouseiren: an association for welfare belonging to agricultural cooperative associations.

TABLE 18. Frequencies of measurement of bacterial count in dialysis fluid in different medical organizations (number of bedside consoles ≥ 1)

Kind of facility	Measurement frequency of bacterial count in the dialysis fluid										Subtotal	Unspecified	No information available	Total
	None	Every day	Every week	Every two weeks	Every month	Several times per year	Once a year							
National public university hospital (%)	12 (26.1)	0 (0.0)	0 (0.0)	0 (0.0)	16 (34.8)	16 (34.8)	2 (4.3)	46 (100.0)	6	0	52			
Private university hospital (%)	15 (21.7)	0 (0.0)	1 (1.7)	4 (6.7)	16 (26.7)	20 (33.3)	6 (10.0)	60 (100.0)	2	0	62			
National hospital (%)	22 (61.1)	0 (0.0)	2 (5.6)	1 (2.8)	2 (5.6)	7 (19.4)	2 (5.6)	36 (100.0)	3	0	39			
Prefectural Municipal Village hospital (%)	164 (43.5)	0 (0.0)	1 (0.3)	8 (2.1)	62 (16.4)	96 (25.5)	46 (12.2)	377 (100.0)	42	8	427			
Social insurance hospital (%)	14 (25.9)	0 (0.0)	1 (1.9)	0 (0.0)	12 (22.2)	19 (35.2)	8 (14.8)	54 (100.0)	9	0	63			
"Kouseiren" hospital (%)	37 (33.9)	0 (0.0)	0 (0.0)	3 (2.8)	37 (33.9)	21 (19.3)	11 (10.1)	109 (100.0)	10	1	120			
Other public hospital (%)	61 (36.7)	0 (0.0)	2 (1.2)	7 (4.2)	42 (25.3)	41 (24.7)	13 (7.8)	166 (100.0)	13	1	180			
Private general hospital (%)	46 (46.0)	0 (0.0)	2 (2.0)	6 (6.0)	18 (18.0)	16 (16.0)	12 (12.0)	100 (100.0)	8	2	110			
Private hospital (%)	381 (38.1)	1 (0.1)	10 (1.0)	38 (3.8)	216 (21.6)	236 (23.6)	117 (11.7)	999 (100.0)	104	11	1114			
Private clinic (%)	675 (40.2)	8 (0.4)	21 (1.3)	108 (6.4)	290 (17.3)	389 (23.2)	190 (11.3)	1680 (100.0)	170	33	1883			
Total (%)	1425 (39.3)	8 (0.2)	40 (1.1)	175 (4.8)	711 (19.6)	861 (23.7)	407 (11.2)	3627 (100.0)	367	56	4050			

Kouseiren: an association for welfare belonging to agricultural cooperative associations.

TABLE 19. Number of facilities for different bacterial counts in dialysis fluid (cfu/mL) and cultivation media (number of bedside consoles ≥ 1) dialysis fluid

Media used for bacterial cultivation of dialysis fluid	Bacterial count in dialysis fluid (cfu/mL)					Subtotal	Unspecified	No information available	Total
	Less than 0.1	0.1~	1~	10~	100~				
General agar medium (%)	149 (64.5)	35 (15.2)	31 (13.4)	14 (6.1)	2 (0.9)	231 (100.0)	15	0	246
R2A medium (%)	625 (49.2)	258 (20.3)	239 (18.8)	123 (9.7)	25 (2.0)	1270 (100.0)	51	3	1324
TGEA medium (%)	184 (64.6)	57 (20.0)	33 (11.6)	8 (2.8)	3 (1.1)	285 (100.0)	6	1	292
Blood agar medium (%)	26 (78.8)	4 (12.1)	1 (3.0)	2 (6.1)	0 (0.0)	33 (100.0)	4	0	37
TSA medium (%)	7 (70.0)	2 (20.0)	1 (10.0)	0 (0.0)	0 (0.0)	10 (100.0)	2	0	12
Other media (%)	77 (59.2)	19 (14.6)	23 (17.7)	9 (6.9)	2 (1.5)	130 (100.0)	18	2	150
Subtotal (%)	1068 (54.5)	375 (19.1)	328 (16.7)	156 (8.0)	32 (1.6)	1959 (100.0)	96	6	2061
Unspecified (%)	54 (52.9)	16 (15.7)	17 (16.7)	9 (8.8)	6 (5.9)	102 (100.0)	397	949	1448
No information available (%)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	1	539	541
Total (%)	1123 (54.5)	391 (19.0)	345 (16.7)	165 (8.0)	38 (1.8)	2062 (100.0)	494	1494	4050

The values in parentheses under each figure represent the percentage relative to the total in each row. R2A, reasoner's No. 2 agar; TGEA, tryptone glucose extract agar; TSA, tryptic soy agar.

PD + other therapy patients (1569) accounted for 20.7% of the PD-treated patients (7591).

Table 23 shows the current status of the combined use of PD and other therapies in different medical

organizations. To easily understand the differences in the distribution of patients who underwent different therapies among medical organizations, national, public, and private universities were classified as uni-

TABLE 20. Number of facilities for different bacterial counts in dialysis fluid (cfu/mL) and volumes of samples for measurement of bacterial count (number of bedside consoles ≥ 1)

Amount of sample	Bacterial count in dialysis fluid (cfu/mL)					Subtotal	Unspecified	No information available	Total
	Less than 0.1	0.1~	1~	10~	100~				
less than 1 mL (%)	147 (72.4)	26 (12.8)	23 (11.3)	7 (3.4)	0 (0.0)	203 (100.0)	22	0	225
1 mL~ (%)	326 (50.6)	125 (19.4)	125 (19.4)	57 (8.9)	11 (1.7)	644 (100.0)	51	1	696
10 mL~ (%)	257 (47.2)	121 (22.2)	103 (18.9)	51 (9.4)	12 (2.2)	544 (100.0)	23	5	572
50 mL~ (%)	247 (56.8)	88 (20.2)	59 (13.6)	30 (6.9)	11 (2.5)	435 (100.0)	12	1	448
100 mL~ (%)	93 (62.0)	24 (16.0)	23 (15.3)	8 (5.3)	2 (1.3)	150 (100.0)	3	0	153
500 mL~ (%)	13 (48.1)	3 (11.1)	4 (14.8)	7 (25.9)	0 (0.0)	27 (100.0)	2	0	29
1 L~ (%)	14 (82.4)	1 (5.9)	1 (5.9)	1 (5.9)	0 (0.0)	17 (100.0)	3	0	20
10 L~ (%)	5 (83.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (16.7)	6 (100.0)	1	0	7
Subtotal (%)	1102 (54.4)	388 (19.2)	338 (16.7)	161 (7.9)	37 (1.8)	2026 (100.0)	117	7	2150
Unspecified (%)	21 (58.3)	3 (8.3)	7 (19.4)	4 (11.1)	1 (2.8)	36 (100.0)	377	949	1362
No information available (%)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0	538	538
Total (%)	1123 (54.5)	391 (19.0)	345 (16.7)	165 (8.0)	38 (1.8)	2062 (100.0)	494	1494	4050

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 21. Percentages of facilities that have bedside consoles with endotoxin retentive filter (ETRF) in different medical organizations (number of bedside consoles ≥ 1)

Kind of facility	Percentages of facilities that have bedside consoles with ETRF (%)										100% (All consoles equipped with ETRF)		Subtotal	Mean	SD	
	0%	<10%	10~	20~	30~	40~	50~	60~	70~	80~	90~	100% (All consoles equipped with ETRF)				
National public university hospital	3	0	0	1	0	0	0	0	1	0	0	3	44	52	91.77	25.53
(%)	(5.8)	(0.0)	(0.0)	(1.9)	(0.0)	(0.0)	(0.0)	(0.0)	(1.9)	(0.0)	(0.0)	(5.8)	(84.6)	(100.0)		
Private university hospital	3	1	1	0	2	2	2	2	0	1	0	3	45	62	85.26	30.01
(%)	(4.8)	(1.6)	(1.6)	(0.0)	(3.2)	(3.2)	(3.2)	(3.2)	(0.0)	(1.6)	(0.0)	(4.8)	(72.6)	(100.0)		
National hospital	1	0	0	0	0	0	1	2	1	2	1	1	31	39	92.54	19.20
(%)	(2.6)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(2.6)	(5.1)	(2.6)	(5.1)	(2.6)	(2.6)	(79.5)	(100.0)		
Prefectural Municipal Village hospital	36	21	13	9	8	6	10	8	8	11	11	26	271	427	77.64	36.84
(%)	(8.4)	(4.9)	(3.0)	(2.1)	(1.9)	(1.4)	(2.3)	(1.9)	(1.9)	(2.6)	(2.6)	(6.1)	(63.5)	(100.0)		
Social insurance hospital	5	2	2	2	4	1	2	1	1	5	5	6	32	63	74.55	36.38
(%)	(7.9)	(3.2)	(3.2)	(3.2)	(6.3)	(1.6)	(3.2)	(1.6)	(1.6)	(7.9)	(7.9)	(9.5)	(50.8)	(100.0)		
"Kouseiren" hospital	4	5	4	5	9	2	3	1	4	1	1	7	75	120	78.42	34.18
(%)	(3.3)	(4.2)	(3.3)	(4.2)	(7.5)	(1.7)	(2.5)	(0.8)	(3.3)	(0.8)	(0.8)	(5.8)	(62.5)	(100.0)		
Other public hospital	13	5	8	4	2	2	7	5	7	8	8	5	114	180	78.77	34.71
(%)	(7.2)	(2.8)	(4.4)	(2.2)	(1.1)	(1.1)	(3.9)	(2.8)	(3.9)	(4.4)	(4.4)	(2.8)	(63.3)	(100.0)		
Private general hospital	13	6	6	2	1	3	1	0	2	1	1	7	68	110	73.52	40.49
(%)	(11.8)	(5.5)	(5.5)	(1.8)	(0.9)	(2.7)	(0.9)	(0.0)	(1.8)	(0.9)	(0.9)	(6.4)	(61.8)	(100.0)		
Private hospital	136	52	50	35	35	28	29	20	19	31	31	64	615	1114	70.62	40.06
(%)	(12.2)	(4.7)	(4.5)	(3.1)	(3.1)	(2.5)	(2.6)	(1.8)	(1.7)	(2.8)	(2.8)	(5.7)	(55.2)	(100.0)		
Private clinic	315	122	93	65	52	51	40	47	32	49	49	76	941	1883	64.09	42.67
(%)	(16.7)	(6.5)	(4.9)	(3.5)	(2.8)	(2.7)	(2.1)	(2.5)	(1.7)	(2.6)	(2.6)	(4.0)	(50.0)	(100.0)		
Total	529	214	177	123	113	95	95	86	75	109	109	198	2236	4050	69.76	40.63
(%)	(13.1)	(5.3)	(4.4)	(3.0)	(2.8)	(2.3)	(2.3)	(2.1)	(1.9)	(2.7)	(2.7)	(4.9)	(55.2)	(100.0)		

Kouseiren: an association for welfare belonging to agricultural cooperative associations.

TABLE 22. Number of patients who underwent peritoneal dialysis (PD) and other therapies determined by results of facility survey

Method of therapy	Patients who responded in facility survey that they underwent daytime dialysis, nighttime dialysis, or home HD			Total
	PD (according to results of facility survey)	Non-PD + catheter patients	Patients who were started on PD in 2009 but introduced to other therapies in the same year	
Number of patients	9858 Among the above, 1720 patients underwent both PD and others.	437	196	10 491

versity hospitals. National organizations, prefectural and municipal organizations, social insurance organizations, welfare federation of agricultural cooperatives, and other public organizations were classified as public hospitals. Private general hospitals and private hospitals were classified as private hospitals. Private clinics were simply classified as private clinics. The data shown in Table 23 are analyzed following the new classification as follows. According to the analytical results, most of the non-PD patients were treated in private hospitals and clinics and few were treated in university and public hospitals (university hospitals, 0.9%; public hospitals, 13.9%; private hospitals, 33.1%; private clinics, 52.1%). In contrast, many of the PD-only patients were treated in university and public hospitals and few were treated in private clinics (university hospitals, 19.1%; public hospitals, 43.8%; private hospitals, 26.9%; private clinics, 10.2%). The number of PD + other therapy patients showed an intermediate distribution of the above two groups of patients (university hospitals, 10.8%; public hospitals, 37.2%; private hospitals, 26.7%; private clinics, 25.3%). The distribution of the number of non-PD + catheter patients was closer to the number of non-PD patients than the number of PD + other therapy patients.

The above findings indicate a tendency that, in Japan, PD patients are mainly treated in university and public hospitals, whereas non-PD patients are mainly treated in private medical organizations.

Combined use of PD and other therapies for various age groups (Table 24)

The relationship of the current status of combined use of PD and other therapies with age was analyzed (Table 24). The percentage of PD-treated patients (consisting of PD-only patients and PD + other therapy patients) among all dialysis patients was 90.0% for patients younger than 15 years. The percentage decreased with increasing age (15–29 years old, 10.7%; 30–44 years old, 5.9%; 45–59 years old, 4.9%; 60–74 years old, 3.0%; 75–89 years old, 2.0%;

90 years or older, 2.0%). The mean age of non-PD patients was 65.9 years, whereas that of PD-only patients was younger at 61.2 years.

Combined use of PD and other therapies for different dialysis periods (Table 25)

The relationship between the current status of combined use of PD with other therapies and dialysis period was analyzed (Table 25). The percentage of PD-treated patients, consisting of PD-only patients and PD + other therapy patients, was 5.7% for patients on dialysis for less than 2 years and decreased with increasing dialysis period (2–4 years, 4.5%; 5–9 years, 2.7%; 10–14 years, 1.3%; 15–19 years, 0.7%; 20–24 years, 0.5%; 25 years or more, 0.5%). Patients who underwent both PD and other therapies were observed even among patients on dialysis for less than 2 years.

The percentage of PD + other therapy patients among PD-treated patients (consisting of PD-only patients and PD + other therapy patients) was as high as 40–50% for patients on dialysis for 5 years or more (less than 2 years, 7.4%; 2–4 years, 19.9%; 5–9 years, 36.1%; 10–14 years, 51.4%; 15–19 years, 52.8%; 20–24 years, 46.2%; 25 years or more, 40.9%).

Combined use of PD and other therapies for different PD periods (Table 26)

Peritoneal dialysis period was calculated for patients who underwent PD at the time of the survey, and its relationship with the current status of combined use of PD and other therapies was analyzed (Table 26). The mean PD period of PD-only patients was 2.6 years, whereas that of PD + other therapy patients was nearly twofold higher at 4.6–5.9 years.

Combined use of PD and other therapies for different primary diseases (Table 27)

The relationship between the current status of combined use of PD and other therapies and primary diseases was analyzed (Table 27). The percentages of patients with diabetic nephropathy as the primary

TABLE 23. Current status of combined use of peritoneal dialysis (PD) and other therapies in different medical organizations (for all dialysis patients)

Kind of facility	Current status of combined use of PD and other therapies										Subtotal	Unspecified	No information available	Total
	Non-PD	PD only	Non-PD + catheter	PD + other therapies (once a week)	PD + other therapies (twice a week)	PD + other therapies (three times a week)	PD + other therapies (other frequency)							
National Public university hospital	345	357	1	34	6	1	0	744	0	230	974			
(%)	(46.4)	(48.0)	(0.1)	(4.6)	(0.8)	(0.1)	(0.0)	(100.0)						
Private university hospital	1 551	795	8	116	7	1	4	2 482	0	466	2 948			
(%)	(62.5)	(32.0)	(0.3)	(4.7)	(0.3)	(0.0)	(0.2)	(100.0)						
National hospital	320	85	0	13	1	0	0	419	0	235	654			
(%)	(76.4)	(20.3)	(0.0)	(3.1)	(0.2)	(0.0)	(0.0)	(100.0)						
Prefectural Municipal Village hospital	13 706	1 110	33	172	31	5	25	15 082	0	4 131	19 213			
(%)	(90.9)	(7.4)	(0.2)	(1.1)	(0.2)	(0.0)	(0.2)	(100.0)						
Social insurance hospital	2 536	209	7	49	3	1	0	2 805	0	613	3 418			
(%)	(90.4)	(7.5)	(0.2)	(1.7)	(0.1)	(0.0)	(0.0)	(100.0)						
"Kouseiren" hospital	6 076	418	7	90	9	3	4	6 607	1	2 343	8 951			
(%)	(92.0)	(6.3)	(0.1)	(1.4)	(0.1)	(0.0)	(0.1)	(100.0)						
Other public hospital	7 507	817	23	138	13	9	18	8 525	0	1 764	10 289			
(%)	(88.1)	(9.6)	(0.3)	(1.6)	(0.2)	(0.1)	(0.2)	(100.0)						
Private general hospital	5 266	306	6	58	34	8	1	5 679	0	1 469	7 148			
(%)	(92.7)	(5.4)	(0.1)	(1.0)	(0.6)	(0.1)	(0.0)	(100.0)						
Private hospital	66 435	1311	48	239	26	10	43	68 112	2	14 212	82 326			
(%)	(97.5)	(1.9)	(0.1)	(0.4)	(0.0)	(0.0)	(0.1)	(100.0)						
Private clinic	113 043	614	77	288	61	15	33	114 131	0	31 944	146 075			
(%)	(99.0)	(0.5)	(0.1)	(0.3)	(0.1)	(0.0)	(0.0)	(100.0)						
Total	216 785	6022	210	1197	191	53	128	224 586	3	57 407	281 996			
(%)	(96.5)	(2.7)	(0.1)	(0.5)	(0.1)	(0.0)	(0.1)	(100.0)						

Kouseiren: an association for welfare belonging to agricultural cooperative associations.

TABLE 24. Current status of combined use of peritoneal dialysis (PD) and other therapies for different age groups (for all dialysis patients)

Age (years)	Current status of combined use of PD and other therapies										Subtotal	Unspecified	No information available	Total
	Non-PD	PD only	Non-PD + catheter	PD + other therapies (once a week)	PD + other therapies (twice a week)	PD + other therapies (three times a week)	PD + other therapies (other frequency)							
<15 (%)	6 (10.0)	54 (90.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	60 (100.0)	0	48	108
15-29 (%)	1 026 (89.0)	96 (8.3)	4 (0.3)	21 (1.8)	5 (0.4)	0 (0.0)	1 (0.1)	1 (0.1)	1 (0.1)	1 (0.1)	1 153 (100.0)	0	300	1 453
30-44 (%)	12 044 (93.9)	540 (4.2)	28 (0.2)	173 (1.3)	24 (0.2)	7 (0.1)	15 (0.1)	15 (0.1)	15 (0.1)	15 (0.1)	12 831 (100.0)	0	3 331	16 162
45-59 (%)	47 126 (95.0)	1789 (3.6)	50 (0.1)	485 (1.0)	67 (0.1)	15 (0.0)	57 (0.1)	57 (0.1)	57 (0.1)	57 (0.1)	49 589 (100.0)	1	12 499	62 089
60-74 (%)	99 035 (96.9)	2517 (2.5)	98 (0.1)	430 (0.4)	82 (0.1)	20 (0.0)	39 (0.0)	39 (0.0)	39 (0.0)	39 (0.0)	102 221 (100.0)	1	25 865	128 087
75-89 (%)	54 970 (98.0)	978 (1.7)	29 (0.1)	85 (0.2)	13 (0.0)	10 (0.0)	16 (0.0)	16 (0.0)	16 (0.0)	16 (0.0)	56 101 (100.0)	1	14 677	70 779
90- (%)	2 576 (98.0)	48 (1.8)	1 (0.0)	3 (0.1)	0 (0.0)	1 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 629 (100.0)	0	672	3 301
Total (%)	216 783 (96.5)	6022 (2.7)	210 (0.1)	1197 (0.5)	191 (0.1)	53 (0.0)	128 (0.1)	128 (0.1)	128 (0.1)	128 (0.1)	224 584 (100.0)	3	57 392	281 979
No information available (%)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)	0	15	17
Total (%)	216 785 (96.5)	6022 (2.7)	210 (0.1)	1197 (0.5)	191 (0.1)	53 (0.0)	128 (0.1)	128 (0.1)	128 (0.1)	128 (0.1)	224 586 (100.0)	3	57 407	281 996
Mean	65.94	61.22	60.55	56.86	57.41	62.66	58.03	58.03	58.03	58.03	65.75	67.67	65.82	65.76
SD	12.50	14.35	13.70	12.31	12.70	13.22	11.96	11.96	11.96	11.96	12.60	12.50	12.76	12.63

TABLE 25. Current status of combined use of PD and other therapies for different dialysis periods (for all target patients)

Dialysis period (years)	Current status of combined use of PD and other therapies							Subtotal	Unspecified	No information available	Total
	Non-PD	PD only	Non-PD + catheter	PD + other therapies (once a week)	PD + other therapies (twice a week)	PD + other therapies (three times a week)	PD + other therapies (other frequency)				
<2 (%)	47 711 (94.2)	2681 (5.3)	47 (0.1)	155 (0.3)	24 (0.0)	9 (0.0)	26 (0.1)	50 653 (100.0)	0	13 808	64 461
2-4 (%)	55 151 (95.4)	2076 (3.6)	39 (0.1)	410 (0.7)	65 (0.1)	14 (0.0)	26 (0.0)	57 781 (100.0)	2	14 690	72 473
5-9 (%)	55 431 (97.2)	990 (1.7)	56 (0.1)	448 (0.8)	60 (0.1)	19 (0.0)	33 (0.1)	57 037 (100.0)	1	14 213	71 251
10-14 (%)	27 710 (98.6)	177 (0.6)	42 (0.1)	124 (0.4)	34 (0.1)	5 (0.0)	24 (0.1)	28 116 (100.0)	0	6 958	35 074
15-19 (%)	14 327 (99.1)	51 (0.4)	22 (0.2)	40 (0.3)	5 (0.0)	4 (0.0)	8 (0.1)	14 457 (100.0)	0	3 654	18 111
20-24 (%)	7 838 (99.5)	21 (0.3)	1 (0.0)	12 (0.2)	0 (0.0)	2 (0.0)	4 (0.1)	7 878 (100.0)	0	1 998	9 876
25- (%)	8 617 (99.5)	26 (0.3)	3 (0.0)	8 (0.1)	3 (0.0)	0 (0.0)	7 (0.1)	8 664 (100.0)	0	2 086	10 750
Total	216 785 (96.5)	6022 (2.7)	210 (0.1)	1197 (0.5)	191 (0.1)	53 (0.0)	128 (0.1)	224 586 (100.0)	3	57 407	281 996
Mean	7.12	2.87	6.89	5.75	5.91	6.49	7.94	7.00	3.33	6.82	6.97
SD	7.21	3.67	6.01	4.64	4.97	5.77	7.43	7.15	1.53	7.09	7.14

disease were 35.4% for non-PD patients, 28.5% for PD-only patients, and 25.0% for PD + other therapy patients.

Items associated with CKD-MBD

In this section, the tabulated results on the survey items related to CKD-MBD are summarized.

Blood test items associated with CKD-MBD

(Tables 28–34)

According to the CKD-MBD Guidelines (1) issued in 2008, it is recommended that the predialysis corrected serum calcium level be maintained within the range of 8.4–10.0 mg/dL. The percentage of patients with a predialysis corrected serum calcium level within this range was 75.4% (Table 28).

Similarly, it is also recommended in the above Guidelines (1) that the predialysis serum phosphorus level be maintained within the range of 3.5–6.0 mg/dL. The percentage of patients with a predialysis serum phosphorus level within this range was 65.8% (Table 29).

In the 2009 survey, the predialysis serum magnesium level was first investigated. Predialysis serum magnesium levels were 1.8–3.4 mg/dL in 94.6% of all the dialysis patients (Table 30).

Table 31 shows the results of tests for serum PTH level. Among all the dialysis patients, 89.3% used intact PTH, whereas 9.9% used whole PTH. The percentage of patients who used high-sensitivity (HS)-PTH was only 0.4%.

The mean serum intact- and whole-PTH levels in all the target patients were 164 (±166) and 106 (±116) pg/mL, respectively (Tables 32,33). The percentage of patients who satisfied the serum intact-PTH level recommended in the CKD-MBD Guidelines (1) (i.e. within the range of 61–180 pg/mL) was 44.7%, which is less than one-half the entire target patients.

Table 34 shows the predialysis serum ALP levels. Among all the dialysis patients, 82.8% had a predialysis serum ALP level within the range of 111–360 IU/L, the normal range determined by the Japan Society of Clinical Chemistry (JSCC) standardization method

Administration or non-administration of phosphate binders (Tables 35,36)

Table 35 shows the results of the administration or non-administration of phosphate binders for different dialysis methods. In this table, only the patients who provided answers other than “unspecified” to all the questions regarding calcium carbonate, sevelamer HCl, and lanthanum carbonate were targeted.

TABLE 26. Current status of combined use of peritoneal dialysis (PD) and other therapies for different PD periods (for PD-treated patients)

PD period (years)	Current status of combined use of PD and other therapies										Total
	Non-PD	PD only	Non-PD + catheter	PD + other therapies (once a week)	PD + other therapies (twice a week)	PD + other therapies (three times a week)	PD + other therapies (other frequency)	Subtotal	Unspecified	No information available	
<1 (%)	0 (0.0)	1093 (93.4)	0 (0.0)	58 (5.0)	9 (0.8)	4 (0.3)	6 (0.5)	1170 (100.0)	0	0	1170
1-2 (%)	0 (0.0)	1551 (86.1)	0 (0.0)	195 (10.8)	28 (1.6)	8 (0.4)	19 (1.1)	1801 (100.0)	0	0	1801
3-4 (%)	0 (0.0)	864 (76.4)	0 (0.0)	216 (19.1)	37 (3.3)	6 (0.5)	8 (0.7)	1131 (100.0)	0	0	1131
5-6 (%)	0 (0.0)	429 (65.9)	0 (0.0)	176 (27.0)	30 (4.6)	5 (0.8)	11 (1.7)	651 (100.0)	0	0	651
7-9 (%)	0 (0.0)	248 (56.2)	0 (0.0)	161 (36.5)	19 (4.3)	5 (1.1)	8 (1.8)	441 (100.0)	0	0	441
10-14 (%)	0 (0.0)	101 (44.3)	0 (0.0)	81 (35.5)	24 (10.5)	2 (0.9)	20 (8.8)	228 (100.0)	0	0	228
15- (%)	0 (0.0)	36 (50.7)	0 (0.0)	28 (39.4)	5 (7.0)	1 (1.4)	1 (1.4)	71 (100.0)	0	0	71
Total (%)	0 (0.0)	4322 (78.7)	0 (0.0)	915 (16.7)	152 (2.8)	31 (0.6)	73 (1.3)	5493 (100.0)	0	0	5493
No information available (%)	0 (0.0)	1700 (81.0)	0 (0.0)	282 (13.4)	39 (1.9)	22 (1.0)	55 (2.6)	2098 (100.0)	0	0	2098
Total (%)	0 (0.0)	6022 (79.3)	0 (0.0)	1197 (15.8)	191 (2.5)	53 (0.7)	128 (1.7)	7591 (100.0)	0	0	7591
Mean		2.60		5.17	5.61	4.61	5.88	3.17			3.17
SD		2.94		3.91	4.24	4.28	4.56	3.38			3.38

TABLE 27. Current status of combined use of peritoneal dialysis (PD) and other therapies for different primary diseases (for all dialysis patients)

Primary disease	Current status of combined use of PD and other therapies								Total		
	Non-PD	PD only	Non-PD + catheter	PD + other therapies (once a week)	PD + other therapies (twice a week)	PD + other therapies (three times a week)	PD + other therapies (other frequency)	Subtotal		Unspecified	No information available
Chronic glomerulonephritis (%)	81 153 (96.1)	2388 (2.8)	105 (0.1)	611 (0.7)	91 (0.1)	21 (0.0)	69 (0.1)	84 438 (100.0)	0	21 564	106 002
Chronic pyelonephritis (%)	2 341 (95.7)	83 (3.4)	4 (0.2)	18 (0.7)	0 (0.0)	1 (0.0)	0 (0.0)	2 447 (100.0)	0	622	3 069
Rapidly progressive glomerulonephritis (%)	1 506 (96.6)	40 (2.6)	1 (0.1)	9 (0.6)	2 (0.1)	0 (0.0)	1 (0.1)	1 559 (100.0)	0	402	1 961
Nephropathy of pregnancy/pregnancy toxemia (%)	1 339 (97.8)	20 (1.5)	2 (0.1)	4 (0.3)	3 (0.2)	0 (0.0)	1 (0.1)	1 369 (100.0)	0	386	1 755
Other nephritides that cannot be classified (%)	979 (95.0)	41 (4.0)	1 (0.1)	7 (0.7)	2 (0.2)	0 (0.0)	1 (0.1)	1 031 (100.0)	0	284	1 315
Polycystic kidney (%)	7 409 (97.9)	126 (1.7)	2 (0.0)	24 (0.3)	6 (0.1)	0 (0.0)	3 (0.0)	7 570 (100.0)	0	1 912	9 482
Nephrosclerosis (%)	15 563 (95.7)	601 (3.7)	14 (0.1)	66 (0.4)	6 (0.0)	5 (0.0)	3 (0.0)	16 258 (100.0)	0	3 876	20 134
Malignant hypertension (%)	1 656 (95.8)	59 (3.4)	0 (0.0)	11 (0.6)	1 (0.1)	0 (0.0)	1 (0.1)	1 728 (100.0)	0	450	2 178
Diabetic nephropathy (%)	76 783 (97.3)	1714 (2.2)	60 (0.1)	282 (0.4)	58 (0.1)	20 (0.0)	32 (0.0)	78 949 (100.0)	1	20 090	99 040
SLE nephritis (%)	1 790 (97.0)	44 (2.4)	1 (0.1)	7 (0.4)	0 (0.0)	1 (0.1)	2 (0.1)	1 845 (100.0)	0	495	2 340
Amyloid kidney (%)	380 (96.7)	11 (2.8)	0 (0.0)	1 (0.3)	0 (0.0)	0 (0.0)	1 (0.3)	393 (100.0)	0	123	516
Gouty kidney (%)	961 (96.8)	23 (2.3)	0 (0.0)	8 (0.8)	0 (0.0)	1 (0.1)	0 (0.0)	993 (100.0)	0	258	1 251
Renal failure due to congenital abnormality of metabolism (%)	192 (94.1)	10 (4.9)	1 (0.5)	1 (0.5)	0 (0.0)	0 (0.0)	0 (0.0)	204 (100.0)	0	59	263

TABLE 27. Continued

Primary disease	Current status of combined use of PD and other therapies										Total
	Non-PD	PD only	Non-PD + catheter	PD + other therapies (once a week)	PD + other therapies (twice a week)	PD + other therapies (three times a week)	PD + other therapies (other frequency)	Subtotal	Unspecified	No information available	
Kidney and urinary tract tuberculosis	255	3	0	1	0	0	0	259	0	71	330
(%)	(98.5)	(1.2)	(0.0)	(0.4)	(0.0)	(0.0)	(0.0)	(100.0)			
Kidney and urinary tract stone	447	9	0	2	0	0	0	458	0	110	568
(%)	(97.6)	(2.0)	(0.0)	(0.4)	(0.0)	(0.0)	(0.0)	(100.0)			
Kidney and urinary tract tumor	558	15	0	0	0	0	0	573	0	155	728
(%)	(97.4)	(2.6)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)			
Obstructive urinary tract disease	534	19	0	1	1	0	0	555	0	137	692
(%)	(96.2)	(3.4)	(0.0)	(0.2)	(0.2)	(0.0)	(0.0)	(100.0)			
Myeloma	169	2	0	0	0	0	0	171	0	36	207
(%)	(98.8)	(1.2)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)			
Hypoplastic kidney	422	46	0	3	0	0	0	471	0	114	585
(%)	(89.6)	(9.8)	(0.0)	(0.6)	(0.0)	(0.0)	(0.0)	(100.0)			
Undetermined	16 402	607	17	106	17	3	9	17 161	2	4 663	21 826
(%)	(95.6)	(3.5)	(0.1)	(0.6)	(0.1)	(0.0)	(0.1)	(100.0)			
Reintroduction after transplantation	1 621	39	2	12	1	0	3	1 678	0	370	2 048
(%)	(96.6)	(2.3)	(0.1)	(0.7)	(0.1)	(0.0)	(0.2)	(100.0)			
Others	4 288	120	0	23	3	1	2	4 437	0	1 186	5 623
(%)	(96.6)	(2.7)	(0.0)	(0.5)	(0.1)	(0.0)	(0.0)	(100.0)			
Total	216 748	6020	210	1197	191	53	128	224 547	3	57 363	281 913
(%)	(96.5)	(2.7)	(0.1)	(0.5)	(0.1)	(0.0)	(0.1)	(100.0)			
No information available	37	2	0	0	0	0	0	39	0	44	83
(%)	(94.9)	(5.1)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(100.0)			
Total	216 785	6022	210	1197	191	53	128	224 586	3	57 407	281 996
(%)	(96.5)	(2.7)	(0.1)	(0.5)	(0.1)	(0.0)	(0.1)	(100.0)			

TABLE 28. Predialysis corrected serum calcium levels (mg/dL) for different dialysis methods (for all dialysis patients)

Predialysis corrected serum calcium levels (mg/dL)		No information available										Mean	SD
Dialysis method	<6.0	6.0~	7.1~	8.4~	9.3~	10.1~	11.1~	12.0~	Subtotal	Total	Mean	SD	
Facility HD (%)	183 (0.1)	752 (0.3)	19 672 (8.9)	92 128 (41.9)	74 434 (33.8)	28 005 (12.7)	3594 (1.6)	1305 (0.6)	220 073 (100.0)	253 807	9.29	0.88	
HDF (%)	10 (0.1)	38 (0.3)	1 004 (6.7)	5 285 (35.5)	5 569 (37.4)	2 511 (16.9)	365 (2.4)	117 (0.8)	14 899 (100.0)	16 853	9.45	0.97	
HF (%)	0 (0.0)	0 (0.0)	10 (10.4)	30 (31.3)	40 (41.7)	15 (15.6)	0 (0.0)	1 (1.0)	96 (100.0)	160	9.37	0.77	
Hemoadsorption (%)	3 (0.2)	7 (0.4)	92 (5.7)	544 (33.5)	605 (37.2)	326 (20.1)	41 (2.5)	7 (0.4)	1 625 (100.0)	1 788	9.47	0.83	
Home HD (%)	0 (0.0)	2 (1.4)	9 (6.2)	59 (40.4)	58 (39.7)	16 (11.0)	1 (0.7)	1 (0.7)	146 (100.0)	224	9.27	0.83	
PD (%)	6 (0.1)	27 (0.5)	335 (5.6)	1 807 (30.3)	2 460 (41.2)	1 122 (18.8)	157 (2.6)	51 (0.9)	5 965 (100.0)	9 164	9.52	0.90	
Total (%)	202 (0.1)	826 (0.3)	21 122 (8.7)	99 853 (41.1)	83 166 (34.3)	31 995 (13.2)	4158 (1.7)	1482 (0.6)	242 804 (100.0)	281 996	9.31	0.89	

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 29. Predialysis serum phosphorus levels (mg/dL) for different dialysis methods (for all dialysis patients)

Predialysis serum phosphorus levels (mg/dL)		No information available										Mean	SD
Dialysis method	<2.0	2.0~	3.5~	4.8~	6.1~	7.0~	8.0~	9.0~	Subtotal	Total	Mean	SD	
Facility HD (%)	1355 (0.6)	25 262 (11.2)	76 701 (33.9)	72 098 (31.9)	28 706 (12.7)	13 900 (6.1)	5 127 (2.3)	3118 (1.4)	226 267 (100.0)	253 807	5.04	1.48	
HDF (%)	77 (0.5)	1 305 (8.6)	4 627 (30.6)	5 286 (34.9)	2 167 (14.3)	1 060 (7.0)	392 (2.6)	224 (1.5)	15 138 (100.0)	16 853	5.21	1.47	
HF (%)	2 (2.1)	19 (19.8)	22 (22.9)	35 (36.5)	10 (10.4)	4 (4.2)	3 (3.1)	1 (1.0)	96 (100.0)	160	4.84	1.49	
Hemoadsorption (%)	2 (0.1)	117 (7.1)	496 (29.9)	676 (40.8)	243 (14.7)	92 (5.5)	18 (1.1)	14 (0.8)	1 658 (100.0)	1 788	5.18	1.25	
Home HD (%)	0 (0.0)	12 (8.1)	61 (41.2)	59 (39.9)	12 (8.1)	2 (1.4)	0 (0.0)	2 (1.4)	148 (100.0)	224	4.84	1.10	
PD (%)	22 (0.4)	662 (10.8)	1 977 (32.3)	2 069 (33.8)	817 (13.4)	366 (6.0)	139 (2.3)	64 (1.0)	6 116 (100.0)	9 164	5.08	1.40	
Total (%)	1458 (0.6)	27 377 (11.0)	83 884 (33.6)	80 223 (32.2)	31 955 (12.8)	15 424 (6.2)	5 679 (2.3)	3423 (1.4)	249 423 (100.0)	281 996	5.05	1.47	

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 30. Predialysis serum magnesium levels (mg/dL) for different dialysis methods (for all dialysis patients)

Dialysis method	Predialysis serum magnesium levels (mg/dL)										Subtotal	No information available	Total	Mean	SD
	0.1~	0.9~	1.8~	2.7~	3.5~	4.4~	5.2~	6.1~							
Facility HD (%)	36 (0.0)	2263 (1.5)	87 072 (57.7)	55 800 (37.0)	4650 (3.1)	621 (0.4)	250 (0.2)	233 (0.2)			150 925 (100.0)	102 882	253 807	2.60	0.53
HDF (%)	1 (0.0)	96 (0.9)	5 715 (56.2)	4 014 (39.5)	277 (2.7)	40 (0.4)	13 (0.1)	13 (0.1)			10 169 (100.0)	6 684	16 853	2.62	0.48
HF (%)	0 (0.0)	0 (0.0)	15 (50.0)	12 (40.0)	2 (6.7)	1 (3.3)	0 (0.0)	0 (0.0)			30 (100.0)	130	160	2.62	0.62
Hemoadsorption (%)	0 (0.0)	18 (1.5)	723 (60.9)	419 (35.3)	22 (1.9)	2 (0.2)	1 (0.1)	2 (0.2)			1 187 (100.0)	601	1 788	2.58	0.61
Home HD (%)	0 (0.0)	1 (0.8)	95 (80.5)	20 (16.9)	1 (0.8)	0 (0.0)	0 (0.0)	1 (0.8)			118 (100.0)	106	224	2.49	0.82
PD (%)	0 (0.0)	345 (11.5)	2 009 (67.2)	527 (17.6)	77 (2.6)	15 (0.5)	5 (0.2)	10 (0.3)			2 988 (100.0)	6 176	9 164	2.35	0.92
Total (%)	37 (0.0)	2723 (1.6)	95 629 (57.8)	60 792 (36.8)	5029 (3.0)	679 (0.4)	269 (0.2)	259 (0.2)			165 417 (100.0)	116 579	281 996	2.60	0.54

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

Calcium carbonate was the most commonly used among the phosphate binders (i.e. administered to 58.8% of all the target patients). The percentage of patients administered calcium carbonate among the patients who underwent HD at facilities (referred to as facility HD patients) was 58.9%, which was greater than the percentage among PD patients (53.3%). The percentages of patients exclusively administered calcium carbonate, sevelamer HCl, or lanthanum carbonate were 53.0% for the facility HD patients and 48.9% for the PD patients. Namely, these phosphate binders were more commonly used among the facility HD patients than among the PD patients. The percentage of patients administered all of the above three phosphate binders was 1.9% for both the facility HD and PD patients; there were no differences between them and the percentages were small. The percentages of patients not administered the three phosphate binders were 25.4% for the facility HD patients and 30.5% for the PD patients. The above three phosphate binders were less commonly used among the PD patients than among the facility HD patients.

Table 36 shows the predialysis serum phosphorus levels in patients administered and not administered phosphate binders and who underwent HD at facilities three times per week. The predialysis serum phosphorus levels recommended in the CKD-MBD Guidelines (1) (3.5–6.0 mg/dL) were satisfied in 69.7% of the patients administered only calcium carbonate, 65.9% of the patients administered only sevelamer HCl, and 58.8% of the patients administered only lanthanum carbonate. Such recommended levels were also satisfied in 56.0% of the patients administered all of the above three phosphate binders and 63.9% of the non-administered patients. Moreover, 20.8% of the non-administered patients showed a low serum phosphorus level of less than 3.5 mg/dL.

Administration or non-administration of vitamin D and cinacalcet (Tables 37–40)

The percentage of patients administered oral vitamin D among the facility HD patients was 38.2% compared with a higher percentage among PD patients of 51.9% (Table 37).

On the other hand, the percentage of patients administered intravenous vitamin D among the facility HD patients was 26.5% compared with 5.8% among PD patients (Table 38).

The percentage of patients administered cinacalcet showed an insignificant difference between the facility HD and PD patients (Table 39).

Table 40 shows serum intact-PTH levels in patients administered or not administered cinacalcet and who

TABLE 31. Tests of serum parathyroid hormone (PTH) level for different dialysis methods (for all dialysis patients)

Dialysis method	Tests of serum parathyroid hormone (PTH) level					Unspecified	No information available	Total
	intact-PTH	whole-PTH	HS-PTH	Other	Subtotal			
Facility HD	186 739	20 711	788	1003	209 241	2	44 564	253 807
(%)	(89.2)	(9.9)	(0.4)	(0.5)	(100.0)			
HDF	12 894	1 238	32	33	14 197	0	2 656	16 853
(%)	(90.8)	(8.7)	(0.2)	(0.2)	(100.0)			
HF	88	3	0	0	91	0	69	160
(%)	(96.7)	(3.3)	(0.0)	(0.0)	(100.0)			
Hemoadsorption	1 415	156	11	3	1 585	0	203	1 788
(%)	(89.3)	(9.8)	(0.7)	(0.2)	(100.0)			
Home HD	139	10	0	0	149	0	75	224
(%)	(93.3)	(6.7)	(0.0)	(0.0)	(100.0)			
PD	4 775	657	11	63	5 506	2	3 656	9 164
(%)	(86.7)	(11.9)	(0.2)	(1.1)	(100.0)			
Total	206 050	22 775	842	1102	230 769	4	51 223	281 996
(%)	(89.3)	(9.9)	(0.4)	(0.5)	(100.0)			

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; HS-PTH, high-sensitivity serum parathyroid hormone level; PD, peritoneal dialysis.

underwent HD at facilities three times per week. The serum intact-PTH levels in the patients who were administered cinacalcet at the time of the survey and those who had previously received cinacalcet were higher than those of the patients who had never been administered cinacalcet. The serum intact-PTH levels recommended in the CKD-MBD Guidelines (61–180 pg/mL) were satisfied in 41.2% of the patients who currently and previously received cinacalcet compared with 45.6% among patients who had never received the drug.

Current status of satisfaction of target levels during therapy recommended in CKD-MBD Guidelines (Tables 41,42)

Figure 2 shows the target corrected serum calcium and serum phosphorus levels during therapy recommended in the CKD-MBD Guidelines (1). Table 41 shows the predialysis corrected serum calcium and serum phosphorus levels for all the dialysis patients to evaluate the current status of satisfaction of levels recommended in the CKD-MBD Guidelines. The percentage of patients who satisfied both the recommended corrected serum calcium and serum phosphorus levels was 50.6%.

Table 42 shows the current status of satisfaction of the values recommended in the CKD-MBD Guidelines (1) considering the serum intact-PTH level as well as corrected serum calcium and serum phosphorus levels. The percentage of patients who satisfied the corrected serum calcium, serum phosphorus, and serum intact-PTH levels recommended in the guidelines was 24.8%

Items associated with dementia

Complications of dementia

The association between dialysis therapies and the onset of dementia has not been clearly demonstrated. Previously, there was a time when dialysis encephalopathy developed owing to the accumulation of aluminum in the brain of dialysis patients, which was considered to be a serious problem. Because reverse osmosis systems have become widespread, however, dialysis encephalopathy has rarely been observed as a complication of dialysis patients in recent years. Under such circumstances, there have been no reports, as far as we know, in which the relationship between dialysis therapies and the onset of dementia was examined in a large number of dialysis patients.

In the 2009 survey, the onset or non-onset of dementia was investigated. This item was asked with the following four alternatives, and the judgment was left to respondents.

- A Without dementia
- B With dementia (requiring no care)
- C With dementia (requiring care)
- Z Unspecified

Dialysis method and dementia (Table 43). Patients determined to have dementia (patients with dementia) accounted for 9.8% of all the dialysis patients. The percentage of patients with dementia among the patients who underwent hemofiltration was 20.4%, the highest percentage among different dialysis methods. In contrast, no patients with dementia were observed among those who underwent HD at home.

TABLE 32. Serum intact-parathyroid hormone (PTH) levels (pg/mL) for different dialysis methods (for all dialysis patients)

Dialysis method	Serum intact-parathyroid hormone (PTH) levels (pg/mL)										Subtotal	No information available	Total	Mean	SD
	<31	31~	61~	121~	181~	361~	721~	1441~	1441~	1441~					
Facility HD (%)	19 400 (10.7)	22 876 (12.6)	45 275 (25.0)	36 236 (20.0)	43 688 (24.1)	11 489 (6.3)	1 809 (1.0)	280 (0.2)	181 053 (100.0)	5686	186 739	162	163		
HDF (%)	1 389 (11.1)	1 427 (11.4)	2 877 (23.0)	2 505 (20.0)	3 182 (25.4)	945 (7.5)	163 (1.3)	33 (0.3)	12 521 (100.0)	373	12 894	174	186		
HF (%)	25 (29.1)	18 (20.9)	11 (12.8)	6 (7.0)	19 (22.1)	5 (5.8)	1 (1.2)	1 (1.2)	86 (100.0)	2	88	161	322		
Hemoadsorption (%)	223 (16.1)	145 (10.5)	303 (21.9)	237 (17.1)	365 (26.4)	90 (6.5)	21 (1.5)	0 (0.0)	1 384 (100.0)	31	1 415	163	157		
Home HD (%)	11 (7.9)	14 (10.1)	28 (20.1)	30 (21.6)	36 (25.9)	17 (12.2)	3 (2.2)	0 (0.0)	139 (100.0)	0	139	205	184		
PD (%)	276 (6.3)	386 (8.8)	914 (20.8)	816 (18.6)	1 351 (30.7)	530 (12.1)	110 (2.5)	13 (0.3)	4 396 (100.0)	379	4 775	217	212		
Total (%)	21 324 (10.7)	24 866 (12.5)	49 408 (24.8)	39 830 (20.0)	48 641 (24.4)	13 076 (6.6)	2 107 (1.1)	327 (0.2)	199 579 (100.0)	6471	206 050	164	166		

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 33. Serum whole-parathyroid hormone (PTH) levels (pg/mL) for different dialysis methods (for all dialysis patients)

Dialysis method	Serum whole-parathyroid hormone (PTH) levels (pg/mL)										Subtotal	No information available	Total	Mean	SD
	<21	21~	36~	71~	101~	211~	421~	851~	851~	851~					
Facility HD (%)	2448 (12.0)	2373 (11.7)	4784 (23.5)	3143 (15.5)	5418 (26.7)	1706 (8.4)	399 (2.0)	59 (0.3)	20 330 (100.0)	381	20 711	106	115		
HDF (%)	189 (15.4)	138 (11.2)	291 (23.7)	179 (14.6)	298 (24.3)	105 (8.6)	27 (2.2)	1 (0.1)	1 228 (100.0)	10	1 238	102	111		
HF (%)	1 (33.3)	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	3 (100.0)	0	3	55	62		
Hemoadsorption (%)	22 (14.5)	20 (13.2)	31 (20.4)	27 (17.8)	35 (23.0)	13 (8.6)	4 (2.6)	0 (0.0)	152 (100.0)	4	156	106	126		
Home HD (%)	71 (11.3)	72 (11.5)	139 (22.2)	96 (15.3)	160 (25.5)	66 (10.5)	18 (2.9)	5 (0.8)	627 (100.0)	1	637	120	147		
Total (%)	2731 (12.2)	2606 (11.7)	5246 (23.5)	3445 (15.4)	5912 (26.5)	1896 (8.5)	448 (2.0)	65 (0.3)	22 349 (100.0)	426	22 775	106	116		

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 34. Predialysis serum alkaline phosphatase (ALP) levels (IU/L) for different dialysis methods (for all dialysis patients)

Dialysis method	Predialysis serum ALP levels (IU/L)											Subtotal	No information available	Total	Mean	SD
	<71	71~	111~	201~	281~	361~	501~	751~	1001~	1501~						
Facility HD (%)	786 (0.4)	3022 (1.4)	68 711 (31.6)	73 670 (33.9)	38 527 (17.7)	23 092 (10.6)	7448 (3.4)	1375 (0.6)	553 (0.3)	267 (0.1)	217 451 (100.0)	36 356	253 807	265	146	
HDF (%)	30 (0.2)	173 (1.2)	4 321 (29.5)	4 865 (33.2)	2 690 (18.4)	1 764 (12.0)	632 (4.3)	106 (0.7)	48 (0.3)	24 (0.2)	14 653 (100.0)	2 200	16 853	277	162	
HF (%)		3 (3.2)	28 (29.8)	33 (35.1)	16 (17.0)	9 (9.6)	1 (1.1)	1 (1.1)		3 (3.2)	94 (100.0)	66	160	304	311	
Hemoadsorption (%)	7 (0.4)	6 (0.4)	253 (15.6)	510 (31.5)	397 (24.5)	305 (18.8)	122 (7.5)	14 (0.9)	6 (0.4)	1 (0.1)	1 621 (100.0)	167	1 788	316	147	
Home HD (%)	3 (2.1)	3 (2.1)	49 (34.8)	40 (28.4)	31 (22.0)	9 (6.4)	4 (2.8)	1 (0.7)	1 (0.7)		141 (100.0)	83	224	253	134	
PD (%)	20 (0.4)	39 (0.7)	1 429 (25.8)	1 753 (31.6)	973 (17.6)	818 (14.8)	383 (6.9)	84 (1.5)	33 (0.6)	10 (0.2)	5 542 (100.0)	3 622	9 164	301	173	
Total (%)	846 (0.4)	3246 (1.4)	74 791 (31.2)	80 871 (33.8)	42 634 (17.8)	25 997 (10.9)	8590 (3.6)	1581 (0.7)	641 (0.3)	305 (0.1)	239 502 (100.0)	42 494	281 996	267	148	

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 35. Use of phosphate binders for different dialysis methods (for all dialysis patients)

Use of phosphate binders	Dialysis methods											Total	Total (%) [†]	
	Facility HD (%) [†]	HDF (%) [†]	HF (%) [†]	Hemoadsorption (%) [†]	Home HD (%) [†]	PD (%) [†]								
Calcium carbonate (CaCO ₃) only	82 359 (39.2)	4 859 (34.6)	8 (34.6)	574 (18.6)	57 (37.2)	2070 (40.7)	89 927 (38.8)							
Sevelamer HCl (Sevelamer) only	20 187 (9.6)	1 771 (12.6)	2 (12.6)	249 (4.7)	22 (16.1)	668 (15.7)	22 899 (9.9)							
Lanthanum carbonate (La ₂ (CO ₃) ₃) only	8 849 (4.2)	904 (6.4)	1 (6.4)	78 (2.3)	5 (5.0)	229 (3.6)	10 066 (4.3)							
CaCO ₃ + Sevelamer	27 571 (13.1)	2 195 (15.6)	0 (15.6)	264 (0.0)	20 (17.1)	820 (14.3)	30 870 (13.3)							
CaCO ₃ + La ₂ (CO ₃) ₃	9 777 (4.7)	882 (6.3)	9 (6.3)	84 (20.9)	4 (5.4)	228 (3.8)	10 984 (4.7)							
Sevelamer + La ₂ (CO ₃) ₃	3 961 (1.9)	501 (3.6)	2 (3.6)	47 (4.7)	2 (3.0)	82 (1.4)	4 595 (2.0)							
All three	4 064 (1.9)	395 (2.8)	1 (2.8)	26 (2.3)	4 (1.7)	118 (2.9)	4 608 (2.0)							
None	53 321 (25.4)	2 531 (18.0)	20 (18.0)	223 (46.5)	26 (14.4)	1852 (30.5)	57 973 (25.0)							
Total	210 089 (100.0)	14 038 (100.0)	43 (100.0)	1545 (100.0)	140 (100.0)	6067 (100.0)	231 922 (100.0)							

[†]Percentage relative to total in each column. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 36. Predialysis serum phosphorus levels (mg/dL) in patients administered or not administered phosphate binders (for patients who underwent HD at facilities three times per week)

Use of phosphate binders	Predialysis serum phosphorus levels (mg/dL)								Subtotal	No information available	Total
	<2.0	2.0~	3.5~	4.8~	6.1~	7.0~	8.0~	9.0~			
Calcium carbonate (CaCO ₃) only (%)	304 (0.4)	8 533 (10.9)	29 081 (37.2)	25 359 (32.5)	8 946 (11.5)	3 920 (5.0)	1247 (1.6)	717 (0.9)	78 107 (100.0)	641	78 748
Sevelamer HCl (Sevelamer) only (%)	35 (0.2)	1 170 (6.0)	5 540 (28.4)	7 309 (37.5)	3 026 (15.5)	1 522 (7.8)	572 (2.9)	332 (1.7)	19 506 (100.0)	121	19 627
Lanthanum carbonate (La ₂ (CO ₃) ₃) only (%)	20 (0.2)	536 (6.3)	2 289 (27.1)	2 682 (31.7)	1 426 (16.9)	887 (10.5)	394 (4.7)	223 (2.6)	8 457 (100.0)	93	8 550
CaCO ₃ + Sevelamer (%)	57 (0.2)	1 292 (4.8)	7 341 (27.4)	9 968 (37.2)	4 662 (17.4)	2 214 (8.3)	792 (3.0)	460 (1.7)	26 786 (100.0)	139	26 925
CaCO ₃ + La ₂ (CO ₃) ₃ (%)	14 (0.1)	479 (5.1)	2 598 (27.6)	3 005 (32.0)	1 632 (17.4)	949 (10.1)	459 (4.9)	269 (2.9)	9 405 (100.0)	49	9 454
Sevelamer + La ₂ (CO ₃) ₃ (%)	9 (0.2)	169 (4.4)	993 (25.9)	1 345 (35.0)	695 (18.1)	379 (9.9)	146 (3.8)	104 (2.7)	3 840 (100.0)	19	3 859
All three (%)	10 (0.3)	149 (3.8)	882 (22.4)	1 317 (33.5)	742 (18.9)	474 (12.1)	196 (5.0)	160 (4.1)	3 930 (100.0)	11	3 941
None (%)	712 (1.5)	9 246 (19.3)	17 956 (37.5)	12 655 (26.4)	4 239 (8.8)	1 928 (4.0)	693 (1.4)	491 (1.0)	47 920 (100.0)	917	48 837
Total (%)	1161 (0.6)	21 574 (10.9)	66 680 (33.7)	63 640 (32.1)	25 368 (12.8)	12 273 (6.2)	4499 (2.3)	2756 (1.4)	197 951 (100.0)	1990	199 941

The ratio of the percentage of patients with dementia requiring no care to that of patients with dementia requiring care was approximately 1 : 1.

As shown in the following pages, the onset of dementia is largely affected by age and the complications of diabetes and cerebrovascular disease. Because such background factors in patients were not considered in the above tabulation results for different dialysis methods, each dialysis method cannot be associated with the risk of the onset of dementia. The tabulation results should be interpreted as indicating the adaptation status of each dialysis method to patients with dementia.

Gender and dementia (Table 44). Table 44 shows the numbers of patients with and without dementia who underwent HD at facilities three times per week for both genders. The percentage of patients with dementia was greater among females than males

Age and dementia (Table 45). Table 45 shows the numbers of patients with and without dementia who underwent HD at facilities three times per week for different ages. For patients aged 60 years or older, the percentage of patients with dementia increased with age

Primary diseases and dementia (Table 46). Table 46 shows the numbers of patients with and without dementia who underwent HD at facilities three times per week for different primary diseases. The percentage of patients with dementia among the patients with diabetic nephropathy as the primary disease (11.6%) was greater than that among the patients with chronic glomerulonephritis as the primary disease (7.5%). A study of dementia in the general population, not dialysis patients, also indicates that diabetes is related to the onset of dementia (7).

Histories of cerebrovascular disease and dementia (Tables 47,48). Tables 47,48 show the numbers of patients with and without dementia who underwent HD at facilities three times per week, and their histories of cerebral infarction and cerebral hemorrhage, respectively. For both cerebral infarction and cerebral hemorrhage, the percentage of patients with dementia was greater in the patients who had histories of these diseases than in the patients who did not.

Activities of daily living

Activities of daily living (ADL) of patients was previously investigated twice (current status of care in the 1998 survey and physical activities in the 2002 survey) (8,9).

TABLE 37. Patients administered or not administered with oral vitamin D for different dialysis methods (for all dialysis patients)

Dialysis method	Use of oral vitamin D		Subtotal	Unspecified	No information available	Total
	Nonuse	Use				
Facility HD	131 319	81 113	212 432	1491	39 884	253 807
(%)	(61.8)	(38.2)	(100.0)			
HDF	8 935	5 229	14 164	47	2 642	16 853
(%)	(63.1)	(36.9)	(100.0)			
HF	32	50	82	0	78	160
(%)	(39.0)	(61.0)	(100.0)			
Hemoadsorption	1 004	552	1 556	6	226	1 788
(%)	(64.5)	(35.5)	(100.0)			
Home HD	50	93	143	1	80	224
(%)	(35.0)	(65.0)	(100.0)			
PD	2 966	3 194	6 160	63	2 941	9 164
(%)	(48.1)	(51.9)	(100.0)			
Total	144 306	90 231	234 537	1608	45 851	281 996
(%)	(61.5)	(38.5)	(100.0)			

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

The tabulation results on ADL are summarized in this section. Table 49 shows the alternatives used in the questionnaires and headings in the subsequent tables.

Dementia and ADL (Table 50). Table 50 shows the numbers of patients with and without dementia who underwent HD at facilities three times per week for different levels of ADL. There was a tendency that the percentage of patients with dementia tended to be higher in the group with a low level of ADL

Place of residence

In this survey, the place of residence of individual patients was investigated using the following four alternatives.

A: Patients' own home (outpatient dialysis, home PD, home HD).

B: Care facilities (e.g. homes with care services, nursing homes such as private-pay nursing homes without national aids and nursing homes for families with financial difficulties, group homes, vocational centers, relief facilities).

TABLE 38. Patients administered or not administered intravenous vitamin D for different dialysis methods (for all dialysis patients)

Dialysis method	Use of intravenous vitamin D			Subtotal	Unspecified	No information available	Total
	Had never been administered	Under administration	Administered previously				
Facility HD	140 320	54 135	9 633	204 088	7803	41 916	253 807
(%)	(68.8)	(26.5)	(4.7)	(100.0)			
HDF	7 777	4 901	1 041	13 719	518	2 616	16 853
(%)	(56.7)	(35.7)	(7.6)	(100.0)			
HF	27	11	2	40	3	117	160
(%)	(67.5)	(27.5)	(5.0)	(100.0)			
Hemoadsorption	727	602	152	1 481	64	243	1 788
(%)	(49.1)	(40.6)	(10.3)	(100.0)			
Home HD	110	19	8	137	7	80	224
(%)	(80.3)	(13.9)	(5.8)	(100.0)			
PD	5 252	327	71	5 650	498	3 016	9 164
(%)	(93.0)	(5.8)	(1.3)	(100.0)			
Total	154 213	59 995	10 907	225 115	8893	47 988	281 996
(%)	(68.5)	(26.7)	(4.8)	(100.0)			

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 39. Patients administered or not administered cinacalcet for different dialysis methods (for all dialysis patients)

Dialysis method	Use of cinacalcet				Subtotal	Unspecified	No information available	Total
	Had never been administered	Had been administered for at least one year	Had been administered for less than one year	Had been administered but discontinued				
Facility HD	183 485	14 629	7788	1632	207 534	4282	41 991	253 807
(%)	(88.4)	(7.0)	(3.8)	(0.8)	(100.0)			
HDF	10 820	1 982	922	184	13 908	242	2 703	16 853
(%)	(77.8)	(14.3)	(6.6)	(1.3)	(100.0)			
HF	38	4	0	0	42	1	117	160
(%)	(90.5)	(9.5)	(0.0)	(0.0)	(100.0)			
Hemoadsorption	1 137	260	126	20	1 543	9	236	1 788
(%)	(73.7)	(16.9)	(8.2)	(1.3)	(100.0)			
Home HD	83	43	15	0	141	3	80	224
(%)	(58.9)	(30.5)	(10.6)	(0.0)	(100.0)			
PD	5 123	433	245	27	5 828	360	2 976	9 164
(%)	(87.9)	(7.4)	(4.2)	(0.5)	(100.0)			
Total	200 686	17 351	9096	1863	228 996	4897	48 103	281 996
(%)	(87.6)	(7.6)	(4.0)	(0.8)	(100.0)			

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

C: Hospitals (e.g. health service facilities for elderly; beds for general patients, patients of chronic stage, patients requiring rehabilitation, and patients with mental illness and infectious diseases, such as tuberculosis).

Z: Unspecified or uncategorized.

The place of residence was investigated once in the 1998 survey (living conditions) (8).

Dialysis methods and place of residence (Table 51). Table 51 shows the number of patients and their places of residence for different dialysis methods. Hemofiltration showed the highest percentage of patients who stayed at hospitals and care facilities, whereas HD at home showed the lowest percentage of such patients.

ADL and place of residence (Table 52). Table 52 shows the number of patients and their places of residence who underwent HD at facilities three times per week for different levels of ADL. The percentages of patients who stayed at hospitals and care facilities tended to be higher among patients with a low level of ADL.

Dementia and place of residence (Table 53). Table 53 shows the numbers of patients with and without dementia who underwent HD at facilities three times per week and their places of residence. The percentage of patients with dementia was high

among those who stayed at hospitals and care facilities.

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TABLE 40. Serum intact-parathyroid hormone (PTH) levels (pg/mL) in patients administered or not administered cinacalcet (patients who underwent HD at facilities three times per week)

Use of cinacalcet	Serum intact-PTH levels (pg/mL)										Subtotal	No information available	Total	Mean	SD
	<31	31~	61~	121~	181~	361~	721~	1441~							
Had never been administered (%)	16 865 (11.9)	19 400 (13.7)	36 513 (25.7)	28 167 (19.8)	32 394 (22.8)	7 442 (5.2)	1009 (0.7)	146 (0.1)	141 936 (100.0)	3727	145 663	150	147		
Had been administered for at least one year (%)	258 (2.1)	679 (5.6)	2 617 (21.6)	2 731 (22.6)	3 924 (32.4)	1 495 (12.4)	334 (2.8)	55 (0.5)	12 093 (100.0)	89	12 182	232	216		
Had been administered for less than one year (%)	174 (2.7)	348 (5.4)	1 195 (18.5)	1 281 (19.9)	2 250 (34.9)	982 (15.2)	185 (2.9)	31 (0.5)	6 446 (100.0)	34	6 480	248	223		
Had been administered but discontinued (%)	110 (8.3)	105 (7.9)	171 (12.9)	193 (14.6)	398 (30.1)	254 (19.2)	75 (5.7)	17 (1.3)	1 323 (100.0)	5	1 328	292	341		
Subtotal	17 407 (10.8)	20 532 (12.7)	40 496 (25.0)	32 372 (20.0)	38 966 (24.1)	10 173 (6.3)	1603 (1.0)	249 (0.2)	161 798 (100.0)	3855	165 653	161	162		
Unspecified (%)	267 (11.7)	300 (13.2)	565 (24.8)	484 (21.3)	523 (23.0)	111 (4.9)	22 (1.0)	3 (0.1)	2 275 (100.0)	155	2 430	152	156		
No information available (%)	819 (9.3)	1 006 (11.4)	2 108 (23.9)	1 697 (19.3)	2 296 (26.1)	756 (8.6)	111 (1.3)	15 (0.2)	8 808 (100.0)	1086	9 894	177	172		
Total (%)	18 493 (10.7)	21 838 (12.6)	43 169 (25.0)	34 553 (20.0)	41 785 (24.2)	11 040 (6.4)	1736 (1.0)	267 (0.2)	172 881 (100.0)	5096	177 977	162	163		

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 41. Predialysis serum phosphorus levels (mg/dL) in relation to predialysis corrected serum calcium levels (mg/dL) (for all dialysis patients)

Predialysis corrected serum calcium levels (mg/dL)	Predialysis serum phosphorus levels (mg/dL)			Subtotal	No information available	Total	Mean	SD
	0.1~	3.5~	6.1~					
5.0~	2 049 (0.8)	14 246 (5.9)	5 838 (2.4)	22 133 (9.1)	17	22 150	5.20	1.61
8.4~	20 939 (8.6)	122 828 (50.6)	39 158 (16.1)	182 925 (75.4)	94	183 019	5.01	1.43
10.1~	5 160 (2.1)	22 991 (9.5)	9 458 (3.9)	37 609 (15.5)	26	37 635	5.09	1.54
Subtotal	28 148 (11.6)	160 065 (66.0)	54 454 (22.4)	242 667 (100.0)	137	242 804	5.04	1.47
No information available	687	4 042	2 027	6 756	32 436	39 192	5.37	1.63
Total	28 835	164 107	56 481	249 423	32 573	281 996	5.05	1.47
Mean	9.41	9.29	9.33	9.31	9.27	9.31		
SD	0.95	0.85	0.96	0.89	1.33	0.89		

The values in parentheses under each figure represent the percentage relative to the total.

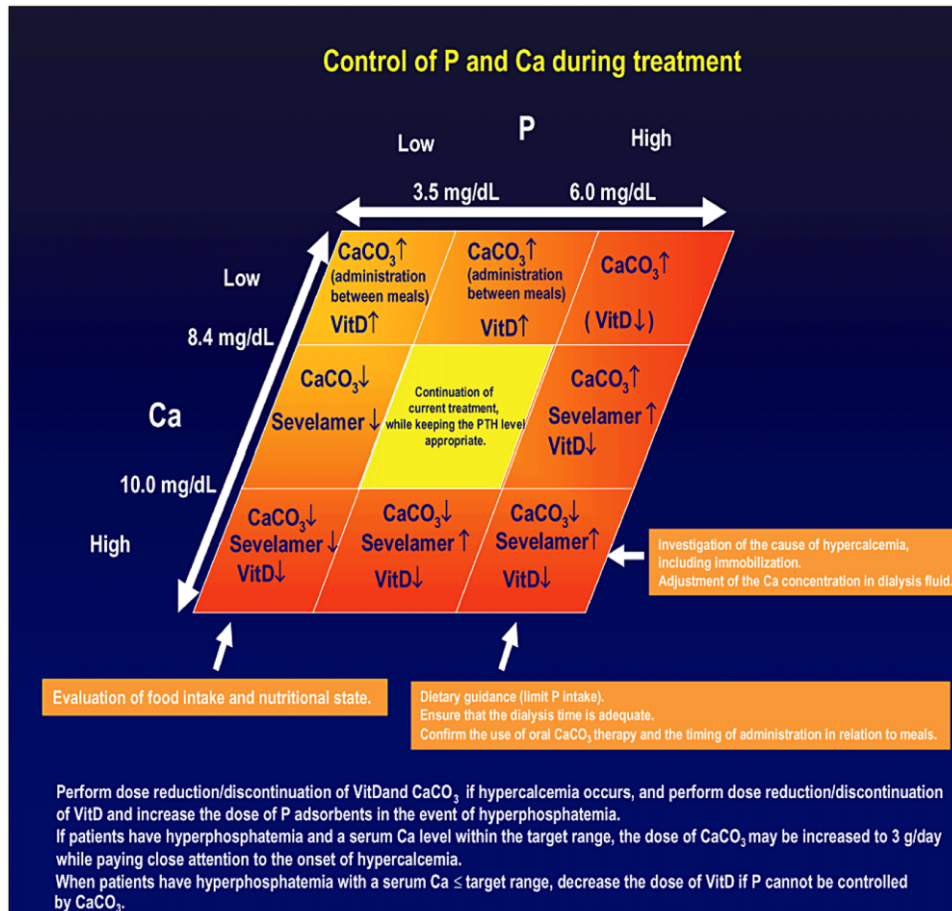


FIG. 2. Target values during therapy recommended in chronic kidney disease-mineral and bone disorder (CKD-MBD) Guidelines.

TABLE 42. Current status of satisfaction of target values of parameters recommended by chronic kidney disease-mineral and bone disorder (CKD-MBD) Guidelines

Extraction conditions		Number of patients	(%) [‡]
1)	Predialysis serum phosphorus level = 3.5–6.0 mg/dL	128 811	(66.0)
2)	Predialysis corrected serum calcium level = 8.4–10.0 mg/dL	147 152	(75.4)
3)	Serum intact-parathyroid hormone (PTH) level = 60–180 pg/mL	88 345	(45.2)
4)	Predialysis serum phosphorus level = 3.5–6.0 mg/dL and predialysis corrected serum calcium level = 8.4–10.0 mg/dL	98 691	(50.5)
5)	Predialysis serum phosphorus level = 3.5–6.0 mg/dL, predialysis corrected serum calcium level = 8.4–10.0 mg/dL, and serum intact-parathyroid hormone (PTH) level = 60–180 pg/mL	48 418	(24.8)
Total number of target patients [†]		195 256	(100.0)

[†]Target patients refer to those who responded to the questions regarding predialysis phosphorus, predialysis corrected serum calcium, and intact-PTH levels. [‡]Percentage relative to total number of target patients[†].

TABLE 43. Numbers of patients with and without dementia for different dialysis methods (for all dialysis patients)

Dialysis method	Dementia					Total
	Without dementia (requiring no care)	With dementia (requiring care)	Subtotal	Unspecified	No information available	
Facility HD (%)	185 251 (89.7)	9317 (4.5)	206 512 (100.0)	2626	44 669	253 807
HDF (%)	13 041 (93.7)	411 (3.0)	13 918 (100.0)	96	2 839	16 853
HF (%)	35 (79.5)	7 (15.9)	44 (100.0)	1	115	160
Hemoadsorption (%)	1 509 (98.1)	16 (1.0)	1 538 (100.0)	7	243	1 788
Home HD (%)	144 (100.0)	0 (0.0)	144 (100.0)	0	80	224
PD (%)	5 535 (94.5)	125 (2.1)	5 856 (100.0)	116	3 192	9 164
Total (%)	205 515 (90.1)	9876 (4.3)	228 012 (100.0)	2846	51 138	281 996

The values in parentheses under each figure represent the percentage relative to the total in each row. HD, hemodialysis; HDF, hemodiafiltration; HF, hemofiltration; PD, peritoneal dialysis.

TABLE 44. Numbers of patients with and without dementia for both genders (for patients who underwent HD at facilities three times per week)

Gender	Dementia					Total
	Without dementia (requiring no care)	With dementia (requiring care)	Subtotal	Unspecified	No information available	
Male (%)	112 055 (91.6)	4913 (4.0)	122 366 (100.0)	1474	14 657	138 497
Female (%)	64 815 (87.3)	3795 (5.1)	74 204 (100.0)	986	8 884	84 074
Subtotal (%)	176 870 (90.0)	8708 (4.4)	196 570 (100.0)	2460	23 541	222 571
No information available (%)	0	0	0	0	0	0
Total (%)	176 870 (90.0)	8708 (4.4)	196 570 (100.0)	2460	23 541	222 571

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 45. Numbers of patients with and without dementia and their ages (for patients who underwent HD at facilities three times per week)

Age (years old)	Dementia						Total
	Without dementia	With dementia (requiring no care)	With dementia (requiring care)	Subtotal	Unspecified	No information available	
<15 (%)	4 (80.0)	1 (20.0)	0 (0.0)	5 (100.0)	0	0	5
15-29 (%)	905 (98.7)	7 (0.8)	5 (0.5)	917 (100.0)	10	112	1 039
30-44 (%)	10 818 (99.4)	31 (0.3)	35 (0.3)	10 884 (100.0)	90	1 374	12 348
45-59 (%)	41 697 (98.4)	356 (0.8)	328 (0.8)	42 381 (100.0)	415	5 117	47 913
60-74 (%)	83 626 (93.2)	2955 (3.3)	3 169 (3.5)	89 750 (100.0)	1168	10 817	101 735
75-89 (%)	38 541 (76.5)	5031 (10.0)	6 801 (13.5)	50 373 (100.0)	731	5 872	56 976
90- (%)	1 278 (56.6)	327 (14.5)	653 (28.9)	2 258 (100.0)	46	249	2 553
Subtotal (%)	176 869 (90.0)	8708 (4.4)	10 991 (5.6)	196 568 (100.0)	2460	23 541	222 569
No information available (%)	1 (50.0)	0 (0.0)	1 (50.0)	2 (100.0)	0	0	2
Total (%)	176 870 (90.0)	8708 (4.4)	10 992 (5.6)	196 570 (100.0)	2460	23 541	222 571
Mean	64.80	75.92	77.48	66.00	68.26	65.79	66.00
SD	12.25	8.97	8.88	12.49	11.99	12.47	12.49

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 46. Numbers of patients with and without dementia and their primary diseases (for patients who underwent HD at facilities three times per week)

Primary disease	Dementia				Subtotal	Unspecified	No information available	Total
	Without dementia	With dementia (requiring no care)	With dementia (requiring care)	With dementia (requiring care)				
Chronic glomerulonephritis	66 683 (92.5)	2444 (3.4)	2 949 (4.1)	2 949 (4.1)	72 076 (100.0)	755	8 584	81 415
Chronic pyelonephritis	1 938 (92.4)	75 (3.6)	84 (4.0)	84 (4.0)	2 097 (100.0)	25	226	2 348
Rapidly progressive glomerulonephritis	1 191 (89.5)	60 (4.5)	79 (5.9)	79 (5.9)	1 330 (100.0)	16	154	1 500
Nephropathy of pregnancy/pregnancy toxemia	1 135 (96.3)	23 (2.0)	20 (1.7)	20 (1.7)	1 178 (100.0)	13	161	1 352
Other nephritides that cannot be classified	794 (92.4)	30 (3.5)	35 (4.1)	35 (4.1)	859 (100.0)	17	134	1 010
Polycystic kidney	6 346 (94.7)	171 (2.6)	183 (2.7)	183 (2.7)	6 700 (100.0)	77	799	7 576
Nephrosclerosis	11 890 (83.5)	1010 (7.1)	1 346 (9.4)	1 346 (9.4)	14 246 (100.0)	173	1 621	16 040
Malignant hypertension	1 404 (92.2)	52 (3.4)	67 (4.4)	67 (4.4)	1 523 (100.0)	11	182	1 716
Diabetic nephropathy	63 391 (88.4)	3693 (5.1)	4 640 (6.5)	4 640 (6.5)	71 724 (100.0)	928	8 365	81 017
SLE nephritis	1 478 (94.2)	40 (2.5)	51 (3.3)	51 (3.3)	1 569 (100.0)	11	172	1 752
Amyloid kidney	323 (93.4)	13 (3.8)	10 (2.9)	10 (2.9)	346 (100.0)	5	42	393
Gouty kidney	817 (91.9)	35 (3.9)	37 (4.2)	37 (4.2)	889 (100.0)	12	101	1 002
Renal failure due to congenital abnormality of metabolism	173 (98.3)	3 (1.7)	0 (0.0)	0 (0.0)	176 (100.0)	1	26	203
Kidney and urinary tract tuberculosis	203 (86.4)	18 (7.7)	14 (6.0)	14 (6.0)	235 (100.0)	0	30	265
Kidney and urinary tract stone	370 (92.0)	16 (4.0)	16 (4.0)	16 (4.0)	402 (100.0)	7	42	451
Kidney and urinary tract tumor	460 (90.4)	26 (5.1)	23 (4.5)	23 (4.5)	509 (100.0)	4	68	581
Obstructive urinary tract disease	415 (92.6)	14 (3.1)	19 (4.2)	19 (4.2)	448 (100.0)	3	47	498
Myeloma	122 (87.1)	12 (8.6)	6 (4.3)	6 (4.3)	140 (100.0)	1	13	154
Hypoplastic kidney	348 (97.2)	6 (1.7)	4 (1.1)	4 (1.1)	358 (100.0)	4	49	411
Undetermined	12 774 (86.7)	788 (5.3)	1 173 (8.0)	1 173 (8.0)	14 735 (100.0)	295	2 040	17 070
Reintroduction after transplantation	1 239 (96.5)	20 (1.6)	25 (1.9)	25 (1.9)	1 284 (100.0)	42	156	1 482
Others	3 362 (90.1)	159 (4.3)	211 (5.7)	211 (5.7)	3 732 (100.0)	60	485	4 277
Subtotal	176 856 (90.0)	8708 (4.4)	10 992 (5.6)	10 992 (5.6)	196 556 (100.0)	2460	23 497	222 513
No information available	14 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	14 (100.0)	0	44	58
Total	176 870 (90.0)	8708 (4.4)	10 992 (5.6)	10 992 (5.6)	196 570 (100.0)	2460	23 541	222 571

The values in parentheses under each figure represent the percentage relative to the total in each row. SLE, systemic lupus erythematosus.

TABLE 47. Numbers of patients with and without dementia and their history of cerebral infarction (for patients who underwent HD at facilities three times per week)

History of cerebral infarction	Dementia				Subtotal	Unspecified	No information available	Total
	Without dementia	With dementia (requiring no care)	With dementia (requiring care)	With dementia (requiring care)				
No (%)	147 989 (92.6)	5582 (3.5)	6 173 (3.9)	6 173 (3.9)	159 744 (100.0)	973	1 599	162 316
Yes (%)	18 073 (75.6)	2227 (9.3)	3 593 (15.0)	3 593 (15.0)	23 893 (100.0)	482	593	24 968
Acute, Under treatment (%)	81 (66.4)	17 (13.9)	24 (19.7)	24 (19.7)	122 (100.0)	4	5	131
With lacunar infarction (%)	2 726 (77.4)	333 (9.5)	464 (13.2)	464 (13.2)	3 523 (100.0)	21	69	3 613
Subtotal (%)	168 869 (90.2)	8159 (4.4)	10 254 (5.5)	10 254 (5.5)	187 282 (100.0)	1480	2 266	191 028
Unspecified (%)	857 (75.8)	99 (8.8)	175 (15.5)	175 (15.5)	1 131 (100.0)	268	4	1 403
No information available (%)	7 144 (87.6)	450 (5.5)	563 (6.9)	563 (6.9)	8 157 (100.0)	712	21 271	30 140
Total (%)	176 870 (90.0)	8708 (4.4)	10 992 (5.6)	10 992 (5.6)	196 570 (100.0)	2460	23 541	222 571

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 48. Numbers of patients with and without dementia and their history of cerebral hemorrhage (for patients who underwent HD at facilities three times per week)

History of cerebral hemorrhage	Dementia				Subtotal	Unspecified	No information available	Total
	Without dementia	With dementia (requiring no care)	With dementia (requiring care)	With dementia (requiring care)				
No (%)	162 322 (90.7)	7513 (4.2)	9 095 (5.1)	9 095 (5.1)	178 930 (100.0)	1168	1 742	181 840
Yes (%)	6 857 (79.2)	656 (7.6)	1 150 (13.3)	1 150 (13.3)	8 663 (100.0)	271	219	9 153
Acute, Under treatment (%)	58 (74.4)	5 (6.4)	15 (19.2)	15 (19.2)	78 (100.0)	10	5	93
Subtotal (%)	169 237 (90.2)	8174 (4.4)	10 260 (5.5)	10 260 (5.5)	187 671 (100.0)	1449	1 966	191 086
Unspecified (%)	518 (73.4)	61 (8.6)	127 (18.0)	127 (18.0)	706 (100.0)	264	4	974
No information available (%)	7 115 (86.8)	473 (5.8)	605 (7.4)	605 (7.4)	8 193 (100.0)	747	21 571	30 511
Total (%)	176 870 (90.0)	8708 (4.4)	10 992 (5.6)	10 992 (5.6)	196 570 (100.0)	2460	23 541	222 571

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 49. Alternatives used in questionnaire on activities of daily living (ADL) and headings in table

Alternatives used in questionnaire		Headings in table
A:	The patient can perform social activities without symptoms and behave as he/she was before the onset of the diseases without restrictions.	→ No symptoms
B:	The patient has moderate symptoms and has trouble with physical work, but can walk and do light and sedentary work, such as light domestic and clerical work.	→ Moderate symptoms
C:	The patient can walk and take care of him/herself, but sometimes requires care. The patient can sit up at least half of the day although he/she cannot do light work.	→ ≥50% sitting up
D:	The patient can take care of him/herself to some extent, but often requires care and is in bed at least half of the day.	→ ≥50% in bed
E:	The patient cannot take care of him/herself and has to be in bed the whole day, requiring constant care.	→ Whole day in bed
Z:	Unspecified or uncategorized	→ Unspecified

TABLE 50. Numbers of patients with and without dementia and their levels of activities of daily living (ADL) (for patients who underwent HD at facilities three times per week)

Activities of daily living	Dementia			Subtotal	Unspecified	No information available	Total
	Without dementia	With dementia (requiring no care)	With dementia (requiring care)				
No symptoms (%)	86 258 (98.7)	813 (0.9)	301 (0.3)	87 372 (100.0)	177	617	88 166
Moderate symptoms (%)	53 988 (95.4)	1967 (3.5)	638 (1.1)	56 593 (100.0)	137	812	57 542
≥50(%) sitting up (%)	19 647 (78.9)	2926 (11.7)	2 331 (9.4)	24 904 (100.0)	188	311	25 403
≥50(%) in bed (%)	8 908 (66.0)	1705 (12.6)	2 876 (21.3)	13 489 (100.0)	136	121	13 746
Whole day in bed (%)	4 492 (43.6)	1153 (11.2)	4 649 (45.2)	10 294 (100.0)	537	138	10 969
Subtotal (%)	173 293 (90.0)	8564 (4.4)	10 795 (5.6)	192 652 (100.0)	1175	1 999	195 826
Unspecified (%)	684 (85.2)	34 (4.2)	85 (10.6)	803 (100.0)	1272	7	2 082
No information available (%)	2 893 (92.9)	110 (3.5)	112 (3.6)	3 115 (100.0)	13	21 535	24 663
Total (%)	176 870 (90.0)	8708 (4.4)	10 992 (5.6)	196 570 (100.0)	2460	23 541	222 571

The values in parentheses under each figure represent the percentage relative to the total in each row.

TABLE 51. Places of residence for different dialysis methods (for all dialysis patients)

Dialysis method	Places of residence			Subtotal	Unspecified	No information available	Total
	Homes [†]	Care facilities [‡]	Hospitals [§]				
Facility HD (%)	186 469 (89.3)	4308 (2.1)	17 945 (8.6)	208 722 (100.0)	1385	43 700	253 807
HDF (%)	13 161 (93.8)	164 (1.2)	701 (5.0)	14 026 (100.0)	51	2 776	16 853
HF (%)	30 (75.0)	3 (7.5)	7 (17.5)	40 (100.0)	1	119	160
Hemoadsorption (%)	1 484 (96.8)	11 (0.7)	38 (2.5)	1 533 (100.0)	16	239	1 788
Home HD (%)	144 (99.3)	0 (0.0)	1 (0.7)	145 (100.0)	0	79	224
PD (%)	5 645 (95.5)	35 (0.6)	232 (3.9)	5 912 (100.0)	91	3 161	9 164
Total (%)	206 933 (89.8)	4521 (2.0)	18 924 (8.2)	230 378 (100.0)	1544	50 074	281 996

The values in parentheses under each figure represent the percentage relative to the total in each row. [†]Patients' own home (outpatient dialysis, home PD, home HD). [‡]Care facilities (e.g. homes with care services, nursing homes such as private-pay nursing homes without national aids and nursing homes for families with financial difficulties, group homes, vocational centers, relief facilities). [§]Hospitals (e.g. health service facilities for elderly; beds for general patients, patients of chronic stage, patients requiring rehabilitation, and patients with mental illness and infectious diseases, such as tuberculosis).

TABLE 52. ADL for different places of residence (for patients who underwent HD at facilities three times per week)

Places of residence	Activities of daily living (ADL)							Subtotal	Unspecified	No information available	Total
	No symptoms	Moderate symptoms	≥50% sitting up	≥50% in bed	Whole day in bed	Subtotal	Unspecified				
Homes [†]	86 803 (49.6)	55 435 (31.7)	21 052 (12.0)	8 292 (4.7)	3 264 (1.9)	174 846 (100.0)	743	2 390	177 979		
Care facilities [‡]	415 (10.6)	563 (14.4)	1 141 (29.1)	988 (25.2)	814 (20.8)	3 921 (100.0)	34	49	4 004		
Hospitals [§]	633 (3.9)	1 275 (7.8)	3 084 (19.0)	4 403 (27.1)	6 848 (42.2)	16 243 (100.0)	188	176	16 607		
Subtotal	87 851 (45.0)	57 273 (29.4)	25 277 (13.0)	13 683 (7.0)	10 926 (5.6)	195 010 (100.0)	965	2 615	198 590		
Unspecified	150 (75.0)	12 (6.0)	12 (6.0)	16 (8.0)	10 (5.0)	200 (100.0)	1115	1	1 316		
No information available	165 (26.8)	257 (41.7)	114 (18.5)	47 (7.6)	33 (5.4)	616 (100.0)	2	22 047	22 665		
Total	88 166 (45.0)	57 542 (29.4)	25 403 (13.0)	13 746 (7.0)	10 969 (5.6)	195 826 (100.0)	2082	24 663	222 571		

The values in parentheses under each figure represent the percentage relative to the total in each row. [†]Patients' own home (outpatient dialysis, home peritoneal dialysis [PD], home HD); [‡]Care facilities (e.g. homes with care services, nursing homes such as private-pay nursing homes without national aids and nursing homes for families with financial difficulties, group homes, vocational centers, relief facilities). [§]Hospitals (e.g. health service facilities for elderly; beds for general patients, patients of chronic stage, patients requiring rehabilitation, and patients with mental illness and infectious diseases, such as tuberculosis).

TABLE 53. Numbers of patients with and without dementia and their places of residence (for patients who underwent HD at facilities three times per week)

Places of residence	Dementia			Subtotal	Unspecified	No information available	Total
	Without dementia	With dementia (requiring no care)	With dementia (requiring care)				
Homes [†]	163 408 (93.6)	6050 (3.5)	5 188 (3.0)	174 646 (100.0)	656	2 677	177 979
Care facilities [‡]	2 213 (56.9)	533 (13.7)	1 142 (29.4)	3 888 (100.0)	64	52	4 004
Hospitals [§]	9 122 (58.1)	2011 (12.8)	4 574 (29.1)	15 707 (100.0)	636	264	16 607
Subtotal	174 743 (90.0)	8594 (4.4)	10 904 (5.6)	194 241 (100.0)	1356	2 993	198 590
Unspecified	200 (92.6)	4 (1.9)	12 (5.6)	216 (100.0)	1100	0	1 316
No information available	1 927 (91.2)	110 (5.2)	76 (3.6)	2 113 (100.0)	4	20 548	22 665
Total	176 870 (90.0)	8708 (4.4)	10 992 (5.6)	196 570 (100.0)	2460	23 541	222 571

The values in parentheses under each figure represent the percentage relative to the total in each row. [†]Patients' own home (outpatient dialysis, home peritoneal dialysis [PD], home HD); [‡]Care facilities (e.g. homes with care services, nursing homes such as private-pay nursing homes without national aids and nursing homes for families with financial difficulties, group homes, vocational centers, relief facilities). [§]Hospitals (e.g. health service facilities for elderly; beds for general patients, patients of chronic stage, patients requiring rehabilitation, and patients with mental illness and infectious diseases, such as tuberculosis).

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