APPENDIX A. SEARCH STRATEGY

Database: Ovid MEDLINE(R)

1 hemodialysis, home/ or Peritoneal dialysis/
2 ((hemodial$ or haemodial$ or peritoneal dial$ or HHD or NHHD) adj5 (home$ or in-home or out-center$ or out-centre$ or self-admin$ or self-manag$ or self-care or self-treatment$)).mp
3 renal dialysis.mp. or Renal Dialysis/ or exp Kidneys, Artificial/ or haemodialysis.mp. or hemodialysis.mp.
4 (home$ or in-home or out-center$ or out-centre$ or self-admin$ or self-manag$ or self-care or self-treatment$).mp.
5 3 and 4
6 1 or 2 or 5
7 exp Renal Insufficiency, Chronic/ or exp Kidney Failure, Chronic/ or (end-stage kidney or end-stage renal or endstage kidney or endstage renal).mp. or (ESKD or ESKF or ESRD or ESRF).mp.
8 6 and 7
9 limit 8 to (english language and yr="1995 -Current")
10 limit 9 to "all child (0 to 18 years)"
11 limit 10 to "all adult (19 plus years)"
12 10 not 11
13 9 not 12
14 Randomized controlled trials as topic/
15 Randomized controlled trial/
16 Random allocation/
17 Double blind method/
18 Single blind method/
19 Clinical trial, phase iii.pt.
20 Clinical trial, phase iv.pt.
21 Controlled clinical trial.pt.
22 Randomized controlled trial.pt.
23 ((singl$ or doubl$ or treb$ or trip$) adj (blind$3 or mask$3)).mp.
24 Random$ allocat$.mp.
25 (allocat$ adj2 random$).mp.
26 or/14-25
27 Meta analysis/
28 Meta analys$.mp.
29 (systematic adj (review or overview)).mp.
30 meta analysis.pt.
31 or/27-30
32 exp cohort studies/ or (cohort adj (study or studies)).tw. or Cohort analy$.tw. or (Follow up adj (study or studies)).tw. or (observational adj (study or studies)).tw. or Longitudinal.tw. or comparative study/ or follow-up studies/ or prospective studies/ or cohort.mp. or compared.mp. or multivariate.mp. or Case-Control Studies/ or (case control or case-control).mp.
33 13 and 26 [RCTs/CCTs]
34 13 and 31 [SRs/MAs]
35 13 and 32 [cohort/case-control]
36 35 not (33 or 34) [cohort/case-control not already in lists for RCTs/CCTs/SRs/MAs]

APPENDIX B. PEER REVIEW COMMENTS/AUTHOR RESPONSES

REVIEWER COMMENT	RESPONSE
1. Are the objectives, scope, and methods for this review clearly described?	
Yes	
Yes	
Yes	
2. Is there any indication of bias in our synthesis of the evidence?	
No	
No	
Yes: Because home hemodialysis is not used frequently in the US, many studies have less than 100 subjects; the arbitrary cut off to discount articles with fewer than 100 subjects may lead to bias against home hemodialysis.	Our decision to exclude studies with fewer than 100 subjects was reviewed and approved by our stakeholders and TEP members. We included RCTs regardless of the number of subjects. Small observational studies are not likely to be informative and controlling for confounding variables is difficult.
3. Are there any published or unpublished studies that we may have overlooked?	
Yes: There are other studies that have evaluated risk factors for technique failure (or technique survival) in PD that are not included; some of these looked at technique failure as a secondary outcome where the primary outcome was mortality and may have been missed if a more detailed review of the articles on risk factors for survival in PD (that did not compare modalities) were not evaluated. The factors assessed in this report appear to be mainly demographics and comorbidity and do not involve dialysis related factors such as infection, transport characteristics, ultrafiltration failure. There are reports using the CANUSA study, those by Davies et al that look at these factors.	We have added additional studies identified in our literature search that reported risk factors for survival in PD only. Regarding the factors assessed in the report, our protocol, approved by stakeholders and TEP members, specified that we would look at health system organizational factors, provider knowledge, and patient factors associated with technique selection and technique success (or failure). Therefore, dialysis factors were outside the scope of the review.
No	
Yes: Please see the review below. Articles on home hemodialysis comparison to transplant mortality were not included (Pauly, Nephrol Dial Transplant. 2009 Sep;24(9):2915-9.) as well as smaller articles on caregiver burden and new articles that have been published more recently.	Our Key Questions focused on comparisons of home-based dialysis with other dialysis locations so transplantation was outside the scope of the review. We have updated the literature search (to December 2014). Please see above response regarding small studies.
4. Please write any additional suggestions or comments below. If applicable, please indicate the page and line numbers from the draft report.	
1. It is commented in the review that a greater proportion of individuals on home therapy transfer to in-center HD. What is missing is information on the reason individuals transfer. This could provide more information on factors such as care giver burden.	1. We reviewed the studies reporting greater proportions with change from HHD to HD. None reported reasons for transfer.

2. While registry data shows that PD patients tend to be younger on average. It misses the fact that there is a smaller but significant population of PD patients who are older and who receive PD care with the help of a care giver. This may be more relevant to the VA population. One article that might be relevant with this regards is an analysis by Lobbedez et CJASN 2012 using the French Language Peritoneal Dialysis Registry, where a large proportion of patients received PD with help, most was with family help though they also have a nurse program. For the VA, what might be helpful is if home dialysis support was covered by aid and attendance (if PD or home HD were the option the patient wanted). 3. It seems odd in the analysis of factors associated with technique failure that dialysis related factors were not assessed- e.g. infection, access failure, ultrafiltration failure etc. 4. Small point- there appears to be an error on page 40, Lacson paper it was not home based HD, it was home based dialysis, which was predominantly PD.	2. We have added the Lobbedez reference and an additional reference (Smyth 2012) identified in our search that reported on assisted vs independent PD. 3. Please see above response regarding factors associated with technique failure. 4. We have clarified that the home-based dialysis in this study was predominantly PD.
This is a scholarly and highly informative systematic review of the comparative effectiveness of in-center versus home dialysis modalities, and the factors that portend the relative success or failure of their adoption. The concise analysis of the quality of the available literature and recommendations for future research are highly instructive. Particularly intriguing are the findings of the association of age, race, gender, and comorbidities with differential success of home RRT adoption, technique survival, and clinical and economic outcomes. The following questions are offered from the specific to the more speculative: 1. Please clarify what appears to be a contradictory statement on page 8: "Decreased use of HHD or PD was found in more rural facilities… or in high population density zip code areas,… " Is there a bimodal association of home RRT with domiciliary regional density? 2. Did any studies examine patient satisfaction as an outcome measure per se or is this another knowledge gap to consider in a research agenda for the VA? 3. Does the literature specifically report on patient- reported barriers to adoption of home RRT? (ie in contrast to Provider-perceived patient barriers to greater home RRT 4. For all forms of home RRT – is there any Interaction between likelihood of adoption or technique survival of home RRT based on the following patient characteristics: a. eGFR at RRT start? b. Geography of Patient Domicile(rural, ..) c. Type of patient domicile (SNF versus private home versus other) d. Existence/severity of mental health disorders at RRT initiation e. Existence of communicable comorbidities (HIV, HCV)	Thank you. 1. The study authors do not provide an explanation. However, the findings may not be contradictory. It is likely that facilities in more rural locations do not have resources to support PD while facilities in high population density locations likely have higher percentages of African American patients. The registry studies from the US (Lukowsky 2013, Lievense 2012, Mehrotra 2011, etc.) have shown that PD patients are more likely white. There may also be unmeasured confounding factors, such as socioeconomic status. 2. One US non-randomized study with 226 patients (Kutner 2000, Table 3) measured satisfaction with care (a scale from the KDQOL instrument). We also summarized results from a systematic review of 39 studies of experiences, beliefs, and attitudes about PD (Tong 2013). Nine studies were from the US. There does appear to be a knowledge gap around patient satisfaction, particularly for HHD, and we have added this to the "Research Gaps" section. 3. Three studies (from Europe, the UK, and Canada)

f. Type of home RRT technology employed (CAPD v APD ; Nxstage vs conventional HD equipment) g. For PD: Characteristics of PD transport capacity (eg high vs low transporter) h. For HHD: low SBP; type of vascular access, 5. What are the health system factors that associate with home RRT adoption and technique survival? a. Quantity of pre-dialysis specialty care? Quantity of Predialysis primary care? b. Use of caregiver/patient economic incentive or economic burden relief? c. Dedicated transition-to-ESRD team? (ie standardized process/criteria for initiation) d. Provision of comprehensive care in home (ie all care is home based not just RRT)? e. Use of telehealth as healthcare support system ? f. Use of Specialty care staff to provide RRT in home vs Primary care oversight of RRT? g. Dedicated Home dialysis training centers? h. Availability of in-center RRT respite centers? i. Modality of patient education re home RRT? [electronic (video, internet) vs written material,; group education vs 1:1 in-person training] j. Supply side drivers (ie available capacity for delivery of in-center RRT) k. Any unique features offered by non-US national healthcare systems that associate with home RRT? 6. Can table 1.p 20 , table 2 p27, table 5 p 44, and table 3 p84 be amended to include a column for studies reporting effects by health system characteristics and/or mental health disorders on technique failure and mortality associated w in-center HD vs home RRT modalities? 7. Can a table be created that summarizes the literature reporting on patient, provider, and health system factors that impact home RRT uptake (in contrast to technique survival)? 8. Based on the literature review, Can a preferred population for home RRT be defined? (Eg age < 65, married, absence of CVD, preferred vasc access (for home HD), 9. Based on findings, what resources need to be brought to bear to enable expanded RRT capacity for Veterans through greater uptake/survival of home RRT ? a. Education: Patient Education tools? Staff training tools? b. Economic incentives : To patients? To providers? c. Health system infrastructure: home RRT centers, enhanced home telecommunication d. Health system redesign: Staffed home RRT delivery? (would require training program for family caregivers ,or community nurses, or expanded dialysis specialty staff pool) 10. Based on literature review, how might VA better serve as a data repository to enhance understanding of relative merit of in-center vs home RRT (eg VA as large	included patient-reported barriers to PD (Keating 2014, Chanouzas 2012, Maaroufi 2013) and two studies from Canada included patient-reported barriers to HHD (Zhang 2010, Cafazzo 2009). 4. We have added bullet points in the executive summary and full report to highlight the patient, facility, and provider factors associated with home-based dialysis selection and technique survival that we identified in our literature search. 5. See #4 6. The requested information is not available. 7. See #4 8. The preferred population would be those who have the longest technique survival. However, due to likely selection bias in the reported studies, it is not possible to conclude who is best suited. 9. This is a complex question with little evidence to support decision making. The available evidence is from observational studies. It appears that increased uptake is associated with comprehensive pre-dialysis education, facilities with a larger volume of patients (suggesting perhaps one program per network), and caregiver support. There is no evidence that telehealth capability increases uptake but there may be parallels with caregiver support. 10. A VA dialysis cohort could address a number of deficiencies in the existing data. A survey of all patients starting dialysis could provide information about factors influencing modality selection. Patients could then be surveyed periodically to assess quality of life and caregiver burden, comparing home-based and in-center modalities. Other outcomes of interest could also be captured.

national RRT registry,-what missing data would be particularly useful to capture?)	
Title: VAESP-D-15-00001 General Comments: This is a systematic review of the literature comparing home dialysis modalities to in-center dialysis regarding benefits and harms. The authors evaluated randomized controlled trials, and observational studies with at least 100 subjects. The review is extensive, but the review suffers from several concerns listed below. Major Concerns: 1. The authors limited inclusion of studies that were greater than 100 subjects. The authors should consider studies with 50+ patients at least for home hemodialysis (HHD), since most HHD programs in the United States (US) have been small prior to 2006. 2. There are several newer references that have been published recently regarding nocturnal dialysis outcomes from the Frequent Hemodialysis network that compare nocturnal dialysis to in-center dialysis and more frequent dialysis at home. In particular, there is an article on caregiver burden and nocturnal HHD that the authors may want to include (Clin J Am Soc Nephrol. 2014 May;9(5):936-42). 3. The authors state that most evidence from registry is of high potential for bias and of low quality. There has never been a large randomized trial of home dialysis versus in-center dialysis. Given that there is potential for bias due to patient characteristics, observational studies that attempt to adjust for potential bias by adjustment or study design (case-control), may give useful information, although not as high quality as a randomized controlled trial. 4. The authors do not include information regarding mortality comparing home dialysis to transplantation, which is another outcome that should be considered, given the potential bias of patient selection for in-center vs. home hemodialysis or PD (Pauly et al, Nephrol Dial Transplant. 2009 Sep;24(9):2915-9.). 5. The authors state in the executive summary that “However, the applicability of these findings to the Veteran population may be limited. HHD and PD patients typically were younger and with fewer comorbidities than likely seen in Veterans”, which seems to be an overstatement given the paucity of the data. Other countries, such as Australia/New Zealand and Canada have elderly patients with comorbid conditions preferentially on home dialysis therapies. This seems that it may be a bias of the authors against home dialysis modalities! 6. Catheter related infections and home dialysis. New data has emerged regarding risks from observational studies (Hemodial Int. 2015 Feb 3. doi: 10.1111/hdi.12245. [Epub ahead of print). 7. The sections of the review should have bullet points at the end that summarize the findings. The executive review has no references at all. References could be enumerated and included.	1. See response above regarding sample size of included studies. 2. We did not include results from the FHN nocturnal trial because the 6 times/wk and 3 times/wk groups were both largely treated at home. The caregiver paper cited (Suri 2014) provides only an indirect comparison of home vs in-center HD caregiver burden but has been included in the Discussion section of the review. 3. We agree that a large randomized trial of HHD vs HD is not likely. We report the results from the observational/registry studies including the adjusted outcomes. 4. See response above regarding the comparison of HHD to transplantation. 5. We have modified the Applicability section. 6. We have added this study (Xue 2015). 7. We have attempted to improve the readability of the review. We typically do not include references in the Executive Summary. 8. We have added this reference (Marshall 2014) along with others identified in our updated literature search. 9. We reviewed our reporting of the RCTs to confirm that length of follow-up was presented. 10. As noted above, we have attempted to improve the readability of the review.

8. Recent findings evaluate mortality between HHD and PD patients that the authors should consider (PLoS One. 2014 May 7;9(5):e96847. doi: 10.1371/journal.pone.0096847. eCollection 2014.). 9. Many of the randomized trials were short term (6-12 months), thus is no long-term follow up of RCTs, which should be stated where appropriate. 10. The entire review is too long. The authors should try to shorten and place more information in tables for comparison.	

APPENDIX C. EVIDENCE TABLES

Table 1. REGISTRY STUDIES - Study Characteristics and Survival, Technique Failure, and Transplantation Outcomes for Key Questions 1 and 2

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
United States Renal Data System (USRDS)/Centers for Medicare and Medicaid Services (CMS)						
Weinhandl 2015[20] HD, HHD (NxStage System One users) Assess hospitalization risk in patients treated with HHD vs HD	2006-2010 USA (NxStage and USRDS) Likely overlap with Weinhandl 2012	N=3480 incident HHD patients (new to NxSTAGE) N=17,400 matched prevalent HD patients HHD: 5 or 6 sessions/week, Medicare as primary payer HD: 3 sessions/week	Age (yrs): 54 Gender (% male): 66 Race (%) black (27), nonblack (73)	Age, race, gender, primary cause of ESRD, ESRD duration, dual Medicare/Medicaid enrollment, comorbid conditions, BMI, catheter insertion (past 3 months), hospitalization (past 3 months), transplant wait list, affiliation of dialysis provider, exposure to epoetin, iron, vit D (for matching) Poisson regression ITT	Max of 5 years	-Hospital admissions (HHD vs HD), RR All cause: 1.03 (0.99, 1.08) Cardiovascular: 0.83 (0.78, 0.88) Infection: 1.32 (1.24, 1.40) Vascular access dysfunction: 1.01 (0.90, 1.13)
Lukowsky 2013[26] PD, HD Examine survival differences over 1st 24 months accounting for modality changes, transplantation rates and laboratory measures	2001-2004 USA (USRDS and DaVita)	N=23,718 incident patients Included if no missing data on dialysis modalities and key predictors	Age (yrs): 63* Gender (% male): 54 Race (%): white (44), black (29), Hispanic (17), Asian (3)* *PD patients younger, more likely white or Asian, less likely black or Hispanic	Age, gender, race, diabetes, marital status, employment, comorbidities, laboratory variables Marginal structural model (MSM); Kaplan-Meier survival; Cox proportional hazards ITT (modality at day 90)	Max of 2 years	-Mortality (PD vs HD); Cox 12 months: 0.62 (0.51, 0.75) 24 months: 0.81 (0.72, 0.92) -Mortality (PD vs HD); MSM 12 months: 0.59 (0.44, 0.78) 24 months: 0.52 (0.34, 0.80) -Switched modality: HD to PD: 6%, PD to HD: 57% -Transplant rates (during 1st 2 years of dialysis): 6% HD, 18% PD

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Lievense 2012[27] PD, HD Interrelation-ship between body size and initial dialysis modality on transplantation, mortality, and weight gain	2001-2006 USA (USRDS and DaVita)	N=4,008 propensity-matched pairs (incident PD and HD patients) Age ≥18, no prior renal transplant, BMI 12-61; excluded if no data on age, dialysis modality at day 90, or variables needed for propensity matching	Age (yrs): 58 Gender (%male): 54 Race (%): Caucasian (55), black (21), Hispanic (14) HD patients more likely to be black	3 models: 1. minimally adjusted (modality and entry calendar quarter) 2. case-mix adjusted (#1 plus age, gender, race, ethnicity, comorbid conditions, smoking, insurance, marital status) 3. case-mix and laboratory (#2 and laboratory variables) ITT	Max of 6 years	-Mortality (PD vs HD) Model 3: HR 0.88 (0.81, 0.95) -Renal Transplant (PD vs HD) Model 3: HR 1.48 (1.29, 1.70); similar findings across strata of BMI
Weinhandl 2012[8] HD, HHD (NxStage System One users) Assess relative mortality of daily HHD and thrice-weekly HD using data from patients matched on 1st date of follow-up, demographics, and measures of disease severity	2005-2008 USA (USRDS and NxStage registry)	N=1873 incident HHD patients (new to NxSTAGE) N=9365 matched prevalent HD patients HHD: linked to USRDS, 5 or 6 prescribed sessions/week, Medicare primary payer status during 3 months before NxStage use or starting RRT during 6 months before NxStage use HD: 3 times/week	Age (yrs): 53 Gender (% male): 63 Race (%): black (28), other (72)	Age, gender, race, diabetes, hospital days, BMI, ESRD duration, other comorbidities (for matching) Matched 1 HHD patient with 5 HD patients Cox proportional hazards ITT (modality on index date of HHD patient; followed to earlier of death or end of study)	Max of 4 years	-Mortality (HHD vs HD); Cox (unadjusted), ITT Overall: 0.87 (0.78, 0.97) 1-6 months: 0.88 (0.78, 0.98) 25+ months: 0.92 (0.66, 1.28) -Cardiovascular mortality (HHD vs HD); Cox (unadjusted), ITT 0.92 (0.78, 1.09) -Change in dialytic modality HHD: 26% (97% to HD, 3% to PD) HD: 3% HR 10.4 (8.9, 12.3) -Transplant HHD: 10.2% HD: 10.8% HR 1.06 (0.89, 1.25)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Weinhandl 2010[29] PD, HD Compare survival of HD and PD patients in a matched-pair cohort and subsets defined by age, CVD, and DM	2003 USA	N=12,674 incident patients (matched pairs, 6337 PD, 6337 HD) ≥ 18 years; began HD or PD immediately, no missing data for age, gender, race, or ethnicity	Age (yrs): 59* Gender (% male): 54* Race (%): white (70), African American (22), Asian (1)* *Matched pairs	Age, gender, race, ethnicity, primary ESRD cause, laboratory variables, GFR, comorbid conditions Propensity scores to match HD patients to PD patients Kaplan-Meier survival estimates Cox proportional hazards ITT (modality at initiation or at day 90)	Max of 4 years	-Mortality (PD vs HD), HR – All years ITT from day 0: 0.92 (0.86, 1.00) ITT from day 90: 1.05 (0.96, 1.16) -Mortality (PD vs HD), HR – Year 1 ITT from day 0: 0.70 (0.62, 0.78) ITT from day 90: 0.90 (0.76, 1.06) -Mortality (PD vs HD), HR – Year 2 ITT from day 0: 1.10 (0.95, 1.29) ITT from day 90: 1.19 (1.02, 1.38)
Mehrotra 2011[28] PD, HD Test hypothesis that initial dialysis modality has no effect on life expectancy of patients with ESRD using marginal structural models	1996-2004 USA	N=64,406 incident PD patients N=620,020 incident HD patients Modality on day 90 was HD, CAPD, or APD	Age (yrs): 18-44 (15%), 45-64 (37%), 65+ (49%)* Gender (% male): 53 Race (%): white (63), black (30), Asian (4)* *PD patients younger, more likely white	Age, gender, race, current employment status, facility characteristics, cause of ESRD, comorbid conditions, eGFR, BMI, laboratory variables Nonproportional hazards models using a piecewise exponential survival model MSM with inverse probability of treatment and censoring weighting ITT (modality on day 90)	Max of 5 years (median follow-ups of 25-30 months for different cohorts)	Mortality (PD vs HD), HR, MSM 2002-2004 cohort: 1.03 (0.99, 1.06)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
MacRae 2010[9] PD (delivered in residential setting), In-center HD (staff-assisted or self-care), HHD (out-of-center HD delivered in home or long-term care facility) Use and outcome of HHD	1995-2004 USA	N=458,329 incident patients Age ≥18 years, primary insurer was Medicare of Medicaid, stable on single dialysis modality for at least 60 days; excluded if kidney transplant was initial treatment modality or if modality could not be determined	Age (yrs): 18-44 (12%), 45-59 (20%), 60-74 (40%), 75+ (28%)* Gender (% male): 52 Race (%): white (64), black (30), Asian (3), Native American (1)* *HHD and PD patients younger than HD, HHD more likely non-white than HD, PD more likely white than HD	Age, gender, race, cause of ESRD, diabetes, history of CVD, self-reported functional status, dialysis era, median income, employment status Kaplan-Meier (univariate) Cox regression (multivariate) Propensity score matching (secondary sensitivity analysis) ITT	Max of 9 years 3 months, minimum of 2 months	-Mortality, multivariate HRs* HHD vs HD: 1.10 (1.04, 1.17) HHD vs PD: 1.04 (0.98, 1.11) -Propensity score matching HHD& HD: No association between modality and improved survival (HR not reported) HHD&PD: 1.11 (1.03, 1.19) (HHD vs PD) *Results did not differ among patients more likely to reside at home (<50 years, able to ambulate and transfer independently, no diabetes or CVD) or more likely to reside in long-term care facility (>60, unable to ambulate or transfer independently, diabetes and/or CVD)
Abbott 2004[31] PD, HD Determine whether association between obesity and survival differed for HD vs PD patients and whether obese patients had differing survival with one modality vs another	1996 USA (USRDS Dialysis Morbidity and Mortality Wave II [DMMS])	N=3337 (1662 PD, 1675 HD) incident patients (all eligible patients initiating PD and a 20% random sample of patients initiating HD) Survived more than 90 days on dialysis	Age (yrs): 59* Gender (% male): 53 Race (%): African-American (28)* *PD patients younger, less likely African-American	BMI, age, race, gender, diabetes as cause of renal failure, comorbid conditions, ability to walk independently, laboratory variables, malnutrition, renal transplantation, use of aspirin, ACE inhibitors, beta-blockers, calcium channel blockers, and HMG-CoA reductase inhibitors Cox proportional hazards ITT	Max of 5 years	-Mortality (unadjusted): PD: 989/1662 (60%) HD: 1100/1675 (66%); P = .0003 -PD a significant modifier of effect of obesity on survival: Adj HR 1.41 (1.06, 1.88) -Change in dialytic modality (at least once) PD: 46% HD: 4%

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Vonesh 2004[32] PD, HD Identify key patient characteristics for which risk of death differs by dialysis modality and adjust mortality comparisons between HD and PD by stratifying on those factors	1995-2000 USA	N=398,940 incident patients (2 cohorts, 1995-1998 N=185,704 and 1998-2000 N=213,236) Incident patients surviving 1st 90 days	Age (yrs): 18-44 (14%), 45-64 (35%), 65+ (51%)* Gender (% male): 54 Race (%): white (54), black (30), other (15%)* *PD patients younger, more likely white	Cohort period, age, gender, race, cause of ESRD, comorbid conditions, BMI, GFR, laboratory variables Interval Poisson regression (proportional and non-proportional hazards models) ITT (modality at initial treatment [≥60 days prior to and including day 90])	Max of 3 years	-Mortality (HD vs PD), RR, ITT No Comorbid Conditions, Non-Diabetes Cause Age 18-44: 1.24 (1.07, 1.44) Age 45-65: 1.13 (1.02, 1.25) Age ≥65: 1.13 (1.05, 1.21) One or More Comorbid Conditions, Diabetes as Cause Age 18-44: 1.10 (0.92, 1.32) Age 45-65: 0.82 (0.77, 0.87) Age ≥65: 0.80 (0.76, 0.85) -Over Follow-up Time: risk of death initially higher for HD then either reaches level of PD (for non-DM patients and younger DM patients) or becomes lower than PD (older DM patients)
Stack 2003[33] (see Table 3 - Stack 2004[54] for BMI data and Ganesh 2003[55] for CAD data) PD, HD Explore hypothesis that patients new to ESRD with history of CHF experience greater survival with PD compared to HD	1995-1997 USA	N=107,922 incident patients ≥ 18 years; excluded if renal transplant within 1st 90 days; modality at 90 days could not be determined, missing data (demographic, comorbidity, laboratory) of interest	Age (yrs): 62* Gender (% male): 53* Race (%): white (63), black (31), Asian (4)* *PD patients younger, more likely white or Asian, less likely black, more likely male	Age, gender, race, diabetes as cause of ESRD, comorbid conditions, BMI, laboratory variables, eGFR Cox regression ITT (modality at initiation) AT (censored from contributing additional time at risk when switched modalities)	Max of 2 years (median 12 months)	-Mortality (PD vs HD), RR, ITT 0-6 months: 0.92 (0.87, 0.98) 0-24 months: 1.11 (1.07, 1.16) -Mortality, RR, AT *With CHF, Diabetes* Stay on HD: 1.00 (reference) Stay on PD: 1.29; P < .001 Switch to HD: 1.50; P < .001 Switch to PD: 1.72; P < .001 *No CHF, No Diabetes* Stay on HD: 1.00 Stay on PD: 0.90; P < .01 Switch to HD: 1.46; P < .001 Switch to PD: 1.28; P < .001

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Collins 2002[30] PD, HD Survival in elderly patients accounting for comorbidity before dialysis	1995-1997 USA	N=70,208 incident patients ≥ 67 years, able to ascertain a stable dialysis modality (>60 days), able to classify gender, race, renal network of residence, primary cause of renal failure	Age (yrs): 75* Gender (% male): 51* Race (%): white 72,* black 24, other 4 *PD patients younger, more likely male, more likely white	Age, gender, race, geographic location, Charlson comorbidity index, baseline GFR, prior hospital days, incidence year, primary cause of renal failure Interval Poisson regression ITT (censored at switch to different modality)	Up to 4 years	-In an elderly population, PD appears to be associated with a higher risk of death than HD in both diabetics and non-diabetics
Xue 2002[34] PD, HD Determine association of clinical characteristics at initiation of PD and HD with 1-year mortality	1995-1997 USA	N=112,077 incident patients Alive on day 91 after enrollment	Age (yrs): NR Gender (% male): 53 Race (%): white (66), black (34)	Model 1: Age, gender, race, incidence year Model 2: Model 1 plus BMI, laboratory data Cox proportional hazards ITT (modality on day 91)	1 year	-Mortality (PD vs HD), HR *Diabetics* Model 1: 1.05 (0.99, 1.11) Model 2: 1.13 (1.07, 1.20) *Non-diabetics* Model 1: 0.77 (0.72, 0.81) Model 2: 0.88 (0.83, 0.94)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Collins 1999[35] PD, HD Assess differential death rate patterns of PD and HD over time	1991-1994 USA	N=117,158 incident patients Medicare eligible, survived at least 90 days	Age (yrs): NR Gender (% male): NR Race (%): NR Females < 55 years of any race more likely on HD; white and black males 55+ more likely on HD	Age, gender, race, modality, and interactions Poisson regression Cox regression ITT (modality at day 90)	Max of 3 years, 6 months	-Mortality (PD vs HD), RR (values not reported) *Diabetes:* PD mortality risk lower at 3 months follow-up, significantly higher at 12 months follow-up and remains higher through 24 months (but not significant at every 3 month time interval) *No Diabetes:* PD mortality risk lower than HD through 9 months follow-up; no significant difference from 12 to 24 months -Cardiovascular mortality (PD vs HD); age 55 and older only *Diabetes:* males and females had reduced risk of cardiac death (RR 0.90 for both) relative to males age 55+ receiving in-center HD *No Diabetes:* males and females had reduced risk of cardiac death (RR 0.70 for both) relative to males age 55+ receiving in-center HD
Woods 1996[10] HD, HHD (in training on day 30 after onset of ESRD to exclude those likely receiving dialysis from a nurse visiting the home) Relative risk of survival with HHD adjusting for patient characteristics and comorbid conditions	1986-1987 USA	N=3172 incident patients (USRDS Special Study of Case Mix Severity Standard Analysis File) Age 18-90 years, Medicare-entitled for dialysis within ≤90 days of ESRD; excluded PD, Asian or unknown race, history of cardiac arrest, neoplasm with metastases, hepatic cirrhosis, or clinically undernourished	Age (yrs): 58* Gender (% male): 51 Race (%): white (59), black, Native American/Alaska Native (41) *HHD patients younger	Age, gender, diabetes, comorbid conditions Cox proportional hazards ITT (modality at day 30)	Max of 4.1 years	-Mortality (HHD vs HD), adj RR (age, gender, diabetes): 0.56 (0.34, 0.92); P = .02 -Additional adj for comorbid conditions: 0.58 (0.35, 0.95); P = .03

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Bloembergen 1995[36] PD (CAPD/ CCPD) HD Compare mortality adjusting for demographic characteristics	1987, 1988, 1989 (3 cohorts) USA (Note: some patients contributed to >1 cohort)	170,700 PY with prevalent patients CAPD/CCPD or in-center HD; started ESRD therapy >3 months before start of cohort year; no change in modality during 60 days before cohort year	Age (yrs): 60* Gender (% male): 50 Race (%): white (60), black (36),* other (4) *PD patients younger, less likely black	Age, gender, race, cause of ESRD, duration of ESRD therapy (<1 year or >1 year) Poisson regression ITT (switches in dialysis modality during 1 year follow-up were not considered)	12 months (each cohort)	-All cause death rate (PD compared to HD): RR 1.19 (P < .001) -RR accentuated if female, diabetic, or on therapy for ESRD for > 1 year
Patient Statistical Profile System (PSP) from National Medical Care, Inc (NMC)						
Lowrie 1995[37] PD (CAPD/ APD), HD Explore relationship between survival and processes of care among PD patients vs HD	Receiving dialysis on 1/1/1992 or starting dialysis during 1992 USA	N=17,926 prevalent and incident patients 3 times weekly HD, CAPD, or APD (single therapy), intermittent PD excluded; complete clinical and laboratory data	Age (yrs): 58* Gender (% male): 51 Race (%): white (50), black (40), Asian (2)* *PD patients younger and more likely to be white	Age, gender, diagnosis, race, laboratory factors Cox proportional hazards ITT (modality at entry into study)	Max of 1 year	Risk of death (PD vs HD) RR 1.32 (P = .005)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Australia and New Zealand Dialysis and Transplant Registry (ANZDATA)						
Marshall 2014[11] PD, HD, HHD Compare survival between home dialysis and facility HD	1997-2011 New Zealand (Note: some patients were classified in multiple modality categories)	N=6,419 incident patients Age ≥ 18	Age (yrs): 59* Gender (% male): 59 Race (%): NZ European (46), NZ Maori (32), Asian (6), Pacific (17) *PD patients older, less likely male and more likely NZ European and less likely Pacific than facility HD patients HHD patients younger, more likely male, and more likely NZ European and less likely Pacific than facility HD patients	Age, gender, ethnicity, primary kidney disease, eGFR, late referral for nephrology pre-dialysis care (<3 months), DM, BMI, comorbid conditions, smoking, year of dialysis inception Cox proportional hazards AT (modality received)	Max of 15 years	-Mortality (PD vs HD) HR 0.98 (0.90, 1.06) Follow-up < 3 years: HR 0.80 (0.72, 0.88) Follow-up > 3 years: HR 1.33 (1.17, 1.50) -Mortality (HHD vs HD) HR 0.48 (0.41, 0.56) Follow-up < 3 years: HR 0.41 (0.32, 0.53) Follow-up > 3 years: HR 0.57 (0.46, 0.70)
Marshall 2011[12] PD, HD, HHD, Freq/ext HD, Freq/ext HHD Compare survival with medical comorbidity as source of selection bias and intermediary variable	1996-2007 Australia or New Zealand (Note: some patients were classified in multiple modality categories)	N=26,016 incident patients (856,007 patient months of follow-up) Age ≥ 18	Age (yrs): 60* Gender (% male): 59* Ethnicity (%): white/other (75),* Aboriginal/Torres islander (7), Asian (4), NZ Maori/Pacific (11) *Home HD patients more likely younger, male, white/other	Age, gender, ethnicity, primary kidney disease, eGFR at dialysis inception, late referral for nephrology pre-dialysis care (<3 months), DM, BMI, comorbid conditions, country/state at inception, year of treatment Marginal structural modeling AT	Max of 11 years and 9 months	-Mortality, HR HHD vs HD Overall: 0.51 (0.44, 0.59) 12 months: 0.37 (0.24, 0.56) 24 months: 0.49 (0.39, 0.62) -Mortality, HR PD vs HD Overall: 1.10 (1.06, 1.16) 12 months: 0.80 (0.73, 0.87) 24 months: 0.93 (0.88, 1.00) -Cardiovascular cause of death (%) HHD: 65% HD: 47% PD: 54% -Overall Mortality, HR vs conventional HD Freq/Ext HD: 1.16 [0.94, 1.44] Freq/Ext HHD: 0.53 [0.41, 0.68]

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
McDonald 2009[38] PD (CAPD, APD), HD (including hospital, satellite, and home-based) Relationship between dialysis modality and mortality	1991-2005 Australia or New Zealand	N=25,287 incident patients All patients commencing dialysis and surviving ≥90 days	Age (yrs): 60 (median)* Gender (% male): 58* Race (%): Aboriginal and Torres Strait Islander (ATSI) 7, Maori/Pacific Islander (MPI) 10%* *PD patients older, less likely male, less likely ATSI, more likely MPI	BMI, age, gender, race, comorbidities, late referral, country of initial treatment, vintage Cox regression Propensity score matched cohort Shared frailty Cox model for unmeasured variation between centers ITT (treatment modality at 90 days)	3 months to 14 years and 3 months	-Mortality, multivariate Cox, HR, PD vs HD 1st year: 0.80 (0.81, 0.96) ≥1 year: 1.32 (1.26, 1.38) -Mortality, propensity Score, HR, PD vs HD 1st year: 0.99 (0.89, 1.10) ≥1 year: 1.35 (1.27, 1.42) -HR (relative to Start on HD, Stay on HD) 1st year, Start on PD, Stay on PD: 0.87 (0.78, 0.97) 1st year, Start on PD, Switch to HD: 1.36 (1.04, 1.78) 1st year, Start on HD, Switch to PD: 1.09 (0.97, 1.23) ≥1 year, Start on PD, Stay on PD: 1.28 (1.22, 1.31) ≥1 year, Start on PD, Switch to HD: 1.13 (0.95, 1.34) ≥1 year, Start on HD, Switch to PD: 1.34 (1.26, 1.43)
Canadian Organ Replacement Register (CORR)						
Yeates 2012[39] PD, HD Compare survival outcomes hypothesizing worsening of PD survival during the study period	1991-2004 Canada	N=46,839 incident patients Age 18 or older, no pre-emptive renal transplant or extra-renal transplant	Age (yrs): 18-34 years: 7% 35-64 years: 43%* 65+ years: 50%* Gender (% male): 58* Race (%): Caucasian: 75, Aboriginal: 5, Asian: 5, Black: 3, Other 12 *PD higher % in 35-64 year range; HD higher % in 65+ range	Case-mix differences, region, age, gender, race, cause of primary renal disease, diabetes, co-morbidity (Charlson) Proportional hazards and non-proportional hazards models; piecewise exponential survival AT (reclassified every time modality was switched) ITT (modality at 90 days)	Max of 17 years	-Mortality, adj HR (PD vs HD), ITT Overall (1991-2004): 1.08 (1.04, 1.11) 2001-2004 cohort: 0.99 (0.92, 1.06)* -Early survival advantage for PD patients (through 2 years); in 2000-2004 cohort - no difference between HD and PD after 2 years -Technique survival to 60 months: PD group separates from HD group (lower technique survival for PD group) at 10 months *Adj HR significant for 1991-1995 and 1996-2000 cohorts

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Schaubel 1998[40] PD (CAPD/ CCPD), HD Compare adjusted mortality rates	1990-1995 Canada	N=14,483 incident patients Initiated treatment 1/1990-12/1995 with data available on pre-dialysis comorbid conditions	Age (yrs): NR Gender (% male): NR Race (%): NR	Age, follow-up time, primary renal diagnosis, pre-dialysis comorbid conditions ITT (modality at 90 days) analyzed with Cox regression	0 to 6 years	-Mortality rate ratio (PD vs HD): 0.93 (0.87, 0.99) -Reduction in mortality associated with PD diminished with longer follow-up; reduction was non-significant at ≥24 months follow-up
Fenton 1997[41] PD (CAPD/ CCPD), HD Compare mortality controlling for age, primary renal diagnosis, center size, and comorbid conditions	1990-1994 Canada	N=10,633 incident patients Initiated treatment 1/1990-12/1994 with data available on pre-dialysis comorbid conditions	Age (yrs): 0-14 years: 2% 15-44 years: 23% 45-64 years: 36% 65+ years: 39%* Gender (% male): NR Race (%): NR] *HD patients older than PD patients	Age, primary renal diagnosis, RRT center size, pre-dialysis comorbid conditions AT (modality switches incorporated) analyzed with Poisson regression ITT (modality at 90 days) analyzed with Cox regression	0 to 5 years	-5 year survival: PD 35%, HD 36% -Initially better survival on PD but difference between modalities diminishes and after 3 years slightly favors HD -Mortality rate ratio (PD vs HD): 0.95 (0.88, 1.03) -Transplantation RR (PD vs HD): 1.16 (1.06, 1.28) -Technique failure rates PD: 186/1000 PY HD: 165/1000 PY RR 1.15 (1.01, 1.31)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Institute for Clinical Evaluative Sciences (ICES, Canada)						
Quinn 2011[42] PD, HD RR for mortality (PD vs HD) for patients with ≥ 4 months pre-dialysis care and starting elective outpatient dialysis; objectives - isolate association between modality and mortality; how different analytical approaches influence results	1998-2006 Canada	N=6573 incident patients Age ≥ 18, ≥ 1 Ontario Health Insurance Plan (OHIP) claim for any form of dialysis, ≥ 2 years OHIP coverage before dialysis	Age (yrs): 63 Gender (% male): NR Race (%): NR	Demographics, comor-bidities, hospitalization, days in hospital past year Cox proportional hazards; adjusted using corrected group-prognosis method; 3 cohorts: Primary: CKD, ≥4 months pre-dialysis care, started dialysis electively Secondary :1) All patients starting outpatient dialysis; 2) All patients alive (PD or HD) at 90d ITT (modality at baseline)	Max of 7 years and 9 months	-Primary Cohort, adj HR (PD vs HD): 0.96 (0.88, 1.06) No change in relative hazard of death at 12 or 24 months -Secondary Cohorts: RR of death on PD compared to HD increased over time
Dutch End-Stage Renal Disease Registry (RENINE)						
Liem 2007[43] PD, HD Compare mortality of HD and PD patients	1987-2002 Netherlands	N=16,643 incident patients Age 18 or older; at least 30 days of RRT; survived first 90 days of RRT; no pre-emptive transplant; no more than 1 episode of recovery of renal function; treated at center with at least 20 dialysis patients and at least 5 PD patients	Age (yrs): 59* Gender (% male): 59* Race (%): NR *PD patients younger and more likely male	Age, gender, year of start of dialysis, dialysis center, cause of ESRD Multivariable Cox proportional hazards model ITT (modality on day 91 was definite modality)	Mean: 2.4 years	-Mortality, Adj HR (PD vs HD): 0.99 (0.94, 1.05) -Mortality risk (PD vs HD) increased with age, with presence of DM, and with greater time (>15 months)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
European Renal Association-European Dialysis and Transplant Association (ERA-EDTA)						
van de Luijtgaarden 2011[44] PD, HD Assess modality choice within subgroups (age, DM, IHD, PVD, CD, and malignancy) and association between choice and survival in subgroups	1998-2006 Austria, Belgium (French speaking), Spain (Catalonia), Greece, Norway, Sweden, UK	N=15,828 incident patients Age ≥20 years; data available on diabetes (DM), ischemic heart disease (IHD), peripheral vascular disease (PVD), cerebrovascular disease (CD), malignancies	Age (yrs): 63* Gender (% male): 62 Race (%): NR *PD patients younger than HD patients	Age, gender, country, DM, IHD< PVD, CD, malignancy Kaplan-Meier and Cox proportional hazards ITT (modality at 91 days)	Max of 3 years (mean 1.6 years)	-Adj HR (PD relative to HD): 0.82 (0.75, 0.90) -Transplantation PD: 17.9% HD: 17.7% -Switched modalities PD: 25% HD: 4%
Finnish Registry for Kidney Diseases						
Haapio 2013[45] PD, HD Association of modality with survival	2000-2009 Finland	N=4463 incident patients (1217 PD, 3246 HD [including 105 HHD]) Age ≥ 20	Age (yrs): 62* Gender (% male): 64 Race (%): NR *PD patients younger (also higher % of PD patients on transplant wait list)	Age, gender, ESRD diagnosis, comorbidities, laboratory variables, kidney transplant wait list status at 3 months from RRT start Cox proportional hazards ITT (modality on day 91)	Max of 10 years; median 2.8 years	-Mortality (PD vs HD), RR 1.07 (0.94, 1.22)

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
French Renal Epidemiology and Information Network (REIN)						
Sens 2011[46] PD, HD Compare mortality risks by dialysis modality in patients who started dialysis with associated CHF	2002-2008 France	N=4401 incident patients Age ≥ 18, history of CHF at first RRT Excluded if unplanned 1st dialysis session or preemptive transplant	Age (yrs): 73* Gender (% male): 67* Race (%): NR *PD patients older and less likely male	Age, gender, use of central venous catheter at dialysis initiation, comorbidities at first RRT Cox proportional hazards Propensity score ITT (modality at day 90)	0 days to max of 7 years	-Mortality, adj HR (PD vs HD): 1.48 (1.33, 1.65) -Propensity score adjustment: 1.55 (1.37, 1.77) -Cardiovascular mortality HD: 35% PD: 40%, P = .04 -Renal transplant, P = .06 PD: 2.3% (mean time of 25 months after RRT) HD: 3.5% (mean time of 22 months) -Switched modalities PD: 10.5% (median time 12 months) HD: 0.6% (median time 4 months)
International Quotidian Dialysis Registry (IQDR) and Dialysis Outcomes and Practice Patterns Study (DOPPS)						
Nesrallah 2012[13] HHD (intensive, ≥ 5.5 hours/ session, 3-7 sessions/week) HD (conventional, < 5.5 hours/ session; 3 sessions/week) Whether intensive hemodialysis associated with better survival than conventional hemodialysis	2000-2010 Multi-national (Canada, France, USA)	N=1726 (338 incident and prevalent patients [HHD], 1388 matched HD) HHD patients from IQDR (none using NxStage device); HD patients from DOPPS	Age (yrs): 52* Gender (% male): 65* Race (%): white (73), black (11), other (16) *HHD patients were younger, more likely male	Age, gender, race, diabetes Matched intensive and conventional HD patients (up to 10 per intensive patient) by country, duration of ESRD, and propensity score Kaplan-Meier product-limit method; Cox regression ITT (modality at index date)	Median of 1.8 years; max of 4 years	-Mortality, adj HR (HHD vs HD): 0.53 (0.33, 0.86) -Renal transplant HHD: 9.5/100 PY (7.6, 12.1) HD: 8.8/100 PY (6.7, 11.6) -Switched modalities HHD: 48 switched to HD HD: 0 switched to HHD

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Lombardy Dialysis and Transplant Registry						
Locatelli 2001[47] PD, HD Compare influence of HD and PD on overall mortality and risk of developing *de novo* CVD	1994-1997 Italy	N=4064 incident patients (N=3120 for analysis of new CVD) Inclusion: NR	Age (yrs): 62 Gender (% male): 60 Race (%): NR	Age, gender Univariate survival (Kaplan-Meier) and Cox proportional hazards regression ITT (modality at 1 month)	Max of 4 years	-Death rate: PD 13.9/100 PY, HD 12.0/100 PY (not considering changes in modality) -Death due to cardiac causes (not considering changes in modality) PD: 11.4% HD: 21.1% -Mortality (adj) at 4 years (PD vs HD): 0.91 (0.79, 1.06) -Cardiovascular disease risk (*de novo*), PD vs HD: 1.06 (0.79, 1.43) -Ischemic heart disease *(de novo),* PD vs HD: 1.00 (0.61, 1.64) -Congestive heart failure *(de novo)*, PD vs HD: 1.07 (0.66, 1.72) -Switch from PD to HD: 17% -Switch from HD to PD: 3% -New CVD (adj RR); (PD vs HD): 1.06 (0.79, 1.43)
Romanian Renal Registry						
Mircescu 2014[48] PD, HD Compare survival of HD and PD patients	2008-2011 Romania	N=9252 incident patients (8252 HD [including HHD], 1000 PD) Age ≥ 18	Age (yrs): 61 Gender (% male): 57* Race (%): NR *HD group had higher percentage of males	Age, gender, primary renal disease Kaplan-Meier and Cox proportional hazards ITT (modality at 90 days)	Max of 5 years	-Mortality (PD vs HD), HR 1.01 (0.89, 1.51) -Cardiovascular mortality PD: 47% HD: 49% (P = .70) -Switch from HD: 0.6% (median of 11 months) -Switch from PD: 0.9% (median of 13 months) -Renal transplant PD: 0.4% HD: 2.1%

Author, Year Dialysis Modalities Study Purpose	Cohort Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Data Adjusted For Modeling Technique Analysis	Length of Follow-up	Key Findings
Scottish Renal Registry						
Traynor 2011[49] PD, HD Assess survival in patients active on renal transplant list (avoiding confounding by comorbidity and primary renal disease)	1982-2006 Scotland	N=3197 incident patients Adults, active on the renal transplant list at some point after start of dialysis, did not have primary renal disease of diabetic nephropathy	Age (yrs): 47 (median) Gender (% male): 60* Race (%): NR *HD group had higher percentage of males	Age, gender, primary renal disease Kaplan-Meier and Cox regression ITT (modality at start)	0 days to 25 years	-Kaplan-Meier: no difference in survival between HD and PD (log rank P = .996) -Cox regression (adj HR) – predictors of mortality HD: 0.97 (0.80, 1.18) Male: 0.94 (0.78, 1.13) Age at start of RRT: 1.05 (1.04, 1.06)
United Kingdom Renal Registry (UKRR)						
Nitsch 2011[14] PD, HHD (median delay after start of RRT = 12 months), hospital HD, satellite HD (dialysis unit with no inpatient renal facilities on-site) Compare HHD patients with age- and sex-matched PD, hospital HD, and satellite HD patients	1997-2005 England, Wales	N=2475 incident patients* (N=225 HHD, N=900 Hospital HD, N=900 PD, N=450 Satellite HD) ≥ 18 years *median delay before starting HHD = 12 months	Age (yrs): 48 Gender (% male): 71 Race (%): white (79), Asian (11), black (7)* *HHD patients more likely to be white	Age, gender, primary renal disease, year of start of dialysis Cox proportional hazards Frequency matching for age and gender: 4 hospital HD, 4 PD, and 2 satellite HD patients for each HHD patient ITT (modality at day 90)	1 to 10 years	-Survival HHD vs PD: HR 0.61 (0.40, 0.93) Satellite vs PD: HR 0.94 (0.65, 1.37) Satellite vs HHD: 1.06 (0.55, 2.04) -Technique Survival - HHD 18 months (median), IQR 9-33 Switch from HHD to HD: 30* Switch from HHD to PD: 1* Transplant: 70* *Of 130 patients with known reasons for stopping HHD

ACE = angiotensin-converting enzyme; AT = as treated (analysis); BMI = body mass index; CAD = coronary artery disease; CAPD = continuous ambulatory peritoneal dialysis; CCPD = continuous cycling peritoneal dialysis; CHF = congestive heart failure; CVD = cardiovascular disease; DM = diabetes mellitus; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; Freq/Ext = more frequent and/or longer duration than conventional, may include nocturnal and short daily regimens; GFR = glomerular filtration rate; HD = hemodialysis (in-center); HHD = home hemodialysis; HR = hazard ratio; ITT = intention-to-treat (analysis); NR = not reported; PD = peritoneal dialysis; PY = person years; RR = relative risk; RRT = renal replacement therapy

Table 2. TRIALS Study Characteristics and Survival, Technique Failure, and Transplantation Outcomes for Key Questions 1 and 2

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Analysis	Length of Follow-up	Key Findings Risk of Bias
Randomized Controlled Clinical Trials (RCTs)						
Culleton 2007[15] Alberta Kidney Disease Network HD (3 times/ week, 52% in-center, 28% home, 20% self-care) HHD (5-6 times/ week, minimum of 6 hours)	2004-2006 Canada	N=51 Age ≥ 18, currently receiving in-center, self-care, or home dialysis 3 times/week and willing to train for and commence nocturnal HHD; excluded if lacking physical or mental capacity to train for nocturnal HHD	Age (yr): 54 Gender (% male): 63 Race (%): white (86)	Analysis of covariance and t-tests or Wilcoxon rank sum test ITT with last-value-carried-forward for mssing values	6 months	-Mortality HD: 0/25 (0%) HHD: 1/26 (3.8%); P = 0.33 **Risk of Bias: Moderate** **Allocation generation/concealment:** adequate **Blinding:** partially **Incomplete outcomes:** no **Selective outcome reporting:** partially
Korevaar 2003[50] PD HD *Trial stopped early because of disappointing inclusion rates (required n=100)	1997-2000 Netherlands	N=38 New ESRD patients; age ≥18; dialysis as first RRT; no medical, social, or logistic objections to PD	Age (yr): 58* Gender (% male): 58 Race (%): NR HD patients older	Primary outcome: Quality-adjusted life year (QALY) score in first 2 years of dialysis Secondary outcome: Survival with Kaplan-Meier method and Cox proportional hazards (adjustment for age, comorbidity, primary kidney disease) ITT and AT (survival times censored 60 days after modality switch)	Max of 5 years	-Mortality (HD vs PD), ITT HR 3.8 (1.1, 12.6), P = .03 Adj HR 3.6 (0.08, 15.4), P = .09 **Risk of Bias: High** **Allocation generation/concealment:** adequate **Blinding:** nephrologist and patient not blinded **Incomplete outcomes:** QALY analysis included 28/38 patients; survival analysis included all patient randomized **Selective outcome reporting:** no

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Analysis	Length of Follow-up	Key Findings Risk of Bias
McGregor 2001[16] HD (3.5-4.5 hours, 3 times/week) HHD (6-8 hours, 3 times/week)	NR New Zealand	N=9, cross-over RCT HHD of >6 hours, 3 times/week for >6 months; no antihypertensive medications, mean pre-dialysis BP over previous month <160/90 mmHg; excluded diabetes, overt cardiac disease, prior nephrectomy, any recent illness	Age (yr): 48 Gender (% male): 44 Race (%): Caucasian (89), Polynesian (11)	Analysis of variance with repeated measures Student's t-test or Wilcoxon tests for differences between means	8 weeks per arm	-Mortality: no deaths in either group **Risk of Bias: High** **Allocation generation/concealment:** unclear **Blinding:** partially (echocardiographer blinded; other outcomes unclear) **Incomplete outcomes:** no **Selective outcome reporting**: no
Controlled Clinical Trials (CCTs)						
Xue 2015[17] HD (3 times/ week) HHD (nocturnal, 5-6 times/week)	1997-2010 (HHD) 2007-2010 (HD) USA	N=63 HHD N=121 HD (matched to HHD patients based on age, gender, race, dialysis vintage, and DM) Inclusion: NR 20 months (censored at change to fistula/graft, transfer to PD, or kidney transplant)	Age (yr): 54 Gender (% male): 58 Race (%): white (57), black (43)	NR	NR	-Death HHD: 0 HD: 3/121 (3%) (P = .96) -Transfer to PD HHD: 0 HD: 8/121 (6.6%) (P = .96) **Risk of Bias: High** **Allocation generation/concealment:** N/A **Blinding:** no **Incomplete outcomes:** no **Selective outcome reporting:** no

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Analysis	Length of Follow-up	Key Findings Risk of Bias
Kjellstrand 2008[18] HD HHD	1982-2005 USA, Italy, France, UK	N=415 (150 HD, 265 HHD) Patients started daily dialysis to 1) improve quality of life and survival or 2) serious medical complications during dialysis (typically unsuitable for HHD) ESRD for mean of 5.0±5.7 years (range 0-31) before starting daily dialysis; 9% started on daily dialysis	Age (yr): 52 (range 13-89)* Gender (% male): 71 Race (%): NR Daily dialysis for mean of 2.4±2.6 years (range 0-23); mean treatment time 136±35 minutes, mean frequency 5.8±0.5 times/week *HD patients were older (56 vs 49 years, P < .0001)	Kaplan-Meier and Cox-Mantel log rank for survival Backward stepwise Cox proportional hazards for factors influencing survival	1006 patient years	-Three factors independently associated with mortality 1. In-center dialysis: HR 2.42 (1.54, 2.79), P = .0001 2. Secondary renal disease: HR 2.72 (1.76, 4.20), P < .0001 3. Age > 52 (mean age): HR 2.39 (1.49, 3.83), P = .0003 -Correcting for age and diagnosis RR = 0.44 (death in daily at home group vs daily in-center group) **Risk of Bias: Moderate** **Allocation generation/concealment:** N/A **Blinding:** N/A **Incomplete outcomes:** no **Selective outcome reporting:** no
Lindsay 2003[19] Heidenheim 2003[21] London Daily/ Nocturnal Hemodialysis Study HD (3 /wk, 3.5-4.5 hrs) HHD1 (nocturnal 5-6 /wk, 6-8 hrs) HHD2 (daily 5-6 /week, 1.5-2.5 hrs)	1998-2001 Canada	N=46 (22 HD controls, 13 HHD1, 11 HHD2) Age >18, on conventional HD for at least 3 months, expected to survive 1 year Matched controls on age, gender, comorbidity, and original dialysis modality	Age (yr): 47 Gender (% male): 67 Race (%): NR	One-way and repeated measures analysis of variance Student's paired t-test	18 months	-Mortality HD: 3/22 (14) HHD1: 3/13 (23%), P = .47 vs HD HHD2: 0/11 (0%), P = .20 vs HD -All-cause hospitalization, admissions per patient-year HD: 0.93 HHD1: 0.95, P = .96 vs HD HHD2: 0.49, P = .23 vs HD **Risk of Bias: High** **Allocation generation/concealment:** N/A **Blinding:** no **Incomplete outcomes:** yes – patients were replaced during course of trial **Selective outcome reporting:** no

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Analysis	Length of Follow-up	Key Findings Risk of Bias
Clinical Cohort Studies						
Jaar 2005[51] CHOICE PD, HD	1995-1998 USA	N=1041 incident patients (767 HD, 274 PD) Age >17, able to speak English or Spanish	Age (yr): 58* Gender (% male): 54 Race (%): white (67)* *PD patients younger, more likely white	Cox proportional hazards Adjusted model: demographics, clinical factors, laboratory variables Propensity score matching (baseline characteristics) ITT (modality at 4 weeks after enrollment [an average of 10 weeks after starting dialysis])	Max of 7 years	-Switched dialysis modality at least once: PD 25%, HD 5% -Relative hazard of death (PD vs HD), ITT Multivariate Model: 1.61 (1.13, 2.30) Propensity Score Model: 1.74 (1.23, 2.46) *-First year of follow-up* (PD vs HD), ITT Multivariate Model: 1.39 (0.64, 3.06) Propensity Score Model: 1.47 (0.69, 3.15) *-Second year of follow-up* Multivariate Model: 2.34 (1.19, 4.59) Propensity Score Model: 2.05 (1.07, 3.92) -Non-significant interactions for: Age (P > .2); Diabetes (P > .2) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** partially **ITT:** yes **Attrition bias:** unclear **Selective outcome reporting:** no
Noordzij 2006[52] NECOSAD PD, HD	1997-2004 Netherlands	N=1629 incident patients (1043 HD, 586 PD) Age ≥18, dialysis was 1st RRT	Age (yr): 59* Gender (% male): 61* Race (%): NR *PD patients significantly younger and more likely male	Adjusted for age, comorbidity score, primary kidney disease, SGA, laboratory variables Cox proportional hazards with frailty term to correct for dependency between repetitive hospitalizations within the same patient ITT (modality at 3 months after initiation)	Max of 7.8 years, min of 5 months (medians: 29 months PD, 28 months HD)	-Switched dialysis modality: PD 30%, HD 5% -Hospitalized at least once: PD 46%, HD 58% -Survival (2 year): PD 86%, HD 74% -Deaths during study period: PD 146/586 (25%), HD 444/1043 (43%) **Risk of Bias: Moderate** **Selection bias:** unclear **Blinding:** unclear **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Analysis	Length of Follow-up	Key Findings Risk of Bias
Thong 2007[65] NECOSAD-2 PD, HD	1998-2002 Netherlands	N=528 incident patients who returned SSL (87%) Age >18 years, no previous history of RRT, survived 1st 3 months of dialysis	Age (yr): 59 Gender (% male): 59 Race (%): Caucasian 94	Social Support List (SSL) at 3 months from start of PD or HD; "Interaction" and "Discrepancy" scales; both include a) social companionship, b) daily emotional support, and c) emotional support with problems Cox proportional hazards adjusted for demographics, comorbidity, serum albumin, functional ability, depressive symptoms, and treatment modality	Max of 6 years, mean of 2.5 years	*Adj RR (per unit increase) for social support on all-cause mortality* Interaction scale: 0.998 (0.982, 1.014) Discrepancy scale (perceiving that not enough social support is received): 1.022 (1.003, 1.042) HD vs PD: effect of social support on mortality was similar; confidence intervals were wider due to smaller number per group; only daily emotional support component of "Discrepancy" was significant for HD patients after adjustment **Risk of Bias: High** **Selection bias:** adequate **Blinding:** unclear **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics	Analysis	Length of Follow-up	Key Findings Risk of Bias
Termorshuizen 2003[53] NECOSAD-2 PD, HD	Not reported Netherlands	N=1222 incident patients (742 HD, 480 PD) Age >18, survived first 3 months of dialysis	Age (yr): <45: 19% 45-60: 30% 60-70: 25% 70+: 26%* Gender (% male): 61* Race (%) NR *HD patients older and more likely female	Cox proportional hazards (multivariate model adjusted for age, gender, primary kidney disease, comorbidity index, SGA score, residual renal function, other laboratory variables ITT (modality at 3 months) AT (follow-up ended at day 60 after 1st transfer to other modality)	Max of 48 months	-Technique survival (2 year): HD 96%, PD 74% -Transplantation: HD (15% of original HD cohort), 21% of original PD cohort) -Mortality (multivariate RR, HD vs PD, ITT censoring) 3-12 months: 1.32 (0.80, 2.18) 12-24 months: 1.06 (0.66, 1.72) 24-36 months: 0.55 (0.34, 0.87) 36-48 months: 0.42 (0.24, 0.73) Age <60, no diabetes, 3-24 months: 0.77 (0.34, 1.73) Age <60, diabetes, 3-24 months: 6.35 (1.42, 28.36) Age 60+, no diabetes, 3-24 months: 1.03 (0.62, 1.72) Age 60+, diabetes, 3-24 months: 1.28 (0.65, 2.52) **Risk of Bias: Moderate** **Selection bias:** unclear **Blinding:** unclear **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no

AT = as treated (analysis); BMI = body mass index; BP = blood pressure; CAD = coronary artery disease; CAPD = continuous ambulatory peritoneal dialysis; CCPD = continuous cycling peritoneal dialysis; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; CVD = cardiovascular disease; DM = diabetes mellitus; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; Freq/Ext = more frequent and/or longer duration than conventional; GFR = glomerular filtration rate; HD = hemodialysis (in-center); HHD = home hemodialysis; HR = hazard ratio; ITT = intention-to-treat (analysis); KDQOL = Kidney Disease Quality of Life questionnaire; MOS = Medical Outcomes Study; NR = not reported; PD = peritoneal dialysis; PY = person years; QOL = quality of life; RR = relative risk; RRT = renal replacement therapy; SGA = Subjective Global Assessment

[a] 31 patients dropped out of the study, 30 were missing data on the 4 outcome criteria

Table 3. REGISTRY STUDIES – Interactions

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
United States Renal Data System (USRDS)							
Lukowsky 2013[26] PD, HD 2001-2004 N=23,718 incident patients	Mortality (PD vs HD); MSM; P for interaction = .26 *Age ≤ 65 years* 12 months: 0.67 (0.50, 0.92) 24 months: 0.58 (0.43, 0.79) *Age > 65 years* 12 months: 0.68 (0.51, 0.92) 24 months: 0.27 (0.12, 0.61)	NR	NR	NR	Mortality (PD vs HD); MSM; P for interaction = .07 *Diabetes* 12 months: 0.81 (0.63, 1.05) 24 months: 0.34 (0.18, 0.63) *No Diabetes* 12 months: 0.51 (0.36, 0.74) 24 months: 0.64 (0.47, 0.87)	NR	NR
Weinhandl 2010[29] PD, HD 2003 N=12674 incident patients (matched pairs)	Association of dialysis modality modified by age (HR ≥ 1 favoring HD for patients ≥ 65 years); P for interaction < .01	NR	NR	NR	Association of dialysis modality modified by presence of diabetes (HR > 1 favoring HD for patients with DM); P for interaction < .01	Association of dialysis modality modified by presence of cardiovascular disease (HR > 1 favoring HD for patients with CVD); P for interaction < .01	NR
MacRae 2010[9]PD, NRHD, HHD 1995-2004 N=458,329 incident patients	NR	NR	NR	NR	NR	NR	NR

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Abbott 2004[31] PD, HD 1996 N=3337 incident patients	NR	NR	NR	BMI≥30 associated with improved survival for HD patients: Adj HR 0.89 [0.81, 0.99] Not PD patients: Adj HR 0.99 [0.86, 1.15] P = .001 for interaction	NR	NR	NR
Vonesh 2004[32] PD, HD 1995-2000 N=398,940 incident patients	Mortality, RR (age 18-44 as reference) *Age 45-64 years*:* HD 1.57 PD 1.97 *Age ≥ 65 years*:* HD 2.80 PD 3.82 *P < .0001 for interaction	Mortality, RR (female as reference) HD 0.97 PD 0.97 P = .41 for interaction	Mortality, RR (white as reference, P value for interaction) *Black:* HD 0.74 PD 0.77 P = NS *Asian:* HD 0.61 PD 0.53 P < .01 *Other/NA:* HD 0.73 PD 0.77 P = .048	Mortality, RR (BMI 18.5-25 as reference, P value for interaction) *BMI < 18.5:* HD 1.32 PD 1.32 P = NS *BMI 25.1-30:* HD 0.82 PD 0.87 P < .01 *BMI >30:* HD 0.75 PD 0.92 P < .0001	Mortality, RR (non-diabetes as cause of ESRD as reference) *Diabetes as cause:* HD 1.13 PD 1.45 P < .0001 for interaction	Mortality, RR *CHF* HD 1.23 PD 1.37 P < .0001 for interaction *CAD* HD 1.07 PD 1.23 P < .0001 for interaction	NR

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Stack 2004[54] (see Stack 2003[33]) PD, HD 1995-1997 N=134,728 incident patients	NR	NR	Significant race-modality interaction (P = NR) Whites, BMI >30: RR 1.28 (1.08, 1.51) Non-whites: RR 1.01 (0.74, 1.37)	-Significant interactions (P < .001) between 1) modality, BMI, and survival 2) modality, diabetes, and survival -Mortality (PD vs HD), RR, ITT, 0-24 months *Diabetes* BMI-1: 0.99 (0.83, 1.17) BMI-2: 1.12 (0.98, 1.29) BMI-3: 1.26 (1.13, 1.43) BMI-4: 1.15 (1.02, 1.30) BMI-5: 1.44 (1.27, 1.63) *No Diabetes* BMI-1: 1.07 (0.96, 1.19) BMI-2: 1.01 (0.90, 1.13) BMI-3: 0.96 (0.85, 1.08) BMI-4: 1.04 (0.91, 1.18) BMI-5: 1.22 (1.05, 1.41)		NR	NR
Ganesh 2003[55] (see Stack 2003[33]) PD, HD 1995-1997 N=107,922 incident patients	NR	NR	NR	NR	-Significant interactions (P < .001) between 1) modality, CAD, and survival 2) modality, diabetes, and survival -Mortality (PD vs HD), ITT, RR, 0-24 months (P for interaction) *Diabetes* CAD: 1.23 (1.12, 1.34) No CAD: 1.17 (1.08, 1.26); P = .09 *No Diabetes* CAD: 1.20 (1.10, 1.32) No CAD: 0.99 (0.93, 1.05); P < .0001		NR

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Stack 2003[33] (see Stack 2004[54] for BMI data and Ganesh 2003[55] for CAD data) PD, HD 1995-1997 N=107,922 incident patients	NR	NR	NR	NR	-Significant interactions (P < .001) between 1) modality, CHF, and survival 2) modality, diabetes, and survival -Mortality (PD vs HD), RR, 0-24 months *With CHF* Diabetes: 1.30 (1.20, 1.41) No Diabetes: 1.24 (1.14, 1.35) *No CHF* Diabetes: 1.11 (1.02, 1.21) No Diabetes: 0.97 (0.91, 1.04)		NR
Bloembergen 1995[36] PD, HD 1987, 1988, 1989 (3 cohorts) 170,700 PY with prevalent patients	-RR varied significantly by age (P < .001) -Death rate significantly higher for PD than HD for age >55 years (P = .01) but not <55 years	Accentuated RR (PD compared to HD) if female but both significant Females: RR 1.30 (P < .001) Males: RR 1.11 (P < .001)	-No statistically significant effect of race	NR	Accentuated RR (PD compared to HD) if DM was cause of ESRD but both significant Diabetes: RR 1.38 (P < .001) No Diabetes: RR 1.11 (P < .001)	NR	NR

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Australia and New Zealand Dialysis and Transplant Registry (ANZDATA)							
Marshall 2014[11] PD, HD, HHD 1997-2011	Effect of modality on mortality risk is not modified within subcategories of age		-For PD: 1) NZ Europeans and those without type 2 DM have lower risk (vs HD) in early period (<3 years) and no difference in late period 2) NZ Maori, Pacific, and those with type 2 DM have no difference in mortality risk (vs HD) in the early period but increased risk in the late period -For HHD: Pacific have no difference in mortality risk (vs HD)	Effect of modality on mortality risk is not modified within subcategories of BMI	See Race	Minor modification of effect of modality on mortality risk by medical comorbidity but results not materially different from overall population	Minor modification of effect of modality on mortality risk by year of dialysis inception but results not materially different from overall population

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Marshall 2011[12] PD, HD, HHD, Freq/ext HD, Freq/ext HHD 1996-2007 N=26,016 incident patients (856,007 patient months of follow-up)	Significant interaction by age at dialysis inception, P = .03 Decrease in relative mortality risk associated with HHD was less for older age group (> 74 years)	NR	Significant interaction by ethnicity, P < .001 Decrease in relative mortality risk associated with HHD was less for non-whites and non-Asians (*ie,* aboriginal/Torres islanders and NZ Maori/Pacific people)	NR	Significant interaction by baseline DM, P < .001 -Mortality, HHD vs HD *Diabetes* 0.65 (0.52, 0.80) *No Diabetes* 0.44 (0.37, 0.54) -Mortality, PD vs *HD* *Diabetes* 1.23 (1.16, 1.31) *No Diabetes* 1.01 (0.94, 1.07)	NR	NR
McDonald 2009[38] PD, HD (including HHD) 1991-2005 N=25,287 incident patients	-Significant interaction (P < .001) between age and risk of PD vs HD mortality in 90- to 356- day period -No significant interaction (P = .7) in > 365 day period -Clinically and statistically significant interaction among PD risk, age, and comorbidity	NR	No *clinically significant* interactions	-No significant interaction (P = .2) with modality for 90- to 365-day mortality -Significant interaction (P = .002) for ≥365 day mortality but effect size was *clinically similar* across all BMI categories	No significant interaction between presence of DM at RRT start and adj HR for PD relative to HD at < 365 days (P = .6)or ≥ 365 days (P = .4)	NR	-Significant interaction between vintage and HR (PD relative to HD) from 90-365 days (P = .03) and for ≥ 365 days (P = .01) but *little clinical significance*

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Institute for Clinical Evaluative Sciences (ICES, Canada)							
Quinn 2011[42] PD, HD 1998-2006 N=6573 incident patients	NR	NR	NR	NR	No significant interaction between diabetes and treatment modality in primary cohort (P = NR)	NR	NR
Dutch End-Stage Renal Disease Registry (RENINE)							
Liem 2007[43] PD, HD 1987-2002 N=16,643 incident patients	Age by modality HR (PD vs HD): 1.01 (P for interaction < .001)	NR	NR	NR	Diabetes by modality HR (PD vs HD): 1.22 (P for interaction = 0.002)	NR	NR
European Renal Association-European Dialysis and Transplant Association (ERA-EDTA)							
van de Luijtgaarden 2011[44] PD, HD 1998-2006 N=15,828 incident patients	NR	Interaction between dialysis modality and gender for patients with IHD, DM, and PVD (P = NR) Survival advantages of PD observed for males but not females	NR	NR	NR	See Gender column	NR

Author, Year Modalities Cohort Years Sample Size	Age	Gender	Race	BMI	Diabetes Mellitus (DM)	Cardiovascular Disease	Duration of ESRD Therapy
Finnish Registry for Kidney Diseases							
Haapio 2013[45] PD, HD 2000-2009 N=4463 incident patients	No significant interaction between age and modality (P = .06)	No significant interaction between gender and modality (P = .53)	NR	NR	No significant interaction between ESRD diagnosis (including DM) and modality (P = .07)	NR	NR
International Quotidian Dialysis Registry (IQDR) and Dialysis Outcomes and Practice Patterns Study (DOPPS)							
Nesrallah 2012[13] HHD (intensive) HD 2000-2010 N=338 (HHD, incident and prevalent) N=1388 (HD)	Non-significant interaction (P = .36) with age <52 years [HR 0.36] vs ≥ 52 years [HR 0.60]	NR	NR	NR	NR	NR	Non-significant interactions: 1 to 3.5 years [HR 0.95] vs < 1 year [HR 0.65]: P = .65 ≥ 3.5 years [HR 0.32] vs < 1 year [HR 0.65]: P = .39 Median duration of ESRD = 3.5 years
French Renal Epidemiology and Information Network (REIN)							
Sens 2011[46] PD, HD 2002-2008 N=4401 incident CHF patients	No significant interaction between modality and other variables including age and DM (P > .05)	NR	NR	NR	NR	No significant interaction between modality and NYHA stage (P = .86)	NR

AT = as treated (analysis); BMI = body mass index; BMI-1 = 8.8-20.9; BMI=2 = 20.9-23.5; BMI-3 = 23.5-26.1; BMI-4 = 26.1-30.0; BMI-5 = >30; CAPD = continuous ambulatory peritoneal dialysis; CCPD = continuous cycling peritoneal dialysis; CD = cerebrovascular disease; CHF = congestive heart failure; CVD = cardiovascular disease; DM = diabetes mellitus; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; Freq/Ext = more frequent and/or longer duration than conventional; GFR = glomerular filtration rate; HD = hemodialysis (in-center); HHD = home hemodialysis; HR = hazard ratio; IHD = ischemic heart disease; IQR = interquartile range; ITT = intention-to-treat (analysis); NR = not reported; NYHA = New York Heart Association; PD = peritoneal dialysis; PVD = peripheral vascular disease; PY = person-years; RR = relative risk; RRT = renal replacement therapy

Table 4. TRIALS and OBSERVATIONAL STUDIES - Study Characteristics and Hospitalization, Quality of Life, and Adverse Event Outcomes for Key Questions 1 and 2

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Randomized Controlled Clinical Trials (RCTs)						
Culleton 2007[15] Alberta Kidney Disease Network HD (3 times/ week) HHD (5-6 times/ week, minimum of 6 hours)	2004-2006 Canada	N=51 Age ≥ 18, currently receiving in-center, self-care, or home dialysis 3 times/week and willing to train for and commence nocturnal HHD; excluded if lacking physical or mental capacity to train for nocturnal HHD 6 months	Age (yr): 54 Gender (% male): 63 Race (%): white (86) **Risk of Bias: Moderate** **Allocation generation/concealment:** adequate **Blinding:** partially **Incomplete outcomes:** no **Selective outcome reporting:** partially	All-cause hospitalization (per patient over 6 months) HD: 0.84 HHD: 0.62	Quality of life 1. Change in EuroQoL-5D over 6 months, HHD vs HD: Between group difference 0.05 (-0.07, 0.17), P = 0.43 2. Change in KDQOL over 6 months, HHD-HD a. Effects of Kidney Disease: 8.6 (2.0, 15.2), P = .01 b. Burden of Kidney Disease: 9.4 (1.3, 17.5), P = .02	-Infection requiring a procedure, # patients with ≥1 event HD: 4/25 (16%) HHD: 4/26 (15%), P = 1.0 -Vascular access surgical intervention, # patients with ≥1 event HD: 5/25 (20%) HHD: 3/26 (12%); P = .47
Korevaar 2003[50] PD HD *Trial stopped early because of disappointing inclusion rates (required n=100)	1997-2000 Netherlands	N=38 New ESRD patients; age ≥18; dialysis as first RRT; no medical, social, or logistic objections to PD Max of 5 years	Age (yr): 58* Gender (% male): 58 Race (%): NR HD patients older **Risk of Bias: High** **Allocation generation/concealment:** adequate **Blinding:** nephrologist and patient not blinded **Incomplete outcomes:** QALY analysis included 28/38 patients; survival analysis included all patient randomized **Selective outcome reporting:** no	NR	QALY score, Mean (SD), ITT PD: 54.0 (18.9) HD: 59.1 (11.7) Adj difference 3.1 (-9.9, 16.1), P = .63	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
McGregor 2001[16] HD (3.5-4.5 hours, 3 times/week) HHD (6-8 hours, 3 times/week)	NR New Zealand	N=9, cross-over RCT HHD of >6 hours, 3 times/week for >6 months; no antihypertensive medications, mean pre-dialysis BP over previous month <160/90 mmHg; excluded diabetes, overt cardiac disease, prior nephrectomy, any recent illness 8 weeks per arm	Age (yr): 48 Gender (% male): 44 Race (%): Caucasian (89), Polynesian (11) **Risk of Bias: High** **Allocation generation/concealment:** unclear **Blinding:** partially (echocardiographer blinded; other outcomes unclear) **Incomplete outcomes:** no **Selective outcome reporting**: no	NR	Quality of life: 1. HHD interfered more with social activities (P < .05) 2. HHD perceived to be more of a burden on family of patient (P = .07) 3. HHD less physical suffering (P < .005)	NR
Controlled Clinical Trials (CCTs)						
Xue 2015[17] HD (3 times/ week) HHD (nocturnal, 5-6 times/week)	1997-2010 (HHD) 2007-2010 (HD) USA	N=63 HHD N=121 HD (matched to HHD patients based on age, gender, race, dialysis vintage, and DM) Inclusion: NR 20 months (censored at change to fistula/graft, transfer to PD, or kidney transplant)	Age (yr): 54 Gender (% male): 58 Race (%): white (57), black (43) **Risk of Bias: High** **Allocation generation/concealment:** N/A **Blinding:** no **Incomplete outcomes:** no **Selective outcome reporting:** no	NR	NR	*First Catheter Only* -Catheter-related sepsis HHD: 10/63 (16%); 1.77/100 PtM HD:14/121 (12%); 2.03/100 PtM (P = .21) HR 0.99 (CI NR) (P = NS) -Median catheter life HHD: 5.6 months HD: 4.6 months (P = .64)

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Lindsay 2003[19] Heidenheim 2003[21] London Daily/ Nocturnal Hemodialysis Study HD (3 times/ week, 3.5-4.5 hours) HHD1 (nocturnal 5-6 times/week, 6-8 hours) HHD2 (daily 5-6 times/ week, 1.5-2.5 hours)	1998-2001 Canada	N=46 (22 HD controls, 13 HHD1, 11 HHD2) Age >18, on conventional HD for at least 3 months, expected to survive 1 year Matched controls on age, gender, comorbidity, and original dialysis modality 18 months	Age (yr): 47 Gender (% male): 67 Race (%): NR **Risk of Bias: High** **Allocation generation/concealment:** N/A **Blinding:** no **Incomplete outcomes:** yes – patients were replaced during course of trial **Selective outcome reporting:** no	All-cause hospitalization, admissions per patient-year HD: 0.93 HHD1: 0.95, P = .96 vs HD HHD2: 0.49, P = .23 vs HD	-Quality of Life - RAND SF-36 Physical Component at 18 months HD: 39.9 HHD1: 49.1, P = .25 vs HD HHD2: 42.1, P = .60 vs HD -Cognition - RAND SF-36 Mental Component at 18 months HD: 47.2 HHD1: 52.2, P = .98 vs HD HHD2: 52.4, P = .31 vs HD	-Access complications (annual) 1) Arteriovenous fistula HD: 0.31 HHD1 and HHD2: 0.67 2) Synthetic graft HD: 2.18 HHD1 and HHD2: 1.73 3) Catheter HD: 2.64 HHD1 and HHD2: 2.66 -Access interventions (annual); all P = NS 1) Arteriovenous fistula HD: 0.52 HHD1 and HHD2: 0.18 2) Synthetic graft HD: 2.12 HHD1 and HHD2: 1.58 3) Catheter HD: 3.73 HHD1 and HHD2: 4.51
Quintaliani 2000[25] HD (3 times/week, mostly in-center) HHD (daily, 70% at home)	Final observation Nov 15, 1996 Italy	N=148 (123 HD, 24 HHD) Adults, native arteriovenous fistula functioning for at least 1 month; excluded if prosthetic device, diabetes, collagen disease, malignancy 3.6 years (mean)	Age (yr): 56* Gender (% male): 62* Race (%): NR *HHD patients younger and more likely male **Risk of bias: High** **Allocation generation/concealment:** not applicable **Blinding:** no **Incomplete outcomes:** no **Selective outcome reporting:** no	NR	NR	-Access closures - event rate (per 100 PY) HD: 9.8; HHD: 2.2; Rate difference 7.6/100 PY (3.4, 11.9); RR 4.5 (1.2, 16.9), P < .01 -Access survival (3 year probability) HD: 70%; HHD: 92%; P < .05

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Clinical Cohort Studies						
Plantinga 2010[63] CHOICE PD, HD	1995-1998 USA	N=949 incident patients NR Max of 9 years and 2 months	Age (yr): 58 Gender (% male): 54 Race (%): white (67) **Risk of Bias: High** **Selection bias:** adequate **Blinding:** N/A (self-report) **ITT:** unclear **Attrition bias:** inadequate **Selective outcome reporting:** no	NR	-Overall functional support (MOS Social Support Survey); mean (SD) HD: 76.1 (23.1) PD: 80.5 (21.9); P = .002 Significantly higher scores for PD vs HD for emotional support, tangible support, and positive social interaction domains; no difference for affectionate support domain -Social support in highest tertile significantly associated with greater chance of being treated with PD (P = .02) -Modality switching not associated with overall functional social support (Relative Hazard 1.03 [0.57, 1.83]) or any support domain	NR
Noordzij 2006[52] NECOSAD PD, HD	1997-2004 Netherlands	N=1629 incident patients (1043 HD, 586 PD) Age ≥18, dialysis was 1st RRT Max of 7.8 years, min of 5 months (medians: 29 months PD, 28 months HD)	Age (yr): 59* Gender (% male): 61* Race (%): NR *PD patients significantly younger and more likely male **Risk of Bias: Moderate** **Selection bias:** unclear **Blinding:** unclear **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	Hospitalized at least once: PD 46%, HD 58%	NR	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Jansen 2013[64] NECOSAD-2 PD, HD	Patients still in study in January 2006	N=161 who returned first questionnaire (of 248 approached) Age > 18 years, no previous history of RRT 8 months (second questionnaire sent)	Age (yr): 66 Gender (% male): 65 Race (%): NR **Risk of Bias: High** **Selection bias:** unclear **Blinding:** unclear **ITT:** no **Attrition bias:** inadequate **Selective outcome reporting:** no	NR	-BIPQ Illness consequences: no difference between PD and HD -TEQ Treatment consequences: HD patients perceive more consequences than PD patients (P = .01) -BIPQ Treatment controls the illness: no difference between PD and HD	NR
Thong 2007[65] NECOSAD-2 PD, HD	1998-2002 Netherlands	N=528 incident patients who returned SSL (87%) Age >18 years, no previous history of RRT, survived 1st 3 months of dialysis Max of 6 years, mean of 2.5 years	Age (yr): 59 Gender (% male): 59 Race (%): Caucasian 94 **Risk of Bias: High** **Selection bias:** adequate **Blinding:** unclear **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	NR	*Adj RR (per unit increase) for social support on all-cause mortality* Interaction scale: 0.998 (0.982, 1.014) Discrepancy scale (perceiving that not enough social support is received): 1.022 (1.003, 1.042) HD vs PD: effect of social support on mortality was similar; confidence intervals were wider due to smaller number per groups; only daily emotional support component of "Discrepancy" was significant for HD patients after adjustment	NR
Merkus 1999[66] NECOSAD-1 PD, HD	1993-1995 Netherlands	N=228 (119 HD, 109 PD) for Quality of Life analysis 18 months after initiation	Age (yr): 55 Gender (% male): **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** unclear **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	NR	-Physical QOL (SF-36), adjusted mean difference over time, HD vs PD, ITT: 1.6 (0.04, 3.20), P = .04 -Mental QOL (SF-36), ITT: no treatment effect	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Van Diepen 2014[71] NECOSAD PD, HD	1997-2007 Netherlands	N=452 incident patients Age ≥ 18 years, no exclusion criteria Max of 12 years and 6 months	Age (yr): 64* Gender (% male): 65 Race (%): Caucasian (91)* *PD patients younger and less likely Caucasian **Risk of Bias: High** **Selection bias:** unclear **Blinding:** adequate **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	NR	NR	-Adj IRR (HD vs PD) *Overall:* Total infections: 1.65 (1.34, 2.03) Dialysis technique-related infection: 4.10 (3.06, 5.58) Non-dialysis technique-related infection: 0.56 (0.40, 0.79) *6-12 months (n=363)* Total: 1.66 (1.05, 2.62) Dialysis-related infection: 3.28 (1.77, 6.09) Non-dialysis-related infection: 0.68 (0.32, 1.45) *24-36 months (n=207)* Total: 3.21 (1.51, 6.87) Dialysis-related infection: 19.34 (5.20, 71.93) Non-dialysis-related infection: 0.71 (0.13, 3.74)
Longitudinal Studies						
Oliver 2012[72] PD, HD	2007-2010 Canada	N=369 incident patients (224 PD, 145 HD) Eligible for PD or HD, ≥4 months pre-dialysis care, patient chose out-patient modality Excluded if lost to follow-up in 1st 6 months of dialysis Follow-up: mean of 1.3 years (0.1-3.6)	Age (yr): 62* Gender (% male): 60 Race (%): NR *HD patients were older **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	NR	NR	-Access-related invasive interventions required while on dialysis HD 1.4/pt-year PD 1.0/pt-year Rate Ratio (PD vs HD) 0.72 (0.53, 0.96)

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Liberek 2009[77] PD, PD after HD	1994-2006 Poland	N=264 incident PD patients (197 initial PD, 67 transfer after ≥ 3 months of HD) (NOTE: transfer due to vascular access problems (64%), heart failure or severe hypotension (21%), preference (15%) Follow-up: median of 20.5 months (range 1-132)	Age (yr): 51 Gender (% male): 53* Race (%): NR *Higher % male in initial PD group **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** unclear **Selective outcome reporting:** no	NR	NR	-Patient survival: RR (transfer PD vs initial PD) 1.68 (0.87, 3.22) -Combined patient and technique survival: RR (transfer PD vs initial PD) 1.45 (0.89, 2.37) NOTE: median time on HD before transfer: 18 months (range 3-268)
Aslam 2006[56] PD, HD	1999-2005 USA	N=181 incident patients (119 HD, 62 PD) No previous ESRD therapy Follow-up (medians) HD: 18 months PD: 15 months	Age (yr): 58 Gender (% male): 53 Race (%): white (60)* *PD patients were more likely white **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-All admissions for infection per year at risk HD: 0.29 PD: 0.42; P = .02 -Total admissions per year at risk HD: 2.4 PD: 1.4; P < .0001 -More admissions for bacteremia, cellulitis, and pneumonia in HD group; more admissions for peritonitis in PD group (all P < .0001)	NR	-Infections - total per time at risk; median (range) HD: 1 (0-14) PD: 1 (0-10); P = NS -Infection rate per year at risk HD: 0.77 PD: 0.86; P = NS -Higher bacteremia/fungemia infection rate in HD group (overall and in 1st 90 days; P < .001) -Higher peritonitis rate in PD group (overall and in 1st 90 days; P > .001)

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Harris 2002[58] PD, HD	1995-1996 UK	N=174 incident and prevalent patients (96 HD, 78 PD) 70 years or older at start of dialysis, 90 days of uninterrupted dialysis, recruited from 4 hospital-based renal units offering PD and HD Excluded if terminal illness with life-expectancy < 6 months, diagnosis of psychosis, cognitively impaired 12 month follow-up	Age (yr): 77 Gender (% male): 66 Race (%): NR **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** unclear **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-Events/1 pt-year (N=171) HD 2.0 (66%) PD 1.9 (68%) RR (PD vs HD) 0.97 (0.77, 1.22)	Adjusted difference in scores (PD-HD) -SF-36 PCS Baseline: 1.2 (-2.0, 4.3) 6 months: 2.9 (-0.04, 5.9) 12 months: -0.5 (-3.7, 2.7) -SF-36 MCS Baseline: 2.9 (-0.4, 6.2) 6 months: -1.5 (-4.1, 1.1) 12 months: -0.9 (-4.5, 2.7) -KDQOL symptoms Baseline: 3.5 (0.3, 6.6) 6 months: 2.4 (-0.5, 5.3) 12 months: -1.2 (-4.1, 1.7)	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Mittal 2001[57] PD, HD	1996-1998 USA	N=177 (134 HD, 34 PD) Receiving HD or PD for >3 months at study site Mean follow-up: 15.2 months for PD, 14.5 months for HD	Age (yr): 59 Gender (% male): 59 Race (%): Caucasian (59), African-American (31), Hispanic and other (10)* *PD patients less likely Caucasian, more likely African-American **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** inadequate **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	-Number of hospitalizations HD: 1.5 (1.9) PD: 0.43 (0.7); P < .01 -Hospital days HD: 12.2 (21.2) PD: 2.39 (4.4); P < .05	-SF-36 *PCS* HD: 36.9 (8.8) PD: 31.8 (7.8); P < .02 *MCS* HD: 48.7 (9.3) PD: 47.1 (10.7); P = NS *Rate of change over time* Non-significant changes for PD and HD (PCS and MCS) -Depression (MCS ≤ 42; %) HD: 25.4 PD: 26.1; P = NS	NR
Bruno 2000[73] PD, HD	1989-1998 Netherlands	N=397 (269 HD, 128 PD) Chronic dialysis (>6 weeks) patients Follow-up (median) HD: 19 months PD: 17 months	*HD patients* Age (yr): 64 (mean) Gender (% male): 62 Race (%): NR *PD patients* Age (yr): 59 (median) Gender (% male): 66 Race (%): NR **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** unclear **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	NR	NR	Pancreatitis HD: 1/269 (0.4%); 0.0016 events/PY; “uneventful” clinical outcome PD: 7/128 (5.4%); 7 patients had 9 events; 0.037 events/PY or 0.029 patients/PY; 1 patient died (1/7 [14%]), 6 uneventful clinical outcome P < .001 (HD vs PD)

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Van Biesen 2000[74] PD, HD	1979-1996 Belgium	N=417 (223 HD, 194 PD) Survived >3 months on initial modality Follow-up: 10 years	Age (yr): 56 Gender (% male): 52 Race (%): NR **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	NR	NR	*Reasons for modality switch* -HD to PD: n=35 cardiovascular problems (40%), access problems (25%), personal choice (23%), blood pressure problems (12%) -PD to HD: n=32 peritonitis or exit-site infection (50%), adequacy and/or ultrafiltration problem (25%), social problems (14%), extraperitoneal leakage of dialysis fluid (11%)
Cross-Sectional Studies						
Kalirao 2011[68] PD, HD	NR USA	N=389 (51 PD, 338 HD) English as primary language, age ≥18 (PD) or age ≥55 (HD), no documented history of recent chemical dependency or acute psychoses All testing at least 2 hours from time of last dialysis Follow-up: NA	Age (yr): 69* Gender (% male): 56 Race (%): white (79), African American (13)* *PD patients younger, more likely male, broader race distribution Dialysis duration (months) PD: 23.0 (15.6) HD: 32.8 (32.8) (P = .005) **Risk of Bias: High** **Selection bias:** unclear **Blinding:** unclear **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	NR	-Cognitive impairment[a] *None* PD: 26% HD: 13% *Mild* PD: 8% HD: 14% *Moderate* PD: 35% HD: 36% *Severe* PD: 31% HD: 37% -Risk of moderate to severe impairment relative to controls age ≥55 without CKD PD: OR 2.58 (1.02, 6.53) HD: OR 3.16 (1.91, 5.24)	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Griva 2010[22] HD, HHD, PD (CAPD, APD)	NR UK	N=145 (HD 52, HHD 25, PD 68) Age ≥ 18, maintained on same dialysis modality for ≥ 3 months, fluent in English, medically stable (no acute medical or psychiatric problems) Follow-up: NA	Age (yr): 50 Gender (% male): 50 Race (%): 64 Duration of treatment HD: 38.9 months; significantly shorter than HHD, significantly longer than either PD modality HHD: 88.4 months PD: 18.6 (21.6 CAPD, 12.9 APD) **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** inadequate **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	NR	-TEQ: Significant difference across modalities (P < .01); post hoc significant difference was between PD modalities (P = .01) -BDI (% with score of ≥16 [clinical cutoff for depression]) HD: 42 % (P = NS vs other modalities) HHD: 8% CAPD: 49% (P = .01 vs APD; P = .04 vs HHD) APD: 26% -CDI (% with score of ≥10 [clinical cutoff for depression]) HD: 31% (P = NS vs other modalities) HHD: 12% CAPD: 44% (P = .001 vs APD; P = .005 vs HHD) APD: 22%	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Cano 2007[75] PD, HD	NR UK	N=148 (HD 100, PD 48) All HD or PD patients were asked to complete questionnaire Follow-up: NA	*HD Patients* Age (yr): 21-86 (mean NR) Gender (% male): 51 Race (%): NR *PD Patients* Age (yr): 19-87 (mean NR) Gender (% male): 65 Race (%): NR **Risk of Bias: High** **Selection bias:** adequate **Blinding:** unclear **ITT:** inadequate **Attrition bias:** inadequate **Selective outcome reporting:** no	NR	NR	GI Symptoms (Rome II classification) *HD Patients* Abdominal pain: 72/100 (72%)[b,c] Constipation: 33/100 (33%)[b,c] Laxative use: 44/100 (43%)[b,c] Heartburn: 20/100 (20%)[b] Dysphagia: 6/100 (6%)[b] Aerophagia: 11/100 (11%)[c] Vomiting 18/100 (18%)[b,c] IBS: 21/100 (21%)[b,c] *PD Patients* Abdominal pain: 31/48 (65%)[b,c] Laxative use: 38/48 (79%)[b,c] IBS: 16/48 (33%)[b]
Lee 2005[67] PD, HD	2002 UK	N=173 (HD 99, PD 74) Response rates HD: 37% PD: 47% Identified from renal unit database of a hospital Trust Follow-up: NA HD patients completed survey during dialysis appointment	Age (yr): 61 Gender (% male): 57 Race (%): NR **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A (self-report) **ITT:** inadequate **Attrition bias: in**adequate **Selective outcome reporting:** no	NR	-EQ-5D$_{index}$ (1.0=perfect health) HD: 0.44 (0.32) PD: 0.53 (0.34); P = NS -KDQOL (scoring?) PD significantly higher than HD for effects of kidney disease, burden of kidney disease, cognitive function; PD significantly lower than HD for sexual function -SF-36 (100=best health) *PCS:* HD 33.0 (10.4), PD 33.7 (10.8); P = NS *MCS:* HD 44.7 (9.2), PD 47.5 (8.1); P = .03 *Individual domains:* PD significantly higher than HD for emotional well-being and social function	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Wight 1998[23] PD, HD, HHD	1995 UK	N=192 (41 HD, 42 HHD, 109 PD) All patients treated at a hospital-affiliated kidney institute Follow-up: NA	Age (yr): mean NR HD: 59% 40-69 years HHD: 69% 40-69 years PD: 63% 40-69 years Gender (% male): 60 Race (%): NR (ethnic minorities approximately 5% of all patients at facility) Duration of treatment HD: 85% ≤ 9 months HHD: 62% ≤ 9 months PD: 94% ≤ 9 months **Risk of Bias: High** **Selection bias:** unclear **Blinding:** N/A **ITT:** inadequate **Attrition bias:** inadequate **Selective outcome reporting:** no	NR	SF-36 (0-100, higher scores = higher quality of life) Physical functioning* HD: 28.3; HHD: 47.1; PD: 40.6 Role physical* HD: 16.7; HHD: 40.9; PD: 20.4 Bodily pain HD: 55.3; HHD: 54.7; PD: 59.0 General health HD: 31.6; HHD: 38.1; PD: 35.1 Vitality HD: 32.0; HHD: 41.7; PD: 35.8 Social functioning* HD: 48.8; HHD: 62.9; PD: 50.0 Role emotional* HD: 29.7; HHD: 65.0; PD: 55.5 Mental health HD: 66.6; HHD 68.8; PD 65.9 *P < .01 for differences across treatments (including hospital HD group data not presented here)	NR

Author, Year Dialysis Modalities	Study Years Country	Sample Size Inclusion Criteria Length of Follow-up	Patient Characteristics Study Risk of Bias	Hospitalization	Quality of Life, Cognition, Depression	Adverse Events
Molzahn 1997[24] PD, HD, HHD	1987-1989 Canada	N=119 (52 HD, 37 HHD, 30 PD) Receiving care at ambulatory care clinic of a major teaching hospital in western Canada Follow-up: NA	Age (yr): 48 Gender (% male): NR Race (%): NR Duration of Treatment (mean) HD: 43.8 months (P = NS vs HHD, P < .05 vs PD) HHD: 37.7 months PD: 24.8 months HD patients assessed during treatment; others before an appointment **Risk of Bias: High** **Selection bias:** unclear **Blinding:** inadequate **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	In past year (mean(SD)) HD: 1.68 (1.83) (P = NS vs HHD or PD) HHD: 1.96 (1.73) PD: 1.43 (1.79)	-SASS HD: 5.65 (1.90) (P = NS vs HHD or PD) HHD: 5.68 (2.07) PD: 5.30 (2.04) -IWB HD: 7.04 (2.28) (P < .05 vs HHD or PD) HHD: 8.85 (2.55) PD: 8.84 (3.33) -TTO HD: 0.39 (0.32) (P < .05 vs HHD or PD) HHD: 0.61 (0.29) PD: 0.53 (0.28)	NR

AMT = Abbreviated Mental Test; AT = as treated (analysis); BDI = Beck Depression Inventory; BIPQ = Brief Illness Perception Questionnaire; BMI = body mass index; BP = blood pressure; CAD = coronary artery disease; CAPD = continuous ambulatory peritoneal dialysis; CCPD = continuous cycling peritoneal dialysis; CDI = Cognitive Depression Index; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease; CVD = cardiovascular disease; DM = diabetes mellitus; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; Freq/Ext = more frequent and/or longer duration than conventional; GI = gastrointestinal; GFR = glomerular filtration rate; HD = hemodialysis (in-center); HHD = home hemodialysis; HR = hazard ratio; IBS = irritable bowel syndrome; ITT = intention-to-treat (analysis); IWB = Index of Well-Being; KDQOL = Kidney Disease Quality of Life questionnaire; MCS = Mental Component Summary (SF-36); MOS = Medical Outcomes Study; NA = not applicable; NR = not reported; NS = not statistically significant; PCS = Physical Component Summary (SF-36); PD = peritoneal dialysis; PtM = patient months; PY = person years; QOL = quality of life; RR = relative risk; RRT = renal replacement therapy; SGA = Subjective Global Assessment; SASS = Self-Anchoring Striving Scale; TEQ = Treatment Effects Questionnaire; TTO = Health State Utility/Time Trade-Off technique

[a] Level of cognitive impairment determined from scores relative to age-adjusted means; normal=scores ≤ 1.49 SD below mean on all tests in all 3 domains (memory, language, executive function); mild=scores 1.50-1.99 SD below mean in 1 domain; moderate=scores 1.50-1.99 SD below mean in 2 or more domains or ≥2 SD below mean in 1 domain; severe=scores ≥ 2 SD below mean in 2 or more domains

[b] Symptoms significantly higher compared to hospital outpatient controls

[c] Symptoms significantly higher compared to community controls

Table 5. Study Characteristics and Modality Selection Findings for Key Question 3

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Patient Perspective			
Keating 2014[95] Canada Cohort (retrospective)	N=299 Patients from a multi-disciplinary CKD clinic who had initiated dialysis for a minimum of 30 days, had attended clinic for at least 120 days, received pre-ESRD modality education, had declared an intended modality	Age (yr): 69 Gender (% male): 60 Race (%): Caucasian (85), Afro-Canadian (6), Aboriginal (3), other (6) **Risk of Bias: High** **Selection bias:** adequate **Blinding:** unclear **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-Intended and actual modalities PD: initiated by 91/154 (59%) HHD: initiated by 9/21 (43%) HD: initiated by 84/89 (94%) -*Patient r*easons for not performing PD after intending to initiate PD Preference for hospital based treatment: 37% Lack of space in home: 1.6% -*Medical* reasons for not performing PD after intending to initiate PD Acute start (37%) Abdominal surgeries (8%) Hernia (3.2%) Obesity (2.3%)
Forbes 2013[117] UK Observational (prospective)	N=249 Deemed medically suitable for HHD	Age (yr): 53 (median) Gender (% male): 57 Race (%): white (26), black (33), Indo-Asian (34), other (7) **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-Home visit: 33% of homes did not meet Government's Decent Homes Standard -Hazards to health/well-being: overcrowding (57%), damp/mold growth (33%), inadequate facilities for sanitation and drainage (17%), risk of structural collapse (10%), inadequate domestic hygiene, pests and refuge (8), inadequate facility for storing and preparing food (8), inadequate supply of uncontaminated water (3%) -70% of homes visited were not suitable for either PD or HHD (spatial, health, and safety concerns) -1/249 (0.4%) started HHD, 72/249 (29%) started PD

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Maaroufi 2013[96] France Prospective cohort	N=228 CKD (eGFR <20 ml/min/1.73m^2) or incident HD (<1 month of treatment), 2009-2011, no formal information on ESRD treatment Minimum follow-up: 1 year	Age (yr): 70 Gender (% male): 63 Race (%): NR Patients had at least one information session (more if requested) on principles, advantages, and complications of PD and HD (HHD was not an option in this region; PD was offered to all patients expressing a preference or with contraindications to HD) **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-78% (n=177) were pre-dialysis, 22% (n=51) on HD for <1 month (no significant differences in patient characteristics between groups) **-Information received during pre-dialysis care** PD preference: 82/177 (46%); 45 went to RRT (21 [47%] HD, 21 [47%] PD, 3 [6%] transplant at 1 month) HD preference: 49/177 (28%); 33 went to RRT (32 [97%] HD, 1 [3%] transplant at 1 month) Undecided: 34/177 (19%); patients more often female; 11 went to RRT (9 [82%] HD, 1 [9%] PD, 1 [9%] transplant at 1 month) Reluctant to undergo dialysis: 12/177 (7%); patients older (3 went to RRT, all HD at 1 month) **-Information received during 1st month of HD** PD preference: 14/51 (27%); 12 alive at 3 months (8 [67%] HD, 4 [33%] PD) Stay with HD: 26/51 (51%); 25 alive at 3 months (100% HD) Undecided: 11/51 (22%); 11 alive at 3 months (100% HD) -Excluding “reluctant” patients: PD preference patients were older, had lower BMI, and were more frequently informed pre-dialysis -Reasons for preferring PD: home treatment (54%), autonomy (31%), comfort to travel (5%), employment compatibility (11%) -Reasons for preferring HD: treatment in medical facility (32%), autonomy (37%), socioeconomic criteria (15%), socializing/security (12%), reluctance for intra-abdominal catheter (11%) -Reasons for reluctance: age and comorbidities (75%) only pre-emptive transplantation (8%), behavioral impairment (8%), cultural (8%) -Mismatches between preference and treatment – only for n=29 in PD group; 48% due to medical causes (largely abdominal contraindication), 52% due to other causes (medical center transfer, adverse opinion of family or employer, changed opinion)

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Ribitsch 2013[92] Austria Retrospective cohort	N=227 (70 intervention, 157 standard care) eGFR ≤ 15 mL/min/1.73m^2, anticipated progression to ESRD in following year; excluded patients who started dialysis with central venous catheter (eliminating late referrals and emergency starts)	Age (yr): 56 Gender (% male): 66 Race (%): NR Information on Dialysis (INDIAL) pre-dialysis education program offered to all patients with participation voluntary; 2 days of information and demonstrations (PD and HD) Standard care group did not receive structured education **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** unclear **Selective outcome reporting:** no	-227 patients progressed to dialysis during study period Education group: 46% (32/70) chose HD; 54% (38/70) chose PD Standard care group: 72% (113/157) chose HD; 28% (44/157) chose PD OR (choosing PD with INDIAL vs standard care, age corrected): 3.35 (1.82, 6.14)

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Chanouzas 2012[97] UK Cross-sectional (survey)	N=118 (response rate 49%); HD 82, PD 24, conservative management 12) Patients who had already made a modality choice following standard education program; referred for education with irreversible CKD and deteriorating GFR	Age (yr): 67* Gender (% male): 59 Race (%): Caucasian (79) *PD patients younger than HD patients Education program included home visit (2-4 hours) with educational materials, invitation to visit HD or PD unit, invitation to formal education workshop (1/2 day), plus additional meetings as requested **Risk of Bias: High** **Selection bias:** inadequate (49% response rate) **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	-Patients choosing PD (vs HD, all P < .05): lower comorbidity index score, more likely married, more likely employed or in school, less likely living alone -Patients choosing PD scored the following factors significantly more important than patients choosing HD (all P < .05) Written information on modality Modality fitting with lifestyle Family/home/work circumstances -Patients choosing HD scored “past medical history” significantly more important than patients choosing PD (P = .02)

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Lacson 2011[93] USA CCT	N=20,057 incident patient/TOPs attendees (8/2006-12/2008); subset of 30,217 incident patients (1/2008-12/2008, 3,165 who attended TOPS); 2,800 matched (TOPS/non-TOPS) pairs (age, gender, race, diabetes, geographic area) Attended treatment options program (TOPs) at Fresenius Medical Care, North America facilities	For 30,217 incident patients Age (yr): 63 Gender (% male): 57 Race (%): white (65), black (29), other (5) For 2,800 matched pairs Age (yr): 63 Gender (% male): 57 Race (%): white (76), black (21), other (2) **Risk of Bias: Moderate** **Allocation generation/concealment:** N/A **Blinding:** N/A (database) **Incomplete outcomes:** no **Selective outcome reporting:** no	-Of 20,057 TOPs attendees, modality selections were: in-center (27%), home (24%), transplant (13%), no therapy (0.2%), no choice (35%) -5,567 of these patients started dialysis therapy; 25% began a home dialysis therapy (compared to 3.3% of approximately 75,000 patients who did not attend TOPS during same time period); home-based was predominantly PD -Of 30,217 incident patients, TOPs attendees (n=3,165) were younger (62 vs 63 years, P = .008), more likely white (73% vs 65%, P < .001), larger body surface area ($1.89m^2$ vs $1.87m^2$, P < .01), with fewer comorbid conditions (3.7 vs 3.9, P = .01) -Choice of PD: 25% of TOPs attendees, 3.7% of non-attendees (adjOR 5.13 [3.58, 7.35]) -Of 2,800 matched pairs, 24.0% of TOPs attendees and 4.0% of non-attendees chose PD (adjOR 7.73 [3.26, 18.32]) -90 day survival (adj HR for death, attendees vs non-attendees): 0.61(0.50, 0.74) (similar results in matched analysis) -adjOR for TOPs attendees being on PD at day 90: 4.69 (3.24, 6.79)
Oliver 2010[82] Canada Cohort (prospective)	N=497 incident ESRD patients Written diagnosis of ESRD by nephrologist, received at least 1 dialysis treatment or had initiated outpatient chronic dialysis or had acute or acute-on-chronic renal failure and had received at least 4 weeks of uninterrupted dialysis	Age (yr): 66 Gender (% male): NR Race (%): NR Note: contraindications, barriers to self-care, and availability of support in the home were determined by a multidisciplinary team (nephrologist, pre-dialysis nurse, PD nurse and/or acute care nurse, social worker) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-110/497 (22%) had medical and social <u>contraindications</u> to PD a. Medical: obesity (5%), abdominal scarring (5%), ascites (1%), diverticulitis (1%), abdominal hernia (1%), other conditions (all < 1%) b. Social: residence did not permit PD (3%), work did not permit PD (0.2%) -245/387 (63%) had <u>barriers</u> to self-care; patients with barriers were older, more likely female, lower weight and BMI, more likely to have a cardiovascular condition or cancer, more likely to have started dialysis as an inpatient and at a higher eGFR a. Physical: ↓strength (53%), ↓manual dexterity (43%), ↓vision (33%), ↓hearing (16%), immobility (25%), poor health (14%), poor hygiene (3%) b. Cognitive: language (15%), history of non-compliance (13%), psychiatric condition (8%), dementia/poor memory (8%), other (8%) -Among 245 patients with barriers to self-care PD, family support increased PD eligibility (80% vs 63%,; P = .003; adjOR 3.1 [1.6, 6.1], P = .001) -Among 179 patients offered PD, family support increased choice of PD (57% vs 40%, P = .03; adjOR 2.3 [1.2, 4.7], P = .01) -Among 245 patients with barriers to self-care; family support increased PD utilization (39% vs 23%, P = .009) -Family-assisted PD: 34% of patients with barriers to self-care and family support; 0% of patients with barriers and no family support, and 9% of those with no barriers to self-care

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Rioux 2010[118] Canada Cohort (prospective data collection)	N=236 initiating home dialysis (83 HHD, 153 PD) All patients initiating PD or HHD, 2004-2008	Age (yr): 56 Gender (% male): 62 Race (%): Caucasian (52), Asian (21), black (10), other (18) **Risk of Bias: High** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting: no**	(NOTE: facility has a "home dialysis first" policy) -Patient differences (HHD vs PD) a. HHD patients more likely male (70% vs 57%, P = .05) b. HHD patients younger at start of modality (46 years vs 62 years, P < .001) c. HHD patients less likely to have diabetes (24% vs 45%, P = .003) d. HHD patients had longer delay between 1st RRT and HHD (4.8 years) than PD patients (delay between 1st RRT and PD = 0.34 years); P = .002
Zhang 2010[119] Canada Cohort (retrospective data collection)	N=486 attended clinic; 153 started RRT (59 HD, 15 HHD, 79 PD) Attended CKD clinic 2001-2007	Demographic data for N=486 Age (yr): 65 Gender (% male): 61 Race (%): Caucasian (70), Asian (14), black (6), other (10) 11% had medical contraindication for HHD **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-Patient differences; all P < .05 a. HHD patients younger (48 yrs) than HD (62 yrs) or PD (64 yrs) patients b. HHD patients had lower BMI (19) than HD (32) or PD (29) patients c. HHD patients more likely English speaking (100%) than HD (68%) patients d. HHD patients more likely working (73%) than HD (39%) or PD (42%) patients -No difference in eGFR or comorbidity index at initiation -Patients' reasons for NOT choosing HHD: disinterest (25%), lack of social support (24%), inadequate space (5%), communication (5%), inability to perform own dialysis (3%) (NOTE: not all patients provided a reason)

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Cafazzo 2009[120] Canada Cross-sectional survey	N=66 NHHD and 199 eligible HD patients Excluded: medical contraindication to NHHD, life expectancy < 6 months, physical and/or visual impairments limiting ability for HHD, mental or psychiatric diagnoses that prevent independent living	Age (yr): 53 Gender (% male): 57 Race (%): NR **Risk of Bias: High** **Selection bias:** inadequate (21% non-response) **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	-Response rate: 56/66 (85%) NHHD; 153/199 (77%) HD -Patient differences a. NHHD patients were younger (47 years vs 55 years, P = .001) b. No difference in gender (60% vs 56%, P = .49) c. NHHD patients less likely to have diabetes (12.5% vs 31.4%, P = .006) d. NHHD patients had higher physical quality of life (SF-12) scores (41.5 vs 34.7, P < .0001) e. No difference In mental component, perceived ability for self-care, perceived social support, or anxiety -Perceptions of NDDH (all differences P < .05) a. HD patients less likely to be comfortable with self-cannulation b. HD patients less likely to believe they will receive as good care as with HD c. HD patients less likely to believe they would be able to perform NHHD properly d. HD patients more fearful of a catastrophic event
Portolés 2009[76] Spain Prospective cohort	N=489 All incident PD patients (2003-2006) Average follow-up 13.36 months (range 1-36)	Age (yr): 54 Gender (% male): 62 Race (%): NR **Risk of Bias: Low** **Selection bias:** adequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-Hospitalizations: comorbidity index, diabetes, and previous CV event predicted hospital admission -Mortality: 28/489 (5.7%), patients that died were older, had higher comorbidity index values, had diabetes or previous CV event, had higher hospital admission rate -Patients that changed from HD to PD had higher mortality rate (11.5% vs 4.6%, P = .009) -Patients receiving PD through choice has lower mortality than those forced to accept PD for medical reasons (3.5% vs 20.4%, P < .001) and lower peritonitis rate (0.46 per year at risk vs 0.82, P < .05)

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Oliver 2007[83] Canada CCT	N=134 incident patients All pre-dialysis patients who progressed to ESRD, ESRD patients who started dialysis urgently	Age (yr): 73 (median) Gender (% male): 58 Race (%): NR Multidisciplinary team (physician, program coordinator, social work, home dialysis nurse) reviewed for medical and social conditions that could be barriers to PD **Risk of Bias: Moderate** **Allocation generation/concealment:** N/A **Blinding:** inadequate **Incomplete outcomes:** no **Selective outcome reporting:** no	-Control group patients lived in regions without home care support -108/134 (81%) had at least 1 medical or social barrier to PD a. Medical: ↓strength 43%, ↓manual dexterity 37%, ↓vision/blindness 25% immobility 20%, ↓hearing/deafness 17%, others (all 4% or less) b. Mental or psychological: anxiety 25%, decreased cognition (including dementia) 8%, psychiatric condition 7%, history of non-compliance 5% c. Social: living alone and requiring assistance with PD 19%, residence does not permit PD 9%, nursing home does not support PD 7%, others (all 4% or less) -80% of patients living in regions with home care support were eligible for PD (compared to 65% of those living in regions without support, P = .01) -Each condition acting as a barrier reduced odds of being eligible for PD (OR 0.74 per condition, P = .02) -No difference in likelihood of choosing PD based on availability of home care (59% in regions with home care, 58% in regions without home care) -Female patients (adjOR 2.8, P = .03) more likely to choose PD -Patients receiving pre-dialysis care (adjOR 5.0, P = .01) more likely to choose PD (pre-dialysis care defined as at least 4 months of nephrology care before dialysis) -Utilization of PD: 47% in regions with home care support, 37% in regions without home care support (P = .27) -Utilization of PD greater in patients receiving pre-dialysis care (OR 4.0, P = .01) and in females (OR 2.3, P = .04) -Among patients living in region with home care assistance, choosing PD, and consenting to follow-up, mean rate of home care visits per week in 1st year was 4.6 (including 4 self-care patients) or 5.8 in patients who received assistance (maximum allowable visits = 14) -Adverse events in mean follow-up of 449 days per patient (all P = NS) a. Hospitalizations per patient year: Assisted PD 1.4, Other dialysis modalities 1.0 b. Hospital days per patient year: Assisted PD 23.5, Other dialysis modalities 13.1 c. Modality switches per patient year: Assisted PD 0.40*, Other dialysis modalities 0.19 d. Deaths per patient year: Assisted PD 0.12, Other dialysis modalities 0.18 *Included temporary switches, technique survival was 81% at 1 year

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Manns 2005[89] McLaughlin 2008[90] Canada RCT	N=70 (35 per group) Patients with CKD (GFR < 30 mL/min/1.73m^2) who had attended, at a minimum, the standard 3-hour education session; excluded if cognitive dysfunction, non-English speaking unless family member could translate), unable to do ADLs independently, currently on dialysis	Age (yr): 64 Gender (% male): 54 Race (%): NR Randomized to educational intervention (4 written manuals, videos, small group interactive session) or standard care only **Risk of bias: High** **Allocation:** adequate **Blinding:** inadequate **ITT:** no (all patients providing data at time of outcome measurement n=34 in usual care group; n=30 in intervention group at 1st assessment, n=28 at 2nd assessment); **Withdrawals:** 8/70 (11%); all accounted for **Selective outcome reporting:** no	**Manns 2005** -Intention to start self-care dialysis at baseline: 57.1% intervention, 48.6% control (P = .6) -Intention to start self-care dialysis at study completion: 82.1% intervention, 50.0% control (P = .015) -Among patients who were either uncertain or planned to start with in-center HD at baseline: 64.2% of intervention group and 16.7% of control group (P = .01) planned to start self-care at study completion -No interactions -2 factors associated with increased odds of choosing self-care a. intention to choose self-care at the start of the study (OR 41.7 [6.5, 264.3], P < .001) b. being in intervention group (OR 10.2 [2.0, 50.3], P = .004) -Knowledge: intervention group significantly different from control group on 2 of 3 items at study completion -Attitudes: intervention group significantly different from control group on 2 of 5 items at study completion -At mean follow-up of 339 days since enrollment, 12 additional patients started dialysis: 2 intervention group patients died within 1 week of start (modality not reported), 4 of 7 control group patients started with self-care dialysis; 2 of 3 intervention group patients started with self-care dialysis **McLaughlin 2008** -Patient-reported perceived advantages of self-care dialysis categorized as *freedom, lifestyle, and control* -Association of perceived advantages with intended choice of self-care dialysis a. Freedom: adjOR 9.1 (2.0, 41.3), P = .004 b. Lifestyle: adjOR 7.0 (1.6, 29.7), P = .008 c. Control: adjOR 4.3 (0.9, 19.1), P = .058 -Perceiving no advantage of self-care dialysis associated with reduced odds of selecting self-care dialysis (OR 0.06 [0.01, 0.24], P < .001) -Control group: no change in perceptions of advantages of self-care dialysis from baseline to study completion -Intervention group: increased % identifying freedom (P = .01) and control (P = .01) as advantages; decreased % reporting no advantage (P < .001)

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Bass 2004[100] USA Cross-sectional	N=188 Diagnosis of ESRD, began dialysis ≥3 months before interview, spoke English, age ≥18, lived within 1 hour of Baltimore or Boston	Age (yr): NR (34% > 65 yr) Gender (% male): 37 Race (%): African-American (56)* *PD patients less likely African American HD patients interviewed at dialysis facilities; PD patients interviewed at home or at facility HD patients more likely on dialysis ≥5 years and less likely to have had a different previous modality **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** no **ITT:** N/A **Attrition bias:** inadequate **Selective outcome reporting:** no	-Depressed mood (patients with Beck Depression Index score > 9 [mild to moderate depressive mood]) HD: 8/109 (7%); CAPD 3/57 (5%); CCPD 3/22 (14%) -Quality of life (patients with General Health Perceptions score ≥ 70 [median score for general population]; 0 = worst, 100 = best) HD: 38%; CAPD 18%; CCPD 14% (P < .05 across modalities) -Aspects of daily life (patients reporting negative effect of current dialysis modality) a. No differences across modalities for ability to perform daily tasks, ability to control your life, relationships with family and friends, getting the sleep you need, feelings of anxiety, or interest in sex b. Significant difference across modalities for feelings about how you look (HD 29%, CAPD 26%, CCPD 55%) -Time trade-off-based preference values for current treatment vs other modalities a. No differences across modalities in values for current health (0 = death, 1 = perfect health) (HD 0.69, CAPD 0.74, CCPD 0.70) b. HD patients assigned significantly lower values to CAPD, CCPD, and HHD c. CAPD patients assigned significantly lower values to HD and HHD d. CCPD patients assigned significantly lower values to HHD -Approximately 38% of HD patients would switch to CAPD if it increased survival time by 20%; approximately 66% would switch if increase was 100% -Approximately 34% of CAPD patients would switch to HD if it increased survival time by 20%; approximately 70% would switch if increase was 100% -Approximately 30% of CCPD patients would switch to HD if it increased survival time by 20%; approximately 65% would switch if increase was 100%
Rubin 2004[94] CHOICE USA Cross-sectional	N=736 incident dialysis patients from centers offering both HD and PD Initiation of chronic outpatient dialysis in past 3 months, ability to consent, age > 17 years, able to speak English or Spanish	Age (yr): 56* Gender (% male): 56 Race (%): white (69)* *PD patients younger and more likely white **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** surveys returned anonymously **ITT:** N/A **Attrition bias:** inadequate **Selective outcome reporting:** no	-Response rate: 89% (656/736), 521 complete responses, 135 partial responses PD: 85% (185/256) plus 28 partial responses HD: 92% (336/480) plus 107 partial responses -Rating of “Excellent” on amount of information given on choosing HD or PD PD patients: 69% (134/193) HD patients: 26% (99/382) Relative probability (PD vs HD): 2.65 (2.21, 3.02) -Rating of “Excellent” on amount of dialysis information PD patients: 71% (137/193) HD patients: 33% (129/394) Relative probability (PD vs HD): 2.07 (1.78, 2.32)

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McLaughlin 2003[91] Canada Cross-sectional survey	N=223 Attended progressive renal insufficiency clinic (actively promoting self-care dialysis)	Completers of survey: Age (yr): 61 Gender (% male): 60 Race (%): NR **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	-Response rate 185/223 (85%) (NOTE: if questionnaire wasn't returned, another was sent 2 weeks later until response rate was >80%); 12 questionnaires were excluded (patient could not be identified and/or errors in completion) -Barriers to self-care dialysis (% of patients who agreed or strongly agreed with statement): a. knowledge (highest of 4 reasons): lack of explanation of self-care (60%); lack of understanding (36%) b. attitudes (highest of 13 reasons): fear of social isolation (54%), patient should not be unsupervised (53%), lack of self-efficacy in performing self-care (50%), fear of substandard care (40%) c. skills (highest of 9 reasons): needle phobia (47%), lack of space at home (42%), visual impairment (30%)
Ravani 2003[98] Italy Prospective cohort	N=229 Consecutive patients new to RRT 1999-2002 Compared patients referred ≤3 months before dialysis to those referred >3 months before Among patients referred >3 months before dialysis - compared standard unstructured pre-dialysis clinic to formal multidisciplinary pre-dialysis care	Age (yr): 64 (median 70)* Gender (% male): 62 Race (%): NR *Standard care group was older Patients at study centers were invited to consider PD as 1st choice if no major clinical or psychological contraindications or personal unwillingness **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-Participation in modality selection Referral ≤3 months: 53/84 (63%) Referral >3 months:113/145 (78%), P = .015 Standard pre-dialysis care: 44/52 (85%) Multidisciplinary pre-dialysis care: 69/93 (74%), P = .147 (unadjusted analysis) -Choice of PD (vs HD) Referral ≤3 months: 25/84 (30%) Referral >3 months: 70/145 (48%), P = .006 Standard pre-dialysis care: 21/52 (40%) Multidisciplinary pre-dialysis care: 49/93 (53%), P = .155 (unadjusted analysis) -Planned dialysis start Standard pre-dialysis care: 39% Multidisciplinary pre-dialysis care: 91%, P < .001 (unadjusted analysis) Choice of PD higher in those with planned start (56% vs 24%, P < .001)

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Gadallah 2001[99] USA Prospective before/after	N=201 in dialysis program before intervention; N=235 after intervention All patients approaching ESRD in study period Patients invited to visit both HD and PD units and discuss dialysis with current patients, also given booklets and films	Age (yr): NR Gender (% male): NR Race (%): NR Developed comprehensive infrastructure including nephrologist placement of PD catheters, identification and training of family members/ nursing home/ daycare staff to perform PD, increased social support, early ESRD education, provision of in-center intermittent PD for selected patients **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** unknown **Attrition bias:** unknown **Selective outcome reporting:** no	-Significant changes in number of PD patients associated with initiation of PD program element (before, after; P value) a. training nursing home personnel (3, 11; P = .01) b. training daycare center personnel (0, 5; P = .05) c. training family members/providing support (4, 15; P = .03) d. early patient and family education (4, 24; P = .008) e. improving home conditions (1, 14; P = .01) f. in-center intermittent PD program (0, 6; P = .05) g. nephrologists laparoscopic catheter placement (loss to HD due to mechanical catheter failure) (22, 3; P = .005) -Percent of patients choosing PD: 19% before, 76% after (P = .001) -Number of patients in PD program: 33 before, 93 after (P = .001) -Number of patients in HD program: 168 before, 142 after (P = .05) -Percent of dialysis patients at facility on PD *before* intervention: 16% -Percent of dialysis patients at facility on PD *after* intervention: 40%

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Winkelmayer 2001[101] USA Cohort	N=12,557 incident patients (1990-1996); 3014 were eligible (2344 HD, 670 PD) Active in Medicare or Medicaid in New Jersey for at least 12 months prior to initiation; at least 1 health service encounter in each of 2 years prior to RRT; first diagnosis of renal insufficiency >1 year prior to dialysis (exclude new-onset renal disease)	Age (yr): NR (Medicare/Medicaid population - 43% age 65-74, 35% age 75-80) Gender (% male): 56 Race (%): white (74), black (19), other (6) **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** anonymous study numbers **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	-Predictors of PD vs HD as initial modality *Race* Black race (vs white) OR 0.56 (0.43, 0.72) Other race (vs white) OR 0.56 (0.38, 0.85) *Socioeconomic Status (SES)* Lower status OR 0.68 (0.56, 0.83) *Age* Age 45-54 (vs 65-74) OR 1.53 (1.01, 2.31) *Gender, renal diagnosis, and timing of referral* – not statistically significant -Determinants of modality switch – incident HD patients *Race* Black race (vs white) OR 0.69 (0.49, 0.97) *Age* Age 75-84 (vs 65-74) OR 0.73 (0.54, 0.99) *Renal Diagnosis* Diabetic nephropathy (vs not specified) OR 1.49 (1.13, 1.96) *Gender, SES, timing of referral* – not statistically significant -Determinants of modality switch – incident PD patients *Timing of referral* Late referral (≤90 days) (vs early referral) OR 1.47 (1.12, 1.93) *Age, gender, race, SES, renal diagnoses* – not statistically significant
Prichard 1996[86] Canada Retrospective observational	N=150 Chronic renal failure, entering ESRD programs 1988-1991; excluded if transplant at onset of ESRD or transplant or death within 6 weeks of dialysis start date	Age (yr): 57 Gender (% male): 54 Race (%): NR After chart review of comorbid and/or social conditions, patients assigned to Group A (n=31 HD recommended), Group B (n=14 PD recommended), Group C (n=31 diabetic patients encouraged to do CAPD), Group D (n=74 patient choice) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-Dialysis modality during study period HD 83/150 (55%) PD 67/150 (45%) -Group A – HD recommended for a. social reasons (social situation inappropriate to support home PD): 20/31 (65%) b. unusable abdomen (ostomies, hernias, obesity, polycystic kidneys, abdominal wall infection): 9/31 (29%) c. awaiting liver transplant: 1/31 (3%) d. age (92 years old): 1/31 (3%) -Group B – PD recommended for a. cardiovascular disease: 10/14 (71%) b. difficult vascular access: 3/14 (21%) c. lived too far away from center: 1/14 (7%) -Group C – PD recommended (diabetic patients) a. 17/31 (55%) chose PD b. 14/31 (45%) chose HD (10 for social reasons, 3 refused CAPD, 1 unsuitable abdomen) -Group D – Free choice a. 37/74 (50%) chose HD (including 15 self-care HD) (7 had previous HD, 4 lifestyle reasons, 11 missed patient education session [9 were late referrals]) b. 37/73 (50%) chose PD c. no gender preference for HD or PD

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Barker-Cummings 1995[102] USA Cohort	N=10,726 incident patients, 1989-1991, African American or white Defined PD as initial modality if patient started PD within 3 months of treatment for ESRD	Age (yr): 57 Gender (% male): 50 Race (%): African American (59), white (41) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** unclear **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	*Choice of PD* *Ethnicity* African Americans: 16% (996/6314); White: 30% (1337/4412) OR (African American vs white): 0.43 (0.39, 0.47); AdjOR 0.45 (0.38, 0.52) *Gender* Female: 20% (1052/5409; Male: 24% (1281/5317) OR (male vs female): 1.32 (1.20, 1.44); AdjOR not statistically significant *Age* Relative to age <20, all age groups less likely to choose PD Age 20-29: OR 0.48 (0.34, 0.58); AdjOR 0.47 (0.29, 0.76) Age 40-49: OR 0.34 (0.24, 0.47); AdjOR 0.35 (0.22, 0.55) Age 60-69: OR 0.18 (0.13, 0.25); AdjOR 0.23 (0.15, 0.37) *Functional Status* Mildly impaired (vs normal): OR 0.80 (0.69, 0.92); AdjOR 0.94 (0.84, 1.13) Moderately impaired (vs normal): OR 0.54 (0.46, 0.63); AdjOR 0.80 (0.66, 0.80) Severely impaired (vs normal): OR 0.35 (0.29, 0.43); AdjOR 0.61 (0.48, 0.77) *Other Factors* Education: decreased use of PD with level of education ≤ 12 years Employment: increased use of PD if employed; AdjOR not statistically significant Housing status: decreased use of PD if not a home owner Social support: increased use of PD if living with family (vs alone), decreased use if "other arrangement" (vs alone) Student: increased use of PD if a student; AdjOR not statistically significant
Provider Perspective			
Jayanti 2014[87] International Cross-sectional (Survey)	N=272 health care practitioners who completed an on-line survey (at Nephrology Dialysis Transplantation-Educational (NDT-E) site) Respondents: Europe (61%), Middle East (10%), Asia (9%), North America (8%)	Age: 45-54 (36%); 55-64 (29%); 35-44 (22%) Nephrologists (93%): Hospital-based: 54%; Academic department: 28%; Dialysis unit: 14% **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-56% of respondents had no HHD patients; those who did - median of 6 (range 1-150) -Practitioners from units with a greater number of HHD patients (defined as 6+) were: a. more likely to have a dedicated education team b. more likely to place patients' choice of modality above all other factors c. more likely to offer choice of HHD at all stages of CKD d. more likely to believe evidence supporting extended dialysis schedules -Practitioners from units that had HHD patients a. were more likely to see no financial disadvantage b. were more likely to have belief in current evidence for extended HHD c. had higher expectation of proportion of patients who could do HHD d. did not differ from practitioners from units that did not have HHD patients with regard to view of the choice of therapy that offers the best outcomes, choice of best location for patient management, view of perceived benefits of HHD, or in perceived cost-effective therapy

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Tennankore 2013[88] Canada Cross-sectional (Survey)	N=78 complete surveys (61% response rate) (partial responses from a total of 89) HT, PD, HHD, and pre-dialysis clinic nurses at one health network	Home dialysis (HHD, PD, and pre-dialysis clinic) nurses more likely to have certification in nephrology nursing than HD nurses **Risk of Bias: High** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-Nurses rankings of group with most influence on patients' choice of modality Physicians (87% by home dialysis nurses; 57% by in-center HD nurses) -Nurses rankings of group with least influence on patients' choice of modality Dialysis nurses (48% by home dialysis nurses; 38% by in-center HD nurses) -Home dialysis nurses thought home dialysis was strongly preferred for patients working or studying part- or full-time and somewhat preferred for patients of poor SES, multiple chronic illnesses, no education beyond high school, age > 70 years, English not primary language, no caregivers or social supports -In-center HD nurses thought in-center HD was strongly preferred for patients with poor SES, multiple chronic illnesses, and no patient caregivers or social supports and somewhat preferred for patients with lo education beyond high school, age > 70 years, English not primary language -Home dialysis nurses thought home dialysis benefited patient quality of life and survival and was lower cost to patients and the healthcare system -In-center HD nurses thought in-center HD was preferred for lower risk of catastrophic events and provided job security for current dialysis nurses -Both groups were "neutral" regarding whether patients were well-informed about all modalities, agreed that patients would benefit from further modality education after starting dialysis, and agreed that they would benefit from further education about dialysis modalities
Morton 2011[81] Australia Prospective observational	N=721 incident CKD Stage 5, July to September 2009; excluded acute kidney injury or return to dialysis from failed transplant	Age (yr): 63 (median=67) Gender (% male): 59 Race (%): NR **Risk of Bias: Low** **Selection bias:** adequate **Blinding:** adequate **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	-603/721 (84%) received information about treatment options prior to commencing treatment; 118/721 (16%) did not; 30/721 (4%) unknown -Of 588 dialysis patients (excluding transplant, conservative care, and deceased patients) 17.5% did not receive information about treatment options; increasing time known to a nephrologist (> 3 months vs < 3 months) and treatment at a small renal unit (< 100 patients) significantly associated with higher likelihood of receiving information prior to commencing treatment (both P < .01) -PD information not given because of medical/surgical contraindications (n=30), unsuitable living conditions (n=4), low literacy (n=2), psycho-social contraindications (n=2), patient or family refused (n=3), option not available via service provider (n=2), acute presentation (n=1) -HHD information not given because of medical/surgical contraindications (n=16), unsuitable living conditions (n=18), low literacy (n=2), no social/community support at home (n=10), psycho-social contraindication (n=5), patient or family refused (n=1) -Home-based dialysis in 146/721 (20%); these patients less likely to be known to nephrologist for < 3 months (8% vs 29%, P < .001); more likely to have caregiver with them at information session (80% vs 59%, P < .001); no difference in proportion who received information about treatment options (66% vs 73% of center-based HD)

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Pipkin 2010[80] USA and Canada Survey	N=12 survey respondents (75% response rate) Principal Investigator and Study Coordinator at 8 FHN Nocturnal Trial centers N=87 patients Patients randomized in FHN Nocturnal Trial (nocturnal home HD or in-center HD)	Completers of survey: 6 investigators, 6 study coordinators Age (yr): NR Gender (% male): NR Race/ethnicity (%): NR FHN Nocturnal Trial patients Age (yr): 53 Gender (% male): 66 Race/ethnicity (%): Caucasian (55), African-American (27) **Risk of Bias: High** **Selection bias:** inadequate (75% response rate) **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	-5 most common perceived barriers to HHD by > 66% of respondents: lack of motivation, patients too comfortable in-center, fear of self-cannulation, fear of needles falling out or catheter disconnecting (nocturnal), fear of inability to sleep on machine (nocturnal only) -5 most common perceived barriers to HHD by 33 to 66% of respondents: age 70-79 years, training too long and intense, burden of dialysis/burn out patient/partner (nocturnal only), inadequate dwelling, fear of intradialytic hypotension/hurting self -5 most common perceived incentives by > 66% of respondents: flexible scheduling, flexible prescription, less travel, more liberal diet (nocturnal only), partner encouragement -Home renovation: median cost for all patients $1,329 (range $575 to $4,603); median ranged from $998 to $4,018 across 6 study centers -Training time: mean number of sessions 28 (range 11 to 59) a. training time less for patients with experience in self-care or both self-care and cannulation b. training time not related to tests of cognition, education level, or SF-36 Physical Function subscale c. higher comorbidity score and higher age were related to increased training time required

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Jager 2004[84] (NECOSAD) Netherlands Cohort (prospective)	N=1,347 patients who had survived 1st 3 months and were still on dialysis Age ≥ 18, dialysis was first RRT, long-term dialysis modality is modality at 3 months	Patients Age (yr): 59 Gender (% male): 61 Race: NR Nephrologists completed questionnaire on modality selection (medical, social, or logistic contraindications and most important factor in modality choice) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	-864/1347 (64%) made their own modality choice; 448 (52%) chose HD, 416 (48%) chose PD -Choice of HD vs PD (OR > 1 = greater probability to choose HD) Age 40-55 (vs 18-40): OR 1.45 (0.86, 2.44) Age 55-65 (vs 18-40): OR 2.17 (1.27, 3.73) Age 65-70 (vs 18-40): OR 4.51 (2.40, 8.46) Age 70+ (vs 18-40): OR 5.97 (3.44, 10.34) Serum albumin (greater): OR 0.72 (0.55, 0.94) Female: OR 1.44 (1.04, 2.00) Living alone: OR 1.46 (1.01, 2.12) Pre-dialysis care: OR 0.46 (0.30, 0.70) -Technique survival in patients who chose their modality HD: 93% at 12 months, 91% at 24 months PD: 74% at 12 months, 62% at 24 months -483 (36%) had medical, social, or logistic contraindication to either HD (n=97) or PD (n=386) (66 patients with logistic contraindications excluded from subsequent analyses) -Medical contraindications to PD: prior major abdominal surgery (38%), cystic kidneys (7%), poor lung function (6%), IBD (4%), poor cardiac condition (4%), obesity (2%), other (30%) -Social contraindications to PD: incapable of performing exchanges themselves (77%), other (23%) -Medical contraindications to HD: poor cardiac condition (52%), acute start (7%), other (41%) -Social contraindications to HD: other (100%)

Author, Year Country Design	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Key Findings
Thamer 2000[85] Cross-sectional (survey with patient scenarios) USA	N=271 (53% response rate) 15% geographically stratified, random sample of all office-based and full-time hospital-based nephrologists in US	Responding nephrologists Age (yr): 46 Gender (% male): 85 Race (%): white (72), Asian (14), black (5), unknown (9) Training in dialysis Mostly HD: 61% HD and PD equally: 35% Mostly PD: 0.4% Unknown: 4% **Risk of Bias: High** **Selection bias:** inadequate (53% response rate) **Blinding:** N/A **ITT:** N/A **Attrition bias:** inadequate **Selective outcome reporting:** no	-More likely to recommend PD for (adj OR, 95% CI) Males: 1.44 (1.15, 1.80) Age 51-65 (vs 30-50): 1.36 (1.05, 1.77) (non-significant for age 65+ vs 30-50) Patients compliant with treatment: 11.80 (9.29, 15.01) Patients with residual renal function (>250 ml/d of urine): 2.14 (1.71, 2.70) Patients with ejection fraction >25%: 2.53 (1.88, 3.41) -Less likely to recommend PD for (adj OR, 95% CI) Weight ≥200 lbs: 0.44 (0.35, 0.55) Diabetic: 0.51 (0.41, 0.64) Living alone: 0.60 (0.48, 0.76) -Race or HIV status did not independently influence recommendation for modality -Conditions not included in patient scenarios (% of respondents recommending HD): IBD (96%), substance abuse (94%), malnutrition (93%), pregnancy (83%), hepatitis (40%), myocardial infarction (33%) -Importance of involvement in modality decision (% rated as extremely or very important): patient (98%), nephrologist (91%), nurses and social workers (70%), family (65%), other clinicians (12%)
Health Care System Factors			
Walker 2010[79] USA Cross-sectional	4,653 dialysis facilities (92.1% of facilities in 2007 ESRD Network Annual Report) Excluded if no match in Medicare's Dialysis Facility Compare (DFC) database or missing other information	NA **Risk of Bias: Low** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	-Mean % of patients on home dialysis (HHD or PD): 7.1% (range 0-100%) -Higher provision of home dialysis associated with: a. larger dialysis facility size (≥ 62 vs 62 patients) b. more years of facility certification (Medicare) c. higher population of working patients in a facility d. percentage of patients between ages 18 and 54 -Lower provision of home dialysis associated with: a. facility in more rural location b. facility in a geographically larger zip code area c. facility in high-population-density zip code d. facility offering a late shift (5 pm or later) e. facility owned by a chain f. facility with higher treatment capacity g. higher percentage of black patients -For-profit status of facility was not significantly associated with use of home dialysis

ADL = activities of daily living; BMI = body mass index; CAPD = continuous ambulatory peritoneal dialysis; CCPD = continuous cycling peritoneal dialysis; CKD = chronic kidney disease; COPD = chronic obstructive pulmonary disease; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; FHN = Frequent Hemodialysis Network; HD = hemodialysis (in-center); HHD = home hemodialysis; NA = not applicable; NHHD = nocturnal home hemodialysis; NR = not reported; PD = peritoneal dialysis; RRT = renal replacement therapy

Table 6. Study Characteristics and Technique Survival Findings for Key Question 3

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
HHD Technique Survival						
Jayanti 2013[121] Cohort (Prospective)	2004-2011 United Kingdom	N=166 (143 survivors continuing HHD, 24 failures (switch modality) All incident and prevalent HHD patients during study period	Age (yr): 49 Gender (% male): 65 Race (%): Caucasian (86) **Risk of Bias: High** **Selection bias:** adequate **Blinding:** inadequate **ITT:** N/A **Attrition bias:** inadequate **Selective outcome reporting:** no	Cox proportional hazards Technique failure: inability to continue HHD at any point from the commencement of training necessitating a permanent modality switch	4528 patient-months	-Identified 142 survivors (continued HHD) and 24 failures (switched modalities) -Technique survival: 90%, 87%, 82% at 1, 2, & 3 yrs, respectively -Predictors of technique failure (multivariate analysis) Diabetes HR 3.96 (1.66, 9.48) -Patient-reported reasons for modality switch (n=11 [61% response rate]): family dynamics (20%), lack of carer support (17%), lack of confidence with procedure (15%), interference with home life (15%), medical issues including access (12%)
Schachter 2013[122] Cohort (Retrospective)	Initiated HHD training 2003-2011) Canada	N=177 (32 failure, 145 success) “Home-first” RRT policy; only patients with absolute contraindications (dementia, lack of housing) not invited to trial for HHD	Age (yr): 46 Gender (% male): 61 Race (%): Caucasian (55) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	Binary logistic regression HHD was nocturnal (6-8 hr), 5-6 nights/wk Failure defined as training failure or technique failure	Minimum of 1 year; 775 patient-years total	-Factors associated with failure (multivariable analysis) ESRD due to diabetes: OR 3.84 (1.43, 10.3) Renting current residence: OR 3.09 (1.25, 7.59) -Most common reasons for *training* failure (n=24): home inappropriate, deterioration in medical status, cannot cope with burden of HHD, non-adherence, failed training tests -Most common reasons for *technique* failure (n=8): deterioration in medical status, cannot cope with burden of HHD, moved residence, inadequate family support, care-giver anxiety, cannot cannulate

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Tennankore 2012[123] (Likely includes some patients from Schachter 2013[122]) Cohort	Completed nocturnal HHD training 2003-2010 Canada	N=152 (105 independent, 47 dependent) Started and completed home nocturnal HD (HNHD) training, pre-dialysis or other RRT before HNHD Characterized as independent or dependent (partial or total) based on need for caregiver assistance	Age (yr): 45* Gender (% male): 61 Race (%): Caucasian (60) *Independent patients younger **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** inadequate **ITT:** N/A **Attrition bias:** inadequate **Selective outcome reporting:** no	Cox proportional hazards adjusted for age, comorbidity, catheter dialysis access, ESRD due to diabetes, gender, RRT vintage, Caucasian race Primary composite outcome: time to all-cause hospitalization, technique failure (permanent change to either PD or in-center HD), or death	Minimum of 6 months; 436 patient-years for primary outcome	-Primary composite outcome - dependent vs independent: HR 1.71 (1.10, 2.66), P = .02 adj HR 1.25 (0.76, 2.04), P = .40 -Hospitalizations (dependent vs independent): adj IRR 1.58 (0.95, 2.65) -Hospital days (dependent vs independent): adj IRR 1.94 (0.78, 4.34) -Home visits by nurses (dependent vs independent): adj IRR 2.03 (1.39, 2.97) -In-center/training facility backup dialysis runs (dependent vs independent): adj IRR 0.92 (0.58, 1.44)
Pauly 2010[124] CAN-SLEEP Collaborative Group Cohort	1994-2006 Canada	N=247 All nocturnal HHD patients from 3 sites 74% performed nocturnal HHD independently, 18% required minimal assistance, 9% were completely dependent	Age (yr): 46 Gender (% male): 61 Race (%): Caucasian (73), black (10), Asian (9), other (8) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	Cox proportional hazards adjusted for effect of the treating center Technique failure defined as inability to carry out nocturnal HHD as a result of physical or cognitive incapacity Composite outcome: nocturnal HHD program exits due to death and technique failure	Maximum of 12 years	-Model of adverse program exit (death and technique failure);36 events in 247 patients: Age: HR 1.07 (1.03, 1.10) Diabetes: HR 2.64 (1.21, 5.76) -Predictor of program exit (technique failure only); 10 events in 247 patients: Age (per 1 year increase): HR 1.09 (1.03, 1.16)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Komenda 2008[125] Cohort (prospective)	2004-2006 Canada	N=105 All patients who began training for HHD (deemed medically and psychosocially stable, speak and understand English, express interest in HHD); 30 months of dialysis (mean) before HHD	Age (yr): 52 Gender (% male): 71 Race (%): Caucasian (58) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** N/A **Selective outcome reporting:** no	Cox proportional hazards for predictors of technique failure (variables of interest: age, gender, ethnicity, training site size, prior dialysis vintage, presence of CVD and DM) Technique failure not defined	1-3 years	-37 patients dropped out of HHD program: transplantation (13); death (14); inadequate social support (2); medical reasons (2); dialysis withdrawal (1); moving (1); inadequate dialysis (2); unspecified (2) -1 year technique survival: 85% -2 year technique survival: 74% -No predictors of technique survival were significant -32% of patients hospitalized with 75 admissions (0.5 per pt-year of HHD) -90% of patients required in-center HD run with 1816 runs (11 per pt-year of HHD)
PD Technique Failure Studies						
Shen 2013[103] US Renal Data System Dialysis Morbidity and Mortality Study Wave 2 (Prospective cohort)	PD initiated in 1996 – 1997 USA	N=1587 Nationally representative cohort of US patients who initiated PD in 1996 to 1997	Age (yr): 56 Gender (% male): 54 Race (%): white 29; African American 22 **Risk of Bias: Not determined (registry study)**	Cox proportional hazards regression, unadjusted and adjusted analyses. Demographic, medical, social, and pre-dialysis health care factors were analyzed as potential correlates of technique failure; these factors were chosen *a priori* Technique failure defined as any switch from PD to HD for ≥ 30 days	3 years	Factors associated with higher rates of technique failure -Black race (vs white): adj HR 1.48 (1.20, 1.82) -Medicaid recipients: adj HR 1.48 (1.17, 1.86) -Retired (vs full-time work): adj HR 1.49 (1.07, 2.08) -Disabled: adj HR 1.38 (1.01, 1.88) -Systolic BP 140-160 mmHg (vs 120-140 mmHg): adj HR 1.24 (1.00, 1.52) Female gender associated with lower rates of technique failure: adj HR 0.78 (0.64, 0.95)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Lobbedez 2012[104] French Language Peritoneal Dialysis Registry (retrospective cohort)	PD initiated 2002-2010 France	N=9822 (baseline data for 9801; 1056 family-assisted PD, 4230 nurse-assisted PD, 4515 self PD) >18 years, no primary PD failure (PD duration < 2 days), not previously treated with PD	Age (yr): 68 (median) Gender (% male): 57 Race (%): NR **Risk of Bias: Not determined (registry study)**	Cox regression for cause-specific relative hazards Fine & Gray model for subdistribution relative hazards Technique failure defined as cessation of PD due to transfer to HD (transfer lasting > 2 months)	Median PD duration: 16.5 months	-Assisted PD (family or nurse) associated with decreased risk of transfer to HD vs self-care PD: RH 0.85 (0.77, 0.95) -Bivariate analysis Family-assisted vs self-care: RH 0.76 (0.66, 0.87) Nurse-assisted vs self-care: RH 0.67 (0.61, 0.73) -Per year of age: RH 0.99 (0.99, 0.99) -Male gender: RH 1.13 (1.04, 1.23) -Diabetes: RH 1.14 (0.98, 1.33) -HD before PD: RH 1.31 (1.19, 1.46)
Smyth 2012[105] Retrospective	1998-2008 Ireland	N=148 Age ≥ 50, commenced PD as first RRT for ESRD (CrCl ≤ 10 ml/min) Excluded if other indications for RRT (*eg,* CHF 85% performed PD independently (93% of patients 50-69 years vs 63% ≥ 70 years; P = .001)	Age (yr): 63 Gender (% male): 65 Race (%): Caucasian 90; African American 10 **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** unclear **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	Tests of means, Chi - square Technique failure defined as permanent transfer to HD	Minimum of 1 year	-Mean survival: 30 months (2-132); P = .68 between age groups -Technique failure: n=55; difference between age groups not significant -No significant predictors of technique failure (age, etiology of ESRD, catheter method, PD complications, comorbidities) -Assisted PD not associated with technique failure (36% of assisted PD patients, 37% of independent PD patients, P = .93) -Independent PD: no difference in technique failure for < 70 years vs > 70 years (P = .13) -Assisted PD: higher technique failure < 70 vs > 70 years (P = .03) -Assisted PD not associated with hospitalizations (0.78/month for assisted PD, 0.51/month for independent PD, P = 0.42)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Taveras 2012[106] Retrospective	NR (past 22 years) USA	N=235 Initiated PD at ≥ 75 years of age (one facility) 76% performed PD independently	Age (yr): 79 Gender (% male): 51 Race (%): Caucasian 90; African American 10 **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** unclear **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	Life-table analysis Univariate analysis for predictors of technique failure	Unclear	-12 month technique survival: 84%; significantly lower for patients 85 and older vs patients 75-84; no differences by gender or race -Reasons for technique failure: psychosocial problems (41%), peritonitis (25%)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Kolesnyk 2010[107] NECOSAD (prospective cohort)	PD initiated in 1997 – 2007 Netherlands	N=709 >18 years and not previously received RRT	Age (yr): varied per period, 51-59 Gender (% male): varied per period, 50-76 Race (%): NR **Risk of Bias: High** **Selection bias:** unclear **Blinding:** N/A **ITT:** inadequate **Attrition bias:** unclear **Selective outcome reporting:** no	Cox proportional hazards analyses, unadjusted and adjusted analyses Effect of diabetes, (adjusted for age, gender); effect of CVD, (adjusted for age, gender); and influence of residual GFR (rGFR), measured at the start of every follow-up period (adjusted for age, gender, diabetes, CVD Technique survival on PD compared in 4 periods of follow-up: within the 1st 3 months, 3-12 months, 12-24 months, and 24-36 months of treatment Technique failure defined as permanent switch to HD or death on PD	-	Risk factors for PD discontinuation were also those responsible for patient survival: -Age: 1-year increase in age, RR of PD failure of 1.04 (1.003, 1.06) -CVD: 0-3 month group, RR 2.5 1.2, 5.0) then stabilized over next follow-up periods (RR 2 [1.1, 3.5]) -Diabetes: RR of stopping PD after 3 months of treatment increased from 1.8 (1.1, 3.0) during the first year to 2.2 (1.3, 4.0) after second year -rGFR: loss of 1 mL/min rGFR appeared to be a significant predictor of PD failure after 3 months of treatment; within 1st 2 years: RR 1.1 (1.04, 1.25)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Singh 2010[108] University of Texas Southwestern/DaVita Peritoneal Dialysis Clinic (Retrospective)	First PD catheter placed between 2001 and 2009 USA	N=315 Insertion of a PD catheter at UT Southwestern hospitals during study period	Age (yr): 50 Gender (% male): 57 Race (%): African American 43; white 28;Hispanic 23 Diabetes was the primary etiology of end-stage renal disease (43%) **Risk of Bias: Moderate** **Selection bias:** adequate **Blinding:** N/A **ITT:** N/A **Attrition bias:** adequate **Selective outcome reporting:** no	Kaplan-Meier method. Cox proportional hazard regression model to identify factors independently associated with catheter survival (demographic and clinical characteristics including age, gender, race, body mass index [BMI], primary etiology of ESRD, co-morbidities and prior abdominal surgeries) PD catheter failure was defined as removal of dysfunctional PD catheter due to various catheter-related causes	9 years (median 19 months)	PD catheter-related non-infectious problem (*ie,* intra-luminal/extra-luminal obstruction, catheter malpositioning or migration, omental wrap around catheter, catheter leakage, catheter extrusion) was only independent variable that significantly affected catheter survival time (HR 22.5 [6.7, 75.7]) No significant association between PD catheter survival and other risk factors (*eg,* age, BMI, diabetic status, co-morbidities, previous abdominal surgeries or infections) Overall PD catheter survival rates at 12, 24, and 36 months: 92.9%, 91.9%, and 91.1% respectively
Jaar 2009[109] CHOICE (Prospective cohort)	PD initiated in October 1995 to June 1998 USA	N=262 (197 non-switchers and 65 switchers)	Age (yr): 54 Gender (% male): 57 Race (%): white 81 **Risk of Bias: High** **Selection bias:** unclear **Blinding:** N/A **ITT:** inadequate **Attrition bias:** inadequate **Selective outcome reporting:** no	Cox proportional hazards analyses Adjusted model included age, race, education, employment, distance to dialysis clinic, DM status, BMI, baseline serum creatinine Technique failure defined as switch to HD for ≥30 days	2 years	Risk factors for PD discontinuation -Black race (vs white race): HR 5.01 (1.15, 21.8) -Higher BMI (per 1 kg/m2 increase): HR 1.09 (1.03, 1.16)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Plantinga 2009[110] EQUAL cohort, prospective (assembled from CHOICE study PD patients)	1995-1998 USA (13 states, 26 clinics)	N=236 incident PD patients Age > 18 years, speak either English or Spanish Divided into 2 groups: patients from facilities with > 50 patients or ≤ 50 patients	Age (yr): 54* Gender (% male): 56 Race (%): white 75 *Patients from larger facilities were older, higher BMI, more late referrals **Risk of Bias: High** **Selection bias:** unclear **Blinding:** N/A **ITT:** inadequate **Attrition bias:** inadequate **Selective outcome reporting:** no	Covariates were confounders (significantly associated with both clinic size and patient outcomes) or previously shown to be associated with patient outcomes Technique failure defined as switch to HD lasting > 30 days	Maximum of 9 years	-Technique failure Clinics ≤ 50 patients: 37.5% Clinics > 50 patients: 9.7% RH 0.13 (0.13, 0.31) -CV events Clinics ≤ 50 patients: 0.22 per pt-year Clinics > 50 patients: 0.12 RH 0.61 (0.38, 0.98) -CV mortality Clinics ≤ 50 patients: 0.09 per pt-year Clinics > 50 patients: 0.05 RH 1.05 (0.46, 2.40) -All-cause mortality Clinics ≤ 50 patients: 0.18 per pt-year Clinics > 50 patients: 0.15 RH 1.35 (0.78, 2.35)
Tonelli 2007[111] Canadian Organ Replacement Registry (CORR) (Random sample of prospectively collected data)	PD initiated between 1990 and 2000 Canada	N=26,775 Random sample of data from the CORR	Age (yr): 62 Gender (% male): 57 Race (%): white 75 Diabetic nephropathy was primary etiology of ESRD (33%) **Risk of Bias: Not determined (registry study)**	Cox proportional hazards analyses Adjusted for age, sex, race, primary cause of kidney failure, comorbidities, smoking status, socioeconomic status, geographic region of residence, and year of dialysis initiation. Technique failure defined as switch to HD for ≥ 90 days	2.5 years	PD technique failure significantly lower for subjects living farther distances from attending nephrologist compared to patients living within 50 km of attending nephrologist >300 km (vs ≤ 50 km) : HR 0.63 (0.50, 0.79) 150.1-300 km (vs ≤ 50 km): HR 0.78 (0.65, 0.94) 50.1-150 km (vs ≤ 50 km): HR 0.86 (0.75, 0.97)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Mujais 2006[78] Baxter Healthcare (data from four cohorts of US patients tracked in the Baxter Healthcare system)	PD initiated between 2000 and 2003 USA	N=40,869 based on four cohorts of US patients that started PD in 2000, 2001, 2002, and 2003; followed until June 2005	Age (yr): approximately 54 Gender (% male): 57 Race (%): NR Mostly APD (58-64%) and new to dialysis **Risk of Bias: Not determined (registry study)**	Cox regression estimation with adjustments for age, diabetic status, gender, center size, calendar year, patient type (new to dialysis vs transfer from HD), and PD submodality (APD vs CAPD)	Varied between cohorts (2-5 years)	Determinants of technique survival included -Patients new to dialysis (vs transfer from HD): HR 0.79, P<0.0001 -No diabetes (vs with diabetes): HR 0.85, P<0.0001 -Patients from larger centers (vs small center): HR 0.94, P<0.0001 -APD (vs CAPD): HR 0.85, P<0.0001 Temporal profile for adjusted rate of transfer to HD highest in 1st 6 months on PD (relative risk 1.27–1.49, P<0.0001 vs all successive 6 month periods); declined to stable rate afterwards (*ie,* after 1st 6 months)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
McDonald 2003[112] ANZDATA	PD initiated between 1991 and 2002 Australia/New Zealand	N=9440 Patients in the ANZDATA Registry who were ≥15 years of age at the initiation of PD	Age (yr): approximately 60 Gender (% male): 52 Race (%): NR **Risk of Bias: Not determined (registry study)**	Cox regression for multivariate analyses, covariates age, gender, race, type I and type II DM, CAD, peripheral vascular disease, CVD, chronic lung disease, treated HTN, current smoking, country, and size of center at which dialysis was initiated Patients classified as obese (BMI ≥30 kg/m^2), overweight (BMI 25.0 to 29.9 kg/m^2), normal weight (BMI 20 to 24.9 kg/m^2), or underweight (BMI <20 kg/m^2) Technique failure defined as transfer from PD to HD for >1 month	varied	Technique survival rates significantly worse for groups with increased BMI at start of RRT Obese group (versus normal weight group): adj HR 1.16 (1.07, 1.26) Overweight group (versus normal weight group): adj HR 1.15 (1.06, 1.24)
Snyder 2003[113] CMS (Retrospective cohort)	PD initiated in October 1995 to 2000 USA	N=41,197 Age ≥18 years at initiation of dialysis therapy	PD patients only Age (yr): 57 Gender (% male): 53 Race (%): white 67, African American 20 Diabetes was primary etiology of renal disease (47%) **Risk of Bias: Not determined (registry study)**	Logistic regression model, adjusted for incident year, race, gender, age, DM as primary cause of renal failure, employment status, baseline glomerular filtration rate, albumin, hemoglobin, and baseline comorbidities (several), and inability to ambulate or transfer Technique failure defined as switching to HD for ≥ 60 days	3 years	Compared to those with normal BMI, obese subjects (BMI ≥30 kg/m^2) had higher rates of changing to HD in each of the 3 years; HRs 1.28 [CI NR], 1.29 [CI NR], and 1.36 [CI NR], respectively (P < 0.05 for all) Compared to those with a normal BMI, overweight subjects (BMI 25 to 29.9 kg/m^2) had significantly higher rates of changing to HD in years 1 and 2 (HRs 1.07 and 1.11, respectively)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Jager 1999[114] NECOSAD (prospective cohort study)	PD initiated in 1993 to 1995 Netherlands	N=118 ESRD patients >18 years when starting PD, no prior RRT, survived first 3 months on dialysis	Age (yr): 54 Gender (% male): 64 Race (%): NR 95% were on CAPD **Risk of Bias: High** **Selection bias:** adequate **Blinding:** N/A **ITT:** unclear **Attrition bias:** unclear **Selective outcome reporting:** no	Cox proportional hazards analyses, adjusted for several variables Technique failure defined as transfer from PD to HD	2-4 years	Predictors of technique failure included -Total fluid removal: RR 0.79 (0.68, 0.93) per 500 mL/24 hr -Systolic BP: RR 1.22 (1.05, 1.41) per 10 mm Hg -Peritoneal ultrafiltration, RR 0.73 (0.61, 0.87) per 500 mL/24 hr
Korbet 1999[115] Retrospective	1987-1997 USA	N=233 Entered ESRD program, treated with PD	Age (yr): 52 Gender (% male): 49 Race (%): black (61), white (27), other (12) **Risk of Bias: High** **Selection bias:** inadequate **Blinding:** N/A **ITT:** adequate **Attrition bias:** adequate **Selective outcome reporting:** no	Cox proportional hazard model Technique failure defined as transfer to HD	Minimum of 3 months; median 26 months	-Technique failure at 2 years: 29% (67/233) (39% [55/142] for black patients, 8% [5/62] for white patients; P < .0001)

Author, Year Study Design	Study Years Country	Sample Size Inclusion Criteria	Patient Characteristics Study Risk of Bias	Analysis Outcome definition	Length of Follow-up	Key Findings
Temporal Studies						
Perl 2012[116] Canadian Organ Replacement Registry (CORR) Prospective	PD initiated between 1995 and 2009 Canada	N=13,120 Patients from CORR, CAPD and APD patients	Most were ≥55 years of age, male, and white race Compared with patients who initiated PD between 1995 and 2000, patients in more contemporary cohorts more likely to be older, had a higher frequency of diabetes mellitus as a comorbidity, and had higher BMI; frequency of CAD and PVD lower in more contemporary cohorts **Risk of Bias: Not Determined (Registry Study)**	PD technique failure compared among three incident cohorts of PD patients initiating dialysis during 1995 to 2000, 2001 to 2005, and 2006 to 2009 Marginal structural model with inverse probability of treatment and censoring weighting to examine risk of PD technique failure Prespecified interactions with exposure of interest and risk of all-cause technique failure included age (<65 versus ≥65 years), sex, DM (presence vs absence), any comorbidities (presence vs absence), and being obese versus non-obese (BMI >29.9 kg/m2 versus ≤29.9 kg/m^2) PD technique failure defined as transfer to hemodialysis for ≥90 days	Varied between cohorts (3-5 years)	Initiating PD between 2001 and 2005: -Lower adjusted risk of technique failure (adj HR 0.89 [0.82, 0.98]) compared to 1995 to 2000 group Risk of technique failure similar between 2006 to 2009 group and 1995 to 2000 group (adj HR 0.95 [0.85, 1.06]) Patients >65 years of age had significantly lower risk of technique failure between 2001 and 2005 (adj HR 0.86 [0.75, 0.97]) and between 2006 and 2009 (adj HR 0.80; [0.69, 0.93]) relative to those >65 years of age who initiated PD between 1995 and 2000

APD = ambulatory automated peritoneal dialysis; BMI = body mass index; BP = blood pressure; CAD = coronary artery disease; CAPD = continuous ambulatory peritoneal dialysis; CVD = cardiovascular disease; DM = diabetes mellitus; eGFR = estimated glomerular filtration rate; ESRD = end stage renal disease; GFR = glomerular filtration rate; HD = hemodialysis (in-center); HR = hazard ratio; HTN = hypertension; N/A = not applicable; NR = not reported; PD = peritoneal dialysis; RR = relative risk; RRT = renal replacement therapy

Table 7. Study Characteristics and Cost Findings for Key Question 4

Author, Year Country	Inclusion Criteria	Comparisons Patient Characteristics	Analysis	Key Findings
Klarenbach 2014[126] Cost-utility analysis of data from the Alberta nocturnal home HD Canada	Patients from the Alberta nocturnal home HD RCT	Frequent home nocturnal hemodialysis (FHNHD) compared to conventional HD (in-center 61%; satellite 14%, home 25%) Age (yr): 54 Male (%): 62	Cost-effectiveness of FHNHD (including training and ongoing costs) compared with remaining on existing modality; during each 6 month time period patients could die or receive renal transplant, and patients in the FHNHD arm could experience technique failure and return to conventional HD (all outcomes would be attributed to FHNHD) High-quality administrative data and direct measurement of resource use with microcosting (including patient medication, capital and ongoing costs of a home dialysis training program, and direct elicitation of patient-borne and caregiver costs) Because the FHNT RCT did not show a difference in the risk and duration of hospitalization by modality, these costs were excluded in the reference case but explored in sensitivity analysis; resource use not captured by this cohort (*eg,* cost of transplantation or peritoneal dialysis), obtained from other sources; costs of training and each hemodialysis modality based on study and non-study patients to provide more accurate determination of costs QALYs also determined	Compared to conventional (mostly in-center) HD, FHNHD led to incremental cost savings of -$6700 Canadian dollars (US$5872 in 2014) and an additional 0.38 QALYs over a lifetime horizon Attractiveness of FHNHD varied by technique failure rate, training time, and dialysis modalities from which patients are drawn; these variables should be considered when establishing FHNHD programs Limitations: small sample size and short duration of Alberta NHD RCT

Author, Year Country	Inclusion Criteria	Comparisons Patient Characteristics	Analysis	Key Findings
Chui 2013[134] Alberta Renal Programs Canada	Adult patients; initiated long-term dialysis (PD or in-center HD) therapy July 1999 to December 2003; identified from administrative records from Northern and Southern Alberta Renal Programs	1,378 patients initiated dialysis therapy in Alberta. 165 (12%) patients had at least one modality switch during year 1 Initial Dialysis Modality PD: N=253 Age (yr): 55 (P<0.05 vs HD) Male (%): 57 White race (%): 72 (P<0.05 vs HD) HD : N=1125 Age (yr): 61 Male (%): 58 White race (%): 64	Primary cost outcomes: total cumulative costs at years 1 and 3 Secondary cost outcomes: health care resource utilization cost categories (dialysis costs, inpatient costs, medication costs, and physician fees) Analysis did not include related nonmedical costs (*eg,* costs of lost productivity and informal care)	Compared with HD patients, PD patients and patients who transitioned from HD to PD had significantly lower total health care costs at 1 and 3 years Patients who underwent PD technique failure had costs similar and not in excess of HD patients at 3 years supporting economic rationale for PD-first policy in eligible patients 3-year adjusted total cumulative costs in 2010 Canadian dollars PD: $58,724 ($44,123, $73,325) (US$51,473 in 2014) HD-to-PD: $114,503 ($96,318, $132,688) (US$100,374) HD: $175,996 ($134,787, $217,205) (US$154,340) Adjusted total cumulative costs at 1 year in 2010 Canadian dollars PD: $33,932 ($28,692, $39,172) (US$27,775) HD-to-PD: $63,281 ($55,839, $70,723) (US$55,528) HD: $88,850 ($72,642, $105,058) (US$77986) Limitations: analysis based on perspective of health payer; costs outside healthcare system not measured

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Coentrão 2013[135] Retrospective cost data from patients initiating dialysis at one center Spain	Diagnosis of ESRD, received outpatient chronic dialysis treatment Excluded: previous RRT	Modalities: HD with tunneled cuffed catheter (TCC), HD with arteriovenous fistula (AVF), PD HD-TCC: N=45 Age (yr): 66 (P < .05 vs PD) Male (%): 55 HD-AVF: N=65 Age (yr): 63 (P < .05 vs PD) Male (%): 60 PD: N=42 Age (yr): 55 Male (%): 52	Treatment modality assigned at time of first attempt at dialysis access placement (ITT basis) Annual dialysis access costs evaluated using a mixed costing method Included access surgery, diagnostic imaging, TCC-related interventions, hospitalization, and patient transportation	Costs related to dialysis access at 1 year from time of first dialysis Total Access-related interventions (per pt-year at risk) HD-TCC: 3.67 (Rate Ratio vs PD: 1.43 (1.07, 1.80) HD-AVF: 2.38 (Rate Ratio vs PD: 1.57 (1.25, 1.89) PD: 1.54 Total access-related costs (mean, per pt-year at risk) HD-TCC: €4208.20 (P < .05 vs HD-AVF or PD) HD-AVF: €1555.20 PD: €1171.60 Limitations: selection bias possible in modality selection and time of referral to nephrologist; time at risk after first access attempt varied between groups; small sample size, short follow-up; single center
Komenda 2012[127] Model used was based on data from Australia, Canada, and UK Canada	None, economic model study based on a systematic review of available costing literature	Modalities included in-center HD, conventional HHD, and more frequent HHD including nocturnal HHD (dialysis performed for 6 to 10 h per night for up to 7 nights per week) and short daily HHD(dialysis performed for 2 to 3 h per day for up to 7 days per week)	Standardized model based on a systematic review of available costing literature Cost model was transparent spreadsheet that summarized component costs for each modality Direct medical and well documented direct nonmedical costs associated with dialysis (*eg,* transportation to and from dialysis facilities) included; indirect nonmedical costs (*eg,* lost time from work and unpaid assistance from family members) not included	Conventional HHD and frequent HHD similar in cost to in-center HD in first year (driven primarily by training costs); could be less costly from second year onward, depending on frequency of dialysis Model predicted that conventional HHD may payers between $7,612 (US$6,668 in 2014) and $12,403 (US$10,865) over first year of conventional in-center HD Costs of frequent HHD were higher compared to conventional HHD due to greater consumables and materials usage Limitations: existing costing literature used for modeling yielded inconsistent evidence related to costs of conventional home, frequent home, and in-center HD between and within Australia, Canada, and UK

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Berger 2009[136] Health insurance database (retrospective cohort study) USA	Patients designated PD or HD patients based on first-noted treatment; patients with <6 months of pretreatment data or <12 months of data following initiation of dialysis ("pretreatment" and "follow-up," respectively) were dropped from study sample	PD Group: N=56 Age (yr): 44 (P<0.01 vs HD) Male (%): 52 HD Group: N=407 Age (yr): 55 Male (%): 64 Analysis based on 50 matched pairs PD Group Age (yr): 46 Male (%): 54 HD Group Age (yr): 46 Male (%): 52	PD and HD patients matched using propensity scoring to control for differences in pretreatment characteristics Once matched, cost of healthcare services during 12-month follow-up period examined including: (1) prescription medications, (2) physician office visits, (3) other outpatient visits, (4) emergency department visits, (5) hospitalizations Total reimbursed amount (*ie,* amount paid by insurer plus amount of patient liability) used as proxy for cost	Significantly lower total healthcare costs for PD patients during year following initiation of dialysis Median total per-patient healthcare costs over the 12-month follow-up period HD: $173,507 [IQR $98,706, $335,719] PD: $129,997 [IQR $73,212, $207,578] ($43,510 higher, P=0.03) Median inpatient per-patient healthcare costs HD: $39,851 [IQR $6089, $140,125] PD: $651 [IQR $0, $40,591] (P <0.01) Median outpatient per-patient healthcare costs HD: $73,392 [IQR $24,087, $101,992] PD: $70,642 [IQR $17,652, $96,770] (P=0.53) Limitations: ED visits and hospitalizations higher for HD group despite matching; database contained limited clinical information
Howard 2009[128] ANZDATA Registry Australia	New ESRD patients in Australia 2005 to 2010	NR, analyses based on >14,000 new ESRD patients	Costs reported in 2004 Australian dollars from perspective of central health-care funder and based on best available published data Dynamic population-based Markov model constructed to estimate costs and benefits of proposed changes in RRT modality utilization	Clinical practice changes reduce costs, improve patient quality of life In new ESRD patients -Switching from hospital HD to HHD estimated to produce net saving of $46.6 million Australian$ by 2010 (US$40 million in 2014) -Switching from hospital HD to PD estimated to produce a net saving of $122.1 million Australian$ by 2010 (US$104.8 million) Limitations: analysis did not incorporate indirect costs (eg, lost earnings and productivity, direct out-of-pocket costs to patients and care givers)

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Baboolal 2008[137] Cardiff and Vale NHS Trust and six other hospitals UK	Patients with ESRD receiving APD, CAPD, hospital-based HD, or satellite center-based HD (SHD)	Age and gender not reported Number of patients managed by each unit ranged from 205 to 765; renal dialysis units in study were each supervising 1 to 5 satellite units Number of patients undergoing HD: 158 to 634 per center Number of patients undergoing PD: 46 to 139 per center	All costs, including laboratory costs, estimated from service provider's perspective; also included direct costs, costs of transport, and medication usage Costs associated with access surgery and managing dialysis complications were excluded Dialysis costs estimated by combination of microcosting and top-down approach; if no access to detailed accounts values for Cardiff were applied	Cost of PD (APD or CAPD) lower than hospital-based HD Main costs with PD: solutions and management of anemia Main costs with HD: disposables, nursing, overhead associated with running unit, and management of anemia Mean annual costs in British pounds APD: £21,655 (US$34,702 in 2014) CAPD: £15,570 (US$24,949) HD: £35,023 (US$56,111) SHD: £32,669 (US$52,340) Home-based HD £20 764 (US$33,267) (based on data from only one unit) Limitations: Complete application of microcosting not possible due to confidentiality of financial data and different accounting procedures used by different units; values for overheads may not fully reflect true overhead costs and microcosting approach may have underestimated costs (*eg*. by omitting minor procedures)

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Kontodimopoulos 2008[138] Hellenic Renal Registry Greece	≥18 years old, sufficient knowledge of Greek for self- administration of SF-36 and socio-demographic and disease-related questions, physically and mentally capable of completing the survey with minimal assistance Patients on current treatment method for <1 year excluded (may not have yet stabilized against various technique-related symptoms and/or complications)	PD Group: N=65 Age (yr): 59 Male (%): 51 HD Group: N=642 Age (yr): 58 Male (%): 61	Lifelong QALYs estimated from literature-based expected remaining life years according to age, gender and modality Cost analyses performed from perspective of health system	Promoting PD appeared to be second best step (after transplantation) in improving cost-effectiveness Annual estimated costs per patient in Euros PD: €30,719 (US$38,760 in 2014) HD: €36,247 (US$45,733) Estimated lifelong QALYs PD: 3.94 (3.36, 4.51) HD: 4.37 (4.13, 4.62) Cost per QALY PD: €54,504 (US$68,062) HD; €60,353 (US$ 75,350) Limitations: cost estimates based only on direct medical costs

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Malmström 2008[130] Helsinki University Hospital Finland	Patients attending self-care HD in the Helsinki area by October 2004	Home HD: N=33 Age (yr): 49 (P<0.005 vs satellite HD) Male (%): 76 Self-care satellite HD: N=32 Age (yr): 63 Male (%): 66 Cost data collected from study patients who were on dialysis the whole calendar year 2004 (home HD N=23 and satellite HD N=28)	Cost data: total direct health care costs, travel, and outpatient medication costs Costs of laboratory visits and home installations for home HD were estimated. Remuneration to any assistant included Linear regression analysis used to explore whether weight and diabetes had effect on the different items of costs, when age and group were controlled for	No significant difference in total costs between home HD and satellite HD, costs were less than costs observed for hospital HD in other studies Patient preference should be main decisive factor when choosing between home or satellite HD Total costs per patient in Euros Home HD: €38,477 (€28,512, €56,031) (US$48,026 in 2014) Satellite HD: €39,781 (€25,675, €63,982) Mean difference: €1304 (€6491, €3883) (US$1628) Direct medical costs of dialysis and hospital treatment: higher in home HD than satellite HD (€31,834 vs €27,528, P<0.005) Travel costs lower in home HD (€426 vs €5228, P<0.001) Limitations: HHD patients younger and shorter duration of dialysis than satellite HD patients; all patients fairly young compared to general dialysis patients limiting applicability of results to older/frailer patients

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Gonzalez-Perez 2005[129] United Kingdom	None (clinical and cost data from a systematic review)	None (clinical and cost data from a systematic review)	Markov model to estimate cost-effectiveness over lifetime of 3 different HD modalities Model included direct health service costs and QALYs Sensitivity analyses performed to assess robustness of results Transport costs excluded due to variation across UK	Results supportive of shift from hospital HD to satellite and HHD HHD less costly than in-center (hospital) HD; satellite HD less costly than HHD Total Costs HHD: 5 yrs £47,657 (US$76,270 in 2014), 10 yrs £63,539 (US$101,685) Satellite HD: 5 yrs £46,001 (US$73,617),10 yrs £62,054 (US$99,301) In-center (hospital) HD: 5 yrs £48,254 (US$77,087), 10 yrs £65,131 (US$104,049) Incremental costs per QALY relative to HHD Satellite HD: 5 yrs £6,665 (US$10,648), 10 yrs £3,493 (US$5,581) Hospital HD: NR but home HD more effective and less costly at yrs 5 and 10 Estimated lifelong QALYs HHD: 5 yrs 2.32, 10 yrs 3.45 Satellite HD: 5 yrs 2.085, 10 yrs 3.03 In-center (hospital) HD: 5 yrs 1.69, 10 yrs 2.47 Limitations: data used to populate model were limited; lack of robust data on effectiveness and new dialysis equipment (not included in review)

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Shih 2005[139] Dialysis Morbidity and Mortality Study Wave 2 data, collected by the United States Renal Data System (USRDS), along with the USRDS Core CD and USRDS claims data USA	Patient/insurance data from DMMS Wave 2 (prospective observational database consisting of information on random sample of incident ESRD patients initiating dialysis in 1996 and early 1997)	PD: N=1781 Age (yr): 57 (P<0.001 vs HD) Male (%): 54 White race (%): 70 (P<0.001 vs HD) HD Group: N=1642 Age (yr): 63 Male (%): 52 White race (%): 59	Cost of treatment estimated based on Medicare expenditures over study period of up to 3 years ITT and AT analyses Multivariate analyses to account for the differences between the PD and HD groups	Medicare expenditure perspective: PD more economically advantageous initial dialysis modality Longer time (>1 year) on PD better sustains advantage even if modality switch. Unadjusted average annual Medicare expenditure as first modality in 2004 dollars (ITT) PD: $53,277 ($50,626, $55,927) HD: $72,189 ($67,513, $76,865) (P<0.001) Annual Medicare expenditure as first modality, adjusting for patient characteristics (ITT) PD: $56,807 ($53,205, $60,410) HD: $68,253 ($64,490, $72,016) (P<0.001) Limitations: true costs of caring may be underestimated (costs such as patients' copayments/deductibles and prescription drug costs not included in analysis)

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Kroeker 2003[131] London Daily/Nocturnal Hemodialysis Study Canada	Patients from London Daily/Nocturnal Hemodialysis Study (12-month retrospective chart review)	Home short-daily (quotidian) HD: N=10 Home long nocturnal (quotidian) HD: N=12 Conventional thrice weekly HD: N=22 Conventional HD patients served as matched controls for quotidian HD patients 12-month retrospective chart review allowed each patient to serve as his/her own control	Retrospective analysis of patients' conventional HD costs during 12 months before study entry conducted to measure change in cost after switching to quotidian HD Efforts made to include all costs borne by the public health care system; personal costs (patient travel and costs covered by private insurance [*eg*., home helpers] excluded Each patient generated individual cost and QALY data that were used to generate individual cost per QALY values	Major cost saving in home quotidian HD was reduction in direct nursing time, excluding patient training Treatment supply costs per patient for daily HD and nocturnal HD groups were greater due to increased number of treatments Average costs for consults, hospitalization days, emergency room visits, and lab tests for quotidian HD patients tended to decline after study entry Annual cost per patient in 2001 Canadian dollars Daily HHD: $67,300 (US$59,065 in 2014) Home nocturnal HD: $74,400 (US$65,300) Conventional HD: $72,700 (US$63,808) Total annualized cost per QALY Daily HHD: Can $85,442 (US$ 74,743) Nocturnal HD: Can $120,903 (US$ 105,771) Marginal change of -$15,090 (-US$ 13,201) and -$21,651 (-US$ 18,943), respectively (reflecting both improved quality of life and reduced costs for quotidian HD patients) Limitations: small study not powered to detect statistically significant differences in costs; previous year costing data preceding HD modality assignments indicated variance in morbidity patterns, making it difficult to directly compare study groups

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Lee 2002[132] Southern Alberta Renal Program Canada	Patients from a randomly generated list on dialysis therapy > 6 months 6 months chosen because (1) dialysis modality and permanent vascular access generally established, and (2) goal was to determine cost of ongoing dialysis, rather than costs associated with initiating dialysis therapy	Home/self-care Group: N=9 Age (yr): 56 Male (%): 44 White race (%): 89 PD Group: N=38 Age (yr): 58 Male (%): 50 White race (%): 71 Satellite Group: N=31 Age (yr): 64 Male (%): 61 White race (%): 71 HD (in-center) Group: N=88 Age (yr): 62 Male (%): 56 White race (%): 76	Costs considered: those related to outpatient dialysis care, inpatient care, outpatient non-dialysis care, and physician claims Cost of maintaining dialysis access estimated separately Patients analyzed according to modality with which they started the study	Self-care dialysis (*ie*., home/self-care hemodialysis/PD) costs less compared with in-center HD, largely due to a lower requirement for nursing care Total expenses in 2000 US dollars Home/Self-Care: $29,961 ($21,252, $38,670) PD: $26,959 [$23,500, $30,416] (P<0.001 comparing the four modalities using one-way ANOVA) Satellite: $42,057 ($39,523, $44,592) In-center: $51,252 ($47,680, $54,824) Limitations: enrolled only 50% of eligible patients with limited number of PD and home/self-care patients (reflective of the local distribution); enrolled patients were healthier than non-enrolled; possible selection bias
Sennfält 2002[140] Dialysis departments in southeastern health-care region of Sweden Sweden	Variables used to select eligible patients: age, presence of diabetes, acceptance for transplantation, presence of heart disease (angina pectoris, myocardial infarction, heart failure), type of housing, family situation, and country of birth with respect to ability to understand the Swedish language	136 patients with kidney failure, comprising 68 matched pairs PD Group: N=68 Age (yr): 52 Male (%): NR HD Group: N=68 Age (yr): 53 Male (%): NR	Direct costs for dialysis care, including overhead, obtained from annual accounts for 1998 of respective departments Indirect costs (*eg*. lost working time on the part of patients) estimated by clinical experts	Expected cost per life year and cost per QALY were more favorable for PD as the primary method of treatment for patients eligible for both PD and HD Weighted Total Costs Per Patient Per Month in US dollars PD: $6240 (more activity-related material costs) HD: $8257 (more staff and indirect costs) Expected cost per patient for PD as the primary treatment during first 5 years PD: $201,000 HD: $222,450 Limitations: Lack of consistent cost information in health care (different accounting principles used by participating centers)

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Goeree 1995[133] Regional Nephrology Center in Hamilton, Ontario Canada	ESRD patients treated with different dialysis modalities from 1990 to 1991	Home HD: N=13 CAPD: N=78 Self-care HD: N=31 In-center HD: N=96 No demographic information reported	Fully-allocated hospital costs, professional fees, erythropoietin costs, and patient costs added together to calculated total cost associated (and 95% CI) with each modality Hospital costs: salaries/wage, medical/surgical supplies, drugs/medicines, other department expenses, support department expenses, and overhead expenses Professional fees: all consultations; diagnostic, therapeutic, and surgical services Patient costs: transportation costs, parking and dialysis partner time (home HD) Indirect costs associated with lost productivity for patients were not included in the analysis	Costs varied by modality, lower with home HD and CAPD Major cost driver for CAPD was cost of medical and surgical supplies Major cost drivers for In-center HD and self-care HD were cost of personnel (salaries/ wages) and support department expenses Average cost per patient by modality in 1993 Canadian dollars Home HD: $32,570 ($30,524, $34,613) CAPD: $44,790 ($39,700, $49,879) Self-care HD: $55,593 ($52,425, $58,761]) In-center HD: $88,585 ($81,831, $95,339) Limitations: Small sample sizes

AT = as-treated analysis; CAPD = continuous ambulatory peritoneal dialysis; CI = confidence intervals; ESRD = end-stage renal disease; HD = in-center hemodialysis; HHD = home hemodialysis; ITT = intention-to-treat analysis; PD = peritoneal dialysis; QALY = quality adjusted life years; RCT = randomized controlled trial; RRT = renal replacement therapy