Újdonságok a vesepótló kezelésekben

Csiky Botond

- Urémiás toxinok
- Csont- és ásványianyagcsere zavara krónikus veseelégtelenségben
- Renális anémia
- A krónikus veseelégtelenség konzervatív kezelése
- Vese transzplantáció

- Urémiás toxinok
- Csont- és ásványianyagcsere zavara krónikus veseelégtelenségben
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- Vese transzplantáció

Urémiás toxinok

Small Water-Soluble Compounds (<500 Da)	Middle Molecule (≥500 Da)	Protein Bound Compounds (Mostly < 500 Da)
ADMA	ANP	AGEs
Carbamylated compounds	β_2-microglobulin	Homocysteine
Creatinine	Endothelin	Indoxyl sulfate
SDMA	FGF23	Indole acetic acid
TMAO	Ghrelin	Kynurenines
Urea	Immunoglobulin light chains	*p*-cresylsulfate
Uric acid	Interleukin-6	Phenyl acetic acid
	Interleukin-8	
	Interleukin-18	
	Lipids and lipoproteins	
	Neuropeptide Y	
	PTH	
	Retinol binding protein	
	TNF-α	

Toxins 10(5):202 · May 2018

Nephrol Dial Transplant (2018) 33: iii6–iii11
doi: 10.1093/ndt/gfy179

ndt
Nephrology Dialysis Transplantation

Large uremic toxins: an unsolved problem in end-stage kidney disease

Table 1. Middle molecules in the range of 15–60 kDa that have evidence for involvement in inflammation and cardiovascular disease

Molecule (alternative names)	Classification	Molecular size (kDa)	Usual biological role	Relative increase in dialysis or advanced CKD
Interleukin-18	Cytokine	18	Pro-inflammatory	~2-fold higher
Interleukin-6	Cytokine	21–28	Pro-inflammatory	2- to 5-fold higher
Interleukin-1β	Cytokine	17.5	Pro-inflammatory	~2-fold higher
TNF-α	Cytokine	17	Pro-inflammatory	4- to 5-fold higher
Soluble TNF receptor 1 (p75)	Protein	27–30	Limits TNF-α activity	3- to 10-fold higher
Soluble TNF receptor 2 (p55)	Protein	17	Limits TNF-α activity	3- to 10-fold higher
Pentraxin-3	Protein	40	Opsonization and complement activation. Modulate macrophage activity	2- to 7-fold higher
YKL-40 (CHI3L1)	Protein	40	Regulates local inflammatory markers. Other functions unclear	2- to 5-fold higher
Adiponectin	Adipokine	30	Modulates glucose regulation and fatty acid oxidation	2- to 3-fold higher
Visfatin (NAMPT)	Adipokine	52	Extracellularly stimulates angiogenesis and endothelial cell proliferation	3- to 6-fold higher
Leptin	Adipokine	16	Regulates appetite and body energy stores	3- to 4-fold higher
VEGF (vascular permeability factor)	Growth factor	34	Promotes endothelial cell proliferation, migration and differentiation	~2-fold higher
FGF-2 (basic fibroblast growth factor)	Growth factor	18	Angiogenic growth factor	5- to 20-fold higher
FGF-23	Growth factor	32	Regulates phosphate homeostasis	>200-fold higher
Complement factor D (C3 proactivator convertase)	Protein	24	Component of alternative complement pathway; humoral defense	4- to 17-fold higher
Prolactin	Hormone	23	Diverse roles	2- to 4-fold higher
β-trace protein (L-prostaglandin D2 synthase)	Protein	26	Catalyzes isomerization of precursor prostanoids to active forms	>35-fold higher
AGEs	Other	<1–70	Unknown	2- to 20-fold higher

Nephrol Dial Transplant (2018) 33: iii6–iii11
doi: 10.1093/ndt/gfy179

ndt
Nephrology Dialysis Transplantation

Large uremic toxins: an unsolve kidney disease

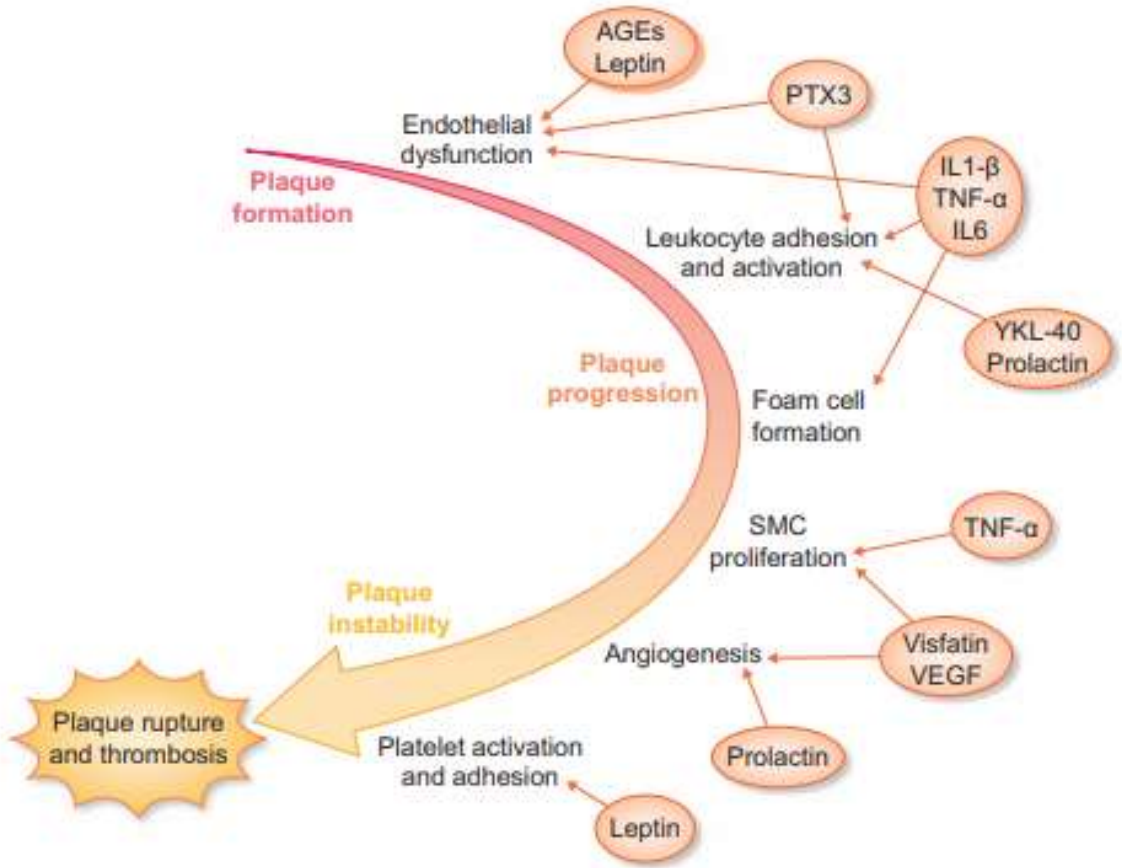
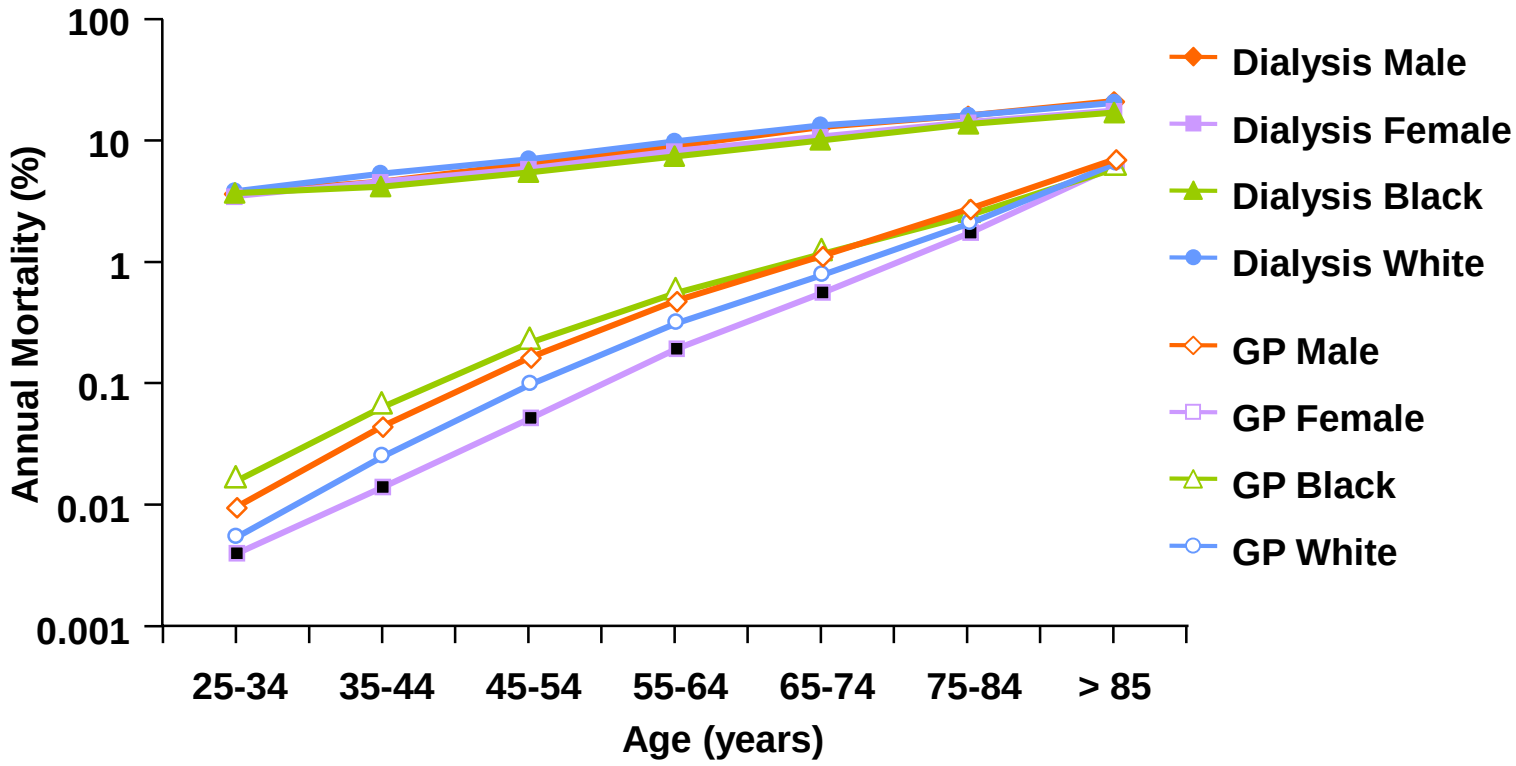


FIGURE 1: Middle molecules influence multiple steps in atherosclerosis progression. Elevated leptin and AGE levels are associated with endothelial dysfunction, which is also promoted by inflammatory molecules such as PTX3 and IL-1 beta. Elevated cytokines and other molecules such as prolactin and YKL-40 increase leukocyte adhesion and activation leading to foam cell formation. The progression to unstable plaque with migration and proliferation of smooth muscle cells and angiogenesis is also influenced by uremic toxins, eventually leading to plaque rupture and thrombosis.

CARDIOVASCULARIS MORTALITÁS DIALIZÁLT BETEGEKBEN ÉS AZ ÁTLAGPOPULÁCIÓBAN



ESRD = end stage renal disease
GP = general population

Sarnak MJ and Levey AS. *Am J Kidney Dis.* 2000;35(4)(suppl1):S117-S131.

International Urology and Nephrology
https://doi.org/10.1007/s11255-019-02291-2

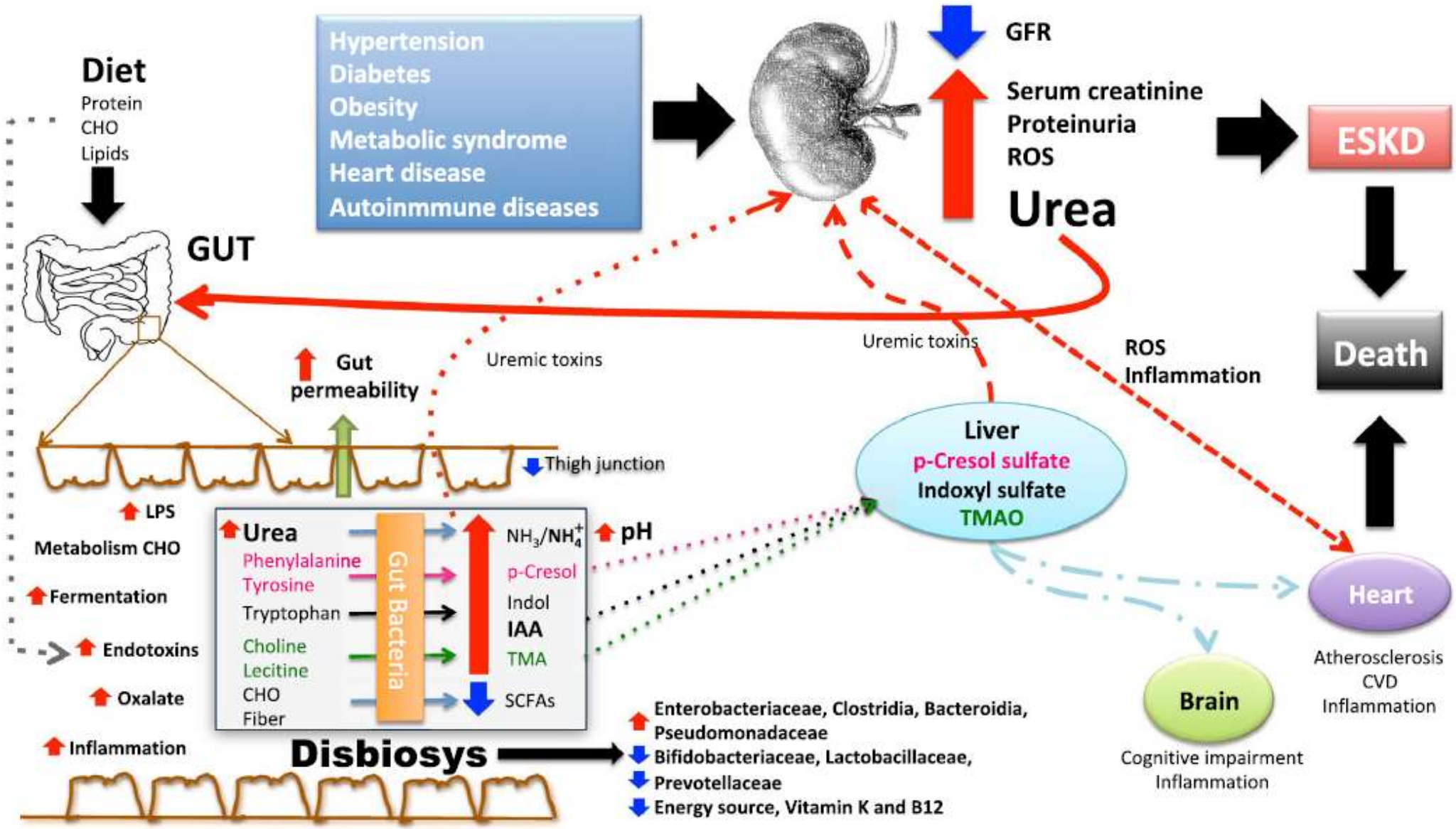
NEPHROLOGY - REVIEW

The gut microbiota and its relationship with chronic kidney disease

Consuelo Plata[1] · Cristino Cruz[1] · Luz G. Cervantes[2] · Victoria Ramírez[3]

Received: 25 April 2019 / Accepted: 17 September 2019

Chronic Kidney Disease



Urémiás toxinok felhalmozódása

- Dialízis hatékonyságának rutin mérőszáma: Kt/V urea.

- Trimetilamin-N-oxidáz (TMAO): a bélflóra mikroorganizmusai által előállított urémiás toxin és biomarker
  - A hagyományosoktól független CVD rizikótényező.
  - Emelkedett szintje összefüggést mutat a CV halálozással, összhalálozással, első CV esemény bekövetkeztével.
  - Hozzájárulhat a veseelégtelenség kialakulásához.
  - Kis molekulasúlyú, dialízissel hatékonyan eltávolítható.
  - Clearance-e nem korrelál az urea Kt/V-vel!

Ahmadmehrabi S, Semin Dial 2018; 31(3): 258

Urémiás toxinok felhalmozódása

- Fehérjéhez kötött, nem dializálható urémiás toxinok
  - Endotél diszfunkciót, vaszkuláris gyulladást és kalcifikációt okoznak.
  - P-kreozol-szulfát, indoxil-szulfát
  - CKD-ben szintjük emelkedett és összefüggést mutat CVD-vel és mortalitással

- AST-120: orálisan alkalmazható adszorber, ami megköti az urémiás toxinokat
  - Remény: lassítja a vesebetegség progresszióját
  - Compliance: rossz (nagy tabletták)
  - EPPIC-1 és EPPIC-2 vizsgálatokban a standard kezelés mellé adott AST-120 szignifikánsan nem csökkentette a progressziót, de hatékony lehet a CV szövődmények csökkentésében.

Schulman G,JASN 2015;26(7): 1732

it is difficult to know the precise phyla that were modified in each patient.

Prebiotics and probiotics

Prebiotics are defined as "molecules or substrates that are selectively used by host gut microbiota, and they have a positive effect" [12]. Originally, prebiotics were complex carbohydrates, oligosaccharides, fructans, galactans, and starch. In recent years, polyphenols have been used as prebiotics, because their metabolism occurs in the colon [12, 19].

Probiotics are defined as "live microorganisms that confer a health benefit on the host when they are administered in adequate concentration". Probiotics are mainly bacterial strains, mostly *Lactobacillus* or *Bifidobacterium*. Multiple studies in humans [20, 21] show the beneficial role of bacteria in the gastrointestinal tract. They were shown to be beneficial for inflammatory bowel disease; however, their use in pathologies such as cardiovascular diseases and CKD needs to be studied [22, 23]. Probiotics produce bacteriocins that inhibit the proliferation of pathogenic bacteria, increase the degradation of waste molecules, decrease the inflammatory response by blocking receptors, and participate the in immune response, thus reestablishing gut mucosa permeability [24].

Uremic toxins

Accumulation of toxic substances during CKD is common, and they are responsible for numerous symptoms and clinical complications during ESRD. Urea is the primary waste product in the kidney, and it is significantly increased in the

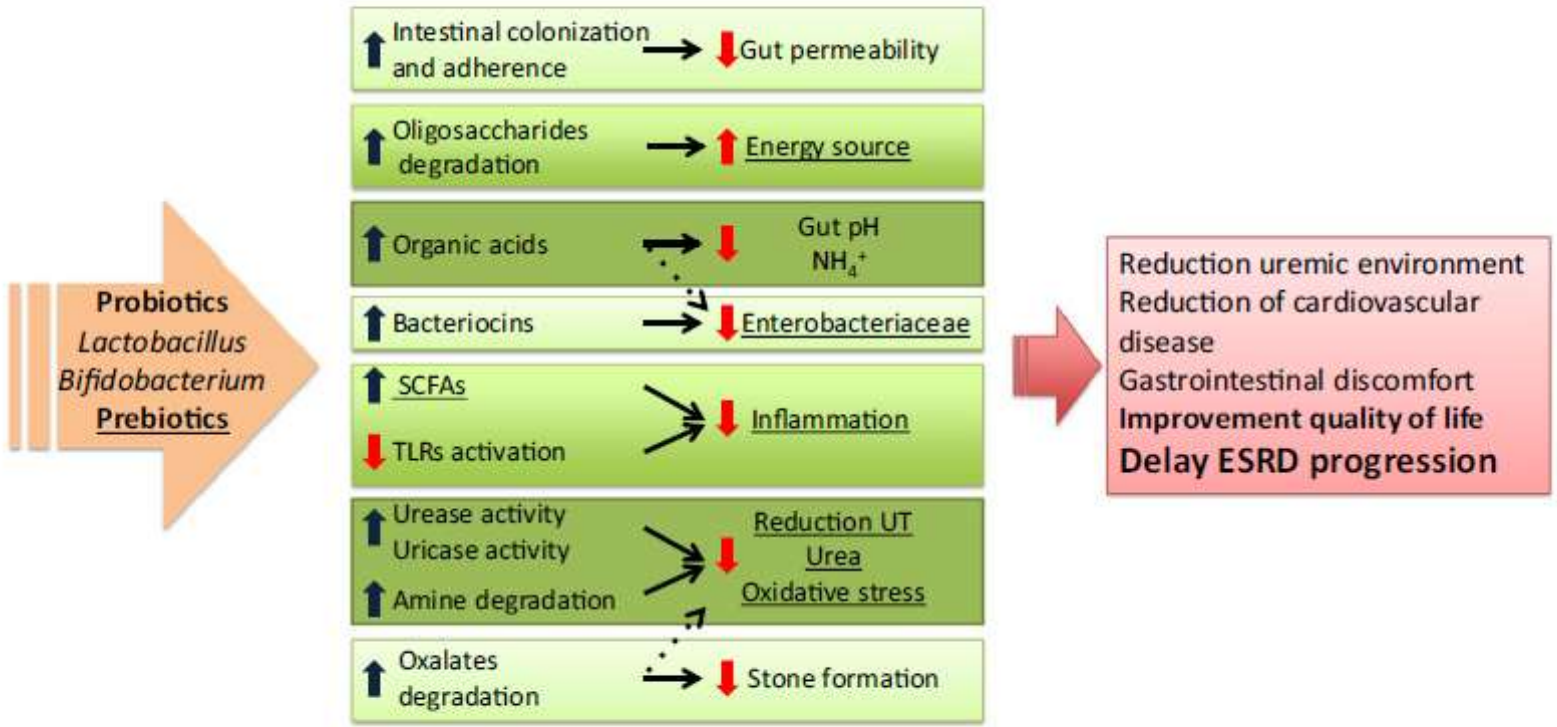
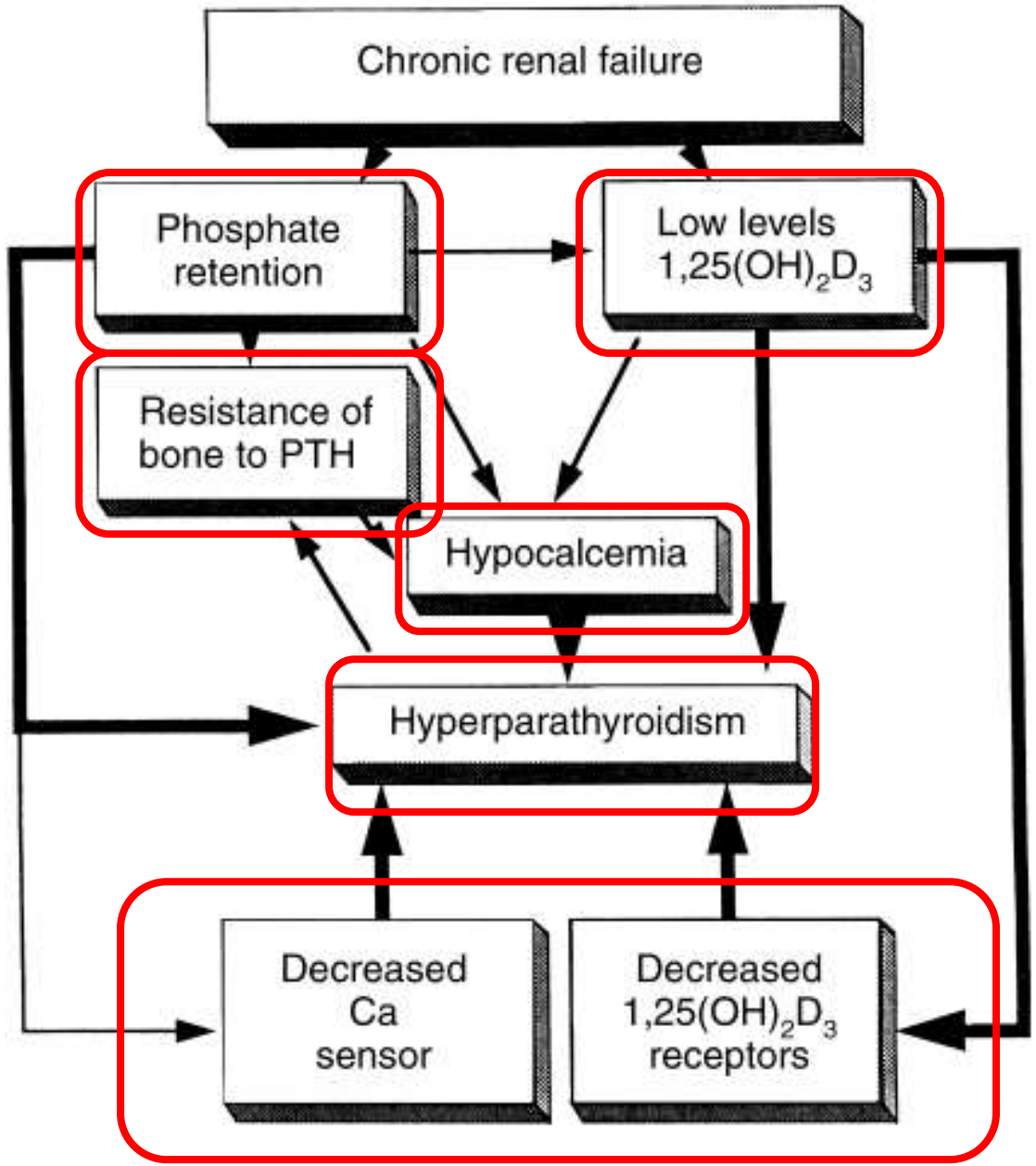
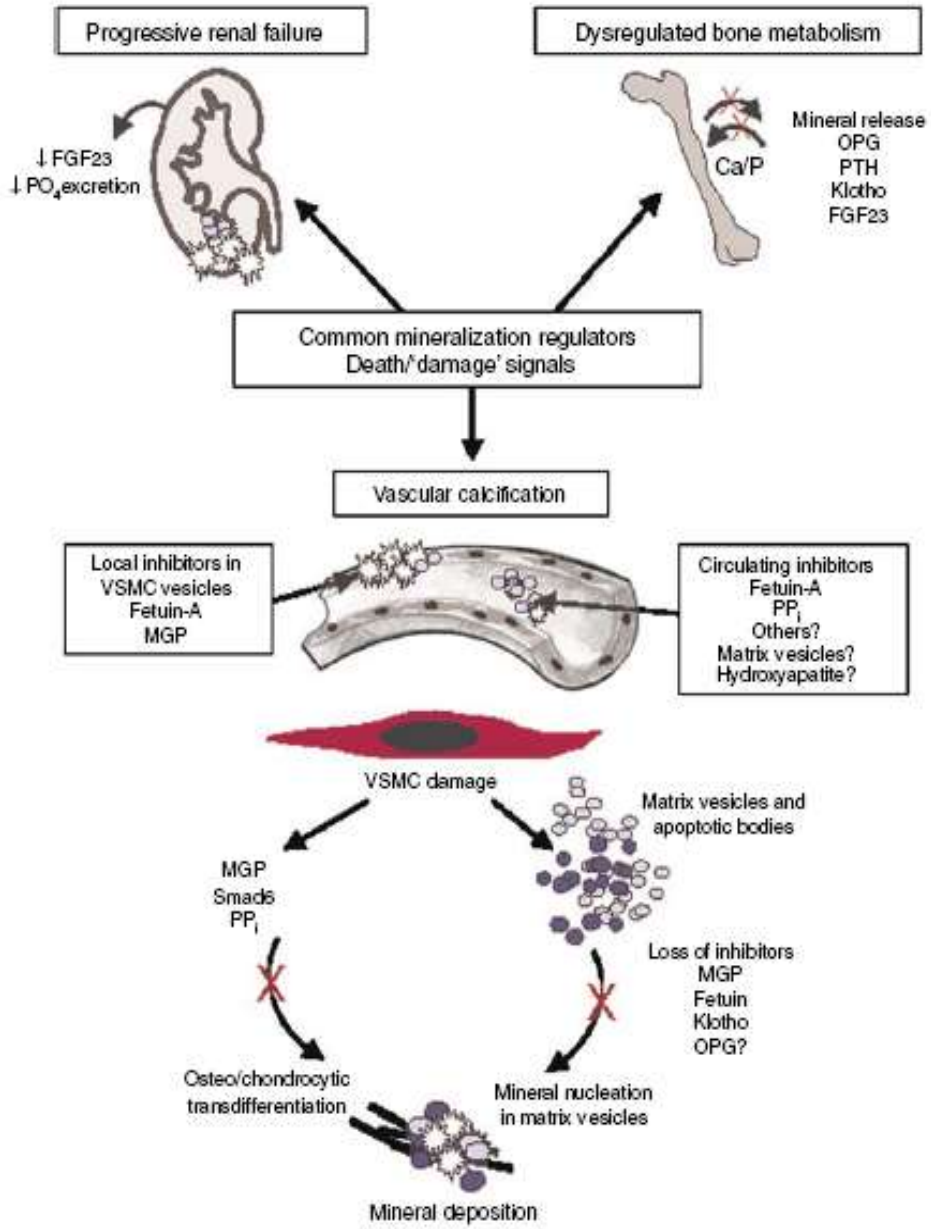


Fig. 2 Principal gut and metabolic effects induced by probiotic and prebiotics supplementation in the CKD population. Underlining indicates the effects described by prebiotic supplementation

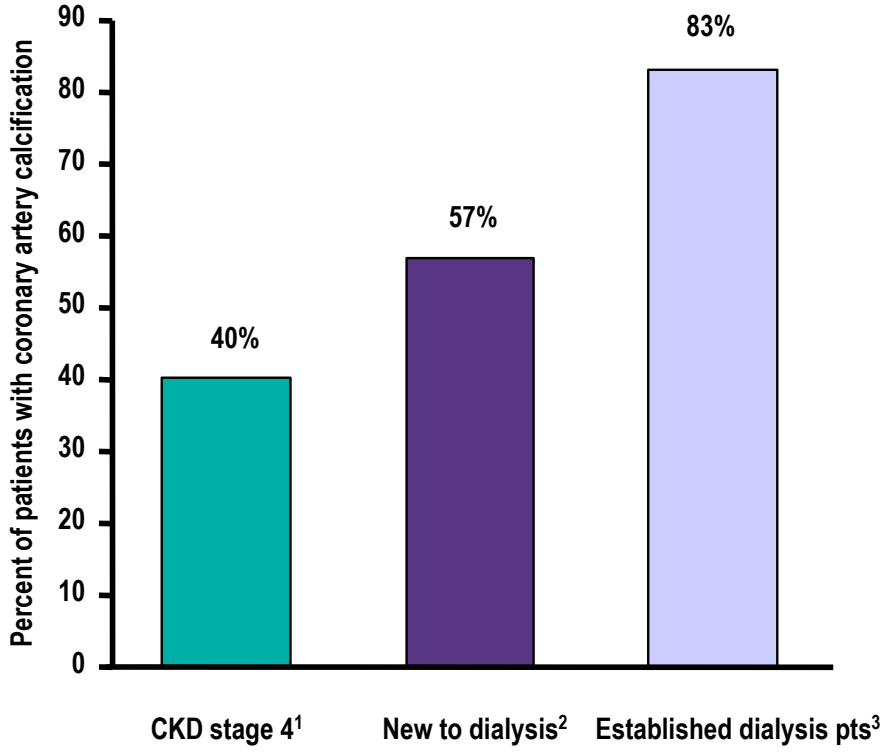
- Urémiás toxinok
- Csont- és ásványianyagcsere zavara krónikus veseelégtelenségben
- Renális anémia
- A krónikus veseelégtelenség konzervatív kezelése
- Vese transzplantáció

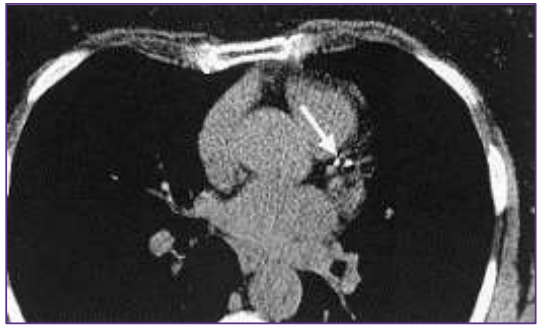

Chronic renal failure
Phosphate retention
Low levels $1,25(OH)_2D_3$
Resistance of bone to PTH
Hypocalcemia
Hyperparathyroidism
Decreased Ca sensor
Decreased $1,25(OH)_2D_3$ receptors

Puha csontok, kemény erek

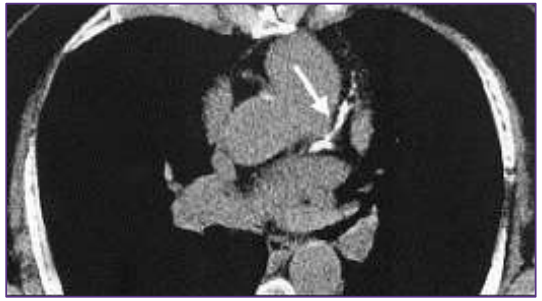


CARDIOVASCULARIS CALCIFICATIO CKD-BAN





Calcification in middle left coronary artery
(68-year-old female without CKD)[4]

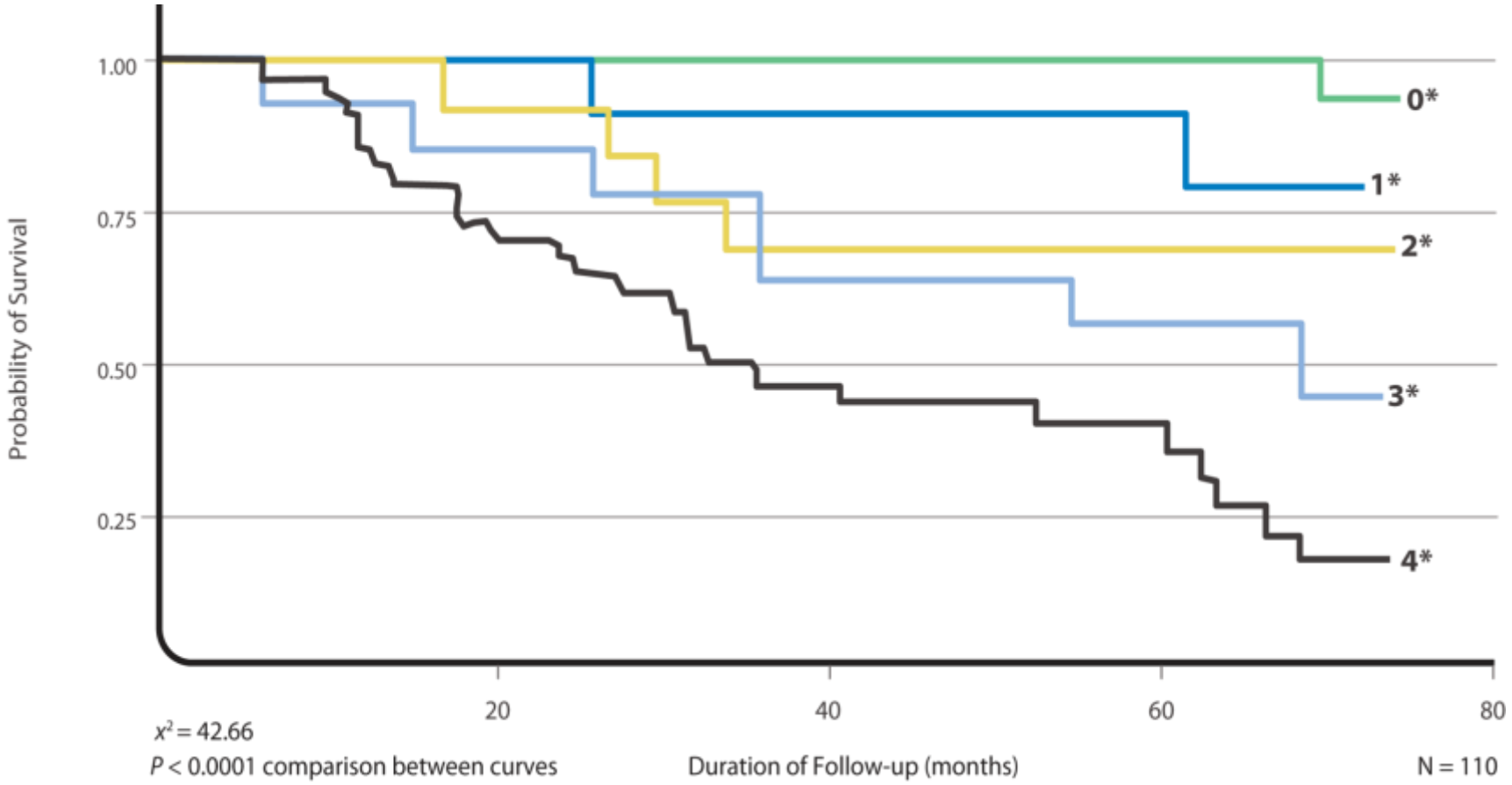


Extensive calcification in middle and distal left anterior coronary artery
(70-year-old woman with end-stage renal disease)[4]

1. Russo D et al. *Am J Kidney Dis*. 2004;44:1024-1030;
2. Spiegel DM et al. *Hemodial Int*. 2004;8:265–272;
3. Chertow GM et al. *Kidney Int*. 2002;62:245–252

4. Raggi P et al. *J Am Coll Cardiol* 2002;39:695–701

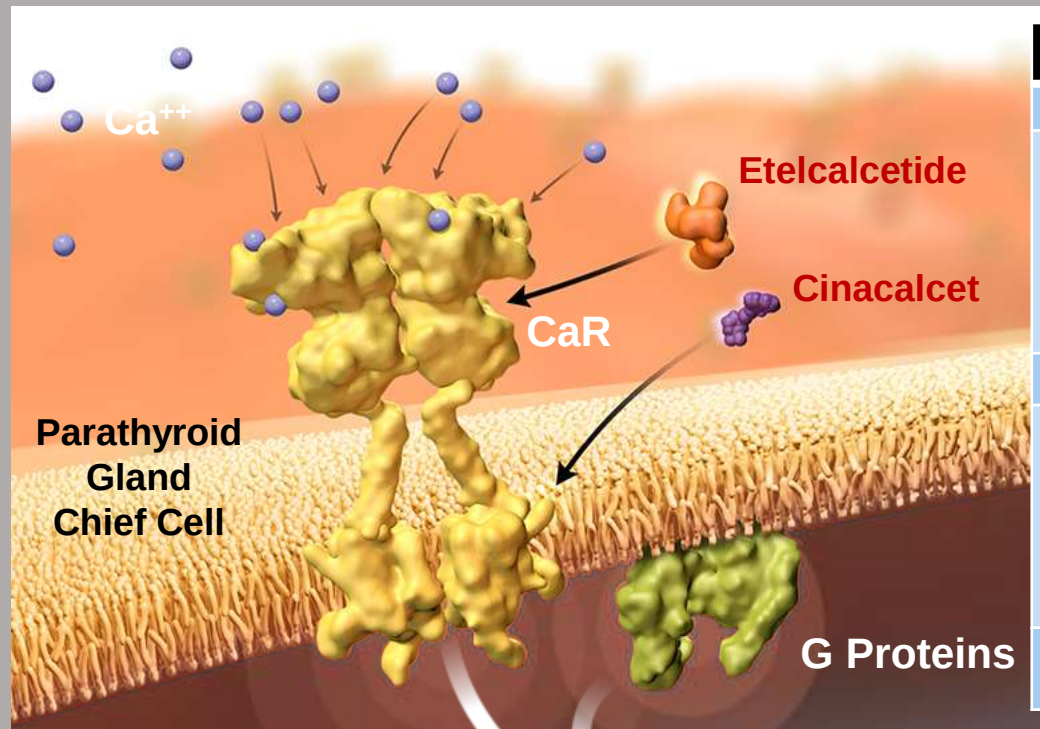
CARDIOVASCULARIS CALCIFICATIO ÉS MORTALITÁS DIALIZÁLT BETEGEKBEN



A VESEELÉGTELENSÉG SZÖVŐDMÉNYEINEK KEZELÉSE

- A csont- és ásványianyagcserezavar kezelése:
  - Diétás *foszfát megszorítás*
  - Oralis *foszfátkötők* (Ca-tartalmú és Ca-mentes)
  - C*alcitriol* (1,25-OH vit D), a legaktívabb D vitamin metabolit szintje elkezd csökkenni, amikor a GFR< 40 ml/min/1.73m². A calcitriol közvetlenül szupprimálja a PTH szekréciót, ezért szupplementáljuk.
  - *Calcimimeticumok* (cinacalcet) fokozzák a mellékpajzsmirigy Ca-érzékenységét. A Ca-érzékelő receptor a PTH szabályozza a PTH termelést és a mellékpajzsmirigy hyperplasiat.

Calcimimetics – An Overview[1-8]



	Cinacalcet[1,2]	Etelcalcetide[3,4,8]
Class	Calcimimetic	Calcimimetic
Description	Small organic molecule agonist of the CaR	Synthetic peptide CaR agonist composed of a linear chain of 7 D-amino acids linked to L-cysteine via a disulfide bond
Size	MW = 393.9 g/mol	MW = 1,048.3 Da
MOA	Interacts with membrane-spanning segments of CaR and enhances signal transduction, thereby reducing PTH secretion	Interacts with and activates the CaR thereby reducing PTH secretion
Administration	Daily oral	IV at the end of each HD session

Ca = calcium; CaR = calcium-sensing receptor; Da = dalton; HD = hemodialysis; IV = intravenous; MOA = mechanism of action; MW = molecular weight; PTH = parathyroid hormone.

1. Sensipar® (cinacalcet) prescribing information, Amgen August 2017 . 2. Goodman WG, et al. *Adv Ren Replace Ther*. 2002;9:200-208. 3. Subramanian R, et al. *Drug Metab Dispos.* 2016;44:1319-1331. 4. Walter S, et al. *J Pharmacol Exp Ther*. 2013;346:229-240. 5. Alexander ST, et al. *Mol Pharmacol.* 2015;88:853-865. 6. Brown EM. *Rev Endocr Metab Disord*. 2000;1:307-315. 7. Goodman WG, et al. *Kidney Int*. 2008;74:276-288. 8. Block GA, et al. *JAMA.* 2017;317:146-155. Supplement 2.

- Urémiás toxinok
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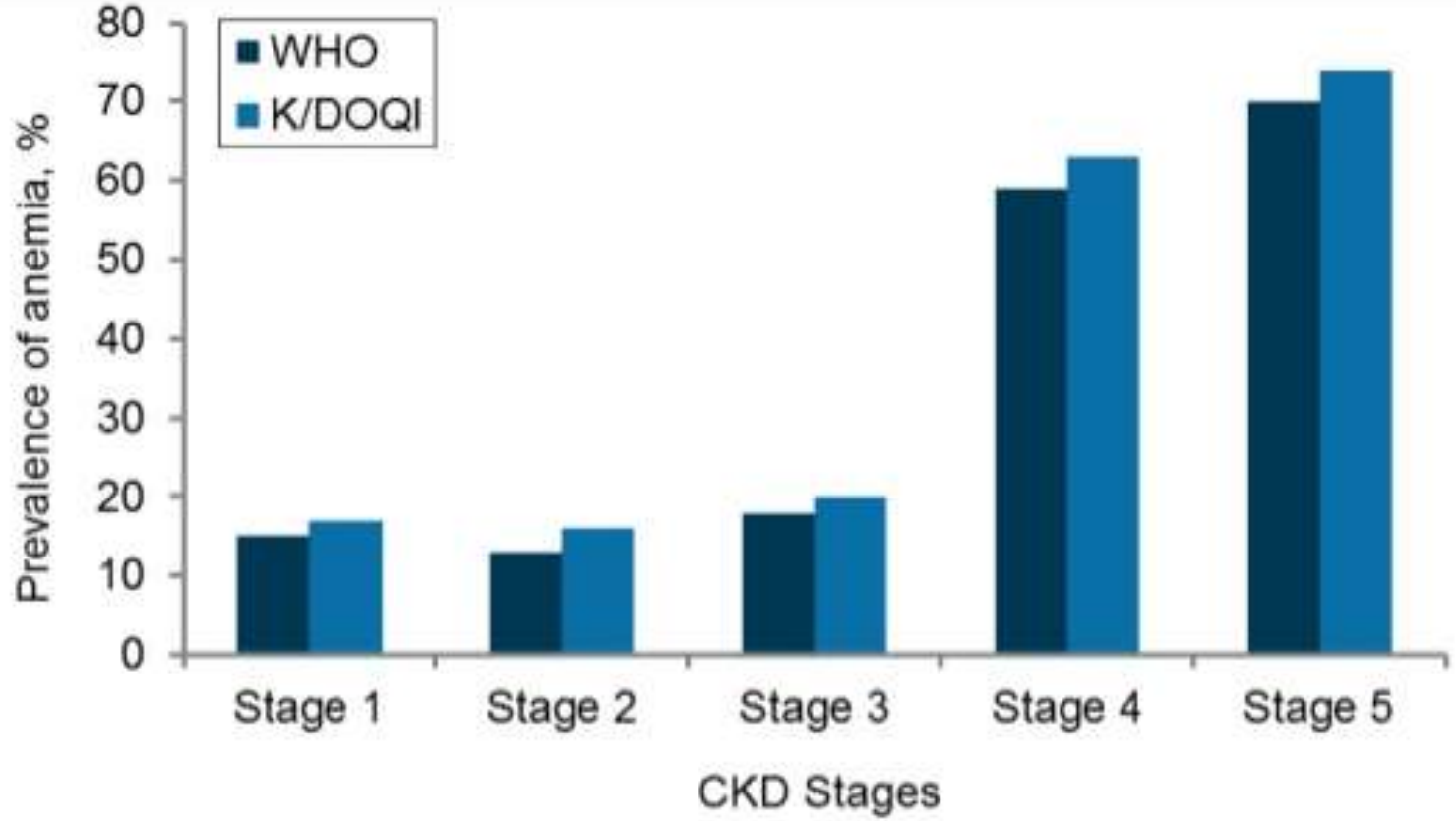
Anemia Prevalence and CKD Stage



K/DOQI = kidney disease outcomes quality initiative

Republished from McFarlane SI, Chen SC, Whaley-Connell AT, et al. Prevalence and associations of anemia of CKD: Kidney Early Evaluation Program (KEEP) and National Health and Nutrition Examination Survey (NHANES) 1999-2004. *Am J Kidney Dis*. 2008;51:S46-S55, with permission from Elsevier.

EPO/ESA elkezdése CKD-ban a KDIGO alapján

- Nem dializált felnőtt betegben ha Hb<100 g/l (individuális döntés alapján)

- Dializált felnőtt betegben ha a Hb 90-100 g/l közötti

In-Depth Topic Review

Nephrology

Am J Nephrol 2017;45:187–199
DOI: 10.1159/000455166

Published online: January 25, 2017

Targeting Hypoxia-Inducible Factors for the Treatment of Anemia in Chronic Kidney Disease Patients

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[a]Department of Nephrology, Alessandro Manzoni Hospital, Lecco, Italy; [b]Department of Medicine, Hofstra Northwell School of Medicine, Great Neck, NY; [c]Denver Nephrologists, Denver, CO, USA; [d]Department of Renal Medicine, King's College Hospital, London, UK

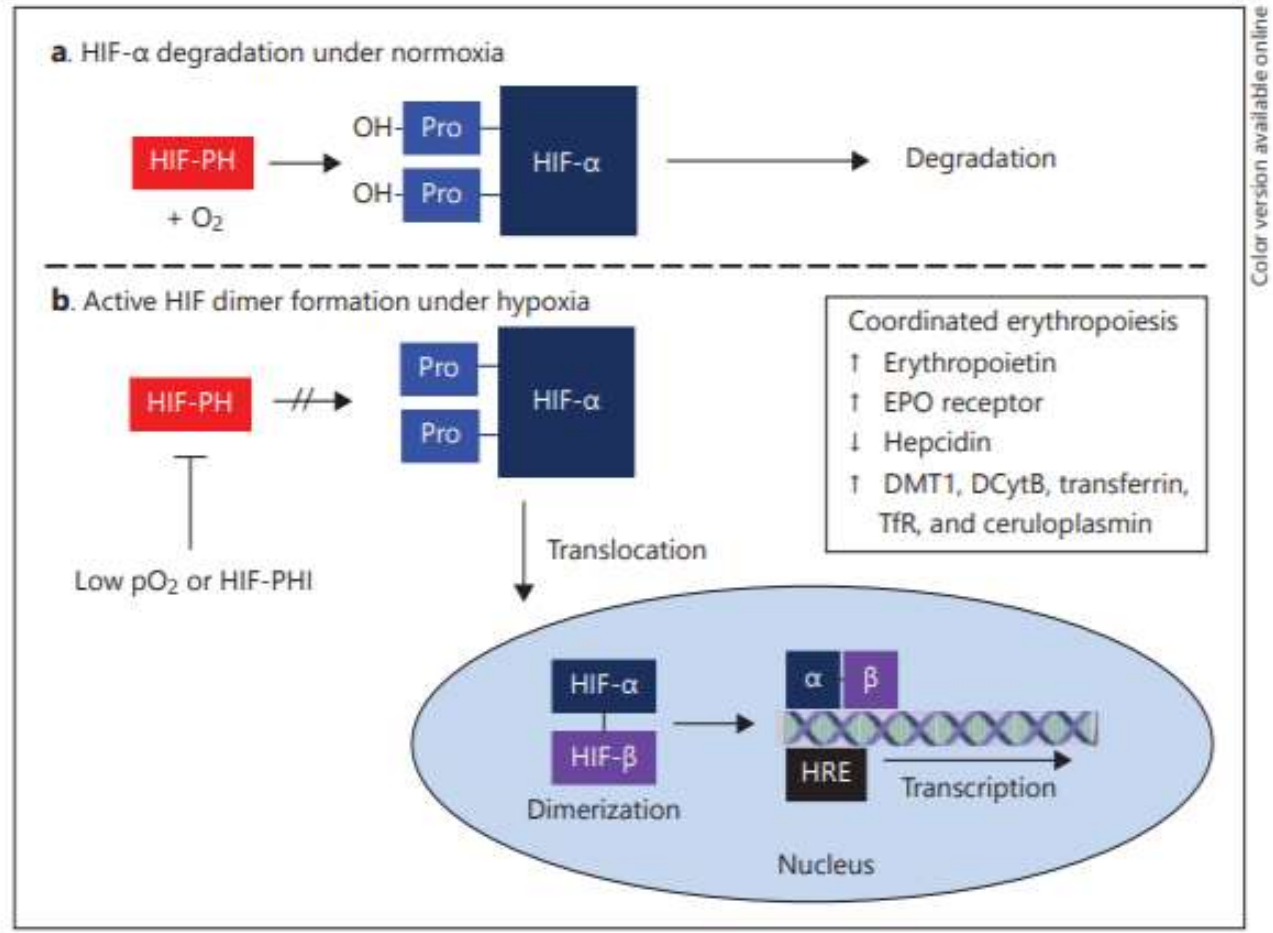

Fig. 2. a, **b** HIF activity under normoxic/hypoxic conditions and HIF-PHI inhibition, and its effects on erythropoiesis. DCytB, duodenal cytochrome B; DMT1, Divalent metal transporter 1; EPO, erythropoietin; HIF, hypoxia-inducible factor; HIF-PH, hypoxia-inducible factor-prolyl-4-hydroxylase domain; HRE, HIF-responsive element; Pro, proline.

Hemoglobin célértéke EPO/ESA kezelés esetén

- Általában 100-120 g/l.

- Minden betegben elkerülendő a 130 g/l feletti Hb érték elérése EPO/ESA kezeléssel.

- Urémiás toxinok
- Csont- és ásványianyagcsere zavara krónikus veseelégtelenségben
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VESEPÓTLÓ KEZELÉS

- VESETRANSZPLANTÁCIÓ
- HAEMODIALYSIS (89%)
- PERITOENALIS DIALYSIS (11%)

KRÓNIKUS VESEELÉGTELENSÉG KEZELÉSE

- **KONZERVATÍV KEZELÉS**
- VESETRANSZPLANTÁCIÓ
- HAEMODIALYSIS (89%)
- PERITOENALIS DIALYSIS (11%)

A végstádiumú veseelégtelenség konzervatív kezelése

- Kinek?
  - Aki nem profitál a dialízis kezelésből
  - Akinek fontosabb a hátralevő életének minősége, mint annak hossza
- Konkrétan:
  - Idős beteg sok társbetegséggel, aki nem akar a dialízistől függővé válni
  - Az urémia tünetei gyakran átfedést mutatnak a geriátriai tünetekkel. Ha az utóbbiak dominálnak, akkor azokon nem fog segíteni a dialízis.
- A Renal Physician Association ajánlása szerint azon 75 év feletti betegekben, akiknél 2 rossz prognosztikai tényező adott az alábbiakból:
  - Megromlott funkcionális státusz
  - Súlyos malnutríció (se albumin<30 umol/l)
  - Többszörös komorbiditás
  - Pozitív válasz az alábbi kérdésre: „Nem lepne meg, ha a beteg egy éven belül meghalna.”

A végstádiumú veseelégtelenség konzervatív kezelése

- A döntést a beteggel és családjával közösen, kellő felvilágosítást követően kell meghozni, akkor, amikor a dialízisre történő edukáció elkezdődne.

- Meta-analízis
  - 89 vizsgálat, 294.921 beteg, átlag életkor 76,5 év
  - Egy éves túlélés
    - Dialízis: 73%
    - Konzervatív kezelés: 70,6%

Nephrology (Carlton) 2016; 21:241.

PLOS ONE

RESEARCH ARTICLE

Outcomes in dialysis versus conservative care for older patients: A prospective cohort analysis of stage 5 Chronic Kidney Disease

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1 Vascular Research Group, Salford Royal NHS Foundation Trust, Salford, United Kingdom, **2** Faculty of Biology, Medicine and Health, University of Manchester, Manchester, United Kingdom

* darrengreen@doctors.org.uk

OPEN ACCESS

Citation: Raman M, Middleton RJ, Kalra PA, Green D (2018) Outcomes in dialysis versus conservative care for older patients: A prospective cohort analysis of stage 5 Chronic Kidney Disease. PLoS ONE 13(10): e0206469. https://doi.org/10.1371/journal.pone.0206469

Editor: Micah Chan, University of Wisconsin, UNITED STATES

Abstract

Background

The benefits of dialysis in older people with ESKD are not clear. We prospectively evaluated whether dialysis has survival advantage compared to conservative care (CC) in older people who were medically suitable for dialysis therapy.

Methods

This was a prospective observational study of CKD patients aged ≥75 years when eGFR first reached ≤15ml/min/1.73m^2. Hazard ratios (HR) for death were compared between patients who chose dialysis versus conservative care (CC) from when first seen in pre-dialysis clinic (eGFR ≤15ml/min/1.73m^2), and when initiation of dialysis was first considered (eGFR ≤10ml/min/1.73m^2). Patients with co-morbidities likely to significantly reduce life expectancy such as advanced heart failure, advanced dementia, and malignancy, were excluded.

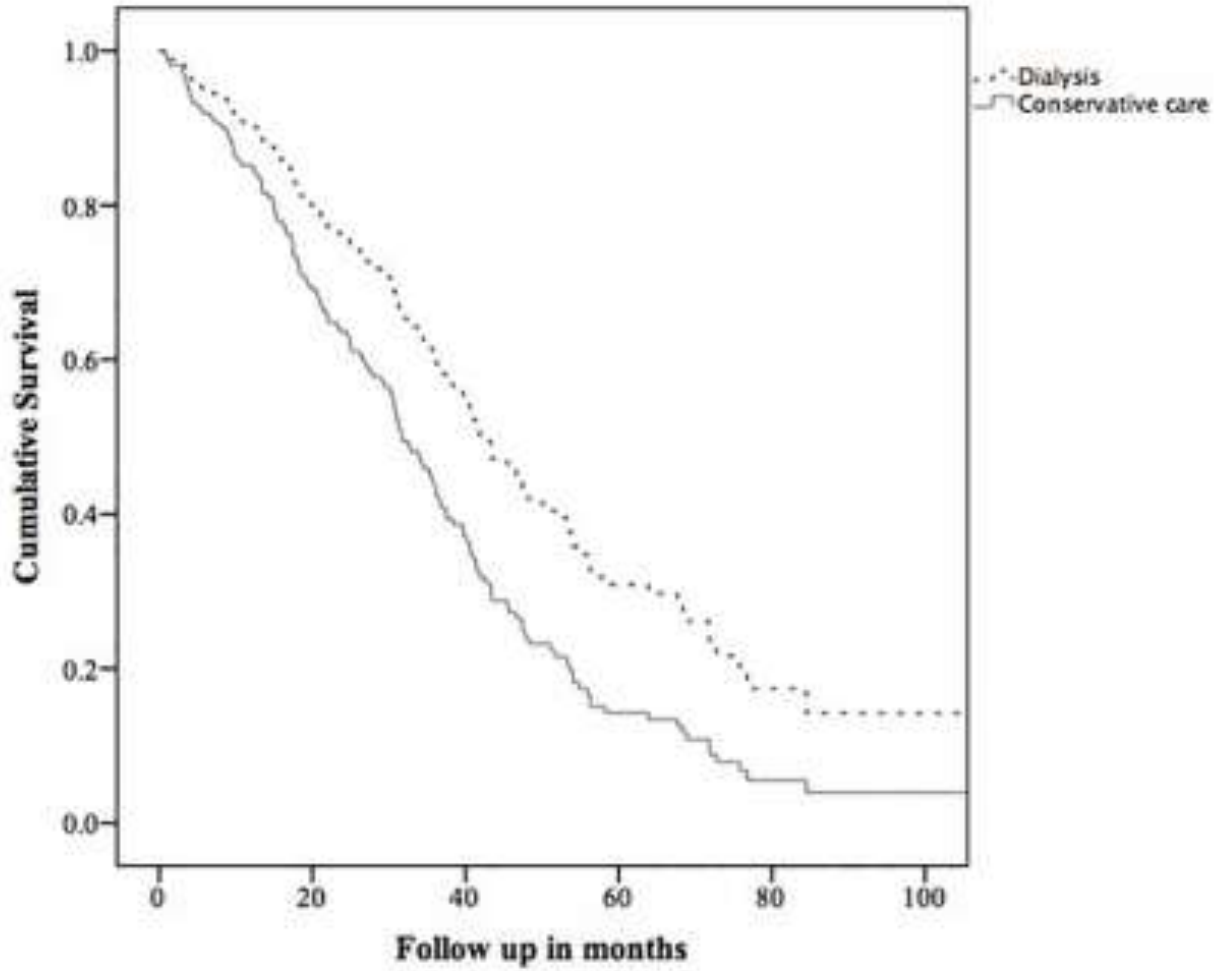


Fig 2. Survival curve comparing dialysis with conservative care from the date of first outpatient eGFR ≤15 mL/min/1.73m^2. Adjusted for age, peripheral vascular disease, and living alone.

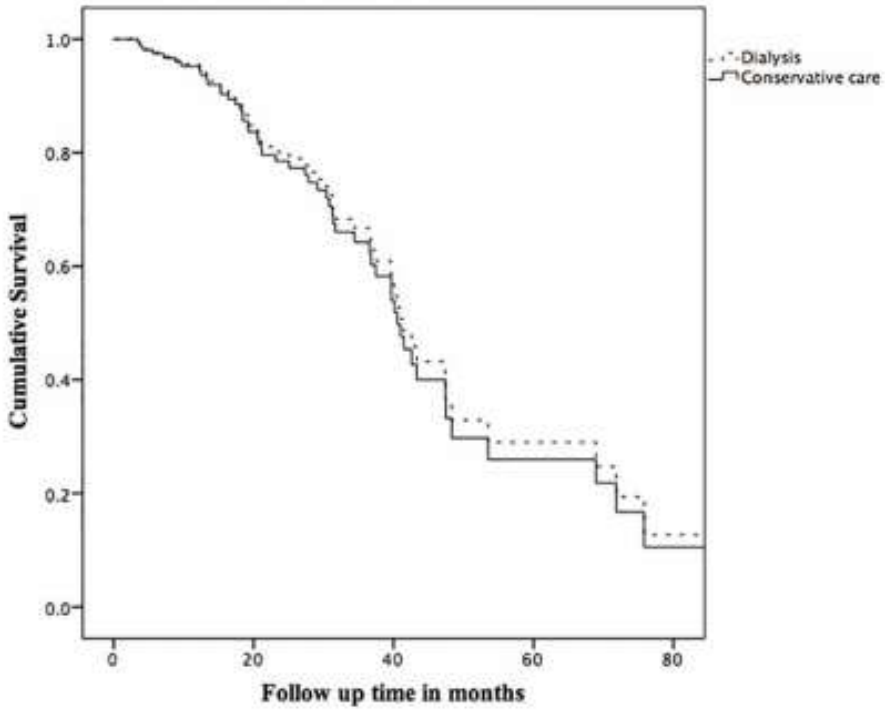


Fig 4. Survival curve comparing dialysis with conservative care during the period that eGFR was between ≤15 mL/min/1.73m^2 and >10mL/min/1.73m^2. Adjusted for age, peripheral vascular disease, and living alone.

https://doi.org/10.1371/journal.pone.0206469.g004

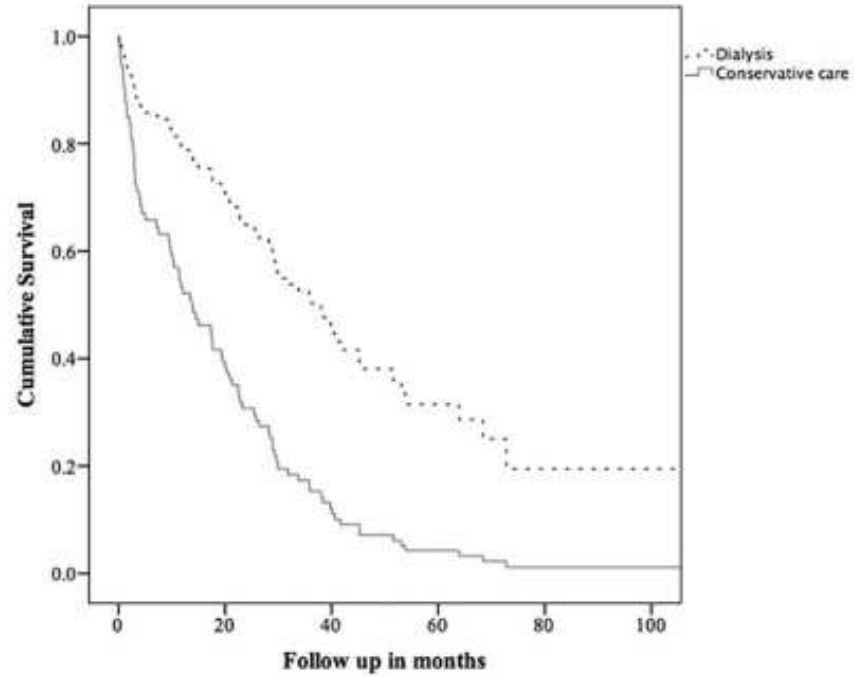


Fig 3. Survival curve comparing dialysis with conservative care from the date of first outpatient eGFR ≤10 mL/min/1.73m^2. Adjusted for age and peripheral vascular disease.

https://doi.org/10.1371/journal.pone.0206469.g003

Table 3. Comparisons of annualised number of hospital days and invasive procedures between dialysis and conservative care, and between haemodialysis and peritoneal dialysis from the baseline of first outpatient eGFR ≤15 mL/min/1.73m^2 and first outpatient eGFR ≤10 mL/min/1.73m^2. Key: HD = haemodialysis; PD = peritoneal dialysis. Numbers are expressed as median (interquartile range [IQR]).

	Dialysis	Conservative	sig.	HD	PD	sig.
From first outpatient eGFR ≤15 mL/min/1.73m^2						
Outpatient days	14.1 (IQR, 8.3–55.7)	7.5 (IQR, 4–12.4))	<0.001	19.2 (IQR, 8.5–75.9)	11.9 (IQR, 7.9–15.3)	0.015
Inpatient days	2.2 (IQR, 0.7–14.7)	0.8 (IQR, 0.0–8.7)	0.005	4.3 (IQR, 0.9–17.3)	1.1 (IQR, 0.3–2.2)	0.003
Total hospital days	23.4 (IQR, 10–85.9)	10 (IQR, 5.2–24.2)	<0.001	38.5 (IQR, 10.8–96.9)	13.5 (IQR, 9.1–21.5)	0.002
From first outpatient eGFR ≤10 mL/min/1.73m^2						
Outpatient days	34.3 (IQR, 9.9–92.8)	9.8 (IQR, 5.1–19.6)	<0.001	59.9 (IQR, 14.7–110.9)	12.2 (IQR, 3.7–21.3)	0.002
Inpatient days	4.1 (IQR, 1.1–20.2)	7.9 (IQR, 0.0–54.3)	0.729	8.2 (IQR, 1.6–25.1)	1.9 (IQR, 0.9–5.7)	0.153
Total hospital days	77.9 (IQR, 17.8–125.2)	20.7 (IQR, 7.8–79.8)	0.015	91.3 (IQR, 21.9–129.8)	17.9 (IQR, 9.2–48.9)	0.007

https://doi.org/10.1371/journal.pone.0206469.t003

Comparative Survival among Older Adults with Advanced Kidney Disease Managed Conservatively Versus with Dialysis

Wouter R. Verberne, A.B.M. Tom Geers,* Wilbert T. Jellema,* Hieronymus H. Vincent,* Johannes J.M. van Delden,† and Willem Jan W. Bos**

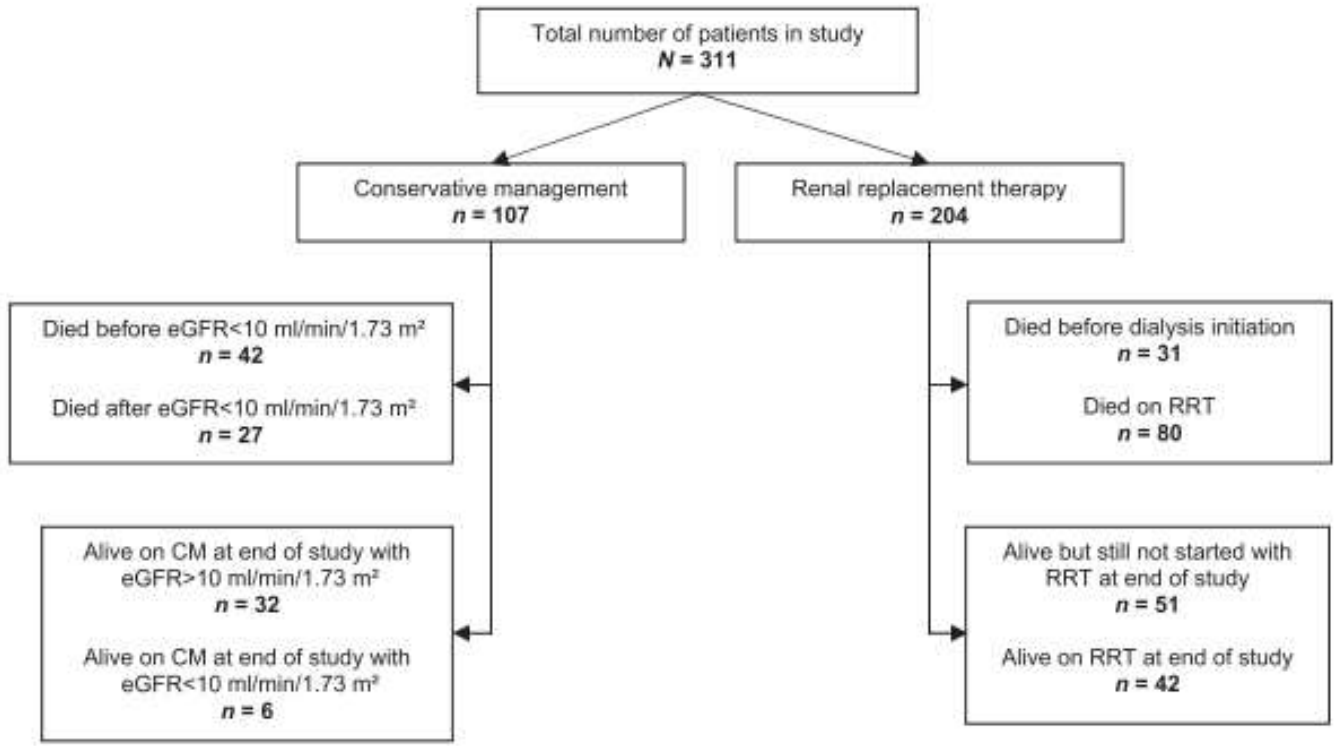


Figure 1. | Flowchart of patients and outcomes. Twelve patients who initially opted for RRT changed to conservative management (CM), and two patients who initially opted for CM changed to RRT. Analyses were performed according to the original treatment choice.

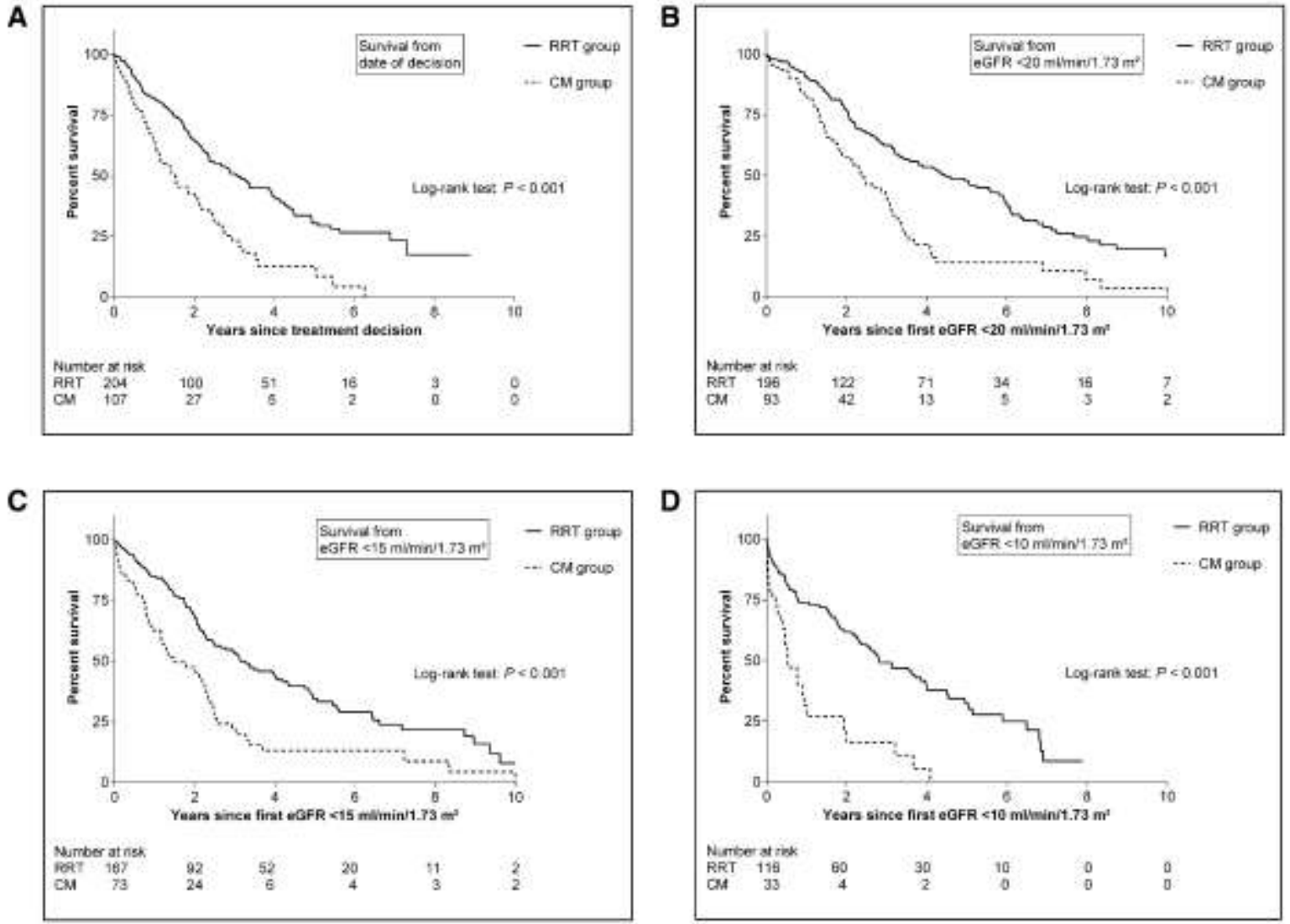
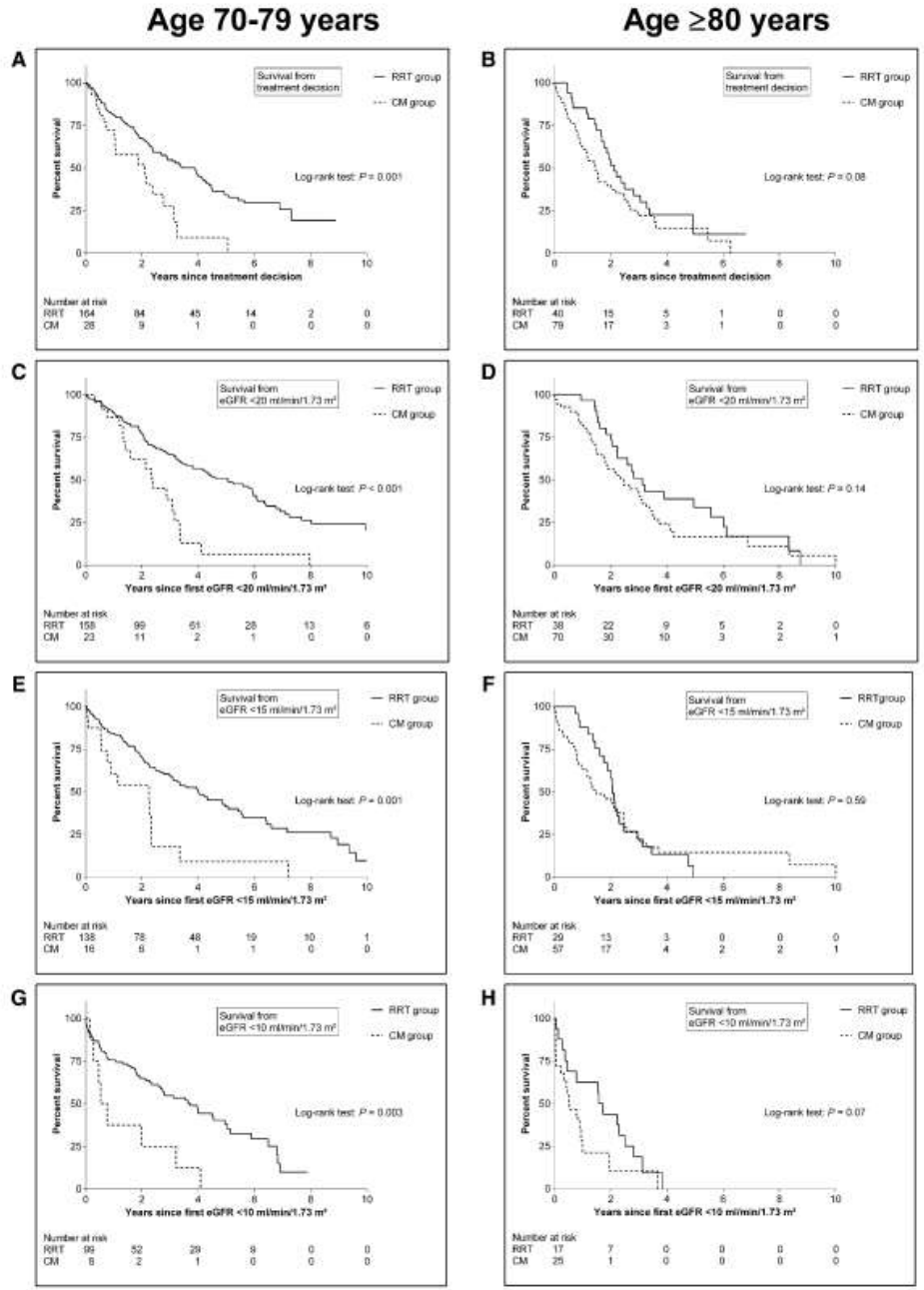


Figure 2. | Kaplan–Meier survival curves comparing patients ages ≥70 years old treated with conservative management (CM) with patients on RRT using different starting points in survival calculation. (A) Time of treatment decision. (B) Time of first eGFR<20 ml/min per 1.73 m^2. (C) Time of first eGFR<15 ml/min per 1.73 m^2. (D) Time of first eGFR<10 ml/min per 1.73 m^2.


Age 70-79 years
Age ≥80 years
A
B
C
D
E
F
G
H
Survival from treatment decision
Survival from eGFR <20 ml/min/1.73 m²
Survival from eGFR <15 ml/min/1.73 m²
Survival from eGFR <10 ml/min/1.73 m²
RRT group
CM group
Percent survival
Log-rank test: P = 0.001
Log-rank test: P = 0.08
Log-rank test: P < 0.001
Log-rank test: P = 0.14
Log-rank test: P = 0.001
Log-rank test: P = 0.59
Log-rank test: P = 0.003
Log-rank test: P = 0.07
Years since treatment decision
Years since first eGFR <20 ml/min/1.73 m²
Years since first eGFR <15 ml/min/1.73 m²
Years since first eGFR <10 ml/min/1.73 m²
Number at risk
RRT 164 84 45 14 2 0
CM 28 9 1 0 0 0
RRT 40 15 5 1 0 0
CM 79 17 3 1 0 0
RRT 158 99 61 28 13 6
CM 23 11 2 1 0 0
RRT 38 22 9 5 2 0
CM 70 30 10 3 2 1
RRT 138 78 48 19 10 1
CM 16 8 1 1 0 0
RRT 29 13 3 0 0 0
CM 57 17 4 2 2 1
RRT 99 52 29 8 0 0
CM 8 2 1 0 0 0
RRT 17 7 0 0 0 0
CM 25 1 0 0 0 0

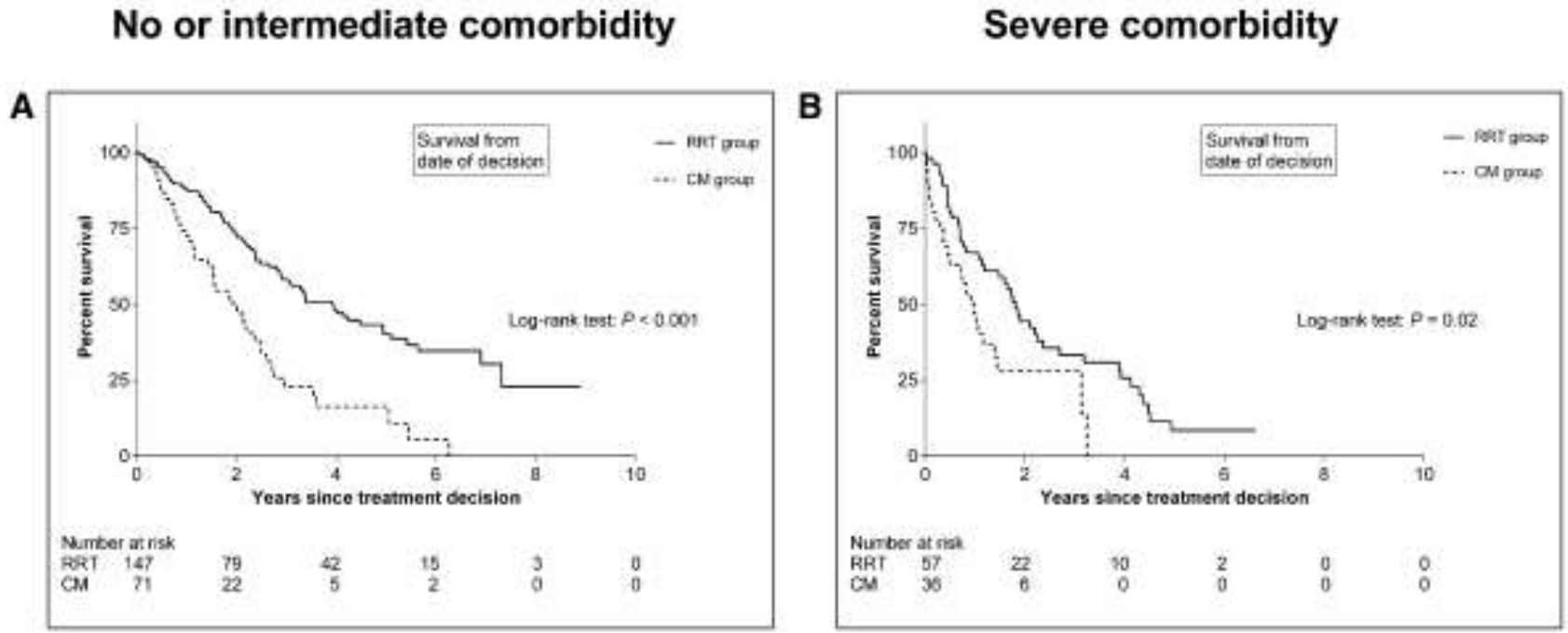


Figure 4. | Kaplan–Meier survival curves for both treatment groups ages ≥70 years old with stratification of comorbidity. (A) No and intermediate comorbidity are taken together and correspond to Davies comorbidity scores of 0–2. (B) Severe comorbidity corresponds to Davies comorbidity scores of ≥3. Only survival calculated from time of modality choice is shown. Similar results were observed using the other starting points. CM, conservative management.

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BMC Nephrology

RESEARCH ARTICLE Open Access

Older patients' experiences with a shared decision-making process on choosing dialysis or conservative care for advanced chronic kidney disease: a survey study

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Abstract

Background: Many older patients approaching end-stage kidney disease have to decide whether to go for dialysis or non-dialytic conservative care (CC). Shared decision-making is recommended to align the treatment plan with the patient's preferences and values. Little is known about older patients' experiences with shared decision-making on dialysis or CC.

Methods: We performed a survey study, in collaboration with the Dutch Kidney Patients Association, in 99 patients aged ≥70 years who had chosen dialysis ($n = 75$) or CC ($n = 24$) after a shared decision-making process involving an experienced multidisciplinary team.

Results: Patients stated to be overall satisfied with the shared decision-making process (% with score 6–10 on 11-point Likert scale, dialysis versus CC: 93% vs. 91%, $P = 0.06$), and treatment decision (87% vs. 91%, $P = 0.03$). However, patients also reported negative experiences, especially those who had chosen dialysis. Such negative experiences were related to the timing, informing, and level of decision-making being shared. More patients who selected dialysis indicated to have felt forced to make a decision, mostly due to the circumstances, such as their deteriorating health or kidney function, or by their nephrologist (31% vs. 5%, $P = 0.01$). Also, patients who selected dialysis mentioned a perceived lack of choice as most common reason for choosing dialysis, and 55% considered their own opinion as most important rather than their nephrologists' or relatives' opinion compared to 90% of the patients who had chosen CC ($P = 0.02$). A subset of patients who had chosen dialysis still doubted their treatment decision compared to no patient who had chosen CC (17% vs. 0%, $P = 0.03$).

Conclusions: Older patients reported contrasting experiences with shared decision-making on dialysis or CC. Despite high overall satisfaction, the underlying negative experiences illustrate important but modifiable barriers to an optimal shared decision-making process.

Keywords: Shared decision making, Chronic kidney failure, Renal dialysis, Conservative treatment, Aged

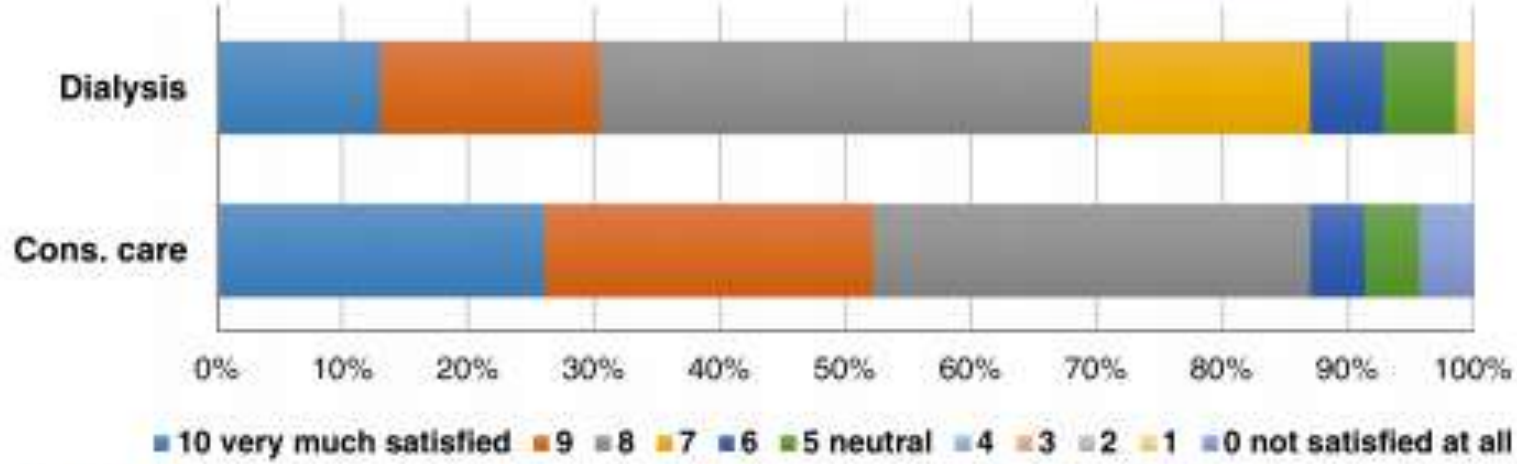

Fig. 1 Older patients' satisfaction with the shared decision-making process for choosing between dialysis and conservative care ($P = 0.06$). Rating on a 11-point Likert scale. Abbreviation: cons. care, conservative care

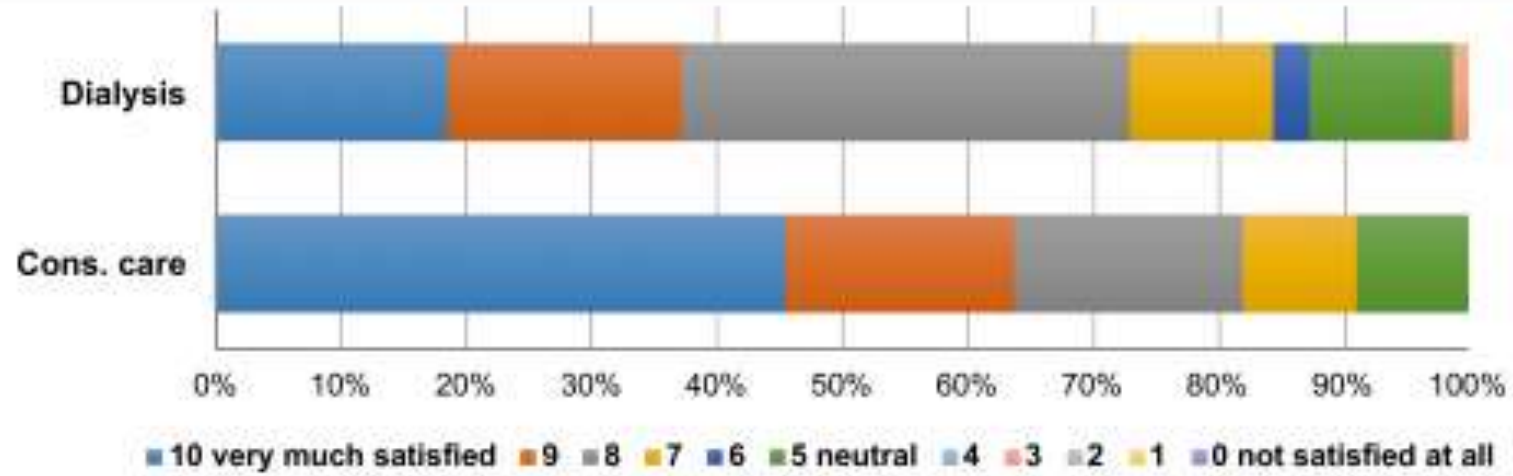

Fig. 2 Older patients' satisfaction with their treatment decision ($P = 0.03$). Rating on a 11-point Likert scale. Abbreviation: cons. care, conservative care

BMJ Open

Health-related quality of life and well-being in people over 75 years of age with end-stage kidney disease managed with dialysis or comprehensive conservative care: a cross-sectional study in the UK and Australia

Karan K Shah,[1] Fliss E M Murtagh,[2] Kevin McGeechan,[3] Su Crail,[4] Aine Burns,[5] Anh D Tran,[1] Rachael L Morton[1]

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ABSTRACT

Objective To measure health-related quality of life (HRQoL) and well-being in older people with end-stage kidney disease (ESKD) and to determine the association between treatment type and sociodemographic characteristics on these outcome measures. In addition, to assess the convergent validity between the HRQoL and well-being measure and their feasibility and acceptability in this population.

Design Prospective cross-sectional study.

Setting Three renal units in the UK and Australia.

Participants 129 patients with ESKD managed with dialysis or with an estimated glomerular filtration ≤10 mL/min/1.73 m^2 and managed with comprehensive conservative, non-dialytic care.

Outcome measures HRQoL and well-being were assessed using Short-Form six dimensions (SF-6D, 0–1 scale); Kidney Disease Quality of Life (KDQOL-36) (0–100 scale) and Investigating Choice Experiments Capability Measure-Older people (ICECAP-O, 0–1 scale). Linear regression assessed associations between treatment, HRQoL and well-being. Pearson's correlation coefficient assessed convergent validity between instruments.

Results Median age of 81 years (IQR 78–85), 65% males; on conservative care. Lower HRQoL and well-being may be associated with dialysis treatment and should inform

Strengths and limitations of this study

- The strengths of our study include a prospective assessment of health-related quality of life (HRQoL) in people over 75 years of age and the use of a novel measure to value well-being.
- This information is essential for doctors to discuss the relative benefits of dialysis compared with conservative care.
- The limitation of this study is that the sample size may not have been sufficient to detect a statistically significant difference in mean scores if one existed.
- We did not have complete data on patient's comorbid conditions that may have impacted our ability to explore the associations between comorbid conditions and HRQoL or well-being.
- Considering the cross-sectional nature of the data, we were unable to analyse any changes relating to individuals' HRQoL or well-being over time, which might be captured in a longitudinal study.

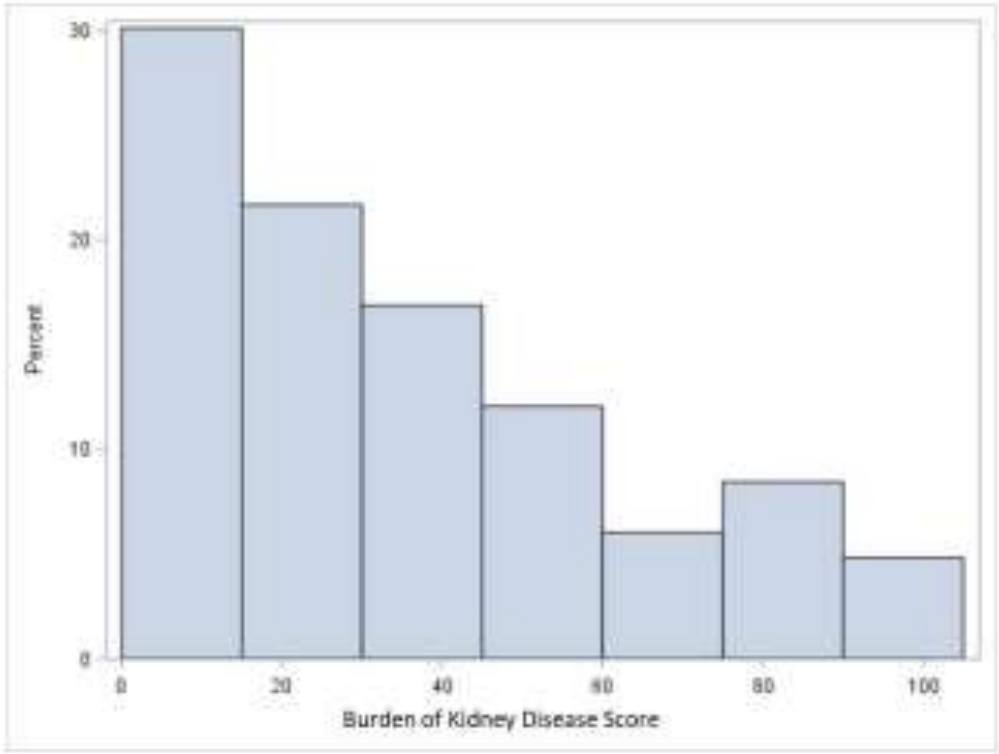


Figure 1 Kidney Disease Quality of Life-36 Burden of Kidney Disease score for dialysis group (n=83). A higher score indicates lower burden of disease and better quality of life.

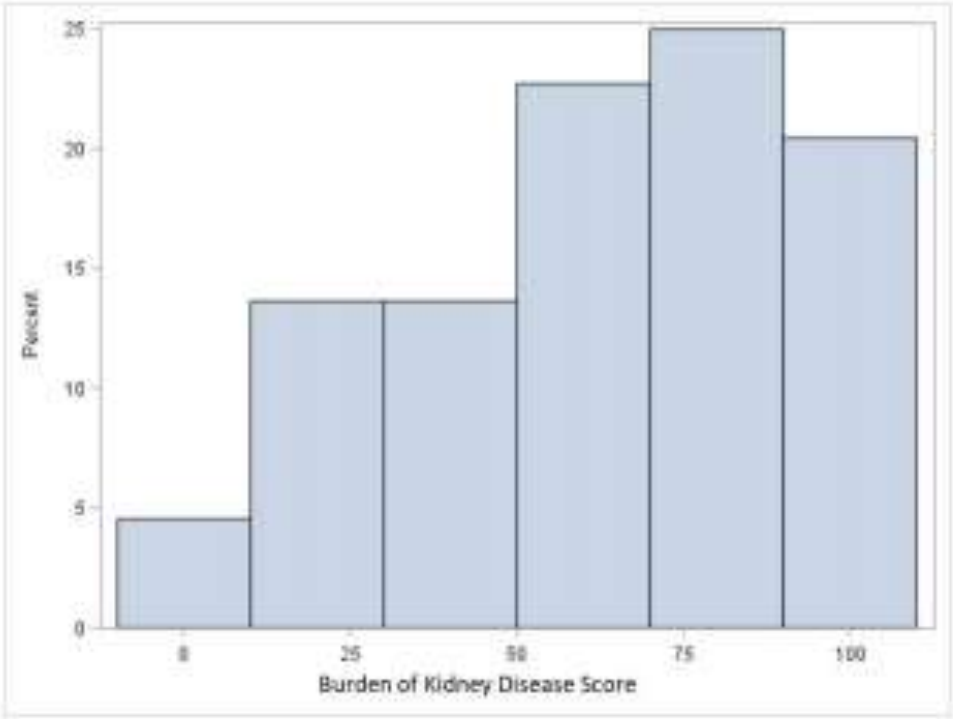


Figure 2 Kidney Disease Quality of Life-36 Burden of Kidney Disease score for conservative care group (n=44). A higher score indicates lower burden of disease and better quality of life.

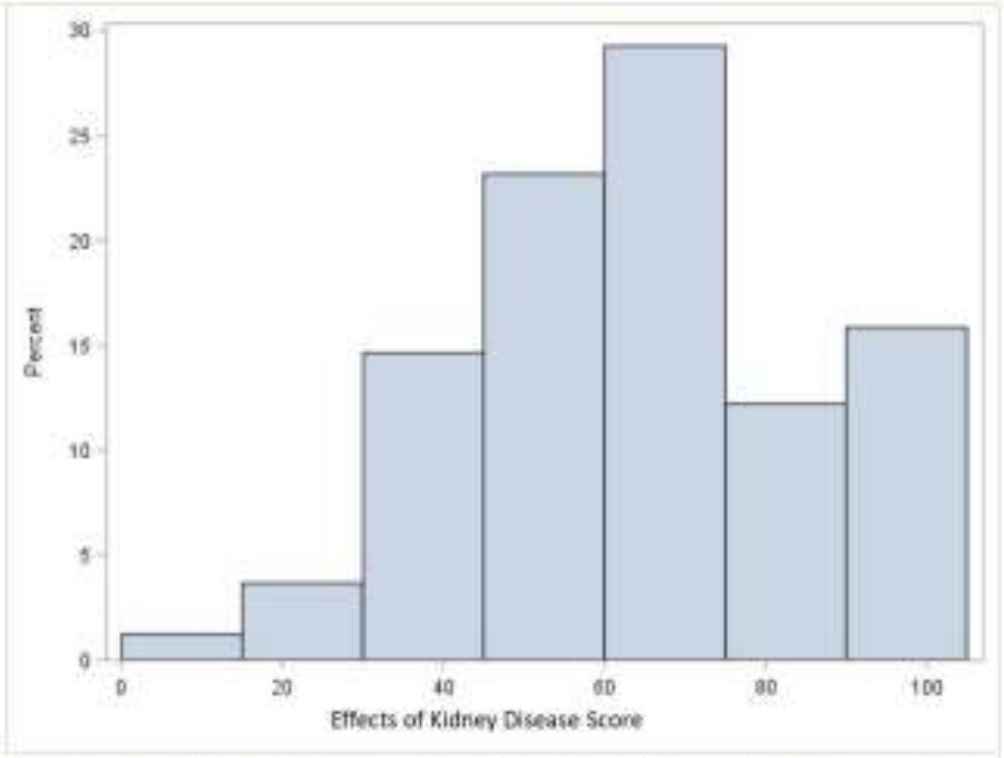


Figure 3 Kidney Disease Quality of Life-36 Effects of Kidney Disease score for dialysis group (n=82). A higher score indicates lower effects of disease and better quality of life.

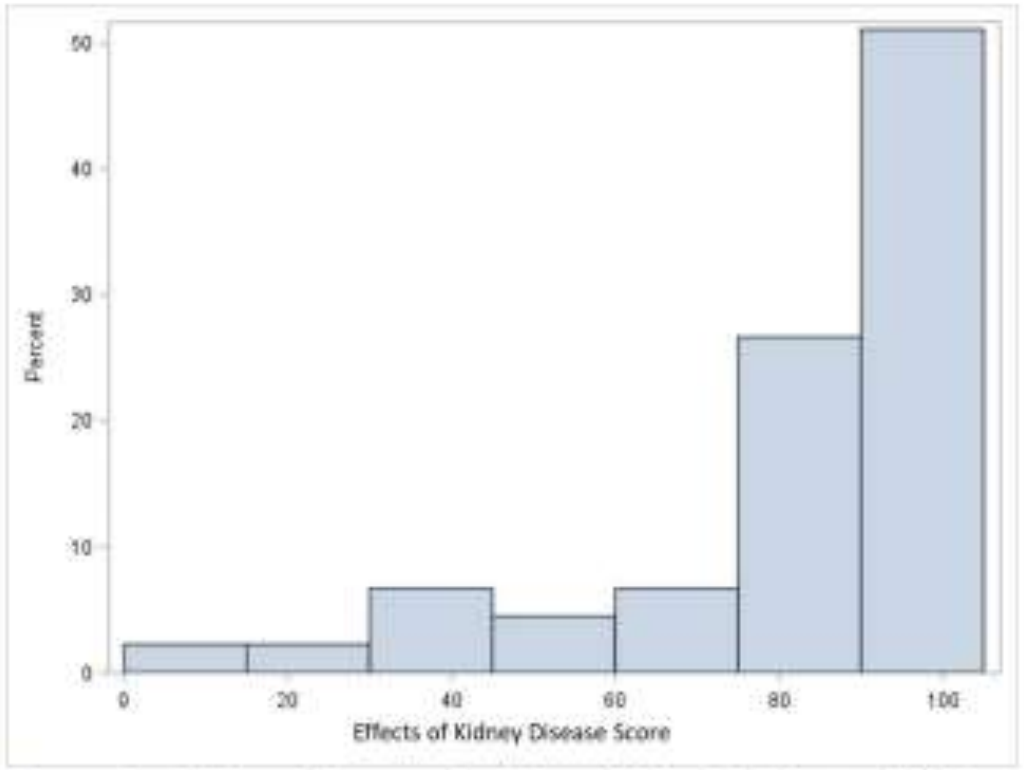


Figure 4 Kidney Disease Quality of Life-36 Effects of Kidney Disease score for conservative care group (n=45). A higher score indicates lower effects of disease and better quality of life.

- Urémiás toxinok
- Csont- és ásványianyagcsere zavara krónikus veseelégtelenségben
- Renális anémia
- A krónikus veseelégtelenség konzervatív kezelése
- Vese transzplantáció

Vese transzplantációk száma Magyarországon

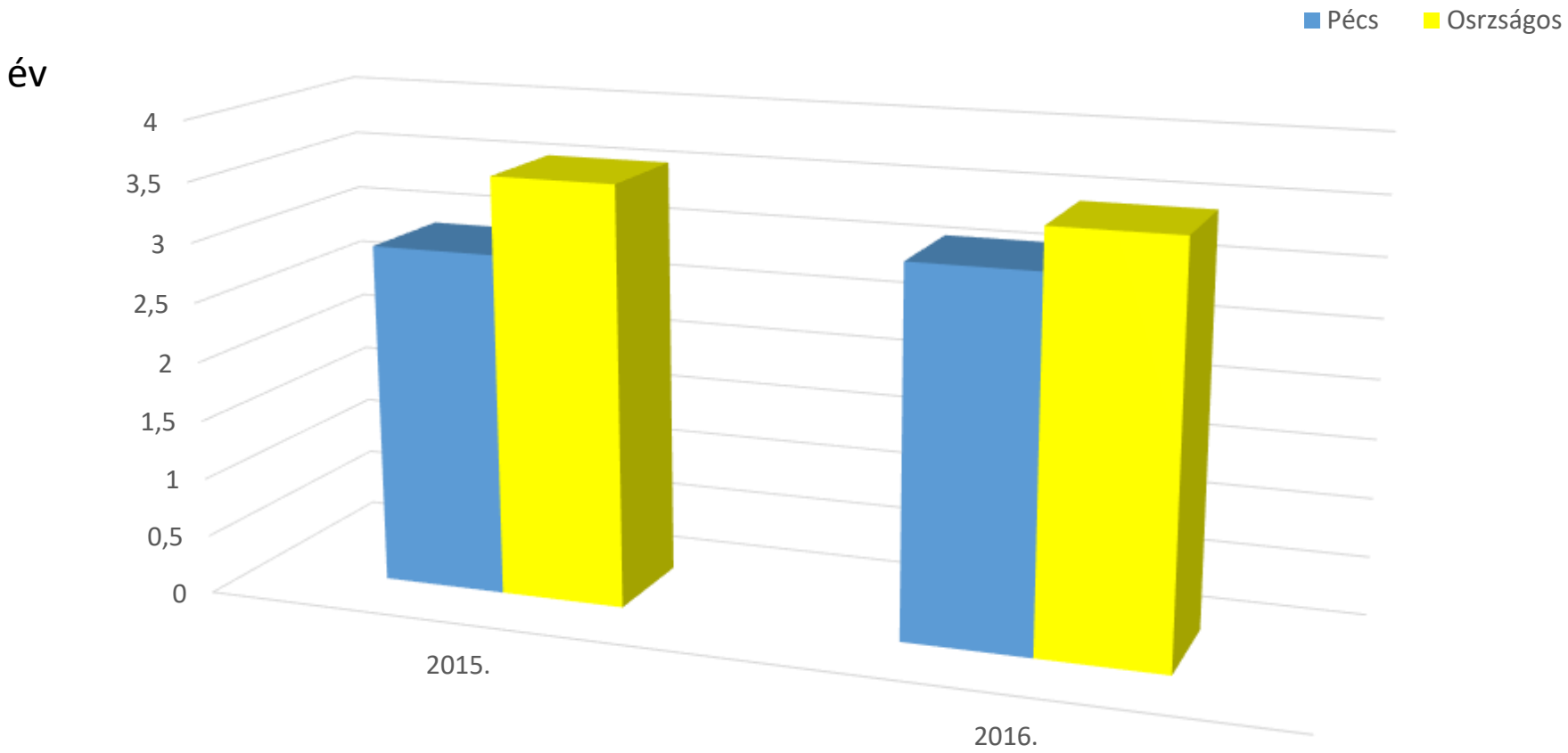
2018

- Elhunyt donorból: 290
- Élő donorból: 24
- Összes: **335**

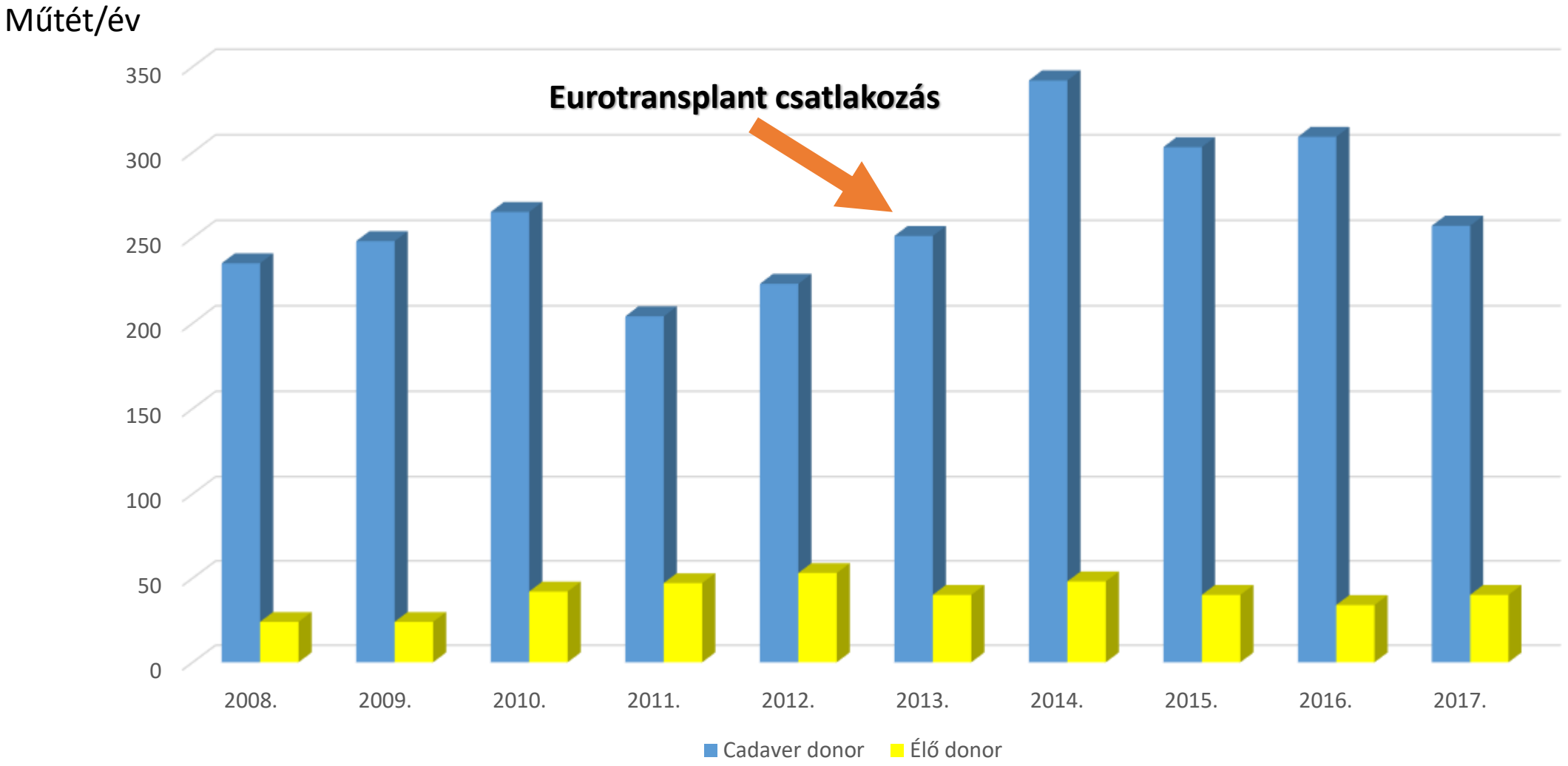
2019 (október 10-ig)

- Elhunyt donorból: 194
- Élő donorból: 20
- Összes: **214**

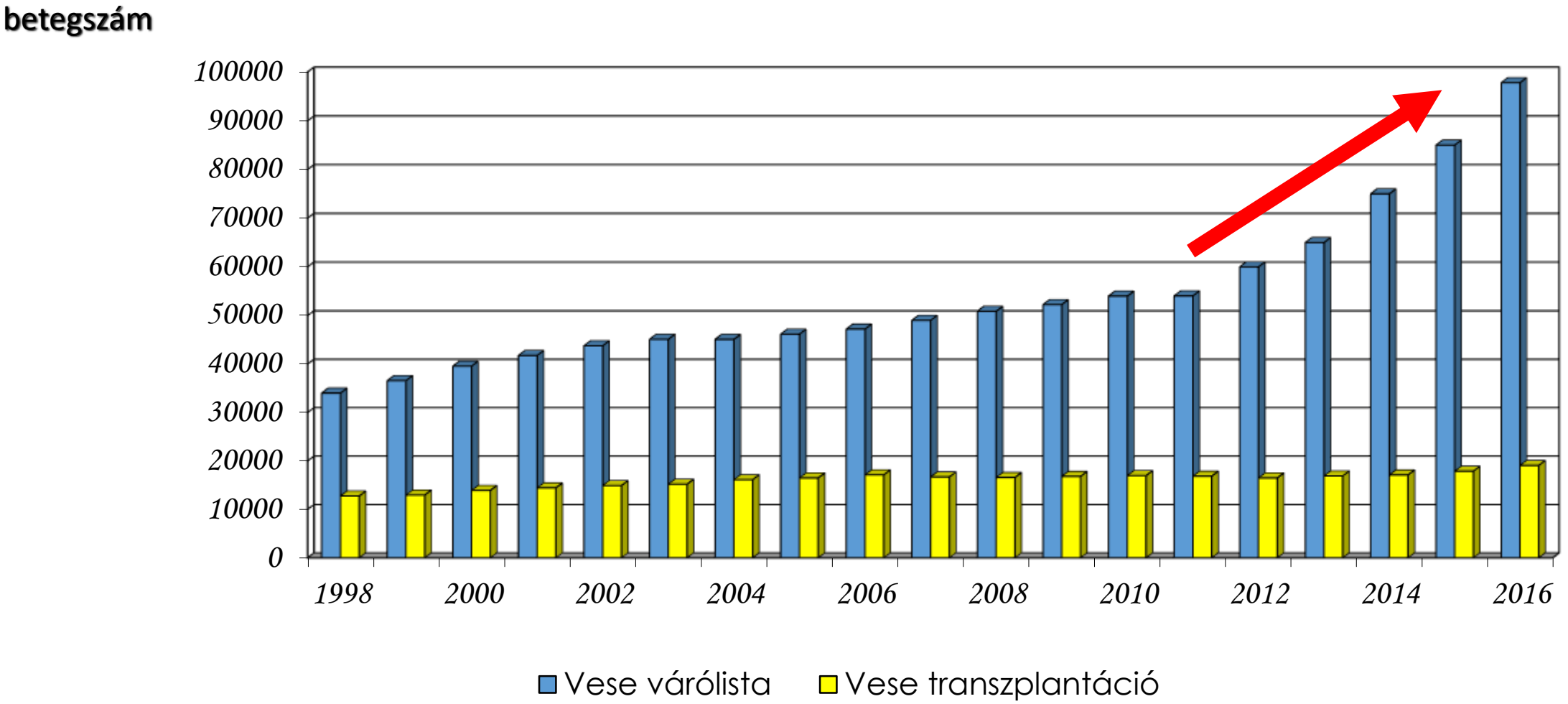
Átlagos várakozási idő a veseátültetésig



Agyhalott és élő donorból történő veseátültetések száma



Kereslet és kínálat



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Nephrol Dial Transplant (2017) 32: 216–223
doi: 10.1093/ndt/gfw429

ndt
Nephrology Dialysis Transplantation

NDT Perspectives

Long-term risks of kidney living donation: review and position paper by the ERA-EDTA DESCARTES working group

Umberto Maggiore[1], Klemens Budde[2], Uwe Heemann[3], Luuk Hilbrands[4], Rainer Oberbauer[5], Gabriel C. Oniscu[6], Julio Pascual[7], Soren Schwartz Sorensen[8], Ondrej Viklicky[9] and Daniel Abramowicz[10] for the ERA-EDTA DESCARTES working group

Nephrol Dial Transplant (2017) 32: 216–223
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Table 1. 2014 matched cohort retrospective studies on the long-term risk of ESRD after living donation

	Mjøen *et al.* [3] (2014), Norway	Muzaale *et al.* [4] (2014), USA
Donors	1901	96 217
Matched controls (survey source)[a]	32 621 (HUNT)	9364 (NHANES III) resampled to match 1:1
Time frame, in donors/in controls, calendar year	1963–2007/1984–1987	1994–2001/1988–1994
F, median (max), in donors/in controls–years	15 (44)/25 (26)	8 (15)/15 (15)
Characteristics, in donors/in controls	Non-marginal donors/healthy subjects	Unselected donors/healthy subjects
Geographical origin overlap, donors versus controls	No	Yes
Matching variables	Age, gender, BP, smoking status	Age, gender, race, BP, BMI, smoking status
Donor's relation with the recipient	80% first-degree relatives	67% related
Matching for family history of ESRD	No	No
ESRD incidence proportion (*n*), in donors/in controls	0.47% (9)/0.06% (22)	0.10% (99)/0.04% (36)[b]
Relative risk of ESRD	11.4[c]	~8.0

BP, arterial blood pressure.

[a]Statistical methods used for matching donors with controls: coarsed exact matching and propensity score plus radius matching, respectively.

[b]Numbers after resampling: 17 events in 9364 controls became 36 in 96 217 after resampling matched controls.

[c]Adjusted for age, gender, systolic blood pressure, BMI, smoking status and year of inclusion. Multiple imputations for missing values.

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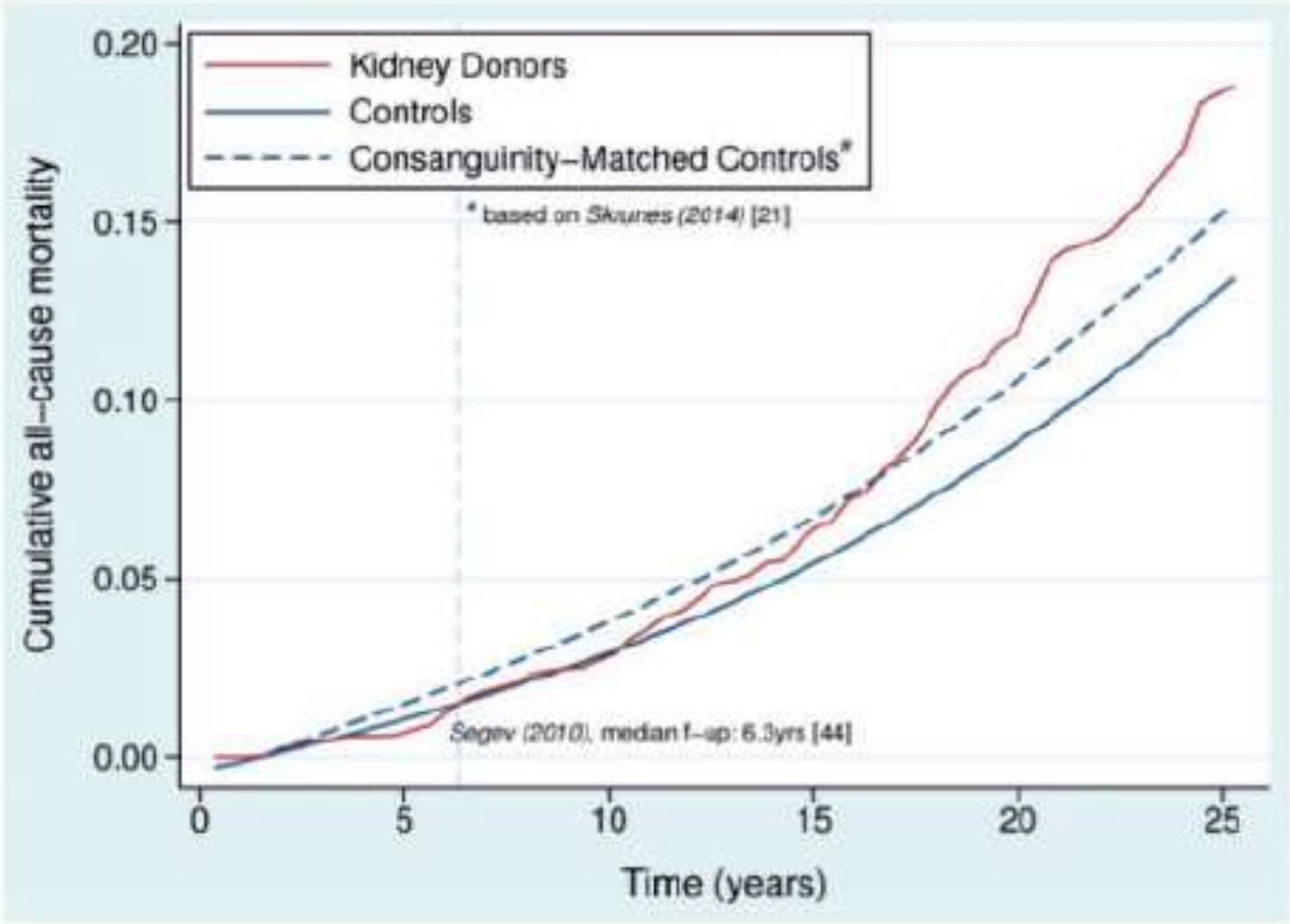

FIGURE 1: The figure represents the observed mortality in the study by Mjøen *et al.* [3] in donors (red line) and controls (blue line).

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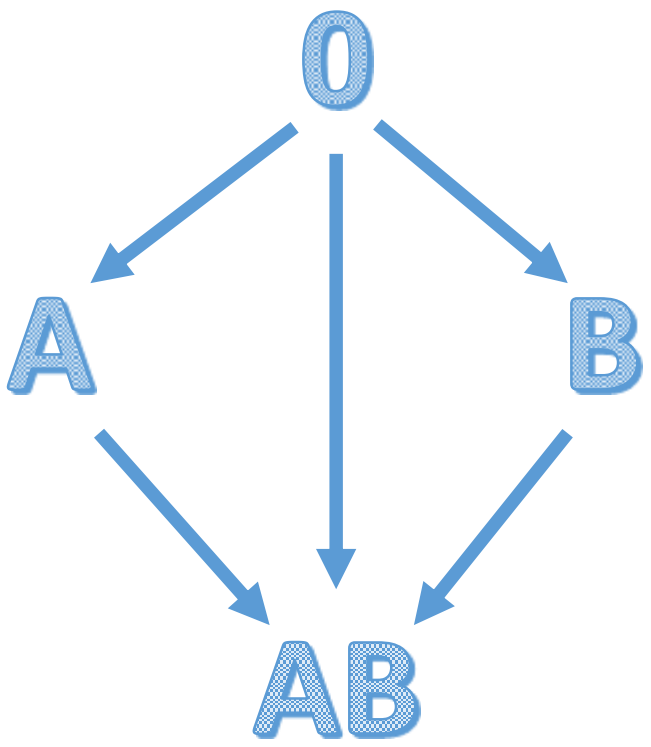
Keresztdonáció



- Egy lehetőség, ha lenne donor, de nem kompatibilis a vércsoport.
- Élődonoros átültetés speciális formája.
- Azért ad valaki vesét másnak, mert annak a donorja is ad vesét az ő rokonának ugyanabban az időben.

- Törvényi keretek adottak.

- Hamarosan megtörténhet az első hazai eset.
- Folyamatosan gyűjtjük az alkalmas párokat.
- Etikai Bizottsági engedélyhez kötött.
- Egyidőben kell elvégezni a műtéteket.
- Win-win helyzet teremtése.