Bijlage 3

Tabel 1. Literatuur relatie centrumgrootte-uitkomst dialysebehandeling

Artikel	**Studieopzet**	**Aantal centra**	**Aantal PD patiënten**	**Uitkomst**		
PD				Technique failure	CV mortality/CV events/ intermediate outcomes	Mortality
Schaubel et al 2001	Data CORR (Canadian Organ Replacement Registry) of all PD pts 1981-1997. Mortality and TF. Adjusted for: age, gender, race, primary renal diagnosis, province, follow-up time, type PD. From 1988 comorbid conditions Poisson regression	86	17.900	Significant dose-response relationship % of patients initiating PD and TF (RR 1 ≥ 60% → RR 1.75 ≤ 29%)	No additional effect of cause of death	Significant dose-response relationship number of patients treated and adj. mortality (RR 1 ≤ 99 PD pts → RR 0.71 ≥ 500 PD pts)
Huisman et al 2002	Data RENINE of all PD pts 1994-1999. TF and mortality Adjusted for age, gender, diabetes Cox multiple regression analysis and correlation number of patient on January 1, 2000	43	4.049	Cox multiple regression analysis: 68% increased risk in centers < 20 pts compared with 20 – 32 and > 32 pts (p < 0.0001) Correlation TF and number of patients on PD (r=-0.396, p=0.009) and % patients on PD (r=-0.410, p=0.006)	Not available	Cox multiple regression analysis: no effect of center size on mortality
Guo and Mujais 2003	Data PD registry Baxter USA 1999, 2000, 2001. Follow up until Febr. 2003 Multivariate analysis adjusted for, diabetes, gender, patient origin, PD sub modality Center size < 20 pts vs >20 pts	Not available	30.135 (59-66% APD)	Significant effect center size on TF , < 20 pts vs > 20 pts HR 1,130, p<0,0001	Not available	No effect center size on survival (data not shown)
Mujais and Story 2006	Data PD registry Baxter USA 2000, 2001, 2002, 2003. Follow up until June 2005. Multivariate analysis adjusted for PD sub modality, age, patient type, diabetes, gender	1768	40.869 (56 – 65% APD)	Significant effect center size on TF, HR 0.94 (p<0.0001). Most pronounced in 1st year of therapy. Center size correlated with catheter problems (p<0.0001, inadequate dialysis (p<0.01) and infectious complications (p<0.01)	Not available	Effect center size on mortality univariate only (p<0.005) Stepwise Cox regression → no effect center size on mortality)

Plantinga et al 2009	Data from prospective cohort study in incident PD patients in USA (EQUAL) 1995-1998. Center size derived from questionnaire (cross-sectional 1998). Center size >50 vs ≤ 50 pts (equal patient distribution) and >25 vs ≤25 (equal center distribution). TF, CV events, CV mortality and all-cause mortality Pearson's chi-square, t-tests, Kaplan-Meier, multivariate Cox models Adjustments: demographics, comorbidities, body size, albumin, creatinine , clinic years in operation	26	236	Cumulative incidence of TF 86 – 74% lower in centers >50 pts (p<0.001) ≥25 pts vs <25 pts HR 0.23 (CI 0.12-0.43;p<0.001)	Cumulative incidence of CV event 38-55% lower in centers >50 pts (p=0.007) ≥25 pts vs <25 pts HR 0.55 (CI 0.33-0.99;p=0.023) No significant effect center size on CV mortality	No effect center size on all-cause mortality
Afolalu et al 2009	ERSD Network #1 (NW1) retrospective review incident PD pts 2001-2005. Center size ≤25 pts vs >25 pts. 1st and 2nd years of treatment. TF and mortality Chi-square analysis. No adjustment	105	5.003	Significant higher TF in small centers ≤25 pts. Year 1 OR 1.36 (p=0.005), year 2 OR 1.35 (p=0.03)	Not available	No effect center size on all-cause mortality
Evans et al 2013	Data from RDPLF incident PD pts 2000-2009 follow up until 31-12-2010. Probalistic sensitivity analysis and Monte Carlo simulation of (hypothetical intervention effects	247	9.602	Higher volume centres reduced risk TF (>60 pts vs 0-10 pts adjusted cs-HR 0.46 (CI: 0.43-0.69) sensitivity analysis: higher volume centres → reduced TF. Predicted reduction largest in scenario shifting all patients to the 2 largest centres	sensitivity analysis: higher volume centres → higher Tx (effect of patients staying longer on PD in higher volume centres)	sensitivity analysis: higher volume centres → higher mortality (effect of patients staying longer on PD in higher volume centres)
HD						
Eisenstein et al 2008	Data from USRDS Pts starting in-center HD in free-standing facility between 1-1-1996 1nd 31-12-1999. Follow up until 31-3-2001 Facilities categorized in small (≤ 60 pts) medium (61-120 pts), large (≥ 120 pts). Outcome: survival for 5 yrs. Diabetes and non-diabetes. Kaplan-Meier, Cox	Not Available	186.554	Not available	Not available	Smaller facility size is associated with increasing long-term mortality. This effect is more pronounced in higher-risk diabetic vs lower-risk non0diabetic patients. HR for small facility size are relatively constant with and without adjustment for clinical, other facility and socioeconomic characteristics

	proportional-hazards modelling, adjustment models					
Yan et al 2013	Data from USRDS incident HD patients October 2003-December 2009. Categorization by number of HD stations. Exclusion of hospital-based facilities, Asians and Native Americans Primary outcome: 1-year survival from day 91 of dialysis initiation. Adjustment race and ethnicity, demographic and clinical factors, SES, facility characteristics, Facility ZIP code SES, nephrologist care, vascular access type Non parametric techniques, Cox regression, unadjusted and adjusted. Subgroup analyses, sensitivity analyses	4633	385.074	Not available	No effects of center size on other patient-related events	Significant higher mortality in centers with ≤15 stations. 1-5 HR 1.33 (CI:1.09-1.63), 6-10 HR 1.17 (CI:1.11-1.23), 11-15 HR 1.06 (CI: 1.02-1.10) More pronounced effects in blacks compared to whites even after adjustments.
HD+PD						
Frankenfield etal 2000	Data from HCFA (ESRD Core Indicator data). 31-12-1997 Random samples from HD and PD centers. In-center HD and PD facilities placed into quartiles based on the total number of patients being treated. Outcomes HD: URR, Kt/V, Ht, epo dose, alb. PD: Kt/V, CrClr, Ht, epo dose, BP. Chi-square hierarchical analysis, two-tailed Student's t-test, multivariate regression analysis	HD: 2.409 PD: 706	HD: 7.092 PD: 1.381	Not available	Multivariate regression analysis: HD: no significant effect of center size (modest effect on Kt/V and URR difficult to interpret) PD: no significant effect of center size	Not available

1. Schaubel DE, Blake PG, Fenton SA. Effect of renal center characteristics on mortality and technique failure on peritoneal dialysis. Kidney Int 2001;60:1517-1524
2. Huisman R, Nieuwenhuizen MGM, de Charro FTh. Patient-related and centre-related factors influencing technique survival of peritoneal dialysis in The Netherlands. Nephrol Dial Transplant 2002;17:1655-1660
3. Guo A, Mujais S. Patient and technique survival on peritoneal dialysis in the United States: Evaluation in large incident cohorts. Kidney Int 2003;suppl 88:S3-S12
4. Mujais S, Story K. Peritoneal dialysis in the US: Evaluation of outcomes in contemporary cohorts. Kidney Int 2006;70:S21-S26

5. Plantinga LC, Fink NE, Finkelstein FO, Powe NR, Jaar BG. Association of peritoneal dialysis clinic size with clinical outcomes. Perit Dial Int 2009;29:285-291
6. Afolalu B, Troidle L, Osayimwen O, Bhargava J, Kitsen J, Finkelstein FO. Technique failure and center size in a large cohort of peritoneal dialysis patients in a defined geographic area. Perit Dial Int 2009:29:292-296
7. Evans D, Lobbedez T, Verger C, Flahault. Would increasing centre volumes improve outcomes in peritoneal dialysis? A registry-based cohort and Monte Carlo simulation study. BMJ 0pen 2013;3:e003092
8. Eisenstein EL, Sun JL, Anstrom KJ, Stafford JA, Szczech LA, Muhlbaier LH, Mark DB. Re-evaluating the volume-outcome relationship in hemodialysis patients. Health Policity 2008;88:317-325
9. Yan G, Norris KC, Xin W, Ma JZ, Yu AJ, Greene T, Yu W, Cheung AK. Facility size, race and ethnicity, and mortality for in-center hemodialysis. J Am Soc Nephrol 2013;24:2062-2070
10. Frankenfield DL, Sugarman JR, Presley RJ, Helgerson SD, Rocco MV. Impact of facility size and profit status on intermediate outcomes in chronic dialysis patients. Am J Kidney Dis 2000;36:318-326