



# Improvements in Six Aspects of Quality of Care of Incident Hemodialysis Patients: An International Multicenter Study

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## Introduction

- The transition from predialysis care to initiation of hemodialysis has received increased attention in recent years, as this period is one of exceptionally high vulnerability for patients, with an annual mortality rate exceeding 20%.
- Morbidity and mortality in incident patients are partially attributed to failure to attain guideline-based targets and type of vascular access in use.
- This analysis focuses on improvements in 6 aspects of quality of dialysis care (adequacy, anemia, nutrition, CKD-MBD, blood pressure and vascular access) during the first 6 months of dialysis in a large cohort of hemodialysis patients in Europe.

## Objective

- To determine whether coordinated patient care with monthly review of results and targets and action plans in DaVita clinics leads to improvement in six aspects of dialysis quality: adequacy, anemia, nutrition, CKD-MBD, blood pressure and vascular access (central venous catheter; CVC vs AV fistula; AVF)

## Methods

- We analyzed patient demographics, practice patterns, and laboratory data in 3462 patients (mean age 65.9 years, 41% female) on hemodialysis (incident <90 days on HD, n=603, prevalent >90 days on HD, mean 55 months, n=2859) from 56 DaVita centers in Poland (51 centers) and Portugal (5 centers). 80% of patients received HD and 20% hemodiafiltration.
- We compared all incident to all prevalent patients (Table 1; unpaired t-test and Chi-2 analyses) and in addition analyzed improvements in six aspects of quality of dialysis care in a subgroup of patients (n=258) who were followed prospectively for 6 months (Table 2 and Fig; paired t-test and McNemar analyses).

## Results

Incident (<90 days on HD) vs all prevalent (>90 days) patients

	<90 days n=603	>90 days n= 2859	p*
Age (years)	66.3	67.1	NS
Body weight (kg)	70.8	72.4	<0.05
Treatment time (min)	677	721	<0.001
Blood flow (mL/min)	295	351	<0.001
Treated blood volume (L/kg)	1.0	1.2	<0.001
Kt/V	1.4	1.7	<0.001
Albumin (g/l)	37.4	40.7	<0.001
Hb (g/dL) all pts	9.9	11.0	<0.001
Hb (g/dL) on ESA	9.8	10.8	<0.001
TSAT (%)	26	31	<0.001
Ferritin (µg/L)	305	540	<0.001
ESA / week	5470	4982	<0.05
ERI (U/kg/Hb)	8.5	7.0	<0.001
Phosphorus (mg/dL)	4.8	5.0	NS
Calcium (mg/dL)	8.7	8.8	NS
iPTH (ng/mL)	372	496	<0.001
MAP (mm Hg)	95	94	NS
IDBWG (%)	1.6	2.6	<0.001
UF volume (mL)	1687	2259	<0.001
CVC (%)	68	26	<0.001
AVF (%)	32	70	<0.001
AVG (%)	1	4	<0.001

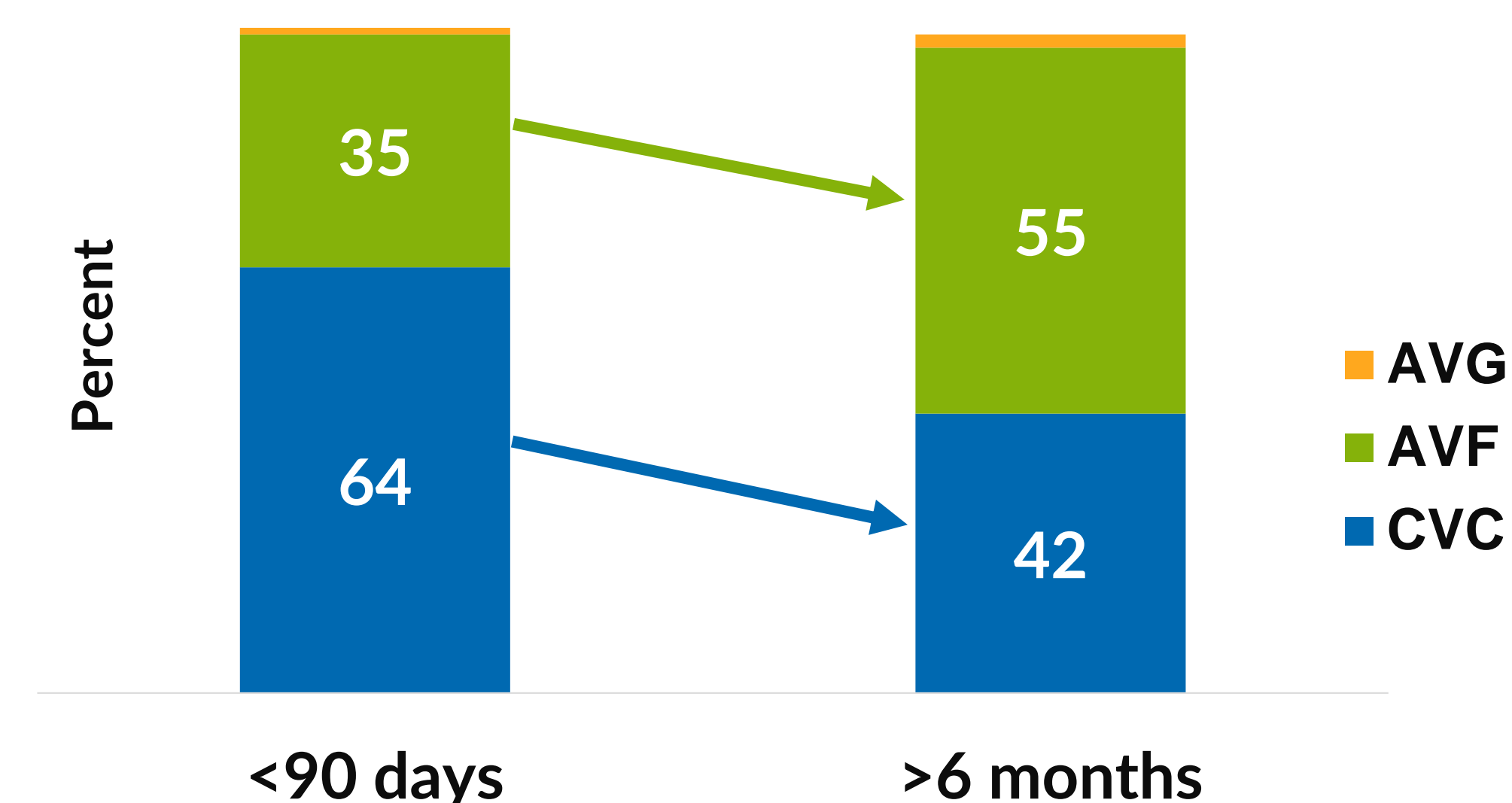
\* t-test and Chi-2 analyses

Improvement in quality of hemodialysis care in incident patients vs the same patients after 6 months

	<90 days n=258	>6 months n=258	P*
Treatment time (min)	678	715	<0.001
Blood flow (mL/min)	294	329	<0.001
Treated blood volume (L/kg)	1.0	1.1	<0.001
Kt/V	1.4	1.5	<0.001
Albumin (g/L)	37.4	40.7	<0.001
Hb (g/dL) all pts	9.8	10.7	<0.001
Hb (g/dL) on ESA	9.8	10.6	<0.001
TSAT (%)	26	30	=0.001
Ferritin (µg/L)	331	458	<0.001
ESA / week	5243	4627	0.092
ERI (U/kg/Hb)	8.2	5.5	=0.05
Phosphorus (mg/dL)	4.8	5.0	0.084
Calcium (mg/dL)	8.5	8.6	<0.05
iPTH (ng/mL)	389	348	=0.005
MAP (mm Hg)	95	95	NS
IDBWG (%)	1.8	1.9	NS
UF volume (mL)	1611	1964	<0.001
CVC (%)	64	42	<0.001
AVF (%)	35	55	<0.001
AVG (%)	1	2	NS

\* paired t-test and McNemars test

Percent CVC, AVF and AVG in incident patients (<90 days) vs the same patients after 6 months (n=258)



Linear and logistic regression including age, gender, Kt/V, albumin, diabetes and CCI showed that improvements in Kt/V at 6 months and a shift from CVC to AVF was associated with female gender, (HR 0.27, CI 0.13-0.34; p<0.001) and (HR 0.48, CI 0.24-0.98; p<0.05) respectively.

## Conclusions

- This large European multicenter analysis of incident hemodialysis patients indicates that the use of
  - medical protocols and
  - medical targets
 resulted in significant improvements in quality of care and a shift from CVC to AVF, which may correspond to better outcomes.

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