

Renal Replacement Therapy in Diabetes: Time for an Evidence-Based Choice?



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- Worldwide prevalence of diabetes was estimated at 2.8% in 2000.
- In 2030, the prevalence of diabetes is projected to be 4.4% of the world population

Should nephrologists fear this diabetic horde?



30 (Australia) to 45 (US) % of new cases of chronic RRT are directly or indirectly consequent to diabetic disease



Rate of new ESKD cases in diabetic subjects in 2012-13 was 152/million/year population

ERA-EDTA Registry



Leading European Nephrology

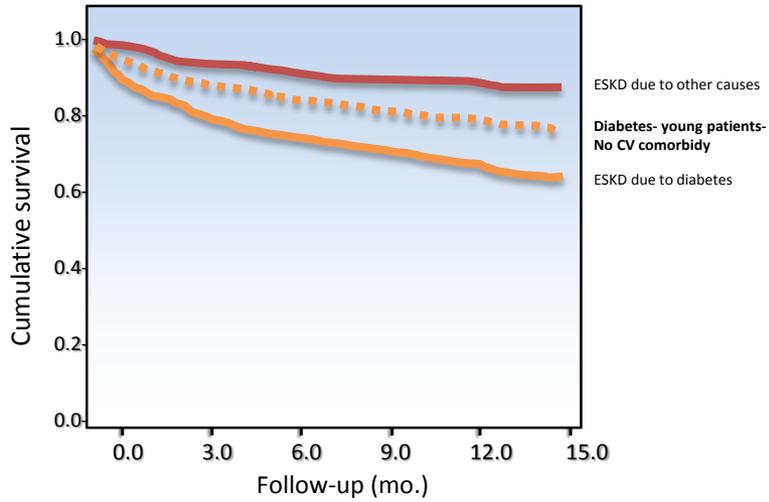
In 2013, DM as the cause of ESKD comprised 24% of the incident RRT patients and 17% of the prevalent RRT patients



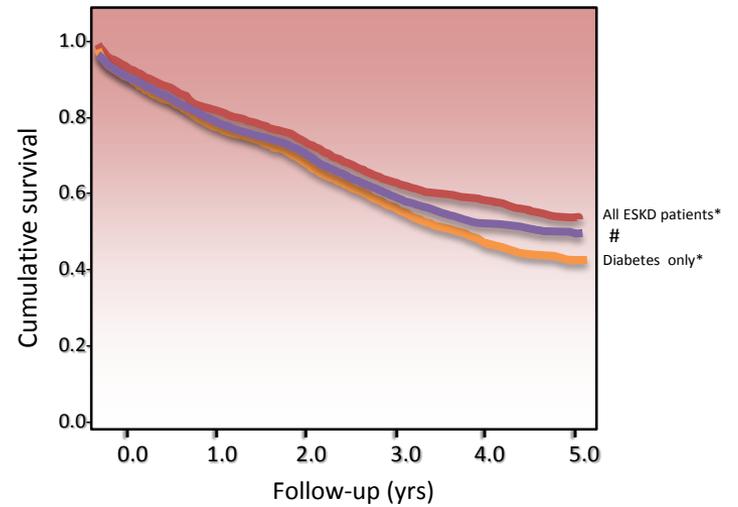
Diabetes mellitus remains the leading cause of ESKD requiring chronic RRT worldwide

A survival issue!

USRDS
UNITED STATES RENAL DATA SYSTEM

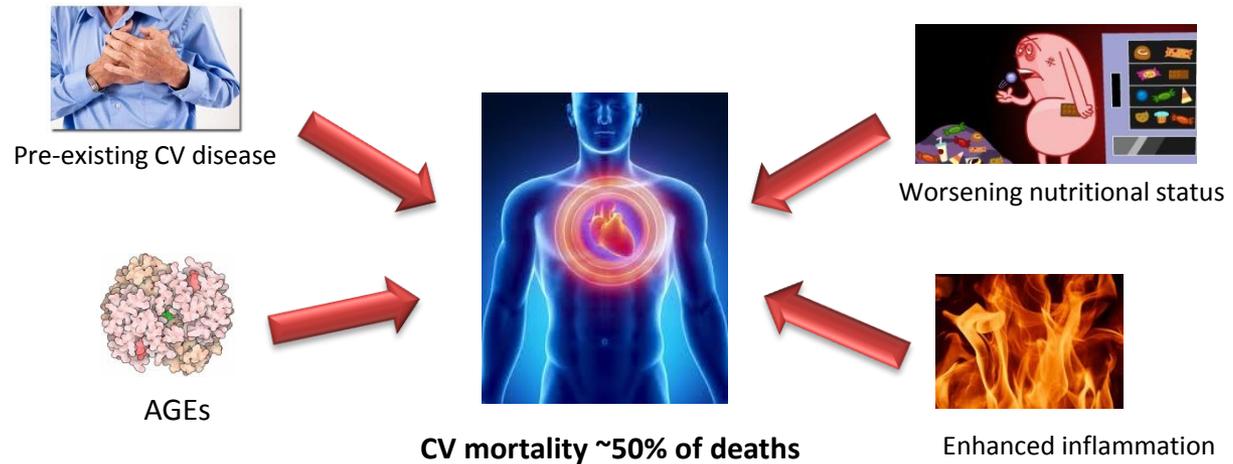


ERA-EDTA Registry



* Adjusted for age, gender and (for all ESKD) cause of ESKD

Adjusted for reduction in plasma albumin and creatinine concentrations





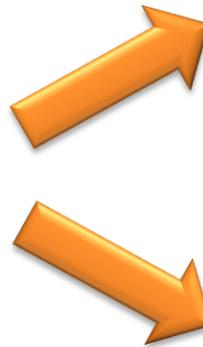
Optimal weight, BP and glycemic control
Reduction in proteinuria



Retarding CKD onset/progression



...ESKD approaches



Pre-emptive

KTx or K-PTx (DM-1)

ideal



Chronic RRT by HD or PD



What is BEST?

PD vs HD: what is best in diabetes?

PD



HD



Better hemodynamic stability

Best for day-life autonomy

Intraperitoneal Insulin

Worsen glycemic control
Higher risk of infections



Better for obese or visually impaired subject (e.g. elderly)

Vascular access may be challenging



Surveys/Registry data

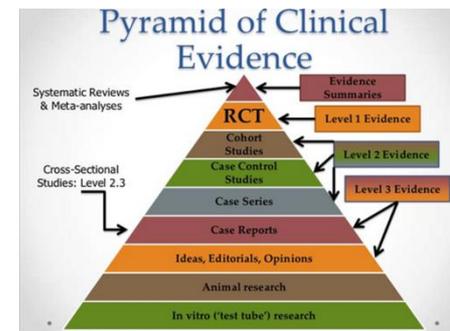


People with diabetes had half the odds of being recommended for HD



Diabetes operates slightly to favor PD

Lack of high evidence/proper guidelines



RCTs directly comparing PD vs HD are difficult to be conducted



Clinical Practice Guideline

Clinical Practice Guideline on management of patients with diabetes and chronic kidney disease stage 3b or higher (eGFR <45 mL/min)

Question 1.1- Should patients with diabetes and CKD-5 start with PD or HD as first modality?

Original Article

Dialysis modality choice in diabetic patients with end-stage kidney disease: a systematic review of the available evidence

Cecile Couchoud¹, Davide Bolignano^{2,3}, Ionut Nistor⁴, Kitty J. Jager⁵, James Heaf⁶, Olle Heimbürger⁷ and Wim Van Biesen⁸ on Behalf of the European Renal Best Practice (ERBP) Diabetes Guideline Development Group

Clinical Practice Guideline on management of patients with diabetes and chronic kidney disease stage 3b or higher (eGFR <45 mL/min)

Study selection criteria



Population

Diabetic patients with CKD stage 5-ND



Intervention

Any PD/HD technique as first dialysis modality



Comparator

Any HD/PD technique as first dialysis modality



Outcome(s)

Survival, QoL, major and minor morbid events, glycaemic control, hospitalizations, deterioration of residual renal function, functional status, access to transplantation, technique survival

Study flow



QoL, major and minor morbid events, hospitalizations, residual renal function deterioration, functional status, glycemic control, access to transplantation, technique survival.

NO EVIDENCE!!!



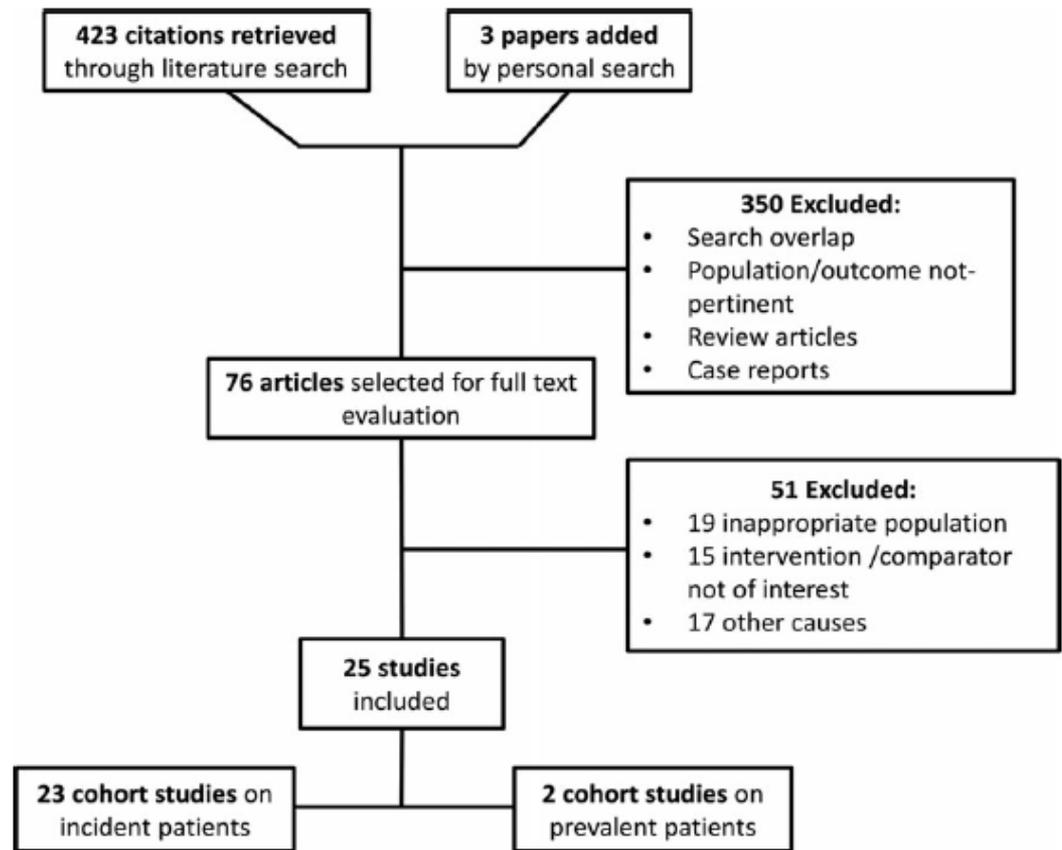
Diabetic patients : 721.783 on HD and 106.790 on PD
(range 9-61% of the total study population)



Mean follow-up: 1 to 8 years



Outcomes: Death (24 studies), Infectious complications (1 study – higher infection rates in PD in unadjusted analyses, no differences in analyses adjusted for albumin, age, race and gender)



Risk of Death

Better PD

No differences

Better HD

Notes

We recommend **giving priority to the patient's condition and preference** in selecting RRT as there is an absence of evidence of superiority of one modality over another in patients with diabetes and CKD stage 5 (**1C**)



All patients, within 12 mo. from dialysis start

All patients, within 9 mo. from dialysis start

All patients, within 6 mo. from dialysis start

All patients

Age <70 yrs

Age >75 yrs

Age <40 after 15 mo. or age 60-70 yrs within 15 mo. from dialysis start

Age 18-44 with co-morbidities

All patients within 24 mo. from dialysis start

Age >50 after 15 mo. from dialysis start

Age >67

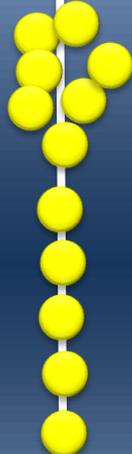
Age >75 after 6 mo. from dialysis start

Age >60 with CAD

Women, Age >70

Age >70 with CHF after 6 mo. from dialysis start

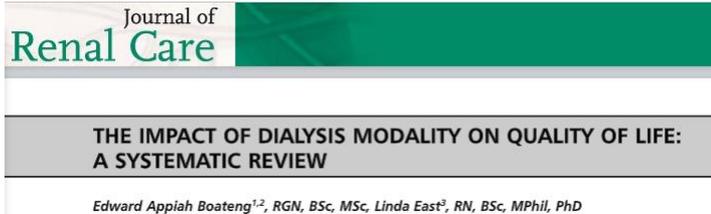
Age >45



Preference-Based Quality of Life of Patients on Renal Replacement Therapy: A Systematic Review and Meta-Analysis

Ylian S. Liem, MD, MSc,^{1,2} Johanna L. Bosch, PhD,¹ M. G. Myriam Hunink, MD, PhD^{1,3}

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VALUE IN HEALTH



Quality of Life Assessed with the Medical Outcomes Study Short Form 36-Item Health Survey of Patients on Renal Replacement Therapy: A Systematic Review and Meta-Analysis

Ylian S. Liem, MD, MSc,¹ Johanna L. Bosch, PhD,^{1,2} Lidia R. Arends, MSc, MA,¹ Majanka H. Heijnenbrok-Kal, PhD,¹ M. G. Myriam Hunink, MD, PhD^{1,3}

No statistically different preference- or utility-based QoL scores in HD compared with PD patients after taking into account presence of diabetes.

OPEN ACCESS Freely available online

PLOS MEDICINE

A Systematic Review and Meta-Analysis of Utility-Based Quality of Life in Chronic Kidney Disease Treatments

Melanie Wyld^{1*}, Rachael Lisa Morton¹, Andrew Hayden^{1,2}, Kirsten Howard¹, Angela Claire Webster^{1,3}

Which HD modality?

High-flux or low-flux dialysis: A position statement following publication of the Membrane Permeability Outcome (MPO) study.

James Tattersall, Bernard Canaud, Olof Heimbürger, Luciano Pedrini, Daniel Schneditz, Wim Van Biesen.



AJKD

Original Investigation

Convective Versus Diffusive Dialysis Therapies for Chronic Kidney Failure: An Updated Systematic Review of Randomized Controlled Trials

Ionut Nistor, MD,^{1,2,*} Suetonia C. Palmer, MBChB, PhD,^{3,*} Jonathan C. Craig, MBChB, DCH, MM, PhD,⁴ Valeria Saglimbene, MSc,⁵ Mariacristina Vecchio, MSc,⁶ Adrian Covic, MD, PhD,¹ and Giovanni F.M. Strippoli, MD, PhD, MM, MPH^{4,5,6}

In patients opting to start HD, we suggest **preferring high flux** over low flux when this is available (**2C**). We suggest diabetes has no influence on the choice between HD or HDF (**2B**)

No interaction for diabetes and HDF versus HD

Limitations



- Observational (low-quality) evidence
- High heterogeneity (patient mix, numerosity, follow-up, methodology...)
- Data on several clinical outcomes lacking in diabetic patients
- No comparative studies evaluating different HD or PD techniques

Take home messages



- There are no evidence-based arguments in favor or against PD or HD as best modality for ESKD patients with diabetes that need to start chronic RRT
- Concerns may arise about PD for elderly and frail patients
- Modality choice should be driven by subjective preferences and individual conditions after unbiased patient information
- Making sure that all the different RRT modalities can be made equally available for all patients is indispensable

Thank you for your attention !

