腎移植認定医 第9回集中教育セミナー
京都府立医科大学　図書館ホール
平成27年7月19 日（日）13:00～16:00

「スムーズな腎代替療法への移行ガイドライン」（カテゴリー１：CKDと透析療法）

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スムーズな腎代替療法への移行ガイドライン

1. わが国の慢性腎臓病の疫学
2. 慢性腎不全CKDステージG4, G5へのアウトリーチの必要性
3. CKDステージG4, G5における降圧療法
4. 糖尿病合併CKDの治療におけるRA系阻害薬と脂質管理の有用性
5. 後期高齢者におけるCKD診療のポイント
6. 慢性腎不全common pathwayの治療
7. CKD腎外合併症対策
8. チーム医療と医療連携
9. 透析・移植医療
10. 将来必要とされる検討

わが国の慢性腎臓病の疫学

CQ1.　わが国におけるCKDステージG4,5患者の高齢者と若年・中年における基礎疾患は何か？

＊推奨＊　グレード：B　レベル：なし

CKDステージG4，G5患者の腎生検を要する基礎疾患は，

- 若年・中年では**慢性腎炎**症候群，
- 高齢者では，**ネフローゼ**症候群，**急速進行性腎炎**症候群である．
- 非腎生検例を含めると透析に至る疾患で最も重要なものは**糖尿病性腎症**である．
- 加えて加齢とともに高齢者では虚血性腎症を含む**腎硬化症**が増加する．

Clin Exp Nephrol (2012) 16:903–920
DOI 10.1007/s10157-012-0673-8

ORIGINAL ARTICLE

Renal disease in the elderly and the very elderly Japanese: analysis of the Japan Renal Biopsy Registry (J-RBR)

Hitoshi Yokoyama · Hitoshi Sugiyama · Hiroshi Sato · Takashi Taguchi · Michio Nagata · Seiichi Matsuo · Hirofumi Makino · Tsuyoshi Watanabe · Takao Saito · Yutaka Kiyohara · Shinichi Nishi · Hiroyuki Iida · Kunio Morozumi · Atsushi Fukatsu · Tamaki Sasaki · Kazuhiko Tsuruya · Yukimasa Kohda · Makoto Higuchi · Hideyasu Kiyomoto · Shin Goto · Motoshi Hattori · Hiroshi Hataya · Shoji Kagami · Norishige Yoshikawa · Yuichiro Fukasawa · Yoshihiko Ueda · Hiroshi Kitamura · Akira Shimizu · Kazumasa Oka · Naoki Nakagawa · Takafumi Ito · Shunya Uchida · Kengo Furuichi · Izaya Nakaya · Satoshi Umemura · Keiju Hiromura · Mitsuhiro Yoshimura · Nobuhito Hirawa · Takashi Shigematsu · Masafumi Fukagawa · Makoto Hiramatsu · Yoshio Terada · Osamu Uemura · Tetsuya Kawata · Akira Matsunaga · Aki Kuroki · Yasukiyo Mori · Koji Mitsuiki · Haruyoshi Yoshida

Clin Exp Nephrol. 2012 Dec;16(6):903-20.

Table 1 Frequency of classification of clinical diagnoses in the elderly Japanese (≥65 years old)

	Very elderly (≥80 years old)		Elderly (≥65 years old)		Control (20–64 years old)		*P* value*
Cases	276		2802		7416		
Gender (male:female)	141:135		1596:1206		3795:3621		
Clinical classification	*n*	%	*n*	%	*n*	%	
Nephrotic syndrome	140	50.7	1018	36.3	1359	18.3	<0.001
Chronic nephritic syndrome	48	17.4	870	31.0	4434	59.8	<0.001
Rapidly progressive nephritic syndrome (RPGN)	54	19.6	432	15.4	300	4.0	<0.001
Acute nephritic syndrome (AGN)	2	0.7	40	1.4	122	1.6	NS
Recurrent or persistent hematuria	1	0.4	33	1.2	263	3.5	<0.001
Renal disorder with collagen disease or vasculitis	12	4.3	117	4.2	326	4.4	NS
Renal disorder with metabolic syndrome	4	1.4	69	2.5	160	2.2	NS
Hypertensive nephropathy	1	0.4	42	1.5	108	1.5	NS
Acute kidney injury (AKI)	6	2.2	51	1.8	55	0.7	<0.001
Drug-induced nephropathy	1	0.4	16	0.6	46	0.6	NS
Inherited renal disease	2	0.7	4	0.1	21	0.3	NS
Thrombotic microangiopathy (TMA, HUS/TTP*)	0	0.0	0	0.0	3	0.0	NS
Others	5	1.8	110	3.9	219	3.0	0.03

NS not significant

* The elderly versus controls

* Hemolytic uremic syndrome/thrombotic thrombocytopenic purpura

Clin Exp Nephrol. 2012 Dec;16(6):903-20.

Table 2 Frequency of pathological diagnoses as classified by pathogenesis in the elderly Japanese (≥65 years old)

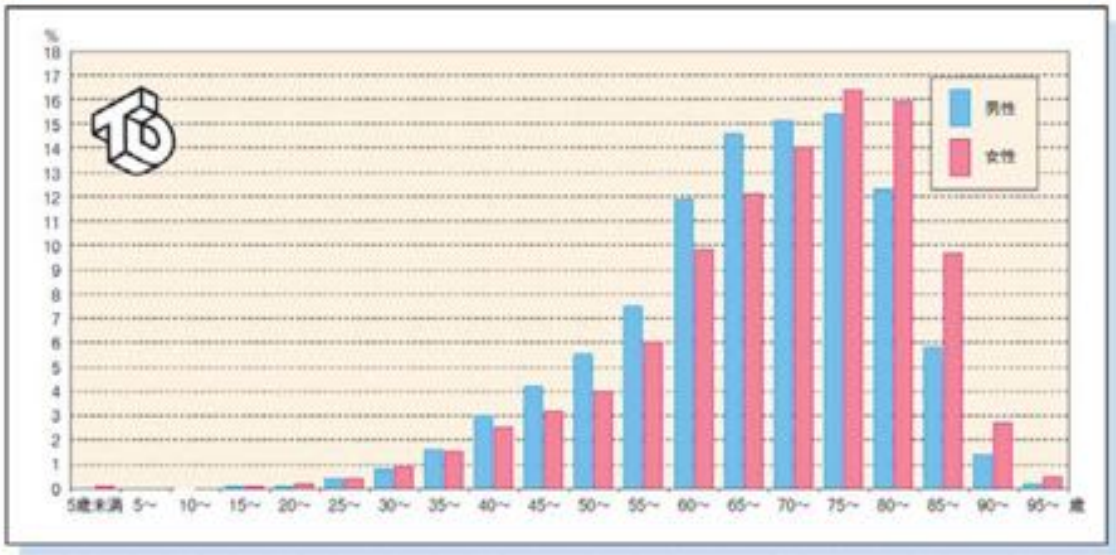
	Very elderly (≥80 years old)		Elderly (≥65 years old)		Control (20-64 years old)		*P* value*
	n	%	*n*	%	*n*	%	
Primary glomerular disease	124	44.9	1259	44.9	5021	60.4	<0.001
Primary glomerulonephritis (except for IgAN)	105	38.0	966	34.5	1666	22.5	<0.001
IgA nephropathy (IgAN)	19	6.9	293	10.5	2815	38.0	<0.001
Secondary and hereditary glomerular diseases	100	36.2	1003	35.8	1766	23.8	<0.001
MPO-ANCA-positive nephritis	31	11.2	313	11.2	164	2.2	<0.001
Diabetic nephropathy	16	5.8	215	7.7	399	5.4	<0.001
Hypertensive nephropathy	14	5.1	173	6.2	304	4.1	<0.001
Amyloid nephropathy	20	7.2	110	3.9	58	0.8	<0.001
Purpura nephritis	4	1.4	56	2.0	151	2.0	NS
Lupus nephritis	4	1.4	44	1.6	461	6.2	<0.001
Infection-related nephropathy	5	1.8	41	1.5	65	0.9	0.012
Anti-glomerular basement membrane antibody-type nephritis	1	0.4	17	0.6	21	0.3	<0.001
PR3-ANCA-positive nephritis	3	1.1	13	0.5	21	0.3	NS
Thrombotic microangiopathy	0	0.0	10	0.4	20	0.3	NS
Dense deposit disease (MPGN type II)	2	0.7	8	0.3	2	0.2	NS
Alport syndrome	0	0.0	2	0.1	27	0.4	NS
Thin basement membrane disease	0	0.0	1	0.0	73	1.0	0.002
Tubulointerstitial diseases	16	5.8	149	5.3	142	1.9	<0.001
Chronic tubulointerstitial lesions	6	2.2	69	2.5	38	0.5	NS
Acute tubulointerstitial lesions	9	3.3	71	2.5	87	1.2	NS
Acute tubular necrosis	1	0.4	9	0.3	17	0.2	NS
Others	36	13.0	391	14.0	126	1.7	NS
Total	276	100	2802	100	7416	100	

NS not significant
* The elderly versus controls

Clin Exp Nephrol. 2012 Dec;16(6):903-20.

○図説　わが国の慢性透析療法の現況○

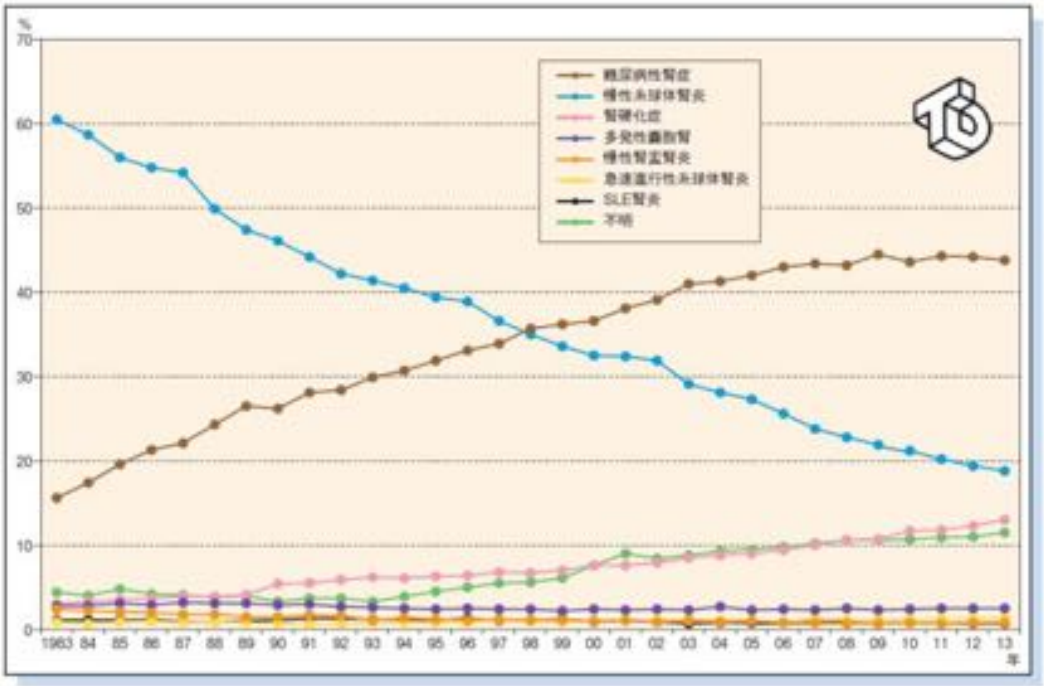
(1) 導入患者の年齢と性別（図表9）



2013年末の慢性透析患者に関する基礎集計

○図説　わが国の慢性透析療法の現況○

(3) 導入患者の主要原疾患の割合推移（図表11）



2013年末の慢性透析患者に関する基礎集計

CQ2.　わが国におけるCKDステージG4,5患者における予後：CVDによる死亡は増加するのか？

＊推奨＊　グレード：C　レベル：なし

CKDステージG4,5のG1に対する

「CVDによる死亡リスク」は

G4で有意に増加し，G5でさらに増加する．

Increased risk of cardiovascular events and mortality among non-diabetic chronic kidney disease patients with hypertensive nephropathy: the Gonryo study.

Nakayama M, et al. Hypertens Res. 2011 Oct;34(10):1106-10.

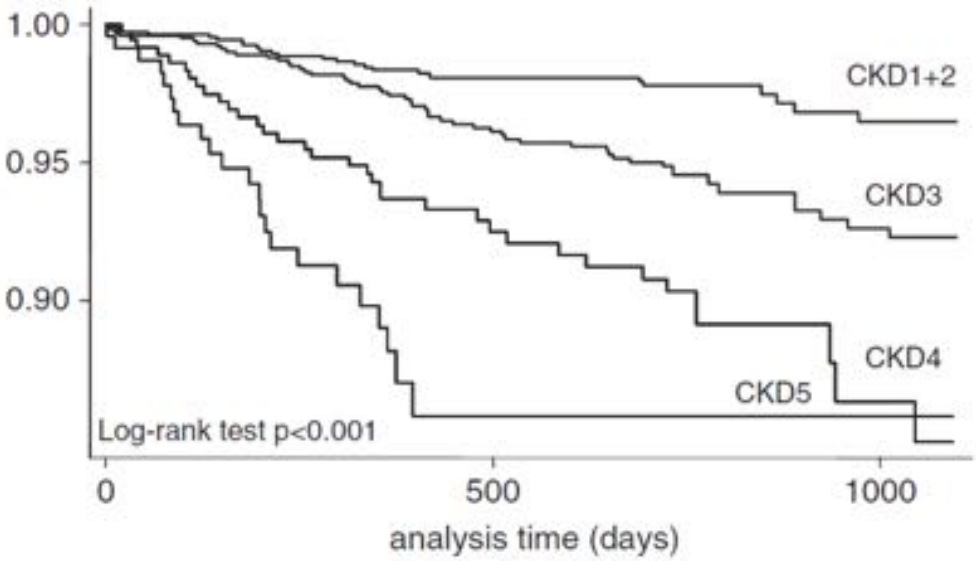


Figure 1 Event-free survival for cardiac disease, apoplexy and all cause of death for patients at different chronic kidney disease (CKD) stages.

Clin Exp Nephrol (2014) 18:697–703
DOI 10.1007/s10157-013-0901-x

ORIGINAL ARTICLE

Health-related quality of life and prognosis in patients with chronic kidney disease: a 3-year follow-up study

Reiko Okubo · Hirayasu Kai · Masahide Kondo · Chie Saito · Keigyou Yoh · Naoki Morito · Joichi Usui · Kunihiro Yamagata

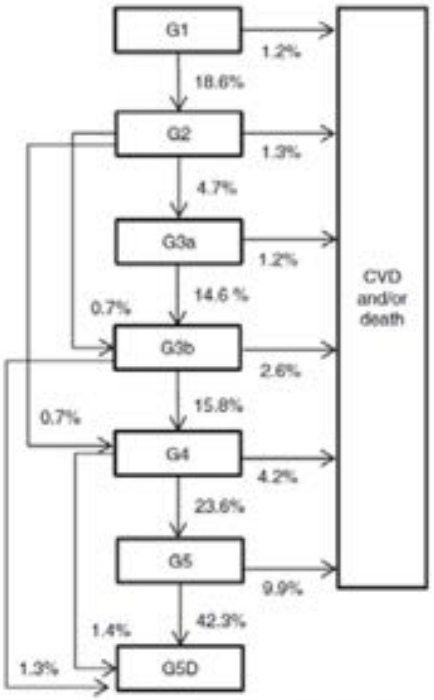


Table 1 Annual eGFR decline by CKD stage (total $n = 421$)

CKD stage		Proteinuria stage			
		A1	A2	A3	A1–3
GFR stage	n	173	82	166	421
G1	66	−4.16 ± 6.33	−6.31 ± 5.88	−6.20 ± 4.84	−4.70 ± 6.14
G2	118	−1.76 ± 3.23	−2.32 ± 2.68	−3.78 ± 4.49	−2.44 ± 3.52
G3a	72	−1.38 ± 2.32	−1.01 ± 2.46	−2.70 ± 4.70	−1.76 ± 3.34
G3b	61	−1.12 ± 2.09	−1.23 ± 3.23	−5.24 ± 7.69	−2.90 ± 5.70
G4	54	−0.01 ± 2.12	−2.18 ± 1.45	−4.03 ± 3.11	−2.90 ± 3.19
G5	50	0.45 ± 0	−0.57 ± 1.10	−6.00 ± 7.61	−5.55 ± 7.46
G1–5	421	−2.15 ± 4.25	−2.47 ± 3.63	−4.60 ± 5.94	−3.17 ± 5.02

A total of 421 patients had both eGFR and proteinuria measurement
The annual eGFR decline was −3.17 ± 5.02 ml/min/1.73 m^2/year in all patients (−3.33 ± 4.97 for males and −2.98 ± 5.08 for females)
The annual eGFR decline tended to be higher with increase of proteinuria
eGFR estimated glomerular filtration rate, *CKD* chronic kidney disease

Clin Exp Nephrol. 2014 Oct;18(5):697-703.

チーム医療と医療連携

CQ1.　腎臓専門医とコメディカルの連携による患者教育はCKDステージG4以降の患者においてスムーズな腎代替療法開始に有効か？

＊推奨＊　グレード：C　レベル：1

CKDステージG4,5患者においても腎臓専門医からだけでなく，多職種によるチーム医療を活用した患者教育の実践を推奨する．

Educational intervention in CKD retards disease progression and reduces medical costs for patients with stage 5 CKD.

Lei CC, et al. Ren Fail. 2013;35(1):9-16.

Table 3. The effect of MDC duration on the laboratory data and the rate of renal disease progression in stage 5 CKD patients between 1 January 2005 and 31 May 2008.

Stage 5 patients with MDC	Total (n = 171)	<1 year (n = 88)	>1 year (n = 83)	p-Value
Age (years) (mean ± SE)	65.37 ± 0.78	63.89 ± 1.03	66.95 ± 1.16	0.05
Male (%)	87 (50.9)	54 (61.4)	33 (39.8)	0.005
Co-morbidity (%)				
Glomerulonephritis (GN)	11 (6.4)	3 (3.4)	8 (9.6)	0.09
Polycystic kidneys	7 (4.1)	3 (3.4)	4 (4.8)	0.64
DM	5 (2.9)	2 (2.3)	3 (3.6)	0.60
HTN	51 (29.8)	26 (29.5)	25 (30.1)	0.93
DM + HTN	81 (47.7)	48 (54.5)	33 (39.8)	0.53
Uncertain etiology	16 (9.4)	6 (6.8)	10 (12)	0.24
Total	171 (100)	88 (100)	83 (100)	
Laboratory data (mean ± SE)				
Hb (g/dL)	9.19 ± 0.12	8.83 ± 0.17	9.57 ± 0.15	0.003
Albumin (g/dL)	3.11 ± 0.05	2.97 ± 0.08	3.24 ± 0.05	0.007
Ca (mg/dL)	8.77 ± 0.07	8.68 ± 0.12	8.86 ± 0.08	0.22
P (mg/dL)	5.07 ± 0.12	5.3 ± 0.22	4.83 ± 0.12	0.06
Kidney function (mean ± SE)				
Initial eGFR[a]	9.19 ± 0.23	8.05 ± 0.30	10.39 ± 0.31	<0.001
Change in eGFR per year	10.21 ± 0.89	19.12 ± 1.05	0.76 ± 0.27	<0.001
Follow-up months	12.27 ± 0.95	1.75 ± 0.07	23.43 ± 0.98	<0.001
Follow-up eGFR	6.92 ± 0.30	4.94 ± 0.21	9.01 ± 0.50	<0.001
Slope	−0.85	−1.59	−0.06	

Notes: [a]GFR (mL/min per 1.73 m^2): estimated by an abbreviated MDRD formula. Hb, hemoglobin.

Nephrol Dial Transplant (2009) 24: 3426–3433
doi: 10.1093/ndt/gfp259
Advance Access publication 2 June 2009

Multidisciplinary predialysis education decreases the incidence of dialysis and reduces mortality—a controlled cohort study based on the NKF/DOQI guidelines

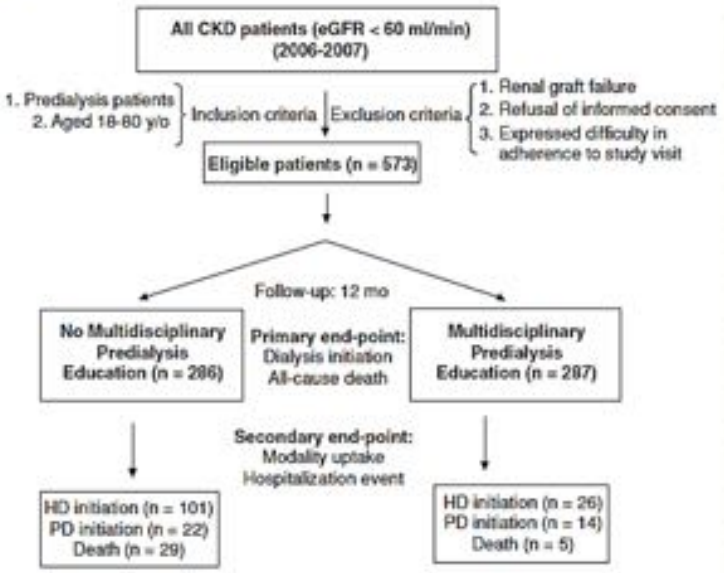


Fig. 1. Enrolment scheme and patient status. CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; HD, haemodialysis; PD, peritoneal dialysis; mo, months.

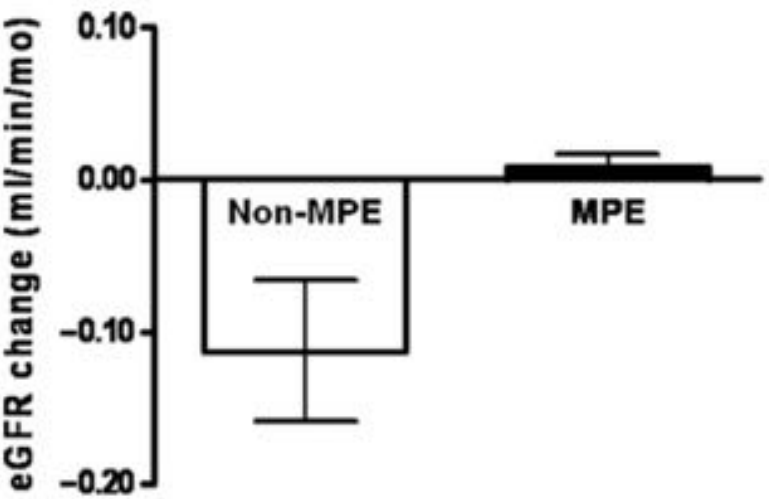


Fig. 3. Change of eGFR between the multidisciplinary predialysis education (MPE) recipients and the non-recipients (non-MPE; $P = 0.011$).

Nephrol Dial Transplant. 2009 Nov;24(11):3426-33.

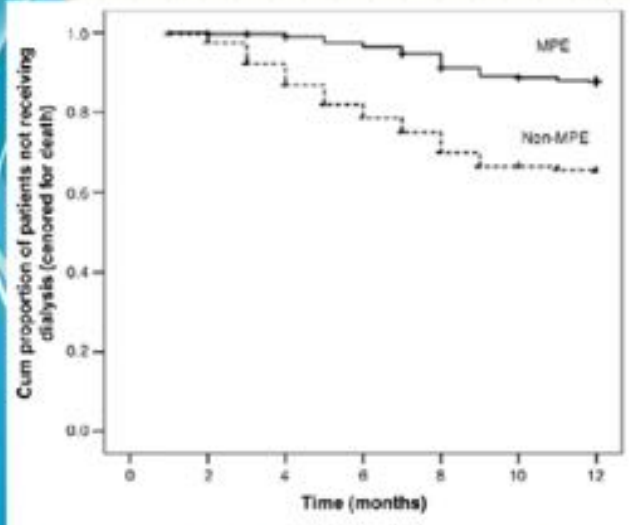


Fig. 4. Cumulative proportion of patients who did not undergo dialysis, censored for death. Time to dialysis therapy was significantly longer for multidisciplinary predialysis education (MPE) recipients than for the non-recipients (the non-MPE; Cox–Mantel log rank test, $P < 0.001$).

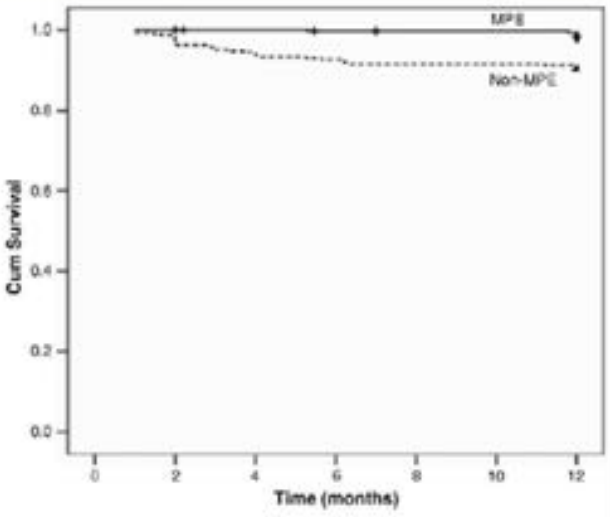


Fig. 5. Cumulative survival curves of multidisciplinary predialysis education (MPE) recipients and non-recipients (non-MPE). Patients with MPE had significantly better survival (Cox–Mantel log rank test, $P < 0.001$).

Nephrol Dial Transplant. 2009 Nov;24(11):3426-33.

Original Paper

Nephron Clinical Practice

Nephron Clin Pract 2010;115:c283–c288
DOI: 10.1159/000313487

Multidisciplinary Care Improves Outcome of Patients with Stage 5 Chronic Kidney Disease

Table 3. Comparative outcomes

Outcomes	Nephrology cohort (n = 194)	MDC cohort (n = 171)	p value
Haemoglobin levels, g/dl	9.81 ± 1.76	10.28 ± 1.86	0.02
Serum albumin, g/l	35.76 ± 5.10	36.68 ± 6.38	0.8
Serum calcium, mmol/l	2.27 ± 0.23	2.27 ± 0.26	0.9
Serum phosphate, mmol/l	1.93 ± 0.52	1.94 ± 0.54	0.8
Blood pressure at 1st dialysis			
Systolic, mm Hg	151 ± 29	150 ± 24	0.2
Diastolic, mm Hg	77 ± 15	77 ± 14	0.8
Starting dialysis with permanent access, %	58.8	68.4	0.04
Hospital admissions (per patient per year) after onset of dialysis	2.52	1.42	0.005

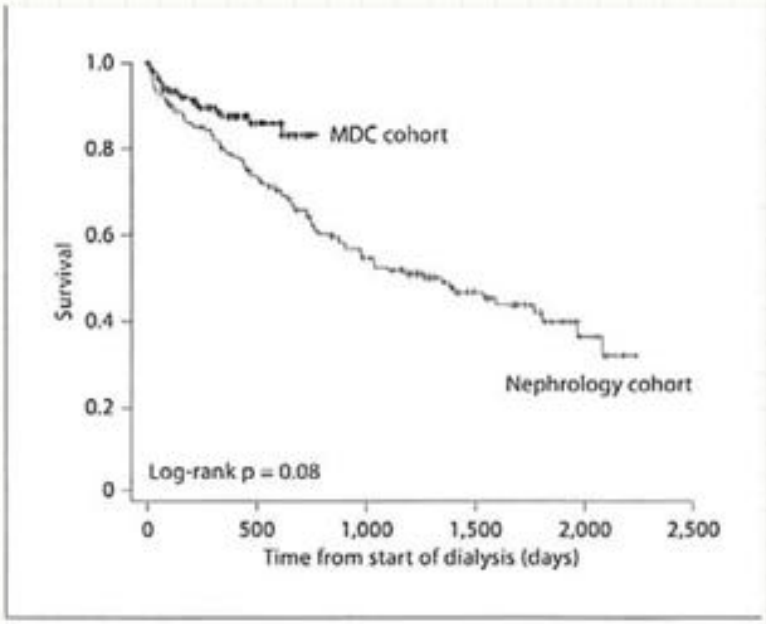


Fig. 2. Comparative survival analysis censored for kidney transplantations, Kaplan-Meier survival plot. Log-rank p = 0.08.

Nephron Clin Pract. 2010;115(4):c283-8.

NEPHROLOGY
Nephrology 17 (2012) 472–479

Original Article

Effect of multidisciplinary pre-dialysis education in advanced chronic kidney disease: Propensity score matched cohort analysis

Table 3 Demographics and clinical characteristics of patients who commenced renal replacement therapy (RRT) during follow-up†

	MPE ($n = 62$)	Non-MPE ($n = 64$)	P-value
Age (years)	58.3 ± 14.4	56.9 ± 13.3	0.568
Male, no. (%)	37 (59.7)	42 (65.6)	0.490
Cause of CKD			0.073
Diabetes	22 (35.5)	25 (39.1)	
CGN	10 (16.1)	20 (31.3)	
Hypertension	11 (17.7)	3 (4.7)	
ADPKD	7 (11.3)	3 (4.7)	
Unknown	7 (11.3)	9 (14.1)	
Others	5 (8.1)	4 (6.3)	
Manifestation at RRT commencement, no. (%)			< 0.001
None	49 (79.0)	31 (48.4)	
Fluid overload	7 (11.3)	7 (10.9)	
Uraemic encephalopathy	1 (1.6)	3 (4.7)	
Nausea, vomiting	5 (8.1)	23 (35.9)	
Urgent HD, no. (%)	13 (21.0)	36 (56.3)	<0.001
Use of temporary catheter	12 (19.4)	34 (53.1)	<0.001

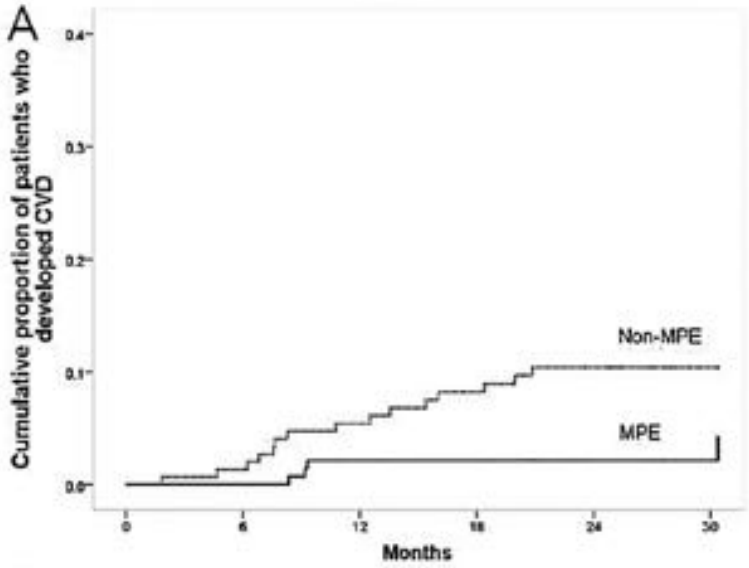


Fig. 4 Cumulative proportion of patients developing cardiovascular and infectious disease. (A) Patients with multidisciplinary pre-dialysis education (MPE) had a significantly reduced risk for cardiovascular disease (Cox-Mantel log rank test, $P = 0.019$). (B) Patients with MPE had a trend toward a lower infection rate ($P = 0.081$).

Nephrology (Carlton). 2012 Jul;17(5):472-9.

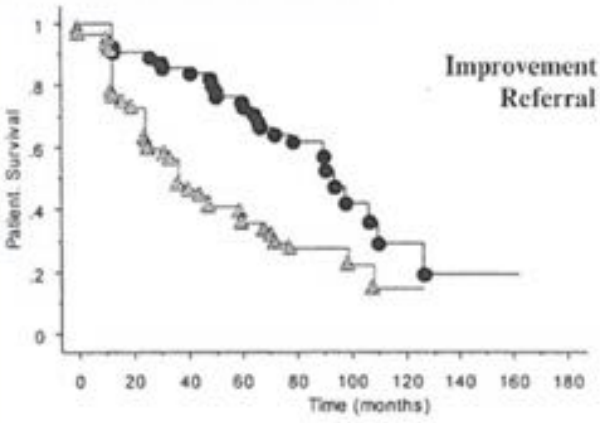
CQ2.　CKDステージG4以降の患者において，腎臓専門医とかかりつけ医の医療連携はどのような場面に考慮するか？

＊推奨＊　グレード：D　レベル：なし

CKDステージG4,5患者においても，腎臓専門医とかかりつけ医が適切な医療連携を行うことが望まれる．

RENAL FAILURE
Vol. 25, No. 3, pp. 435–464, 2003

CLINICAL STUDY



Improvement of Clinical Outcome by Early Nephrology Referral in Type II Diabetics on Hemodialysis

Table 3. Independent relative risk of survival examined by Cox proportional hazards model in HD patients (multivariate analysis).

	Relative risks (Exp (Coef))	95% confidence intervals	Chi-square *p* value
Early referral	0.454	0.254–0.814	<0.01
Good glycemic control	0.487	0.265–0.898	<0.05
Age at dialysis	1.043	1.011–1.077	<0.01
Hemoglobin	0.762	0.632–1.019	NS
Albumin	0.794	0.468–1.347	NS
Cholesterol	0.864	0.431–1.729	NS
residual renal function	0.573	0.284–0.903	<0.05

OPEN ACCESS Freely available online　PLOS ONE

Early Referral to a Nephrologist Improved Patient Survival: Prospective Cohort Study for End-Stage Renal Disease in Korea

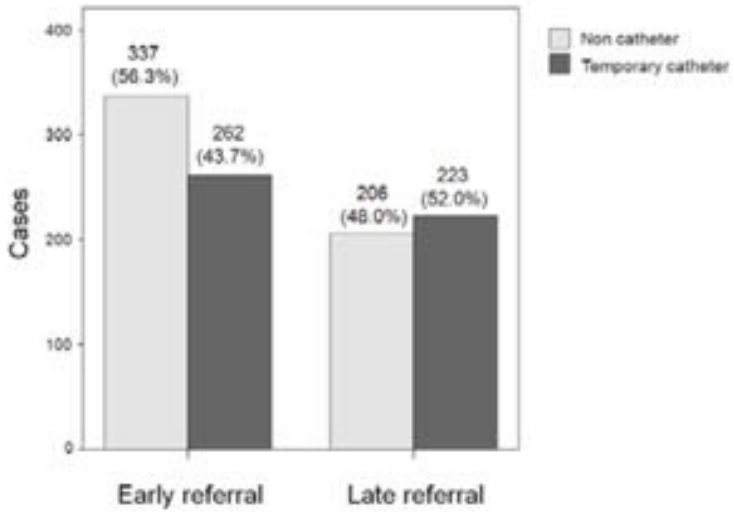


Figure 1. Pattern of emergency dialysis using a temporary vascular catheter according to the timing of referral. Early referral were defined as the patient's first encounter with a nephrologist occurring more than 1 year before first dialysis, with education about dialysis prior to initiation of dialysis, and all others were considered late referral (P = 0.009).

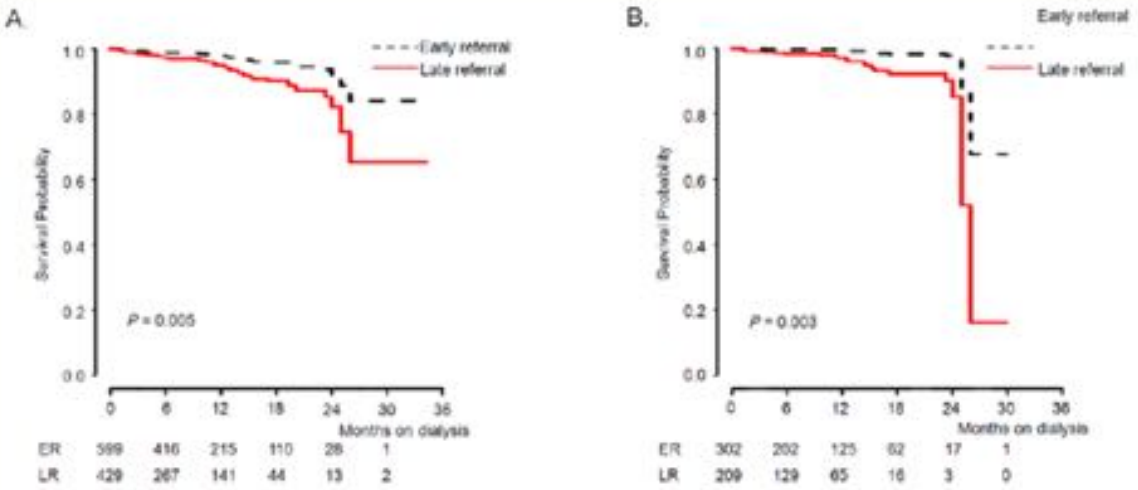


Figure 2. Kaplan-Meier survival curve by timing of referral. (A) Total patients, adjusted for age, gender, modified CCI, BMI, eGFR, serum hemoglobin, calcium, iPTH, uric acid, triglycerides, total cholesterol, and HDL cholesterol. (B) DM ESRD patients, adjusted for age, gender, modified CCI, BMI, eGFR, serum hemoglobin, calcium, iPTH, uric acid, triglycerides, total cholesterol, and HDL cholesterol.

PLoS One. 2013;8(1):e55323.

A propensity analysis of late versus early nephrologist referral and mortality on dialysis.

Winkelmayer WC, et al. J Am Soc Nephrol. 2003 Feb;14(2):486-92.

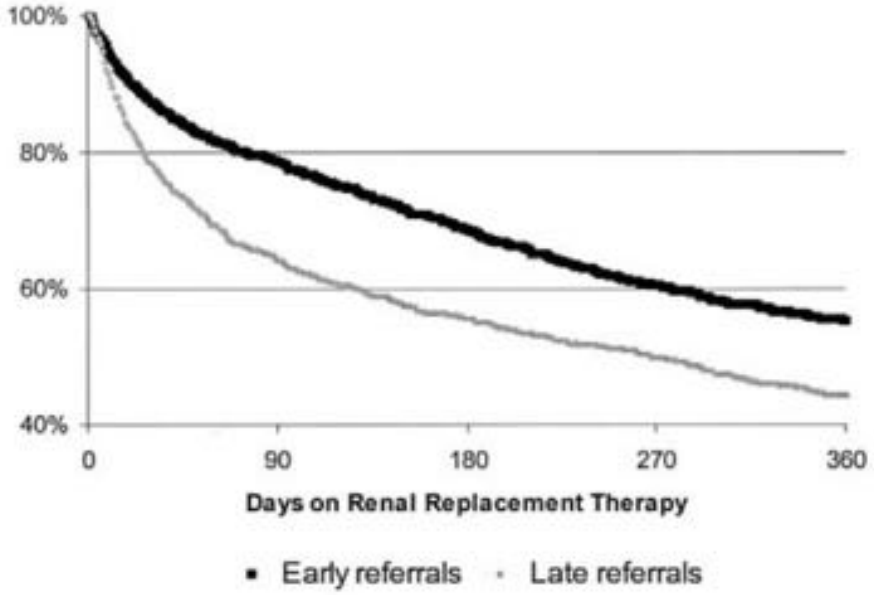


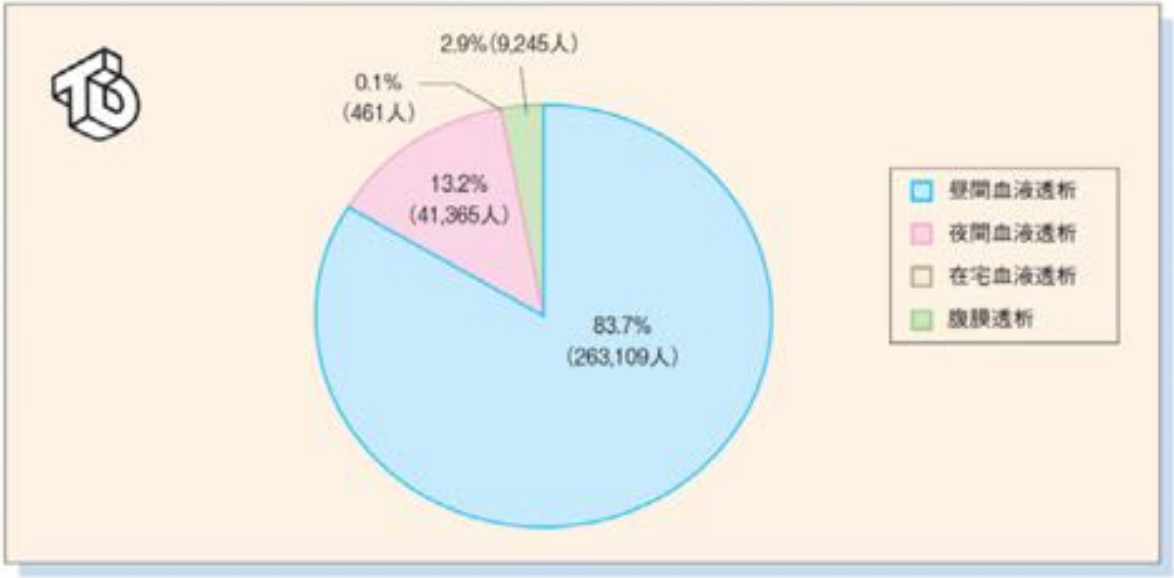
Figure 2. Kaplan-Meier plot of actuarial survival by timing of referral in propensity score matched population (n = 2078).

透析・移植医療

腎移植患者数の推移とその比較

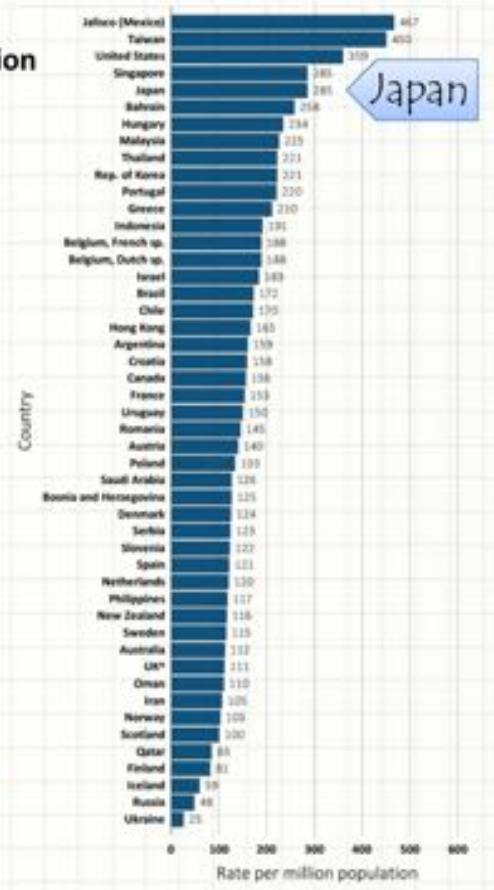
日本移植学会.「臓器移植ファクトブック2013」

慢性透析治療の形態



2013年末の慢性透析患者に関する基礎集計

vol 2 Figure 10.1 Incidence rate of ESRD, per million population, by country, in 2012

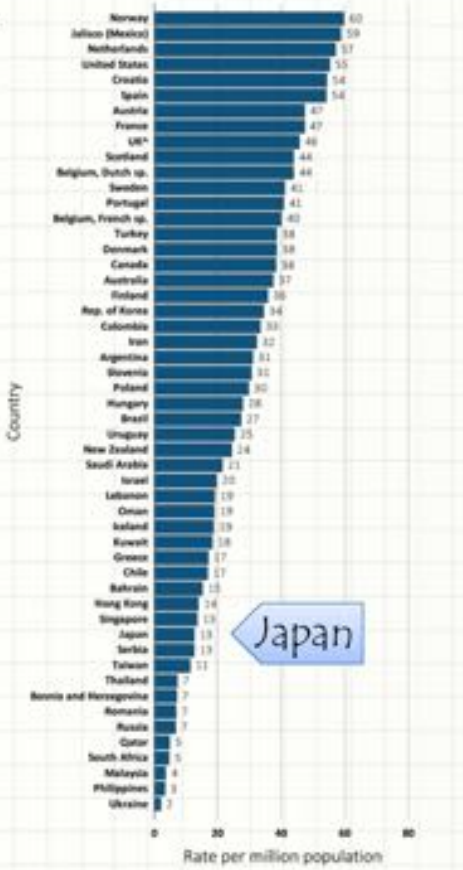


Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Japan and Taiwan are dialysis only. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Data for France include 22 regions. Data for Spain include 18 of 19 regions.

United States Renal Data System, 2014 Annual Data Report: Epidemiology of Kidney Disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2014.

Vol 2, ESRD, Ch 10　34

vol 2 Figure 10.10 Kidney transplantation rate, per million population, by country, in 2012

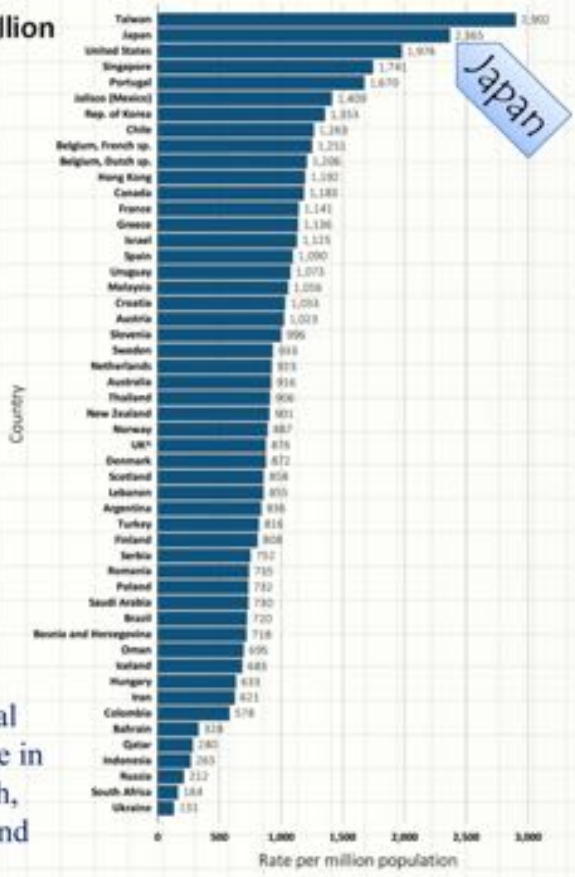


Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Belgium do not include patients younger than 20. Data for France include 22 regions. Data for Spain include all regions. There is underreporting of prevalent transplant patients in Turkey. Abbreviations: sp., speaking.

United States Renal Data System, 2014 Annual Data Report: Epidemiology of Kidney Disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2014.

Vol 2, ESRD, Ch 10　35

vol 2 Figure 10.5 Prevalence of ESRD, per million population, by country, in 2012

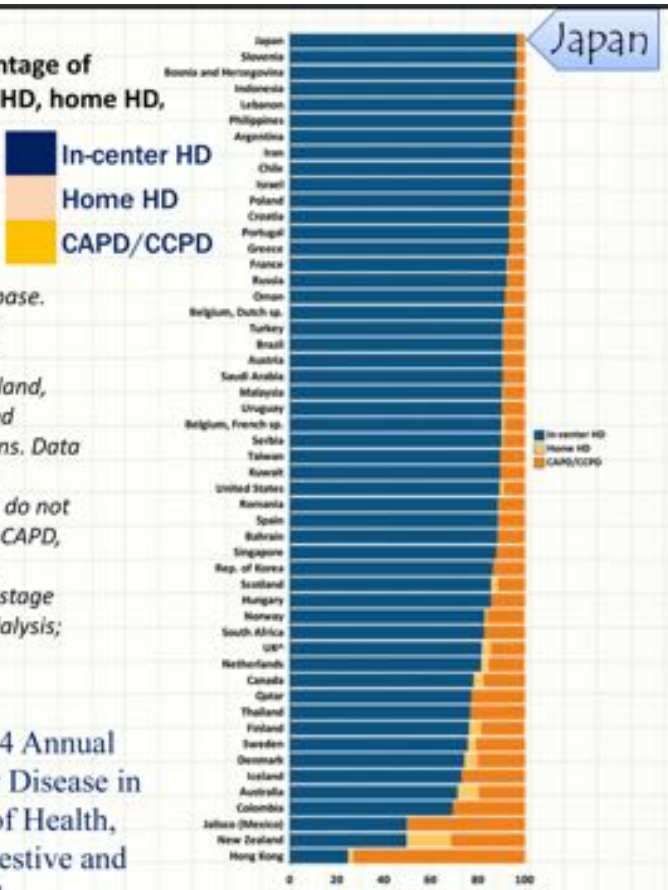


Data source: Special analyses, USRDS ESRD Database. Data presented only for countries from which relevant information was available. All rates are unadjusted and reflect prevalence at the end of 2012; rates for Colombia and Lebanon reflect prevalence at the end of June 2012. ^U.K: England, Wales, & Northern Ireland (Scotland data reported separately). Japan and Taiwan include dialysis patients only. Data for Belgium do not include patients younger than 20. Data for Indonesia represent the West Java region. Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Turkey in 2012 was collected with the collaboration of the Ministry of Health, which collects patient-based data; however, in previous years center-based data were reported. Abbreviations: ESRD, end-stage renal disease; sp., speaking.

United States Renal Data System, 2014 Annual Data Report: Epidemiology of Kidney Disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2014.

Vol 2, ESRD, Ch 10　36

vol 2 Figure 10.9 Distribution of the percentage of prevalent dialysis patients using in-center HD, home HD, and CAPD/CCPD, in 2012



Data source: Special analyses, USRDS ESRD Database. Denominator is calculated as the sum of patients receiving HD, PD, and Home HD; does not include patients with other/unknown modality. ^UK: England, Wales, & Northern Ireland (Scotland data reported separately). Data for Spain include 18 of 19 regions. Data for France include 22 regions. Data for Indonesia represent the West Java region. Data for Belgium do not include patients younger than 20. Abbreviations: CAPD, continuous ambulatory peritoneal dialysis; CCPD, continuous cycling peritoneal dialysis; ESRD, end-stage renal disease; HD, hemodialysis; PD, peritoneal dialysis; sp., speaking.

United States Renal Data System, 2014 Annual Data Report: Epidemiology of Kidney Disease in the United States. National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2014.

Vol 2, ESRD, Ch 10　37

CQ1.　透析および腎移植に関する情報提供はどのようなCKDステージで行うべきか？

＊推奨＊　グレード：C　レベル：1

CKD症例に対して，CKDステージ4（GFR 15～30 ml/分/1.73m²）に至った時点で，公平かつ適切な透析療法および腎移植に関する準備のための情報提供を本人および家族に行うことは，腎代替療法開始後の生命予後を改善するのでこれを推奨する．

Nephrol Dial Transplant (2002) 17: 1252–1259

Nephrology Dialysis Transplantation

Original Article

Late referral for end-stage renal disease: a region-wide survey in the south west of England

Table 4. Dialysis access and clinical outcomes of referral groups

Dialysis access and outcomes	Late referrals			Early referrals	
	<1 month n=84 (24%)	1–4 months n=40 (11%)	All <4 months n=124 (35%)	4–12 months n=52 (15%)	>12 months n=177 (50%)
Permanent form of access at RRT (n (%)) (P=0.001)	15 (18)	24 (65)	39 (31)	34 (71)	110 (71)
Haemodialysis as first form of RRT (n (%)) (P=0.001)	74 (89)	20 (56)	94 (76)	32 (67)	94 (60)
Died within 6 months (n (%)) (P=0.002)	27 (32)	8 (20)	35 (28)	11 (21)	27 (15)
Hospital length of stay (median (IQR)) (P=0.001)	18 (12–39)	10 (3–23)	17 (10–33)	10 (6–18)	10 (4–20)

P values compare those referred >1 month and <1 month before RRT.

Nephrol Dial Transplant (2011) 26: 1266–1274
doi: 10.1093/ndt/gfq555
Advance Access publication 6 September 2010

Patient INformation about Options for Treatment (PINOT): a prospective national study of information given to incident CKD Stage 5 patients

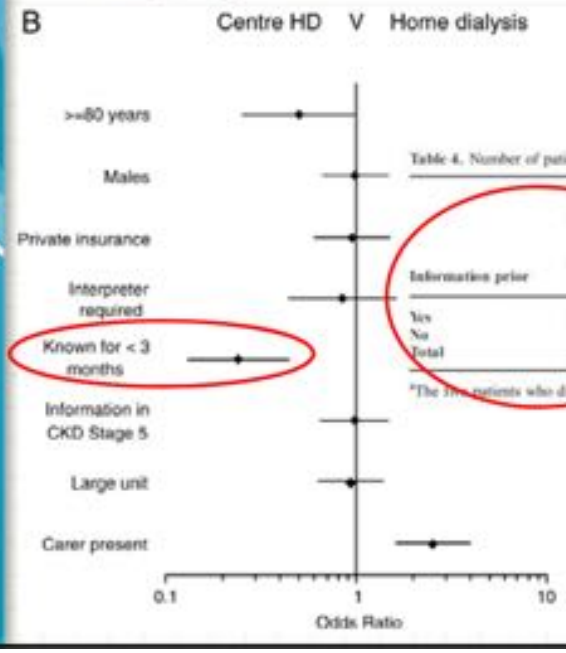


Table 4. Number of patients receiving information prior to commencing treatment by initial treatment type

	Type of treatment									
	Pre-emptive transplant		Peritoneal dialysis		Home haemodialysis		Centre-based haemodialysis		Conservative care	
Information prior	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)	*n*	(%)
Yes	25	(100)	133	(99)	12	(100)	341	(77)	87	(85)
No	0	(0)	1	(1)	0	(0)	102	(23)	15	(15)
Total	25	(100)	134	(100)	12	(100)	443	(100)	102	(100)

*The [illegible] patients who died before starting planned treatment were excluded.

ELSEVIER

Does a Predialysis Education Program Increase the Number of Pre-emptive Renal Transplantations?

Table 1. Comparison Between Non-PDEP and PDEP Group

	Non-PDEP (n = 27)	PDEP (n = 61)	*P*
Age (y)	31.1 ± 8.8	31.2 ± 11.9	None
Gender (male/female)	12/15	46/15	None
eGFR (mL/min)	10.2 ± 2.1	12.2 ± 1.7	.001
Pre-emptive RT	5 (18.5%)	26 (42.6%)	<.001
Donors			
Mother	14 (51.9%)	25 (41%)	<.001
Father	8 (29.69%)	11 (18%)	<.001
Spouse	1 (3.7%)	9 (14.8%)	<.001
Sibling	4 (14.8%)	13 (21.3%)	.001
Relative	0 (0%)	3 (4.9%)	.002

日腎会誌 2008；50(7)：915-926.

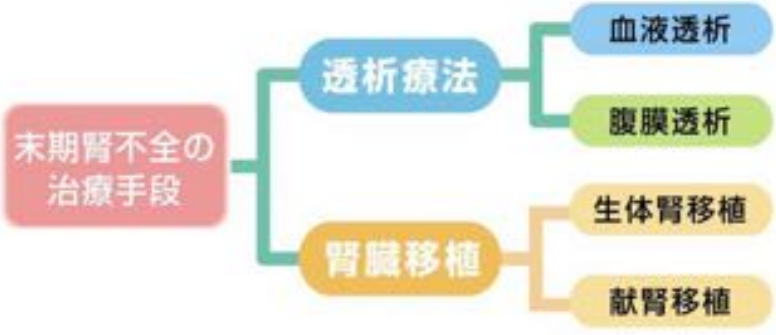
原　著

慢性腎臓病（CKD）ステージ5患者の治療同意能力に関する予備的検討

Table 2. The results of MacCAT-T

	CKD patients	General population	p-value
Understanding			
Disorder	1.25±0.50	1.83±0.23	<0.001
Treatment	1.55±0.50	1.94±0.24	<0.001
Benefit and risk/discomfort	0.88±0.64	1.83±0.34	<0.001
Summary rating	3.72±1.11	5.60±0.66	<0.001
Appreciation			
Disorder	1.62±0.50		
Treatment	1.28±0.68		
Summary rating	2.88±0.88		
Reasoning			
Consequential reasoning	1.10±0.62	1.58±0.71	<0.05
Comparative reasoning	1.09±0.75	0.95±0.96	NS
Generating consequences	1.12±0.60	1.78±0.57	<0.01
Logical consistency	0.86±0.73	1.85±0.42	<0.001
Summary rating	4.30±2.11	6.15±1.69	<0.001

「腎不全　治療選択とその実際」



血液透析か腹膜透析か？

腹膜透析が不向き

癒着を伴う腹部手術の既往
横隔膜交通症
重症の呼吸不全
回腸導管や人工肛門
腹部肥満，筋肉量が多い

以下は逆に禁忌ではない！
- 高齢
- うっ血性心不全
- 多発性嚢胞腎
- 門脈圧亢進症
- 大腸憩室症
- 腹部のヘルニア

血液透析が不向き

シャント 作製できる血管がない
循環動態が不安定
尖端（針）恐怖症

透析会誌42(4):285-315, 2009.
Nephrol Dial Transplant 2010;25:1757-9.
Nephrology(Carlton) 2005;10:46-60.

Transition

腹膜透析が不向き

① 体液量や尿毒症症状を管理できない
② 難治性腹膜炎
③ 残存腎機能が低下
④ 腹腔内手術が必要となった
⑤ 被嚢性腹膜硬化症の発症

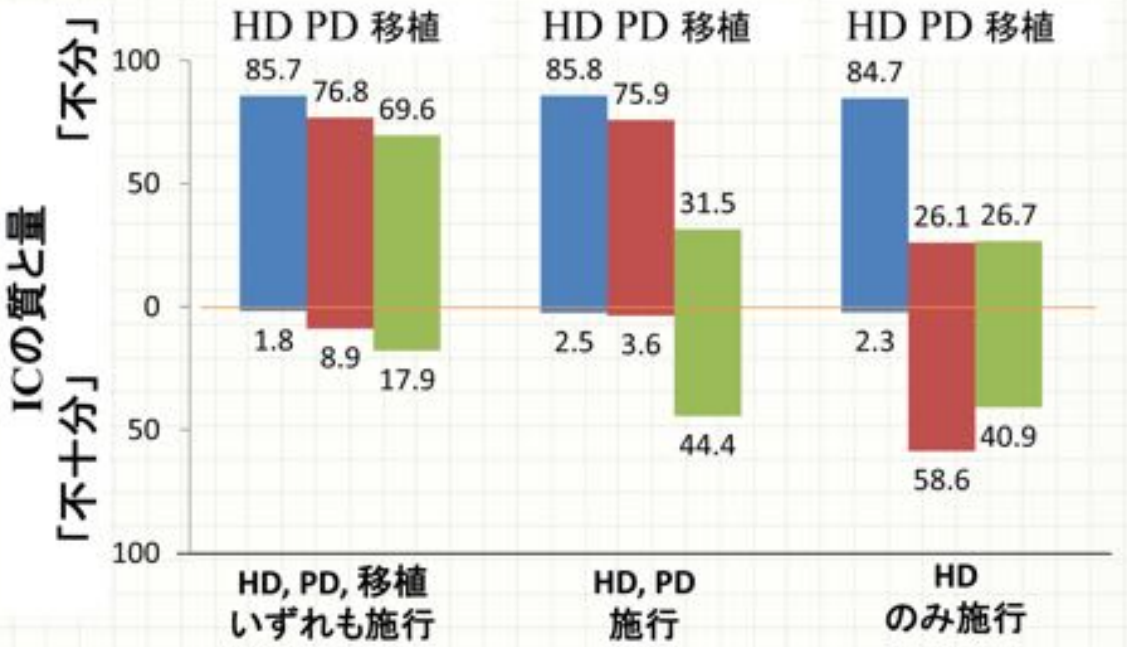
血液透析が不向き

① 適切なDW 管理にも関わらず血液透析中の血行動態が不安定であったり，こむら返りが生じたりする
② ブラッドアクセス作製困難
③ 難治性腹水

腎移植の情報提供

1. 腎移植の透析療法（血液・腹膜）との相違および利点欠点
2. わが国の腎移植の現状，成績（生着率・生存率）
3. 腎移植のドナー・レシピエント関係（献腎/ 生体，血液型適合/ 不適合，血縁間/ 非血縁間）
4. 腎移植の施行時期（先行的/ 透析導入後）とその利点・欠点
5. 生体ドナーの適応，リスク
6. 腎移植の手術方法，免疫抑制療法
7. 腎移植後の合併症
8. 腎移植後の生活の実際
9. 腎移植に関する医療費助成と社会福祉サービス

インフォームド・コンセント(IC)の質と量



日腎会誌48(7):658-663,2006

ORIGINAL ARTICLES

PREVIOUS COMORBIDITY AND LACK OF PATIENT FREE CHOICE OF TECHNIQUE PREDICT EARLY MORTALITY IN PERITONEAL DIALYSIS

José Portolés,[1] Gloria del Peso,[2] M. José Fernández-Reyes,[1] M. Auxiliadora Bajo,[2] and Paula López-Sánchez[1]; on behalf of the GCDP*

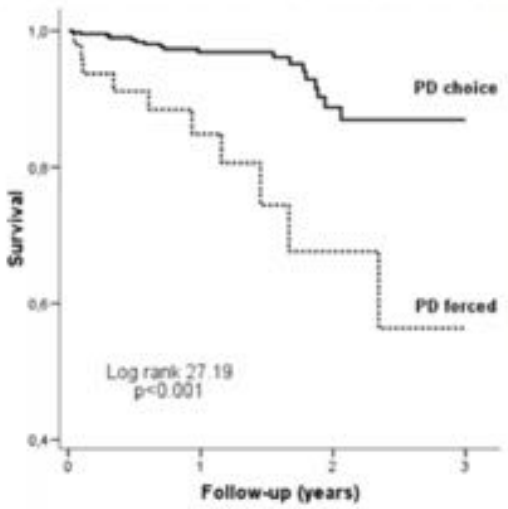


TABLE 2
Characteristics of Patients Forced to Accept Peritoneal Dialysis (PD) Compared to Those on PD by Choice

	Forced (n=49)	Free choice (n=440)	p Value
Deaths (%)	20.4	3.5	<0.001
Hemoglobin>11 g/dL initially (%)	20.0	19.0	>0.05
CAPD initially (%)	74.4	65.9	>0.05
Age (years)	56.0±5.8	53.3±6.18	0.265
Charlson Comorbidity Index	6.64±2.72	5.04±2.4	<0.001
Diabetes mellitus (%)	35.4	16.90	0.002
Previous cardiovascular event (%)	36.7	21.50	0.017
Changed from hemodialysis (%)	63.30	14.50	<0.001
Peritonitis rate per year at risk	0.82 (0.58–0.17)	0.46 (0.40–0.53)	Ratio: 1.78 (1.28–2.46)

CAPD = continuous ambulatory peritoneal dialysis.
Results as meanestandard deviation, percentage, or 95% confidence interval. ANOVA, chi-square, or rate ratio applied according to the nature of the variables.

Transplantation

Association of Patient Autonomy With Increased Transplantation and Survival Among New Dialysis Patients in the United States

Austin G. Stack, MBBCh, MSc, and David R. Martin, MD

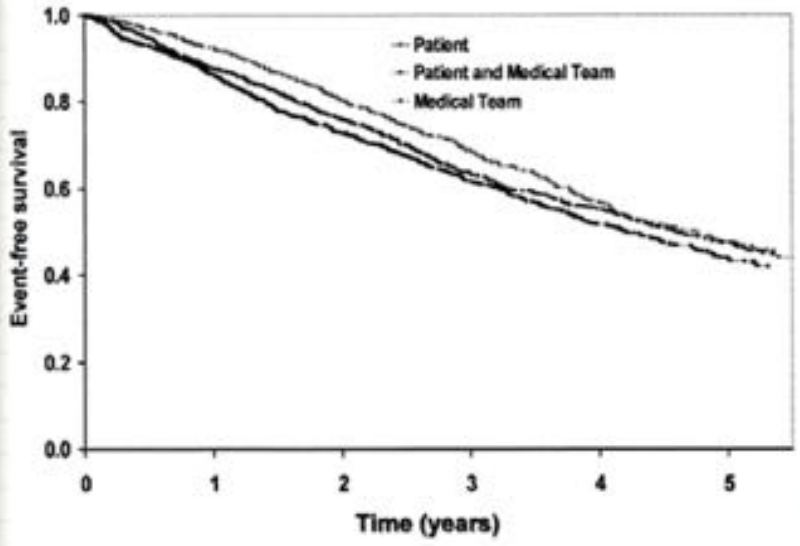


Fig 1. Adjusted (for age at study start) Cox survival curves by patient contribution to initial dialysis modality selection. $P < 0.05$ for patient-led versus team-led comparison.

Table 2 (Cont'd). Comparison of Patient Groups at ESRD Onset by Reported Contribution to the Modality Selection Process

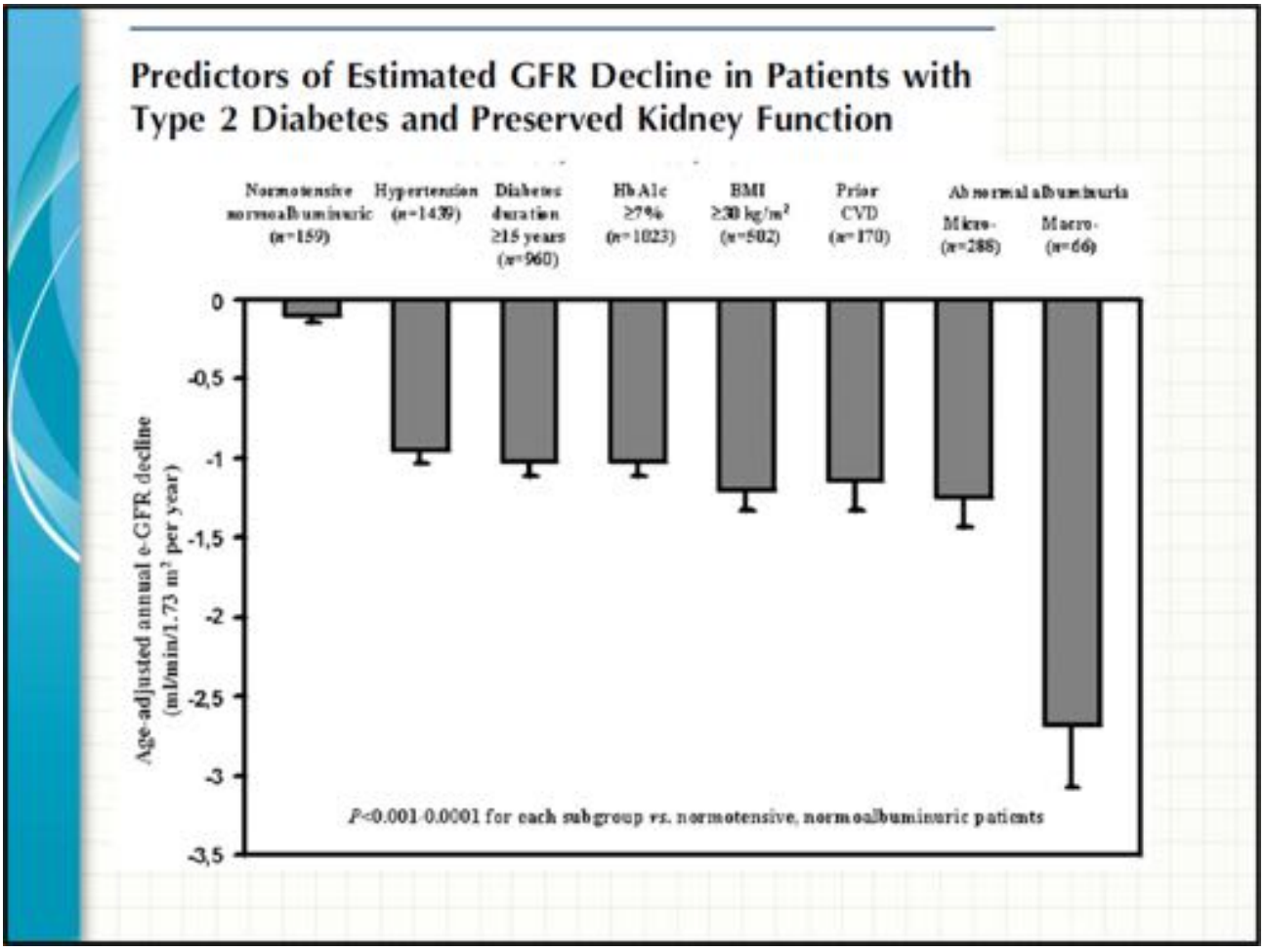
	Patient Led	Patient-and-Team Led	Team Led	Adjusted Odds Ratio (patient led v other)
Treatment modality				
HD†	34.0	40.7	77.6†	1.00 (referent)
PD†	66.0	59.2	22.2†	2.51 (2.07-3.05)†

CQ2.　腎代替療法の準備はどのようなCKDステージで行うべきか？

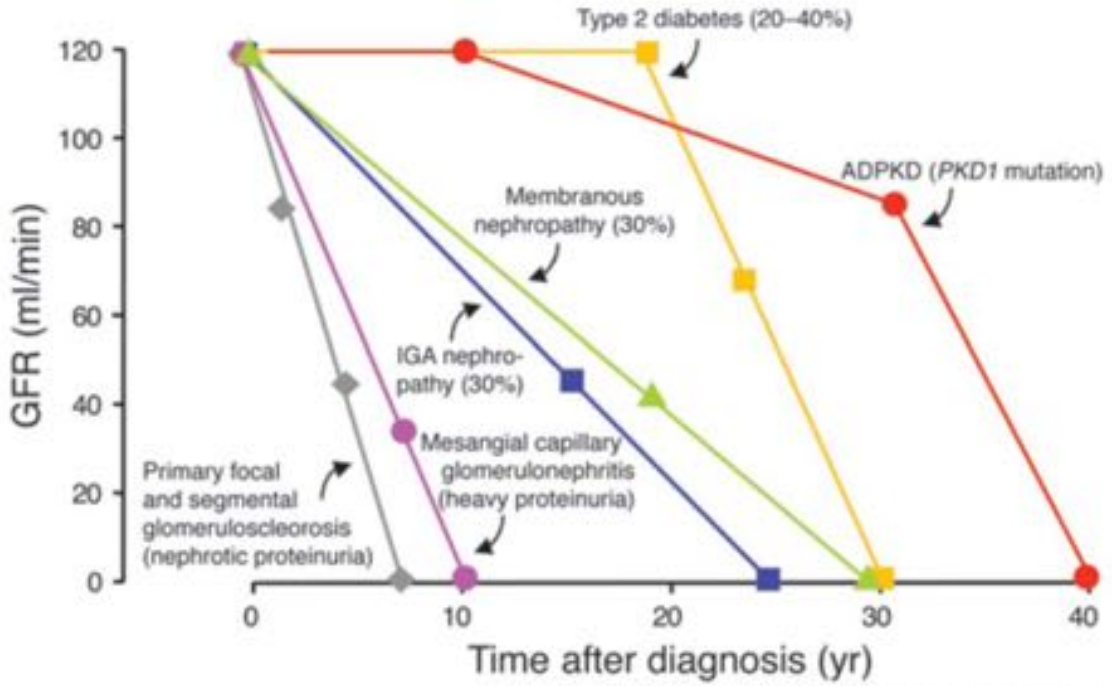
＊推奨＊　グレード：C　レベル：2

CKD症例に対して，CKDステージG５（GFR 15 ml/分/1.73m²未満）に至る前に専門医に紹介し，CKDステージG５では希望する腎代替療法を担当する透析または腎移植の専門医を中心に腎代替療法の準備を開始することが望ましい．

ただし，eGFRの低下速度は症例により異なり，進行性の腎機能低下を示す症例では，CKDステージG５より早期の段階から腎代替療法の準備が必要となることもある．



原疾患と腎機能の低下速度



J Clin Invest. 2006 Feb;116(2):288-96.

Nephrol Dial Transplant (1997) 12: 718–723

Nephrology Dialysis Transplantation

Original Article

Onset of coronary artery disease prior to initiation of haemodialysis in patients with end-stage renal disease

N. Joki, H. Hase, R. Nakamura and T. Yamaguchi

Table 5. Prediction of the presence of coronary artery disease (CAD) by evaluation of chest symptoms using discriminant function analysis

Chest symptoms	CAD		*n*
	Present	Absent	
Present	8	3	11
Absent	7	6	13
Total	15	9	24

Sensitivity, 72.7%; specificity, 46.2% ($P = 0.389$).

Table 6. Prediction of the presence of coronary artery disease (CAD) by evaluation of ECG abnormalities using discriminant function analysis

ECG Abnormalities	CAD		*n*
	Present	Absent	
Present	12	4	16
Absent	3	5	8
Total	15	9	24

Sensitivity, 75%; specificity, 62.5% ($P = 0.091$).

Table 2. Prevalence of coronary artery disease in patients with end-stage renal disease within 1 month of starting haemodialysis

	CAD-positive (%)		Serious CAD (%)	
Total patients ($n = 24$)	15 (62.5)		12 (50)	
Diabetic nephropathy ($n = 15$)	11 (73.3)	$P = 0.164$	9 (60)	$P = 0.20$
Non-diabetic nephropathy ($n = 9$)	4 (44.4)		3 (33.3)	

Differences between the two groups were not statistically significant.

original article

Risk factors for *de novo* acute cardiac events in patients initiating hemodialysis with no previous cardiac symptom

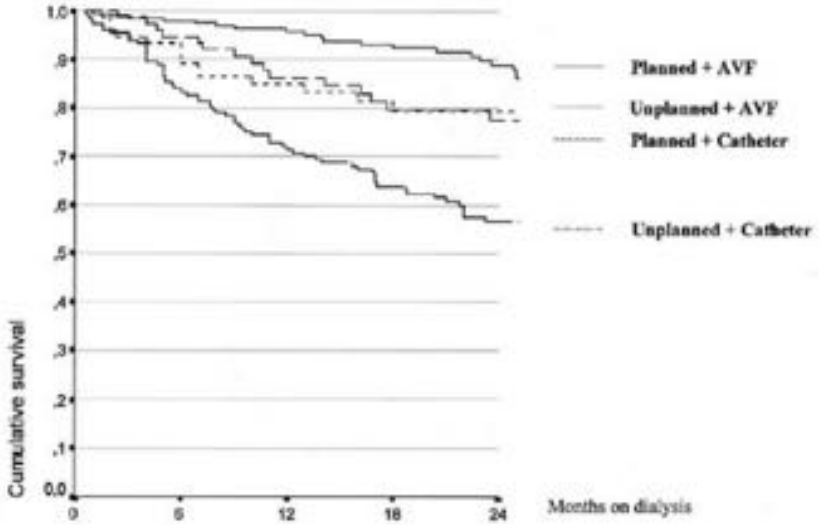
H Hase[1], T Tsunoda[2], Y Tanaka[1], Y Takahashi[2], Y Imamura[2], H Ishikawa[1], Y Inishi[1] and N Joki[1]

[1]Department of Cardiology and Nephrology, Division of Nephrology, Toho University Ohashi Medical Center, Tokyo, Japan and [2]Dialysis Center, Nissan Tamagawa Hospital, Tokyo, Japan

Diabetic patients		Nondiabetic patients	
Group 1 No CAD and CRP<3.5 mg/l	Group 2 No CAD and CRP ⩾3.5 mg/l	Group 1 No CAD and CRP<3.5 mg/l	Group 2 No CAD and CRP ⩾3.5 mg/l
0/17 (0%)	2/11 (18%)	0/19 (0%)	0/18 (0%)
Group 3 Asymptomatic CAD and CRP<3.5 mg/l	Group 4 Asymptomatic CAD and CRP ⩾3.5 mg/l	Group 3 Asymptomatic CAD and CRP<3.5 mg/l	Group 4 Asymptomatic CAD and CRP ⩾3.5 mg/l
7/20 (35%)	13/14 (93%)	0/9 (0%)	3/4 (75%)

Dialysis Therapies

Predialysis Nephrologic Care and a Functioning Arteriovenous Fistula at Entry Are Associated With Better Survival in Incident Hemodialysis Patients: An Observational Cohort Study

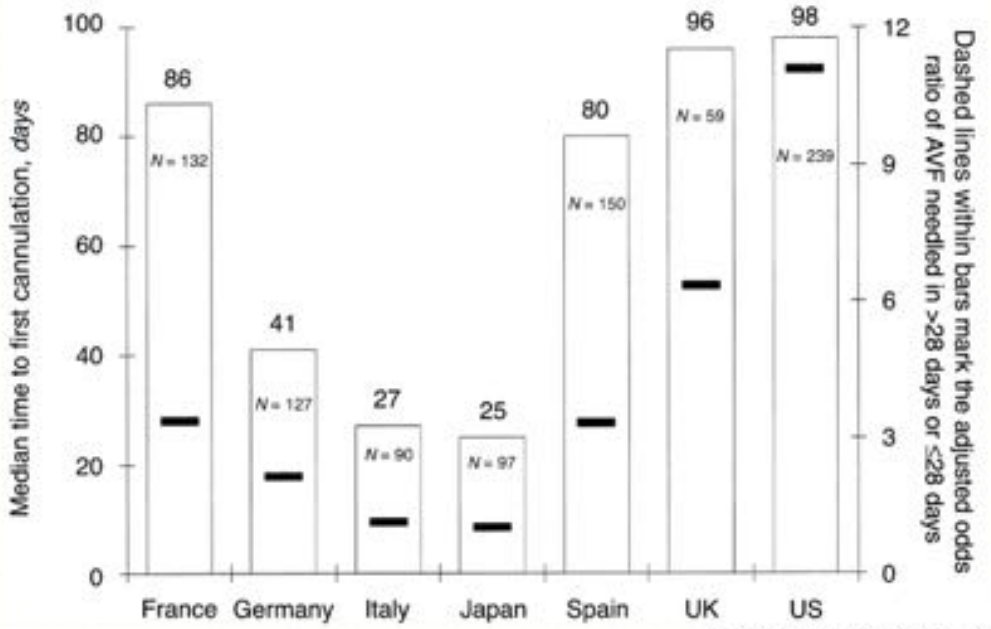


Planned + AVF	206	156	102
Planned + Catheter	75	55	31
Unplanned + AVF	78	57	40
Unplanned + Catheter	179	112	66

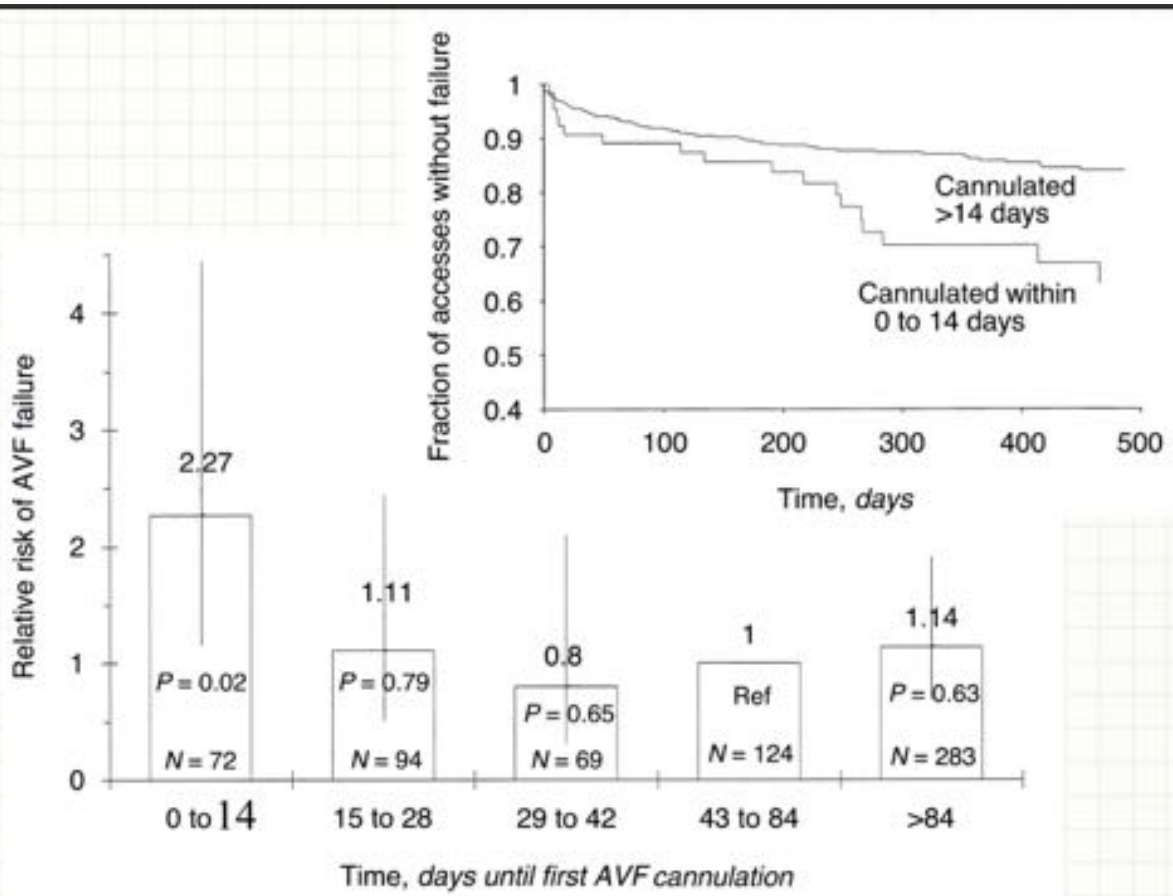
Fig 2. Kaplan-Meier survival curves in the 4 groups. Numbers at the bottom refer to patients entering each 12-month interval.

Kidney International, Vol. 63 (2003), pp. 323–330

Creation, cannulation and survival of arteriovenous fistulae: Data from the Dialysis Outcomes and Practice Patterns Study



Kidney Int. 2003 Jan;63(1):323-30.



Kidney Int. 2003 Jan;63(1):323-30.

European best practice guidelines for peritoneal dialysis. 3 Peritoneal access.

Dombros N, et al. Nephrol Dial Transplant. 2005 Dec;20 Suppl 9:ix8-ix12.

Clinical practice guidelines for peritoneal access.

Figueiredo A1, Perit Dial Int. 2010 Jul-Aug;30(4):424-9.

Guideline C. Time of catheter insertion

The time between catheter insertion and continuous ambulatory peritoneal dialysis (CAPD) beginning, i.e. the break-in period, should preferably be at least 2 weeks to avoid early leakage. Immediate PD is however feasible, especially if the catheter was implanted with a peritoneoscope. In this case, intermittent automated dialysis with a low (1 l, for an adult patient) intraperitoneal volume should be prescribed.

Although rinsing the catheter with saline solution during its placement should be done to check for patency, post-operative lavage with peritoneal solution is not necessary and may even be irritating, promoting catheter displacement or obstruction. There is no consensus as to whether a peritoneal washing should be performed once per week during the break-in period, either with peritoneal solution or with heparinized solution. The Moncrief technique of catheter implantation, leaving the external catheter buried, subcutaneously, and therefore not in use until later exteriorization, has not shown an increased rate of catheter obstruction.

Early and late peritoneal dialysate leaks in patients on CAPD.

Tzamaloukas AH, et al. Adv Perit Dial. 1990;6:64-71.

All of the reported early leaks developed in patients who started CAPD immediately after insertion of the peritoneal catheter. Nineteen early leaks (90%) developed within 10 days of catheter insertion; 11 of these developed within 24 hours. Only 2 early leaks developed in days 10-30 after catheter insertion.

TABLE IV Comparison between early and late dialysate leaks in CAPD patients

	Early leaks	*Late leaks*
Pathogenesis	Poor tissue healing. Median catheter insertion. Onset of CAPD immediately after catheter insertion.	Poor tissue healing/tensile strength. Straining, infections, hernias. Method of catheter insertion may have an effect.
Manifestations	Usually external leaks.	Usually leaks into tissues.
Diagnosis	Usually by clinical means.	Often requires imaging.
Management	CAPD interruption alone effective often. Surgery frequent.	Usually requires surgery. Occasionally conservative means (change to other modality of peritoneal dialysis, observation) are sufficient.
Outcome	Catheter loss frequent. Permanent discontinuation of CAPD improbable.	Catheter loss frequent. Permanent discontinuation of CAPD for conditions associated with the leak probable.
Prevention	Paramedian surgical insertion with meticulous closure of the peritoneum and obliteration of all potential open tunnel spaces. Waiting period for 10–14 days between catheter insertion and onset of CAPD. Starting CAPD with low volumes. Peritoneoscopic insertion is an alternative to paramedian insertion. Avoiding heavy straining. Prevention of infections.	Same as early leak prevention. Research is needed in the area of improving tissue healing/tensile strength.

Peritoneal catheter-related complications: a comparison between hemodialysis and intermittent peritoneal dialysis in the break-in period.

Cheng YL, et al. Adv Perit Dial. 1996;12:231-4.

TABLE II Complications occurring in the observation period following peritoneal catheter placement

	Group A	Group B	p
Delayed bleeding	5 (14%)	3 (6%)	NS
Pericatheter leakage	0	7 (13%)	<0.05
Secondary outflow failure	6 (17%)	8 (15%)	NS
Exit-site infection	17 (47%)	21 (40%)	NS
Peritonitis	4 (11%)	12 (23%)	NS
External cuff erosion	3 (8%)	7 (13%)	NS
Abdominal hernia	1 (3%)	2 (4%)	NS
Removal of catheters	7 (19%)	5 (9%)	NS
Death	3 (8%)	5 (9%)	NS

TABLE III Risk factors and other catheter-related complications for group B patients complicated with pericatheter leakage

	Group B (with pericatheter leakage)	Group B (without pericatheter leakage)	p
Mean age (years±SD)	56±15	56±9	NS
Males/females	2/5	23/23	NS
Diabetes mellitus	5 (71%)	10 (22%)	< 0.05
Patients previously established on CAPD	2 (29%)	17 (37%)	NS
Delayed bleeding	0	3 (7%)	NS
Secondary outflow failure	1 (14%)	7 (15%)	NS
Exit-site infection	5 (71%)	16 (35%)	NS
Peritonitis	3 (43%)	9 (20%)	NS
External cuff erosion	4 (57%)	3 (7%)	<0.005
Abdominal hernia	0	2 (4%)	NS
Removal of catheters	0	5 (11%)	NS
Delay in CAPD training	5 (71%)	3 (7%)	<0.005
Death	1 (14%)	4 (9%)	NS

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Earlier Is Not Necessarily Better in Preemptive Kidney Transplantation

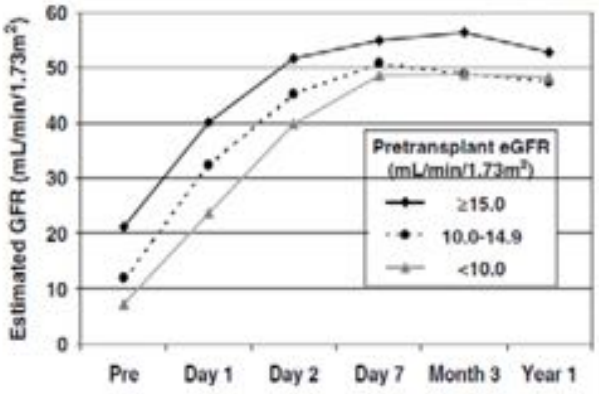

Table 3: The independent association between pretransplant estimated glomerular filtration rate and graft failures (N = 166) in 671 first deceased and living donor preemptive kidney transplantations[1]

Pretransplant characteristics	N (%)[2]	Relative risk (95% CI)	p-Value
Pretransplantation eGFR[3] = 10.0–14.9	217 (32.3)	0.99 (0.68–1.44)	0.9432
Pretransplantation eGFR[3] ≥15	130 (19.4)	1.35 (0.89–2.05)	0.1588
ESRD from type 1 diabetes	210 (31.3)	1.96 (1.38–2.84)	0.0002
ESRD from type 2 diabetes	38 (5.7)	4.09 (2.14–7.83)	< .0001
ESRD from nephrosclerosis/hypertension	34 (5.1)	2.98 (1.40–6.32)	0.0045
Each MHC mismatch	671 (100)	1.15 (1.06–1.25)	0.001
Peak PRA >30%	32 (4.8)	2.05 (1.18–3.56)	0.0108
Smoked cigarettes at transplantation	115 (17.1)	1.66 (1.16–2.37)	0.0059
Smoking status unknown	41 (6.1)	2.54 (1.47–4.367)	0.0008
Single graft renal artery	546 (81.4)	0.57 (0.39–0.83)	0.0038

BRIEF COMMUNICATION www.jasn.org

Trends in the Timing of Pre-emptive Kidney Transplantation

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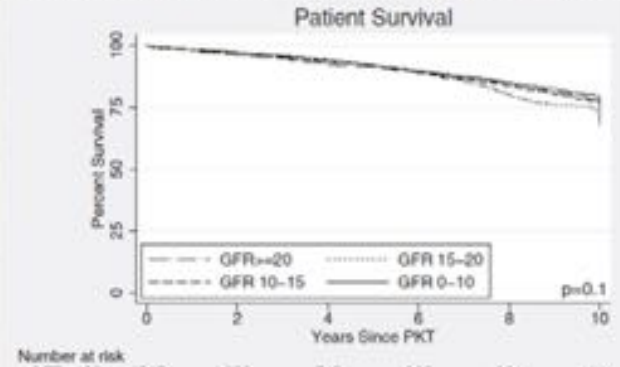
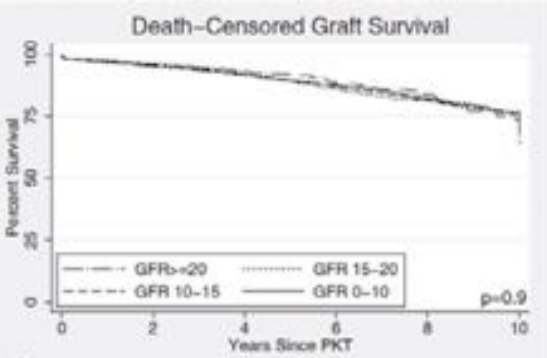


Number at risk

GFR>=20	1515	986	548	308	201	114
GFR 15–20	2780	1795	1019	555	301	148
GFR 10–15	6313	4629	3123	1968	1240	659
GFR 0–10	7845	6519	5233	3849	2692	1605



Number at risk

GFR>=20	1514	782	391	196	109	53
GFR 15–20	2756	1425	729	358	159	68
GFR 10–15	6279	3858	2281	1283	683	313
GFR 0–10	7807	5622	3992	2624	1536	751

9. 透析・移植医療

9. 透析・移植・医療分科会

CQ 1 透析および腎移植に関する情報提供はどのようなCKDステージで行うべきか.

●ステートメント●
グレードC　レベル1
CKD症例に対して，CKDステージG4（GFR 15～30 mL/分/1.73 m²）に至った時点で，公平かつ適切な透析療法および腎移植に関する準備のための情報提供を本人および家族に行うことは，腎代替療法開始後の生命予後を改善するのでこれを推奨する．

CQ 2 腎代替療法の準備はどのようなCKDステージで行うべきか.

●ステートメント●
グレードC　レベル2
CKD症例に対して，CKDステージG5（GFR 15 mL/分/1.73 m²未満）に至る前に専門医に紹介し，CKDステージG5では希望する腎代替療法を担当する透析専門医または移植専門医を中心に腎代替療法の準備を開始することが望ましい．
ただし，eGFRの低下速度は症例により異なり，進行性の腎機能低下を示す症例では，CKDステージG5より早期の段階から腎代替療法の準備が必要となることもある．