


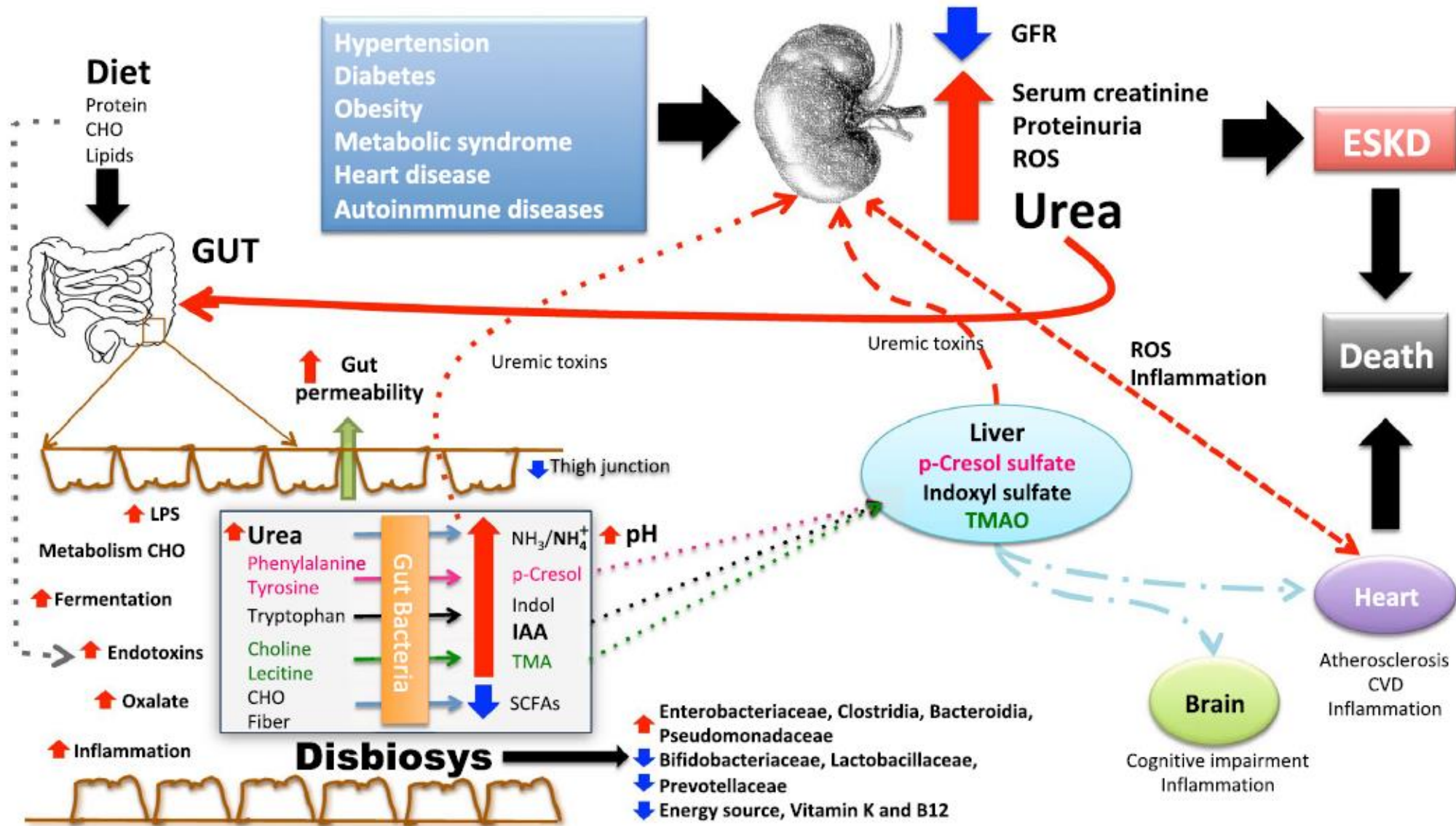


# The gut microbiota and its relationship with chronic kidney disease

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# 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 molekulásúlyú, dialízissel hatékonyan eltávolítható.
  - Clearance-e nem korrelál az urea Kt/V-vel!

# 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.

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].

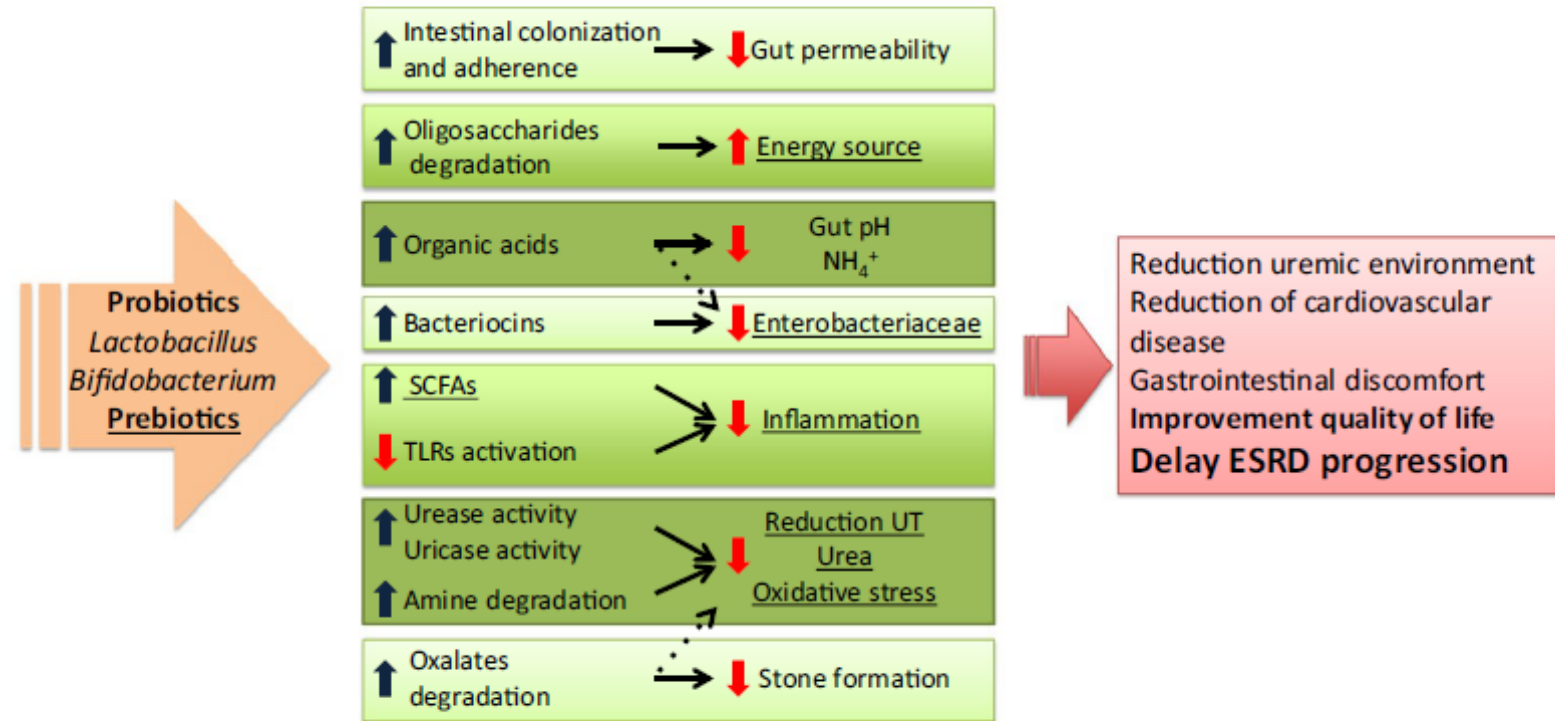
Probiotics are defined as “live microorganisms that confer a health benefit on the host when they are administered in adequate concentration”. Probiotics are mainly bacterial strains, mostly *Lactobacillus* or *Bifidobacterium*. Multiple studies in humans [20, 21] show the beneficial role of

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



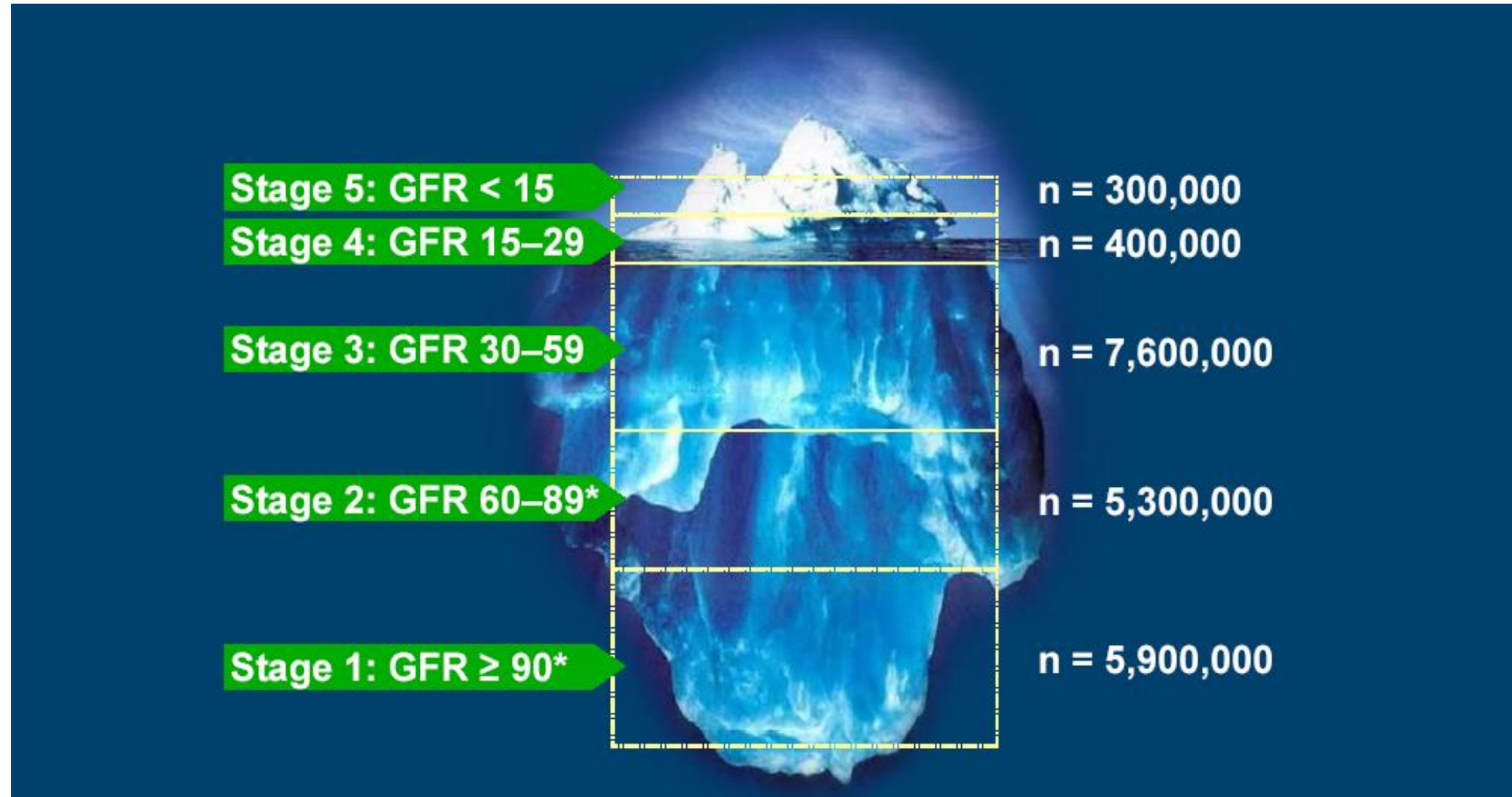
# KRÓNIKUS VESEBETEGSÉG - CKD

- Krónikus vesebetegség (CKD): a vesék kimutatható károsodása (pl. proteinuria  $\geq 30$  mg/nap vagy morfológiai károsodás) **vagy** csökkent vesefunkció (eGFR]  $< 60$  mL/min/1.73 m<sup>2</sup>) **legalább 3 hónapon át, az októl függetlenül.**



# CKD EPIDEMIOLOGIA

USA: a populáció 11 %-a szenved CKD-ban

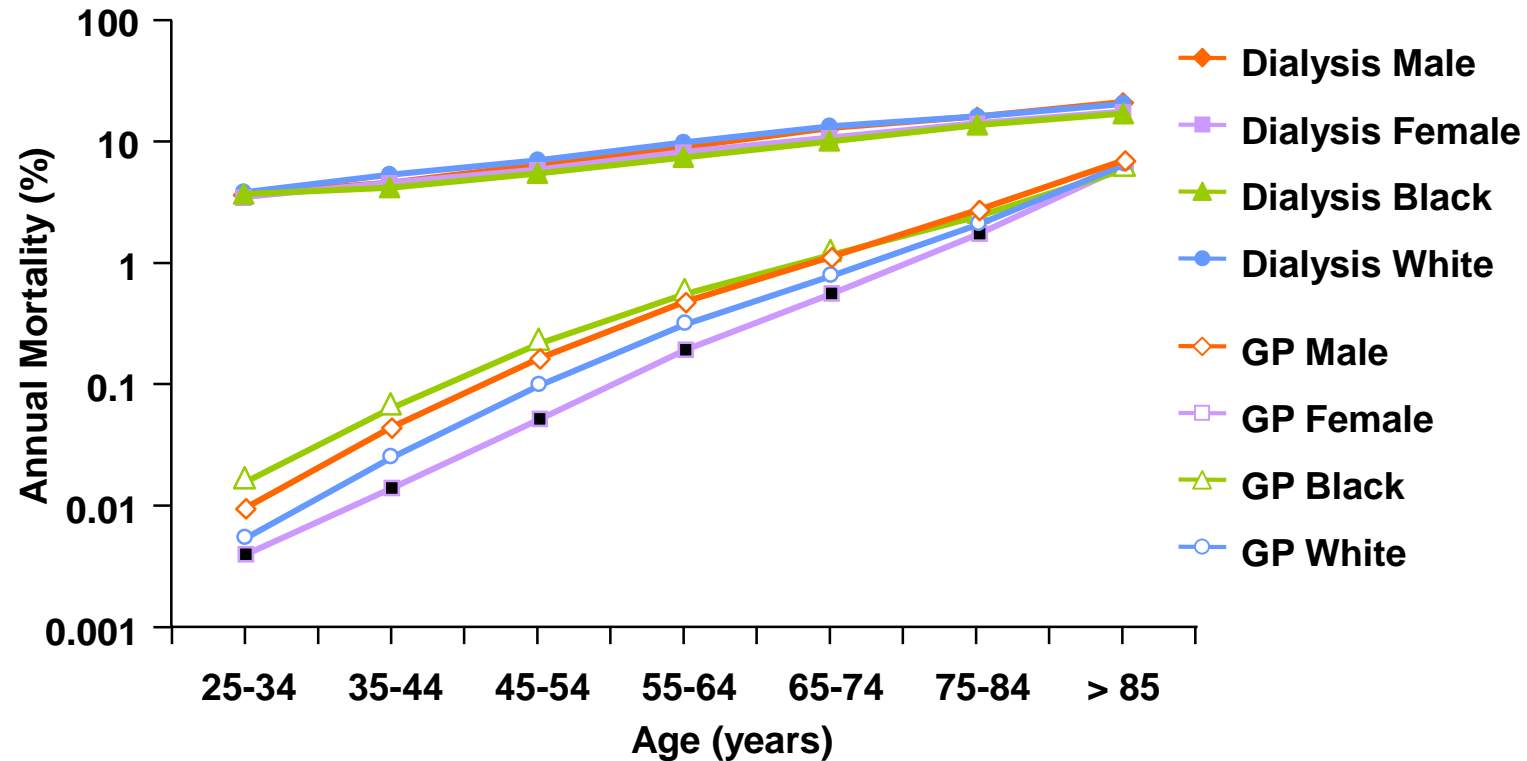




# CKD PREVALENCIA

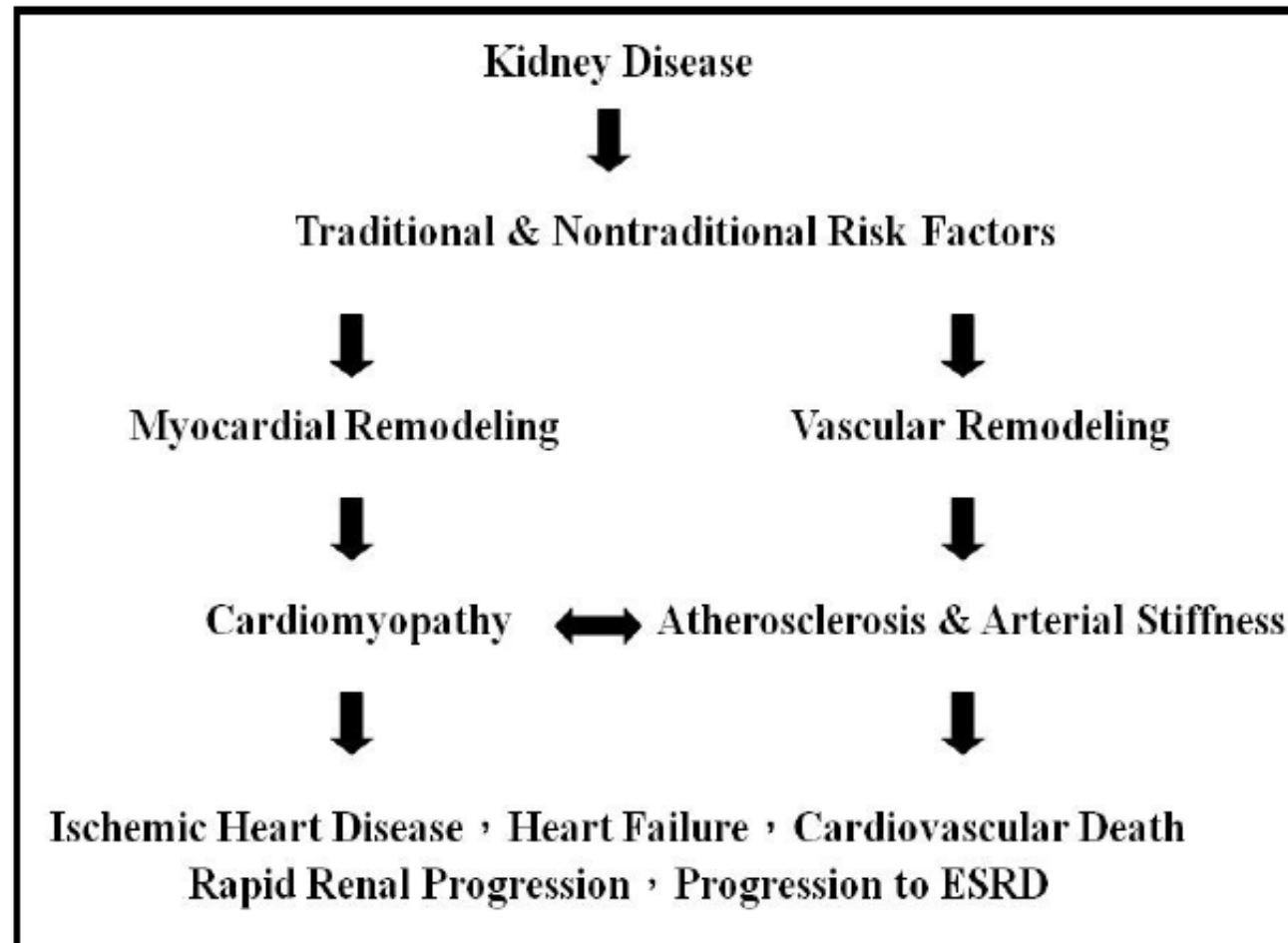
- Különböző országokban: 1-30%
- Norvégia: 10.2%

# CARDIOVASCULARIS MORTALITÁS DIALIZÁLT BETEGEKBEN ÉS AZ ÁTLAGPOPULÁCIÓBAN

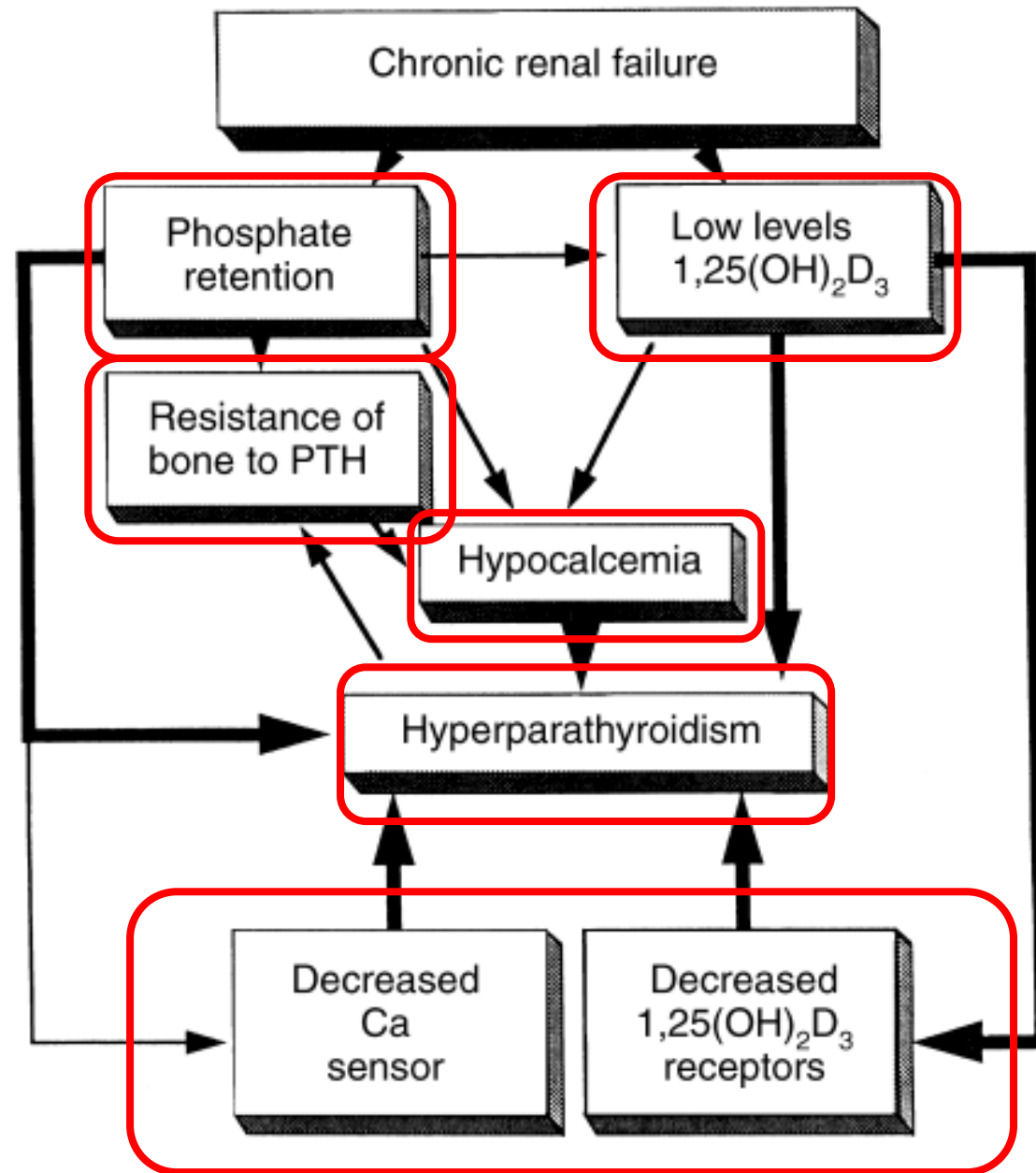


ESRD = end stage renal disease

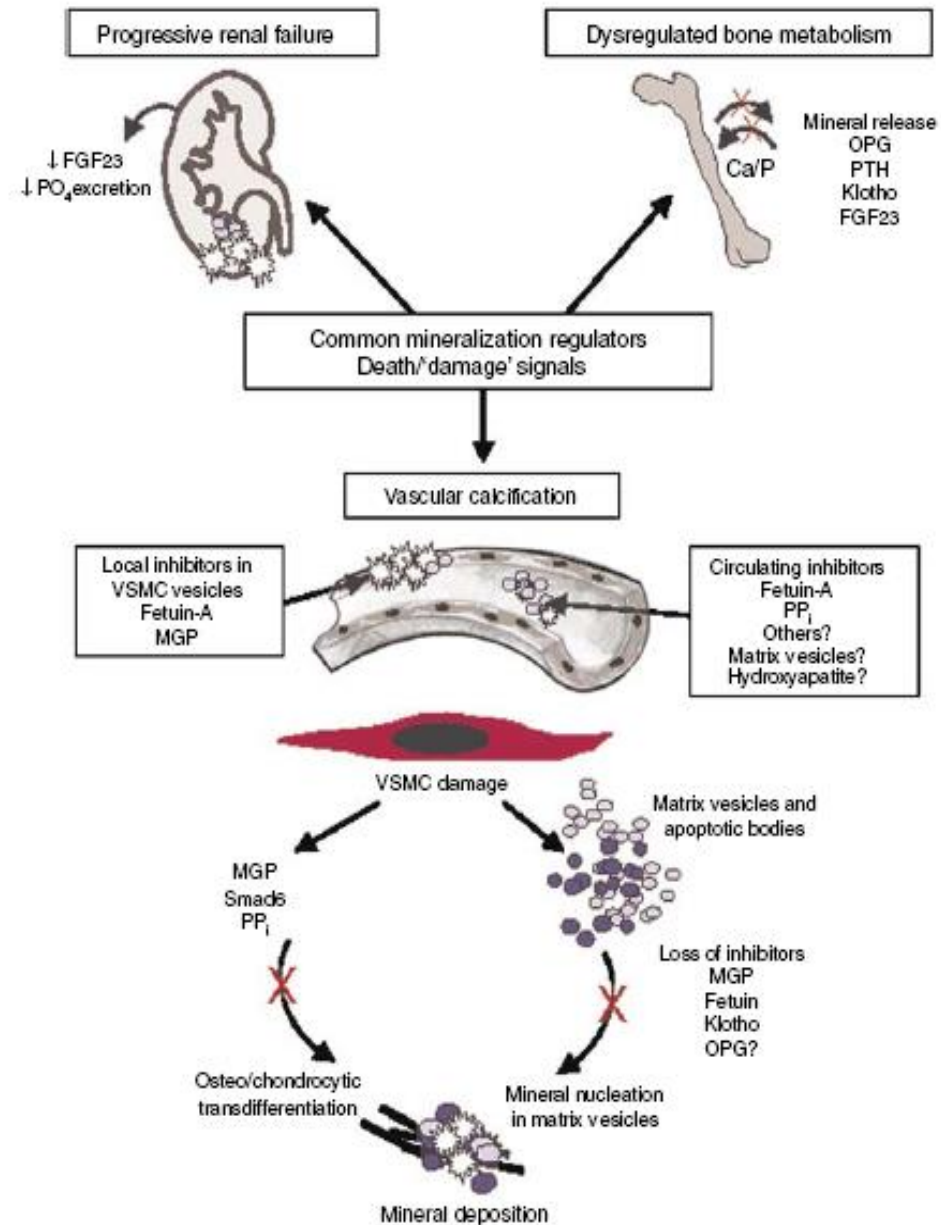
GP = general population



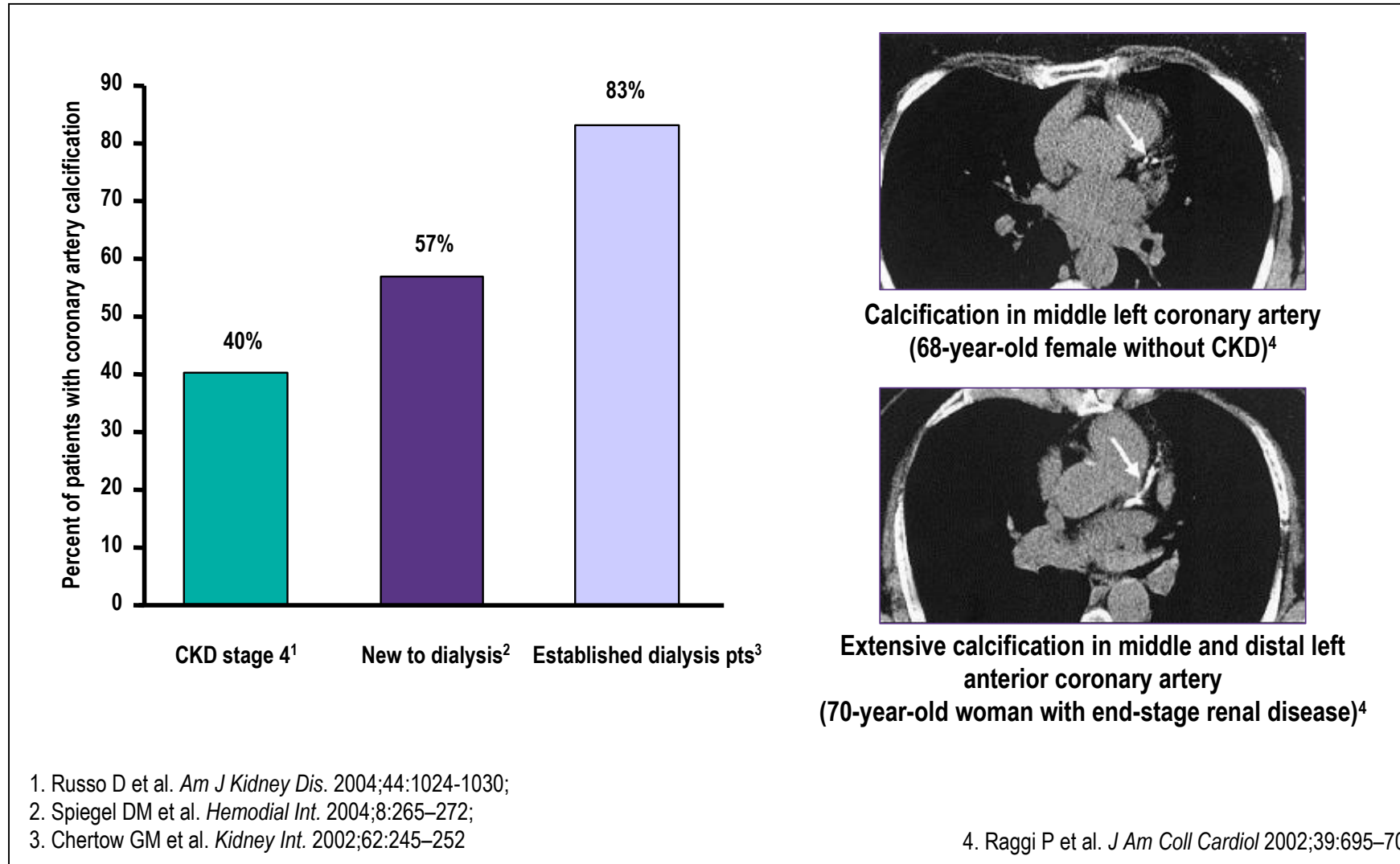
**Fig. 1.** Traditional and nontraditional risk factors associated with CKD promote myocardial and vascular remodeling resulting in different clinical outcomes.



# Puha csontok, kemény erek

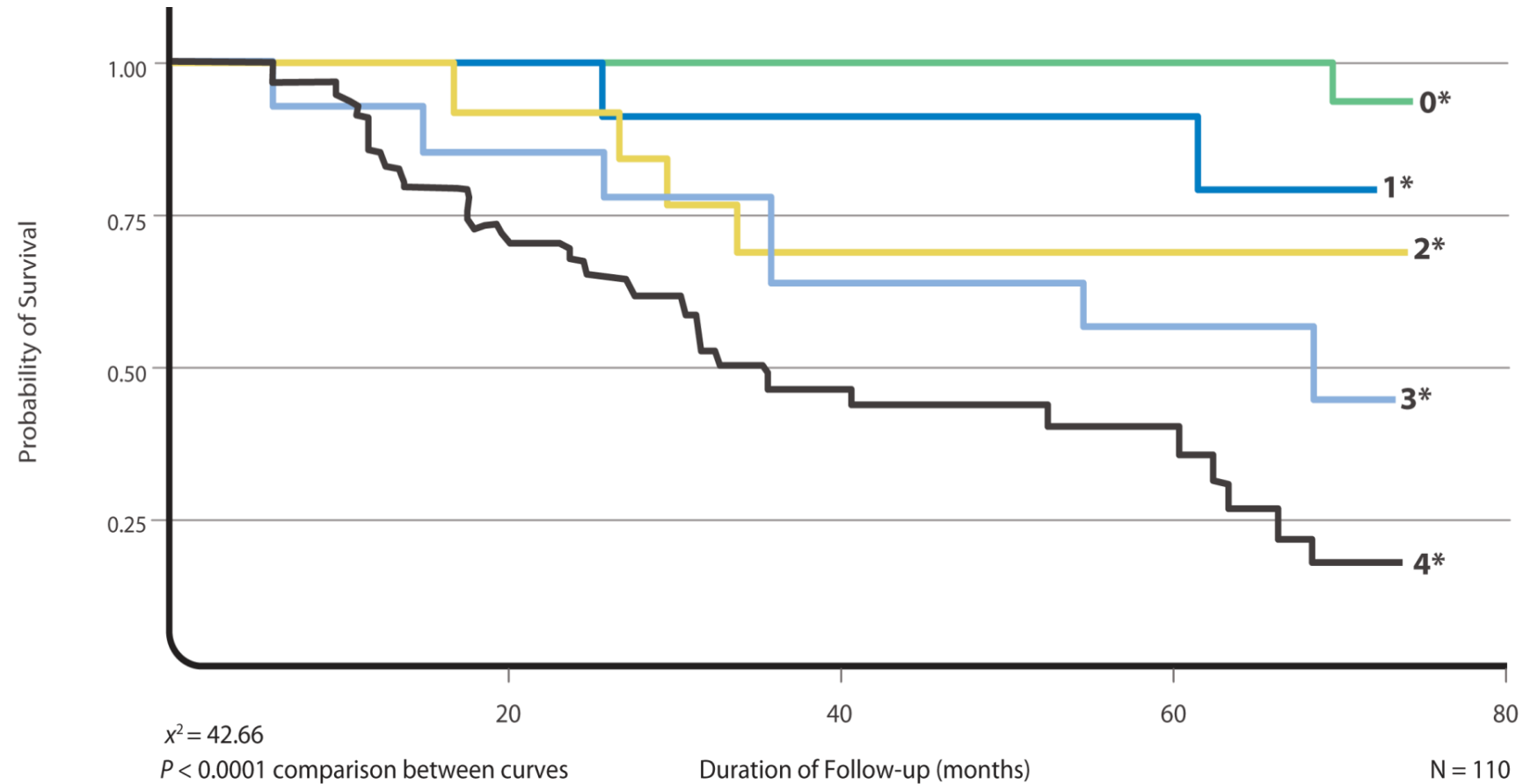


# CARDIOVASCULARIS CALCIFICATIO CKD-BAN





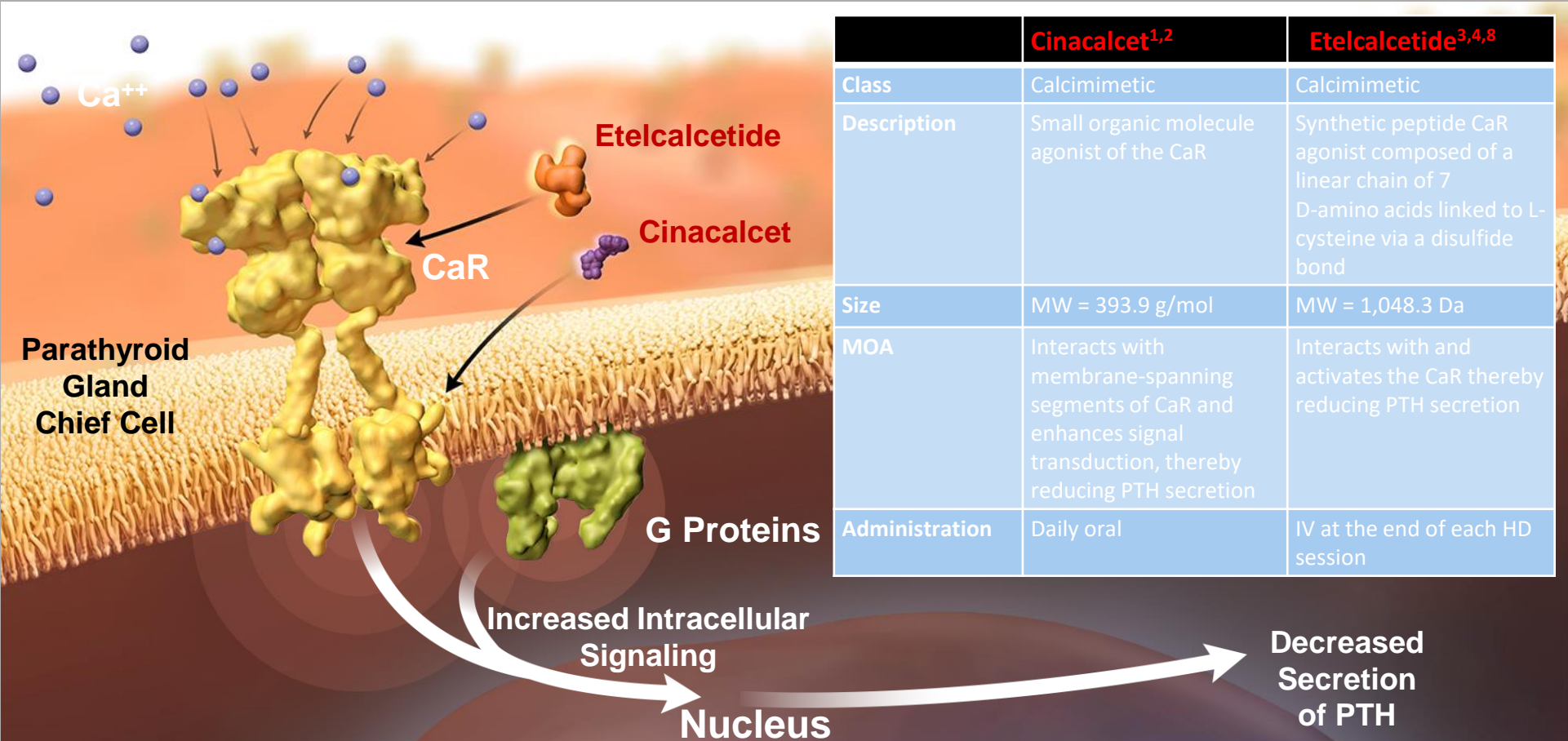
# CARDIOVASCULARIS CALCIFICATIO ÉS MORTALITÁS DIALIZÁLT BETEGEKBEN



# A VESEELÉGTELENSÉG SZÖVŐDMÉNYEINEK KEZELÉSE

- A csont struktúrájának változása általános és progresszív CKD-ban.
- A csontbetegségek:
  - Osteitis fibrosa
  - Osteomalacia
  - Adynamias csontbetegség
- A csont- és ásványianyagcsere zavar kezelése:
  - Diétás *foszfát megszorítás*
  - Oralis *foszfátkötők* (Ca-tartalmú és Ca-mentes)
  - *Calcitriol* (1,25-OH vit D), a legaktívabb D vitamin metabolit szintje elkezd csökkenni, amikor a  $GFR < 40 \text{ ml/min/1.73m}^2$ . 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 hyperplasiát.

Calcimimetics – An Overview<sup>1-8</sup>



	Cinacalcet <sup>1,2</sup>	Etelcalcetide <sup>3,4,8</sup>
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.

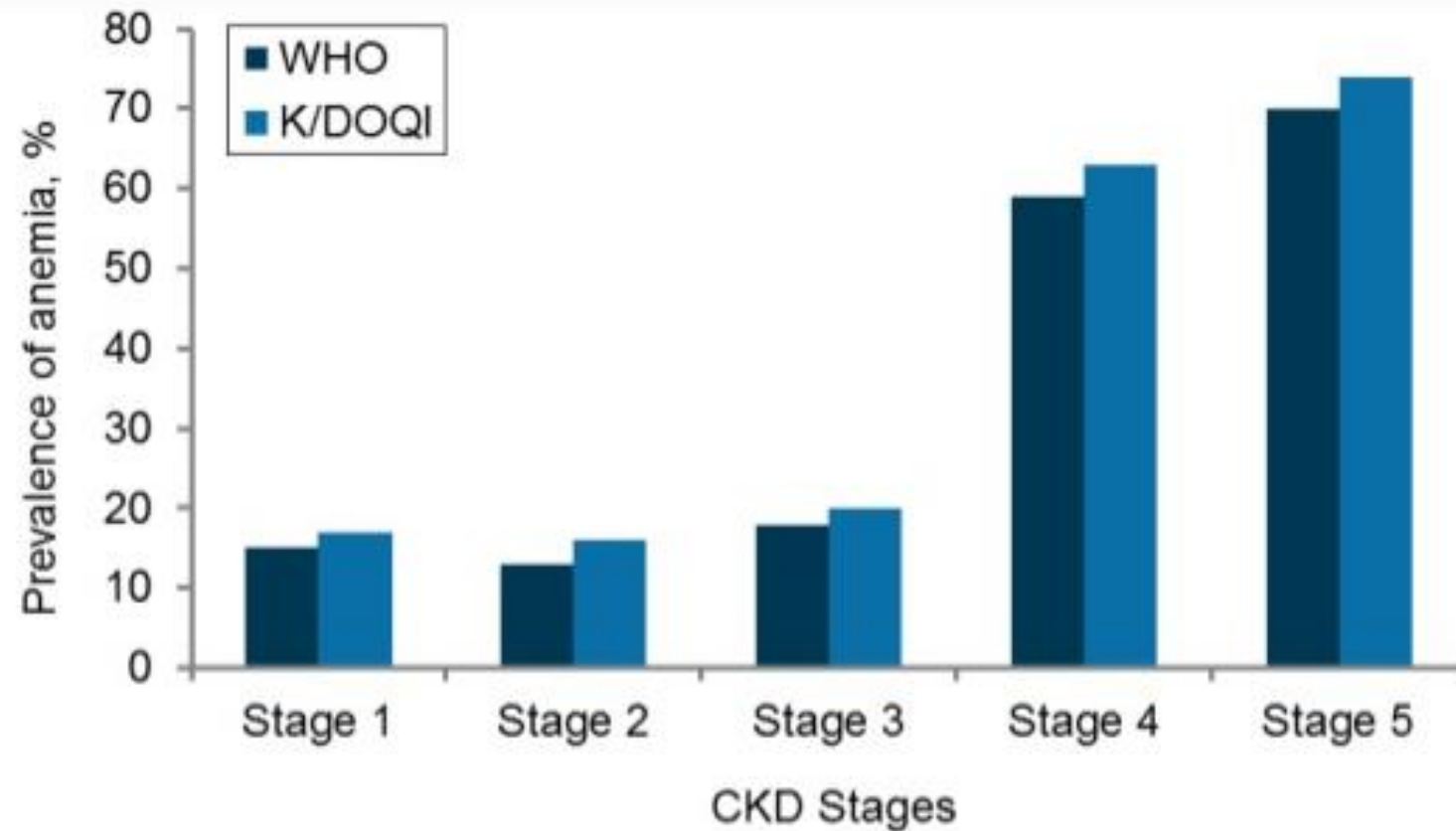
1. Sensipar® (cinacalcet) prescribing information, Amgen August 2017 . 2. Goodman WG, et al. *Adv Ren Replace Ther.* 2002;9:200-208. 3. Subramanian R, et al. *Drug Metab Dispos.* 2016;44:1319-1331. 4. Walter S, et al. *J Pharmacol Exp Ther.* 2013;346:229-240. 5. Alexander ST, et al. *Mol Pharmacol.* 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.



# A VESEELÉGTELENSÉG SZÖVŐDMÉNYEINEK KEZELÉSE

- **Renalis anémia** a csökkent erythropoietin szintézis miatt alakul ki. Normocytaer és normochrom. (Vashiányban microcytaer; folsavhiányban macrocytaer).
- Általában akkor alakul ki, amikor a GFR  $<60$  ml/min/1.73m<sup>2</sup>.
- Diagnózis: kizárandók az anémia egyéb okai!
- Kezelés:
  - Erythropoietin
  - (Vas és folsav)

# 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

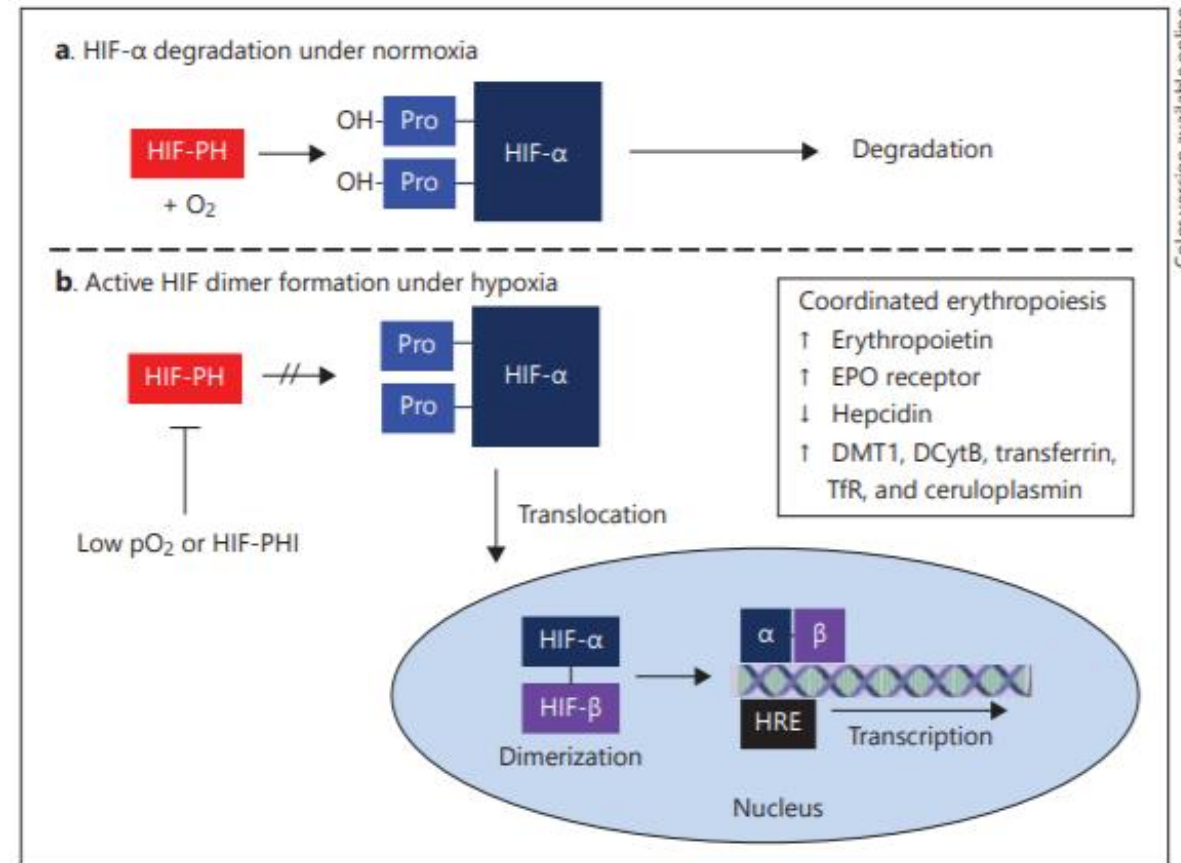


# Targeting Hypoxia-Inducible Factors for the Treatment of Anemia in Chronic Kidney Disease Patients

Francesco Locatelli<sup>a</sup> Steven Fishbane<sup>b</sup> Geoffrey A. Block<sup>c</sup> Iain C. Macdougall<sup>d</sup>

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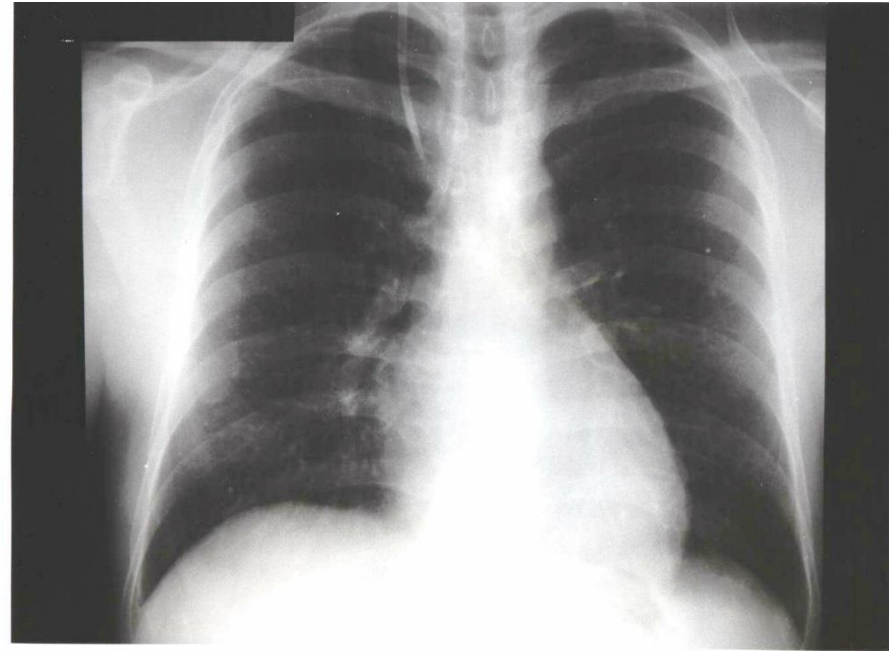
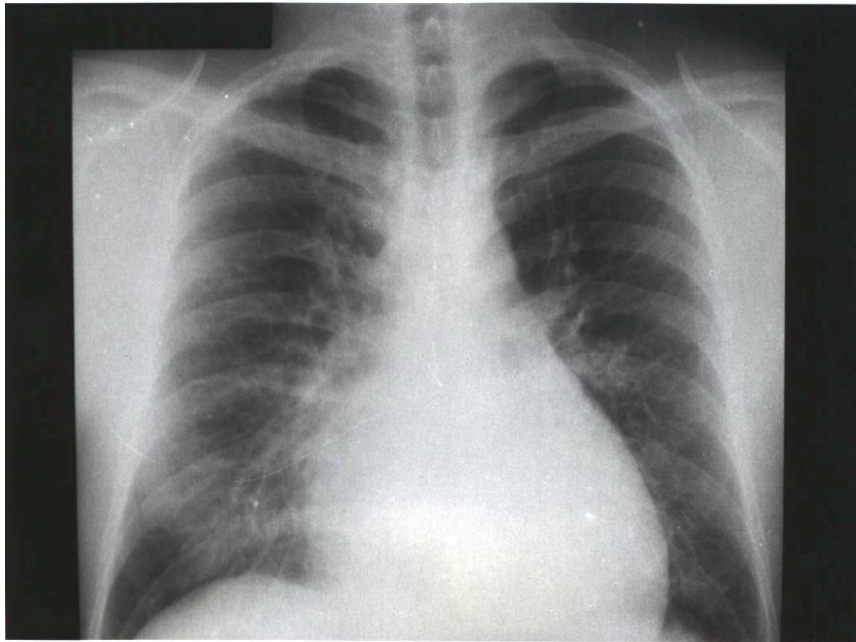
**Fig. 2. a, b** HIF activity under normoxic/hypoxic conditions and HIF-PHI inhibition, and its effects on erythropoiesis. DCyTB, duodenal cytochrome B; DMT1, Divalent metal transporter 1; EPO, erythropoietin; HIF, hypoxia-inducible factor; HIF-PH, hypoxia-inducible factor-prolyl-4-hydroxylase domain;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



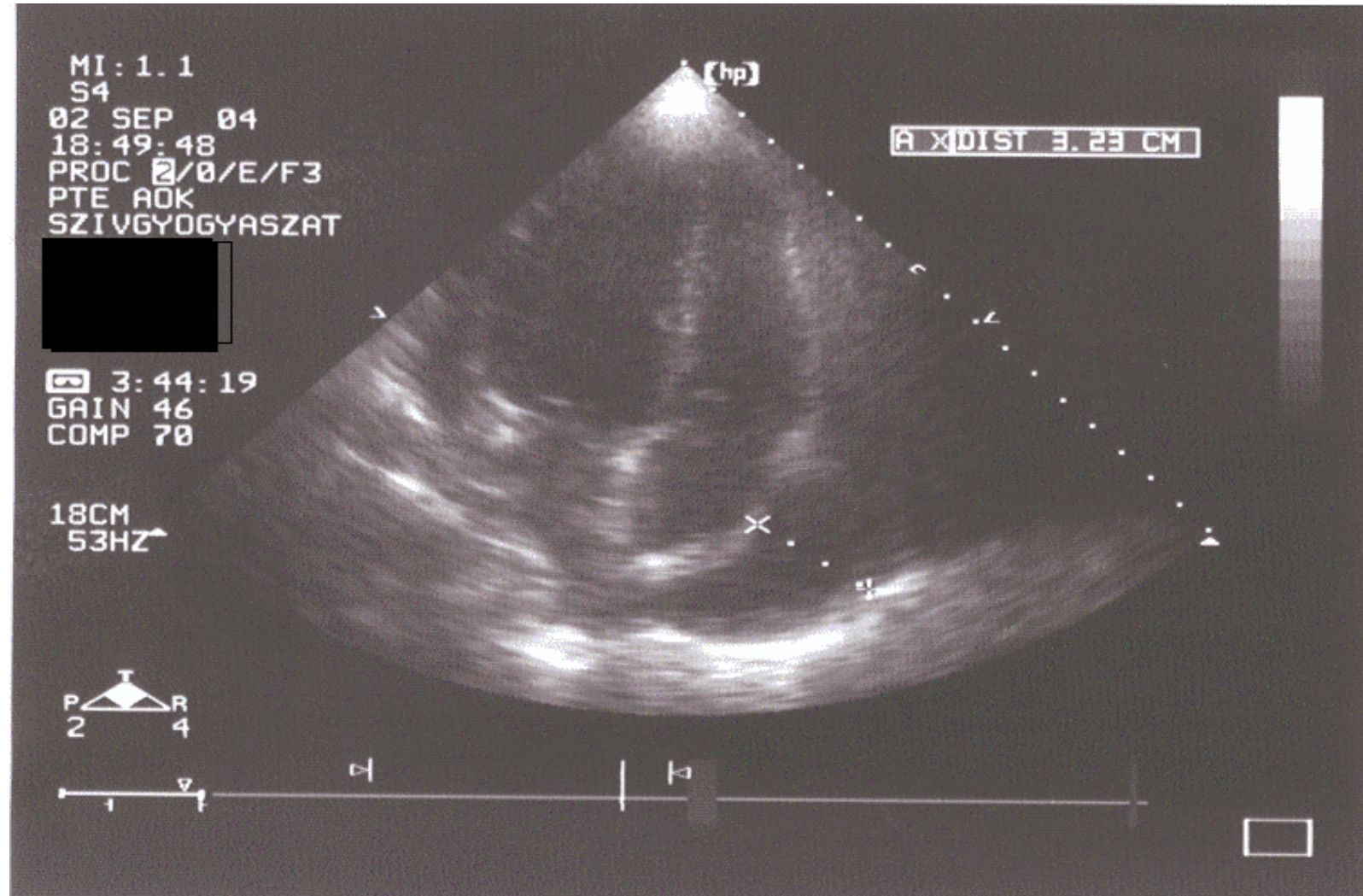
# Hemoglobin célértéke EPO/ESA kezelés esetén

- Általában **100-120** g/l között.
- A legtöbb kezelt beteg esetében nem célszerű a Hb értéket 115 g/l felett tartani EPO/ESA kezeléssel
- A betegek egy részének javul az életminősége 115 g/l feletti Hb esetén
- Minden betegben elkerülendő a 130 g/l feletti Hb érték elérése EPO/ESA kezeléssel

# Uraemiás pericarditis



# Pericarditis exsudativa



# Pericardialis tamponád

- Pericarditis rizikótényezői:
  - hypertonia
  - **hyperhydratio**
  - **magas retenciós értékek**
  - infectiók
  - magas PTH szint

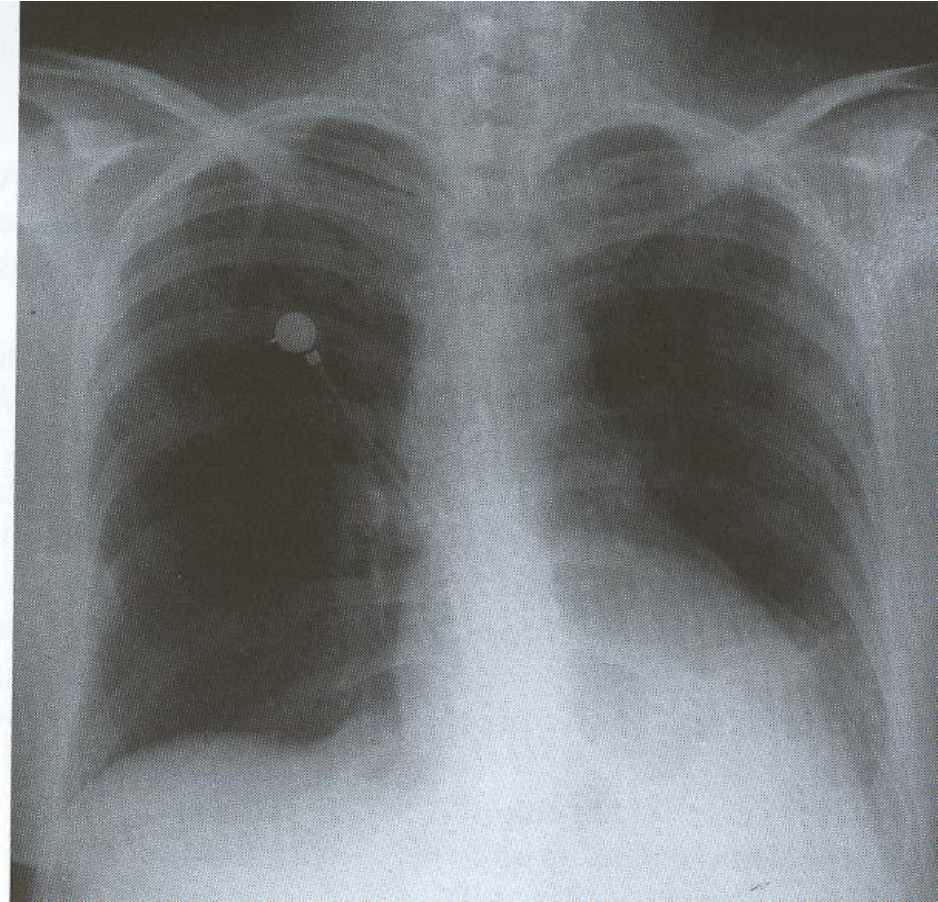
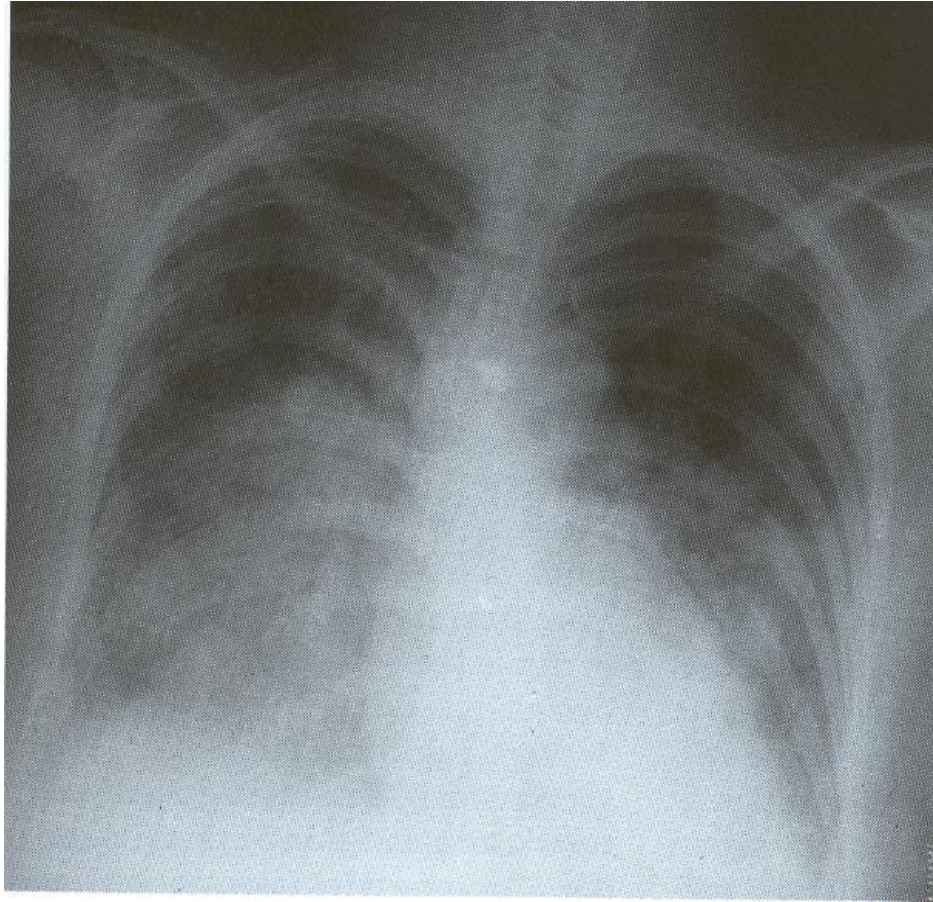


# Pericardialis tamponád tünetei

- hypotonia – tachycardia
- dyspnoe
- lapocka – válltáji fájdalom
- telt nyaki vénák
- cardiomegalia
- hepatomegalia, ascites
- halk, tompult szívhangok
- EKG eltérések: low voltage  
T hullám eltérések  
pitvarfibrillatio



# **Tüdőödéma rtg képe ultrafiltráció előtt és után**



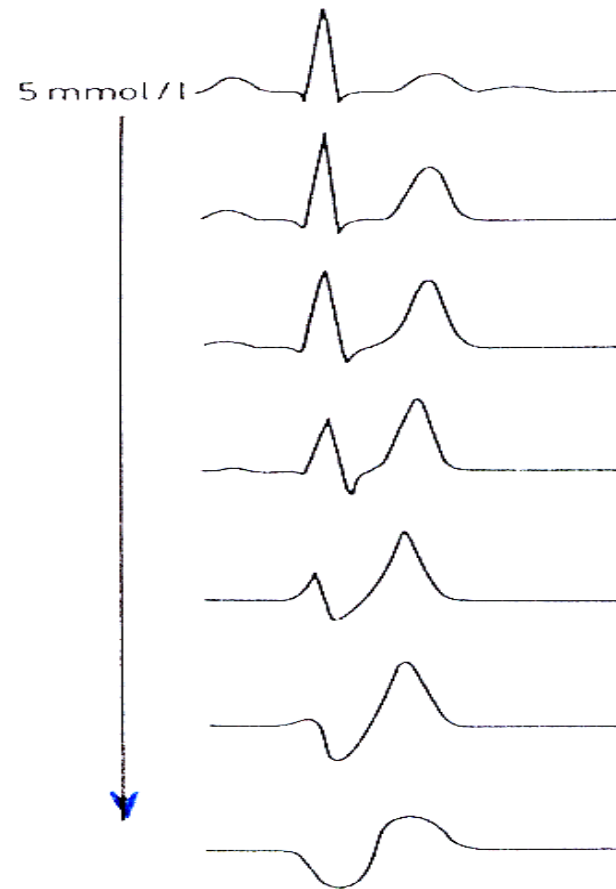
# Hyperkalaemia

Napi káliumbevitel: 1500-2000 mg

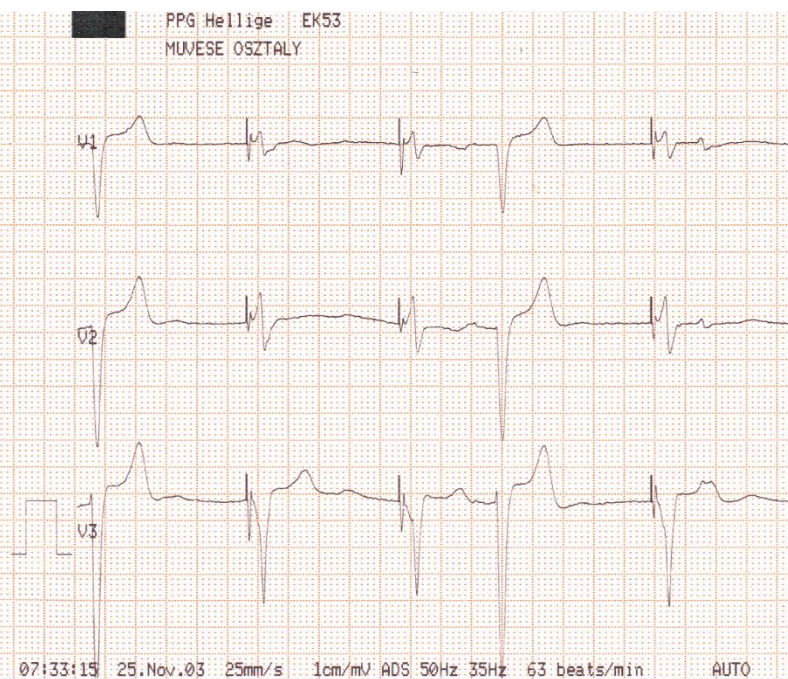
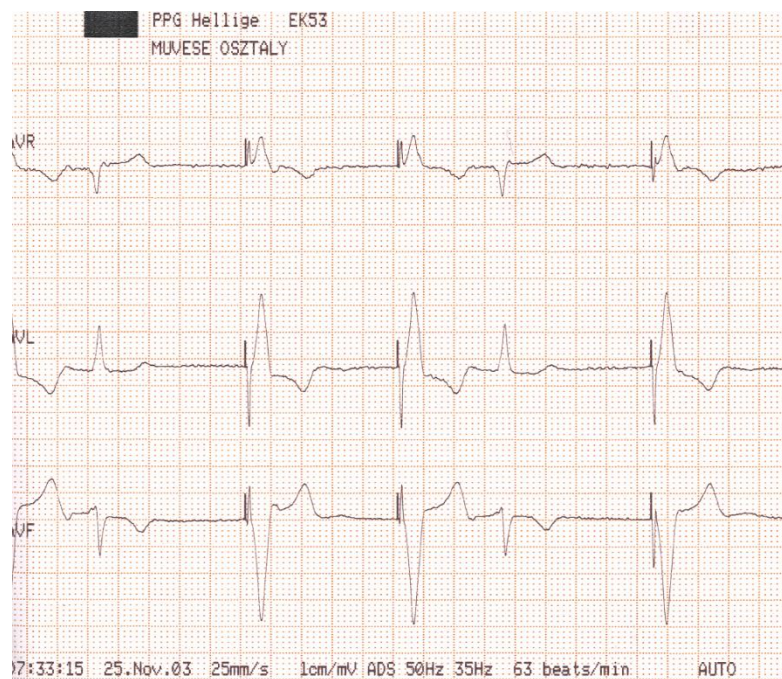
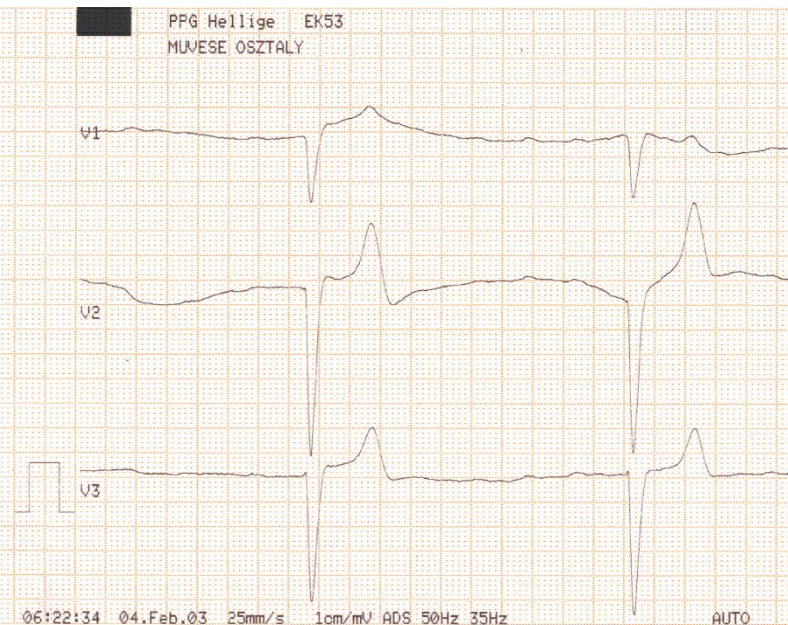
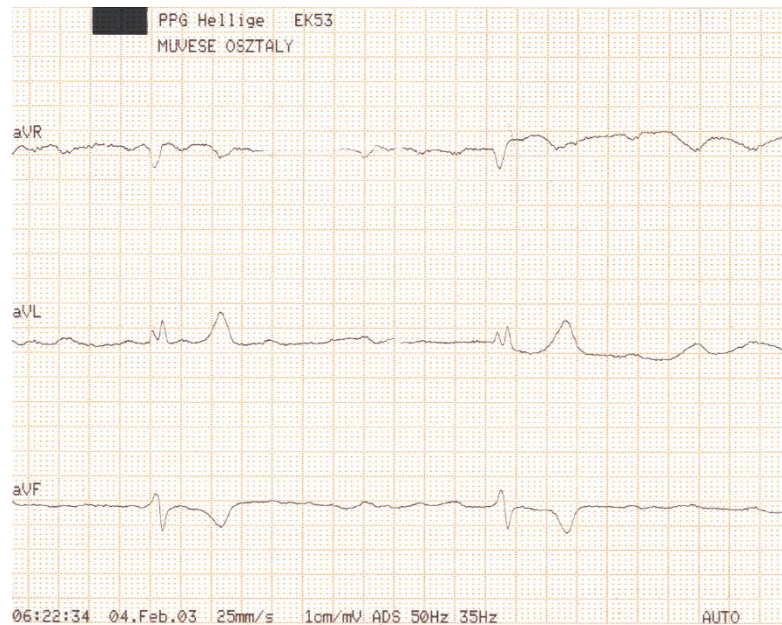
## Tünetei:

- ajak körüli ill. kézzsibbadás
- dyspnoe
- izomgyengeség, petyhüdt quadriplegia
- járásképtelenség
- EKG eltérések, ritmuszavarok

# A hyperkalaemia EKG jelei



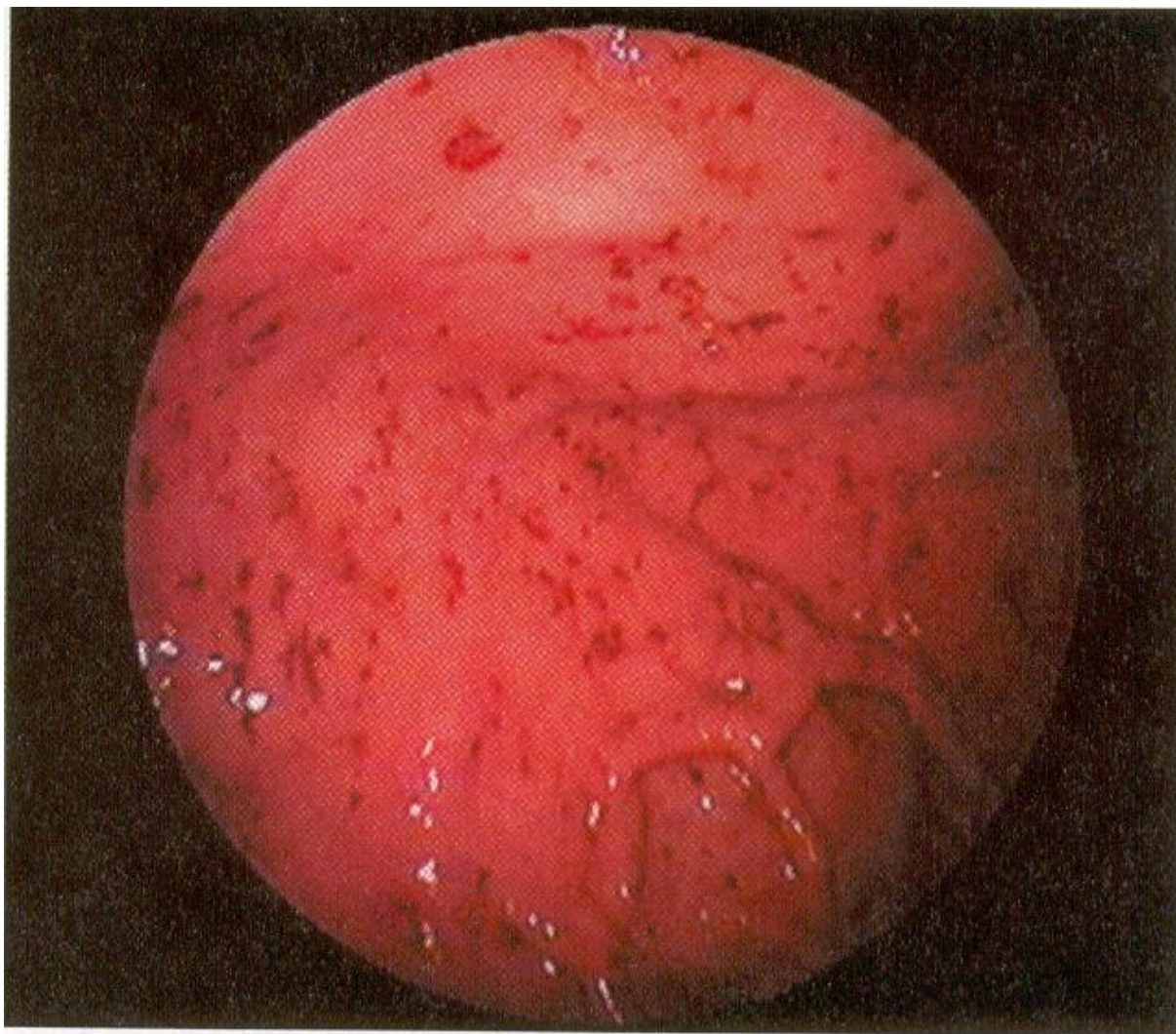






# Hyperkalaemia terápiája

								hatás ideje
Ca gluconicum	→							30-60 perc
Salbutamol	→							30-60 perc
NaHCO <sub>3</sub>	→	→						2 óra
Glükóz+insulin	→	→	→	→	→			4 óra
Resonium A		→	→	→	→	→	→	6 óra
Peritonealis dialízis			→	→	→	→	→	kezelés alatt
Hemodialízis		→	→	→	→	→	→	kezelés alatt
	0	1	2	3	4	5	6	



*XIV.2.9. ábra.* Erosiones ventriculi uraemiában

# VESEPÓTLÓ KEZELÉS

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



# A DIALÍZIS ELKEZDÉSE

- Tünetmentes beteg esetén: amikor **eGFR 5 -10 ml/min/1.73m<sup>2</sup>**.

# Starting Renal Replacement Therapy: Is It About Time?

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## Keywords

Chronic kidney disease · End-stage renal disease · Timing of dialysis initiation

## Abstract

**Background:** Studies of the timing of end-stage renal disease (ESRD) have primarily defined “early” versus “late” initiation of dialysis using estimated glomerular filtration rate (eGFR)-based criteria. Our objective was to determine the theoretical time that could be spent in chronic kidney disease (CKD) stage 5 prior to reaching a conservative eGFR threshold of 5 mL/min/1.73 m<sup>2</sup> compared to the actual time spent in CKD stage 5 by risk factors of interest. **Methods:** Eight-hundred and seventy Chronic Renal Insufficiency Cohort participants with CKD stage 5 who started renal replacement therapy (RRT) were included for retrospective study. We used mixed models to estimate the person-specific trajectory of renal function. We then used these individual trajectories to estimate the amount of time that would be spent in CKD stage 5 (between eGFR of 15 and 5 mL/min/1.73 m<sup>2</sup>) and compared this estimate to the actual time spent in CKD stage 5 prior to ESRD (between eGFR of 15 mL/min/1.73 m<sup>2</sup> and ESRD). **Results:** We found the median observed time between eGFR of 15 mL/min/1.73 m<sup>2</sup> to RRT was 9.6 months, but the median predicted time between eGFR of 15 mL/min/1.73 m<sup>2</sup> to eGFR of 5 mL/min/1.73 m<sup>2</sup> was 17.7 months.

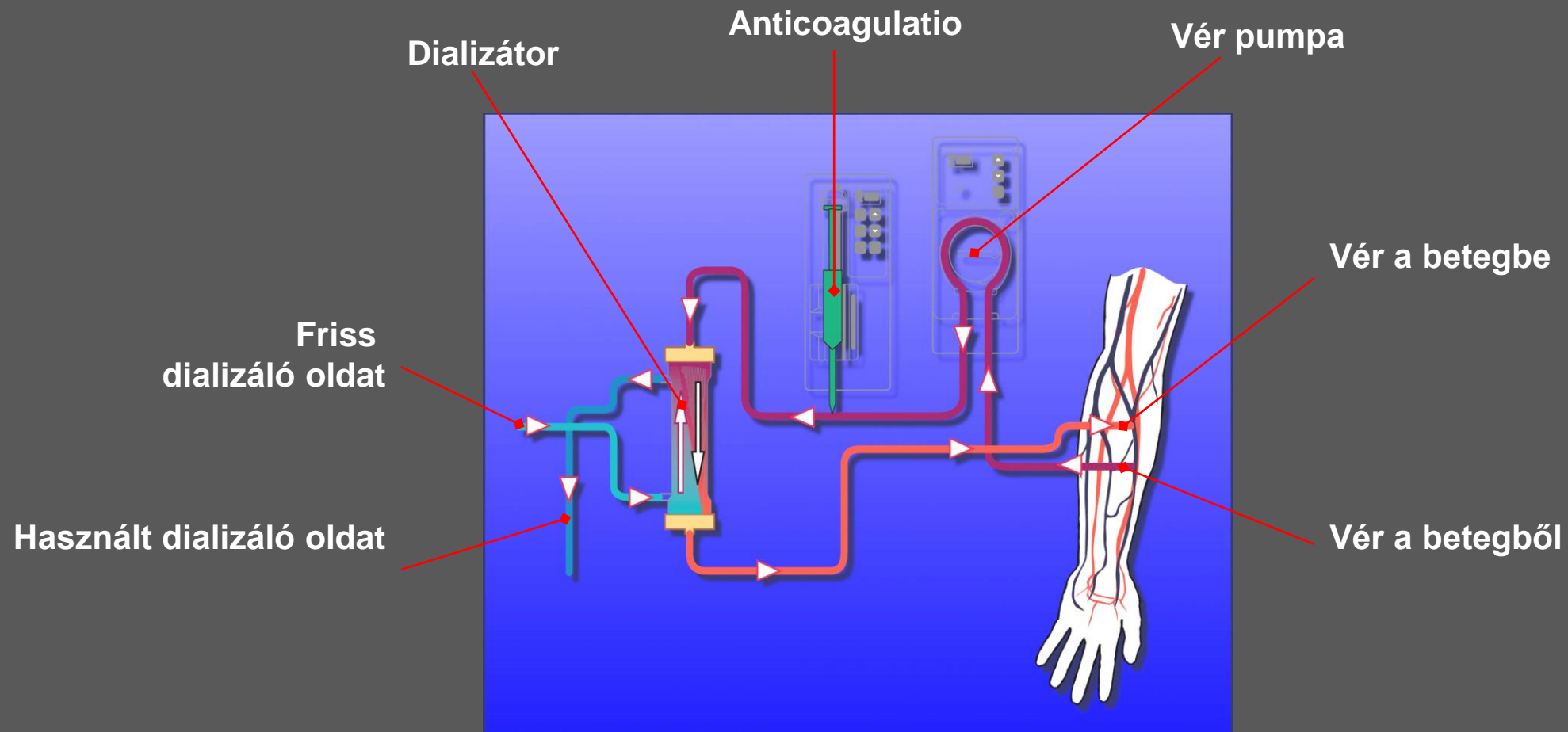
Some of the largest differences between the predicted and actual amount of time spent in CKD stage 5 were noted among those with systolic blood pressure <140 mm Hg (9.7 months longer predicted compared to actual), proteinuria <1 g/g (9.1 months), and serum albumin ≥3.5 g/dL (9.0 months). **Conclusion:** We found marked differences between the actual and predicted time spent in CKD stage 5 based on risk factors of interest. We believe that placing timing of dialysis initiation in the perspective of time is novel and may identify subgroups of patients who may derive particular benefit from a more concerted effort to delay RRT.

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## Introduction

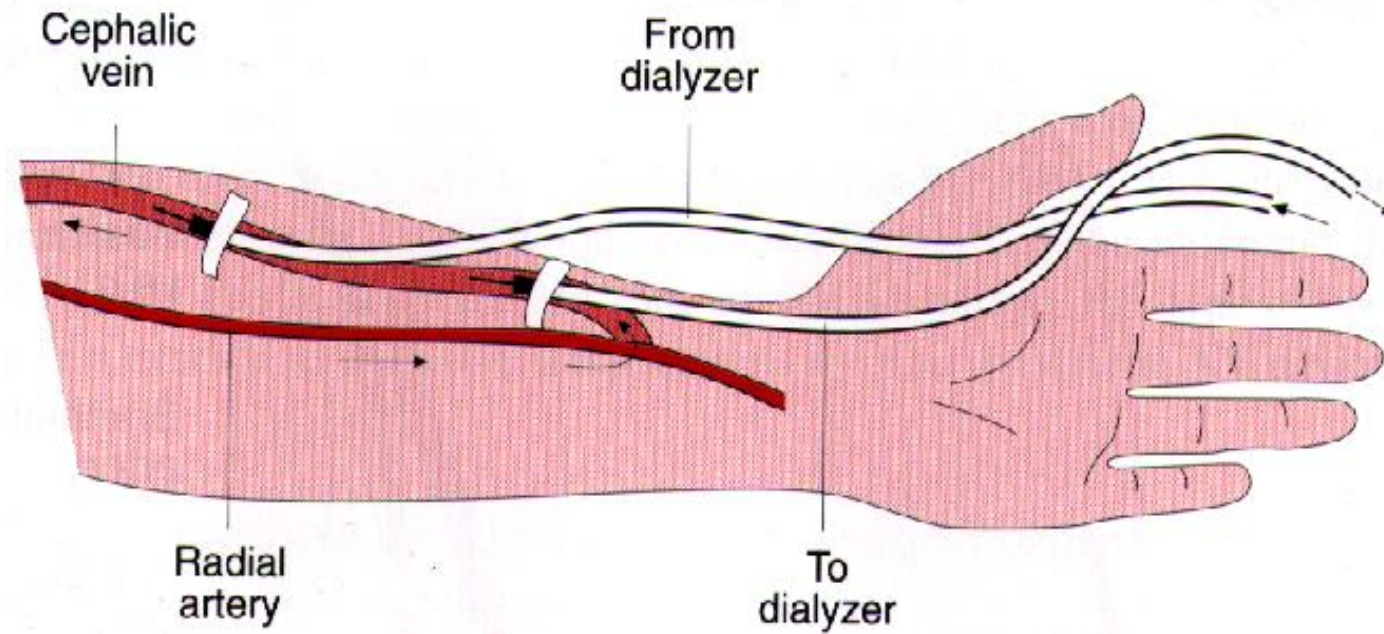
The transition from advanced chronic kidney disease (CKD) to end-stage renal disease (ESRD) represents a vulnerable period, when multiple physiologic and psychosocial changes occur as patients prepare for either dialysis or kidney transplantation. Observational studies have suggested a lack of survival benefit to early initiation of dialysis or earlier preemptive transplantation [1–4]. A large randomized controlled trial (the Initiating Dialysis Early and Late trial) also did not show a survival benefit to earlier (estimated glomerular filtration rate [eGFR] of 10–14 mL/min/1.73 m<sup>2</sup>) versus later dialysis

# HAEMODIALYSIS



# Vérnyerés

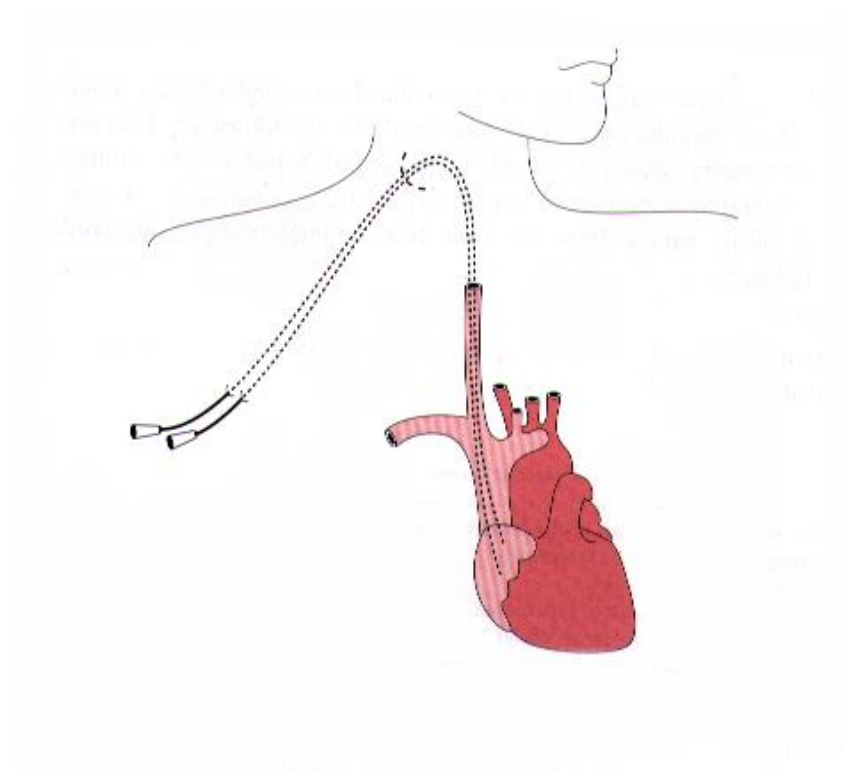
## Standard arteriovenous (AV) fistula



modified from Man, Zingraff, Jungers, Long-Term Hemodialysis,  
1995

# Vérnyerés

Két lumenű katéter a vena jugularis internában



modified from Man, Zingraff, Jungers, Long-Term Hemodialysis,  
1995

# Haemodialysis



**Standard kezelés:  
Intermittáló HD  
3x4-5 h / hét**



**Solution Bag**

**Peritoneum**

**PD-System**

**Catheter**

**Connector**

**Drainage Bag**

**Peritoneal Dialysis Solution**

*Principle of Peritoneal Dialysis*



# CAPD

C ontinuous

A mbulatory

P eritoneal

D ialysis



**Folyamatos dialízis  
kezelés 24 órán át.**

**A beteg szabadon  
mozoghat a kezelés  
ideje alatt.**

# APD



**A dializáló oldat  
cseréjére a beteg  
otthonában kerül sor  
egy automata  
készülék ('Cycler')  
segítségével míg a  
beteg alszik.**

# Peritonitis





RESEARCH ARTICLE

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

Maharajan Raman<sup>1,2</sup>, Rachel J. Middleton<sup>1,2</sup>, Philip A. Kalra<sup>1,2</sup>, Darren Green<sup>1,2\*</sup>

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## 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.

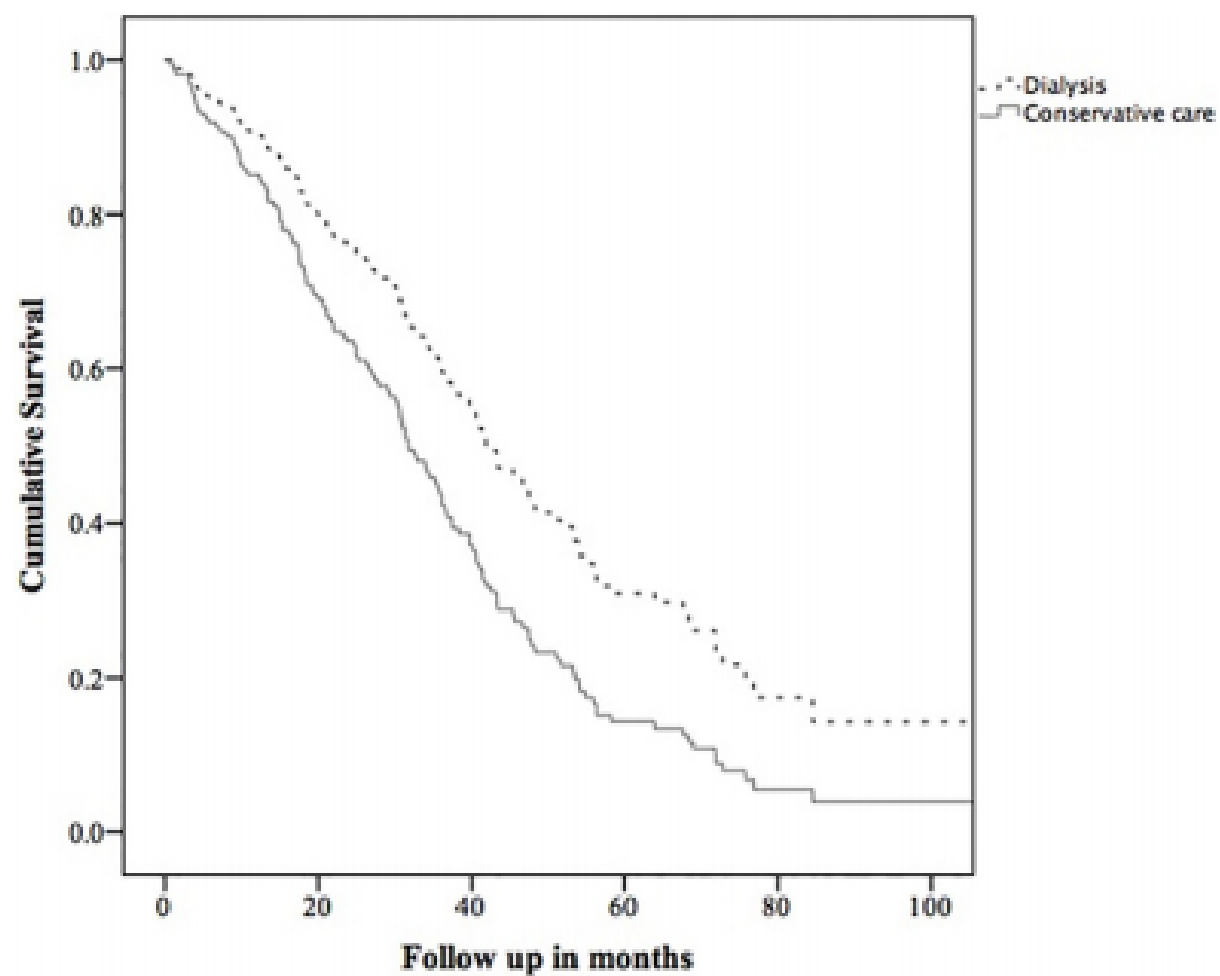
### Methods

This was a prospective observational study of CKD patients aged  $\geq 75$  years when eGFR first reached  $\leq 15\text{ml/min/1.73m}^2$ . 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  $\leq 15\text{ml/min/1.73m}^2$ ), and when initiation of dialysis was first considered (eGFR  $\leq 10\text{ml/min/1.73m}^2$ ). Patients with co-morbidities likely to significantly reduce life expectancy such as advanced heart failure, advanced dementia, and malignancy, were excluded.

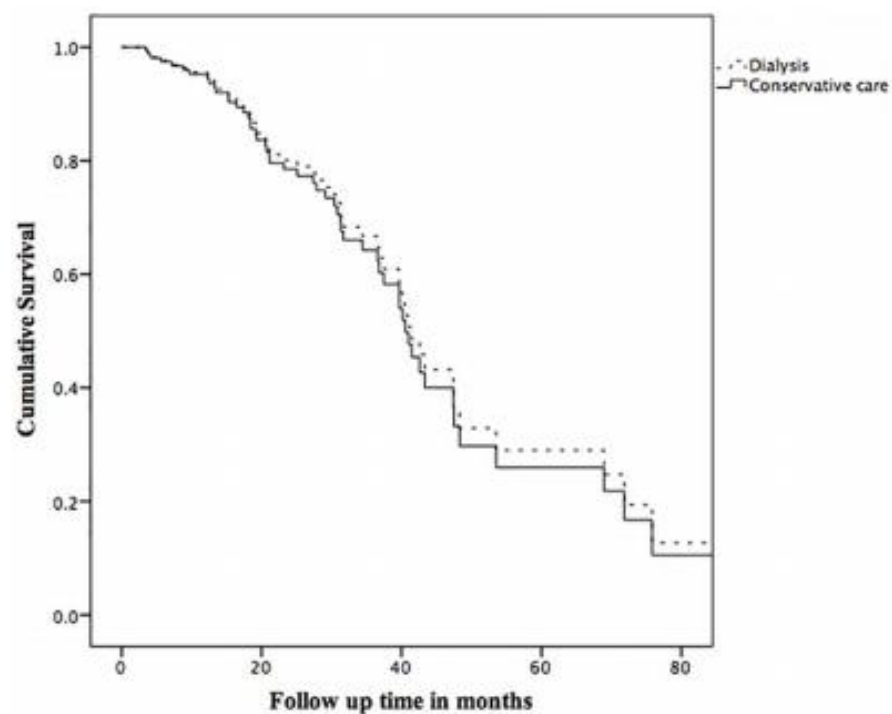
## OPEN ACCESS

**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

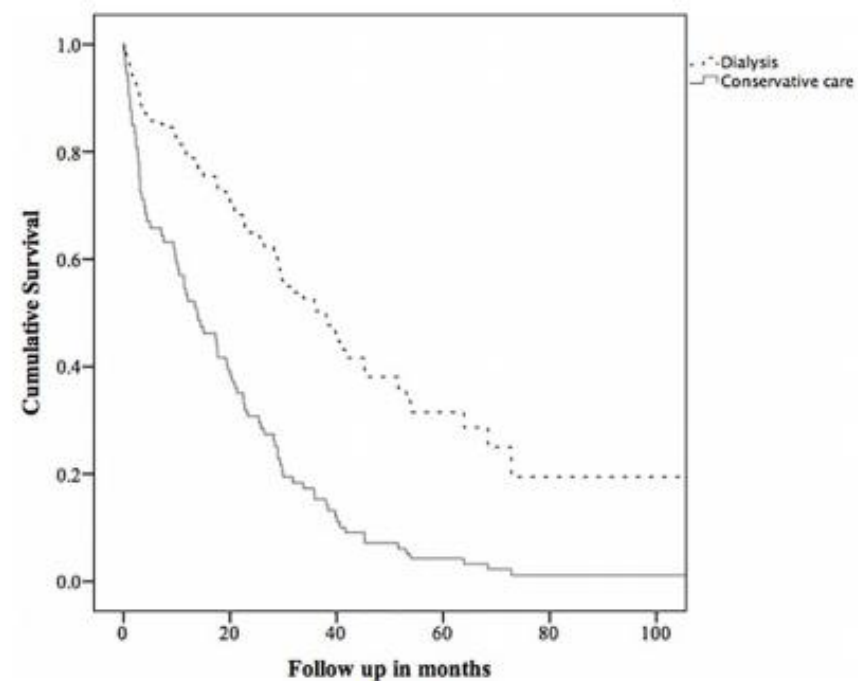


**Fig 2.** Survival curve comparing dialysis with conservative care from the date of first outpatient eGFR  $\leq 15$  mL/min/1.73m<sup>2</sup>. Adjusted for age, peripheral vascular disease, and living alone.



**Fig 4.** Survival curve comparing dialysis with conservative care during the period that eGFR was between  $\leq 15$  mL/min/1.73m<sup>2</sup> and  $>10$  mL/min/1.73m<sup>2</sup>. 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  $\leq 10$  mL/min/1.73m<sup>2</sup>. 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  $\leq 15$  mL/min/1.73m<sup>2</sup> and first outpatient eGFR  $\leq 10$  mL/min/1.73m<sup>2</sup>. Key: HD = haemodialysis; PD = peritoneal dialysis. Numbers are expressed as median (interquartile range [IQR]).**

	Dialysis	Conservative	sig.	HD	PD	sig.
From first outpatient eGFR $\leq 15$ mL/min/1.73m <sup>2</sup>						
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 $\leq 10$ mL/min/1.73m <sup>2</sup>						
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



# 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

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**To cite:** Shah KK, Murtagh FEM, McGeechan K, *et al.* 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. *BMJ Open* 2019;9:e027776. doi:10.1136/bmjopen-2018-027776

► Prepublication history and additional material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2018-027776>).

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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  $\leq 10$  mL/min/1.73 m<sup>2</sup> and managed with comprehensive conservative, non-dialytic care.

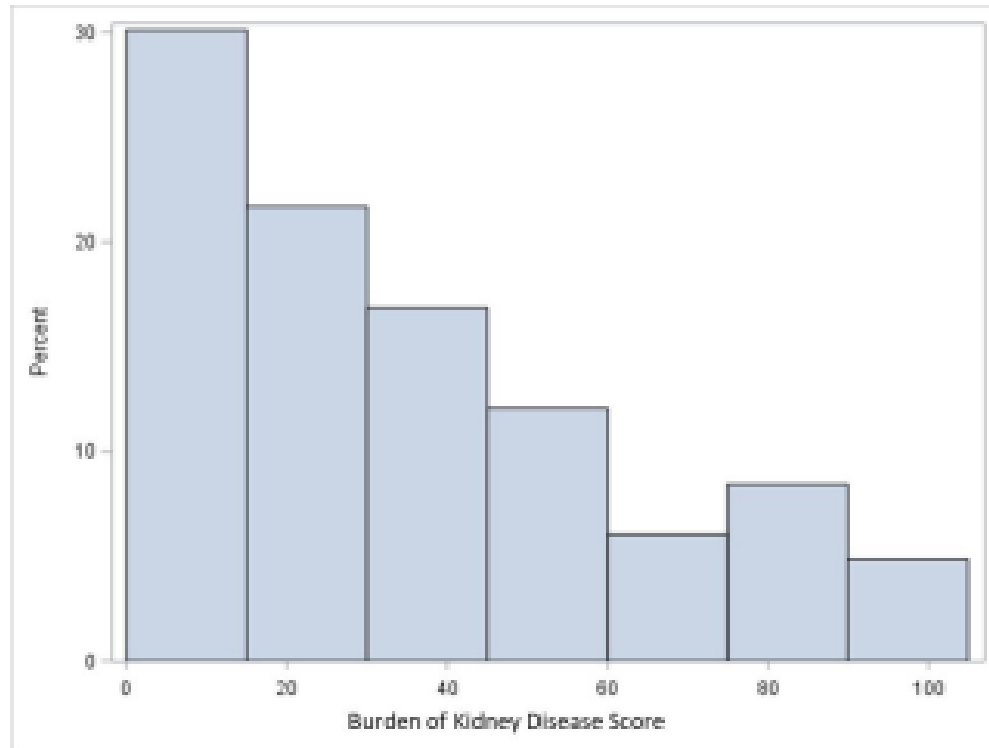
**Outcome measures** HRQoL and well-being were assessed using Short-Form six dimensions (SF-6D, 0–1 scale); Kidney Disease Quality of Life (KDQOL-36) (0–100 scale) and Investigating Choice Experiments Capability Measure-Older people (ICECAP-O, 0–1 scale). Linear regression assessed associations between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

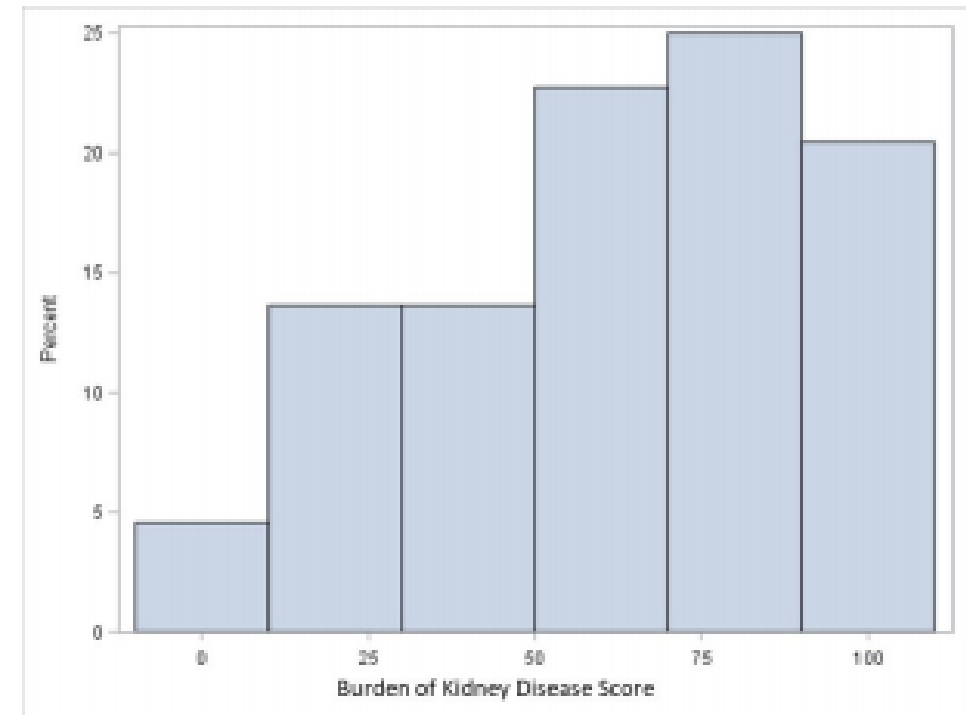
## Strengths and limitations of this study

- 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.

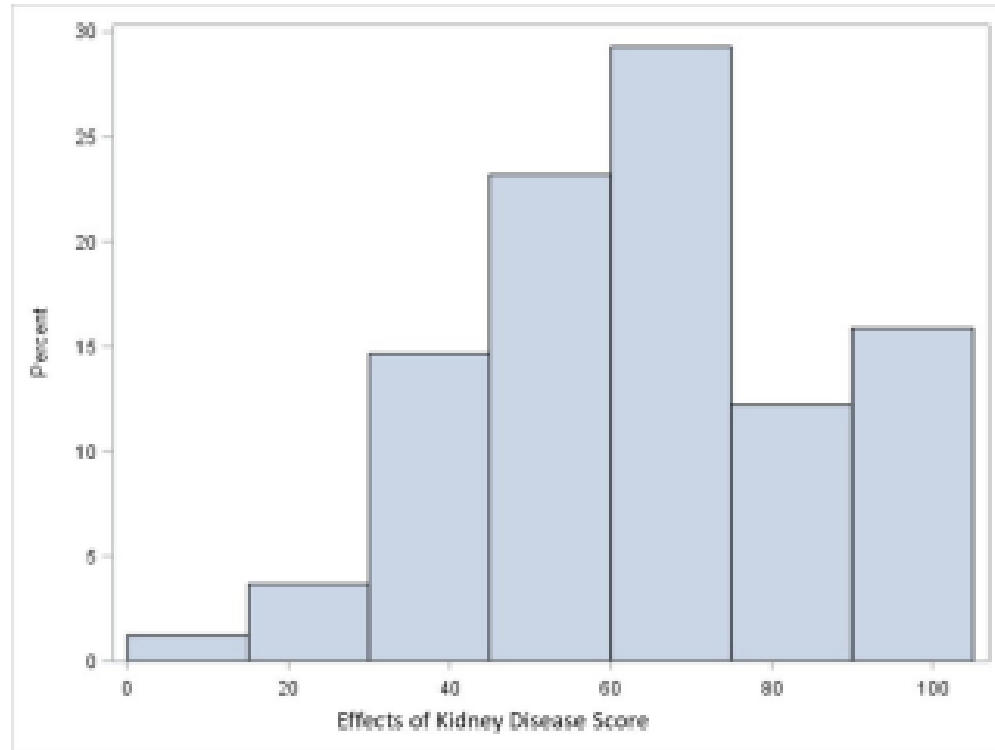
on conservative care. Lower HRQoL and well-being may be associated with dialysis treatment and should inform



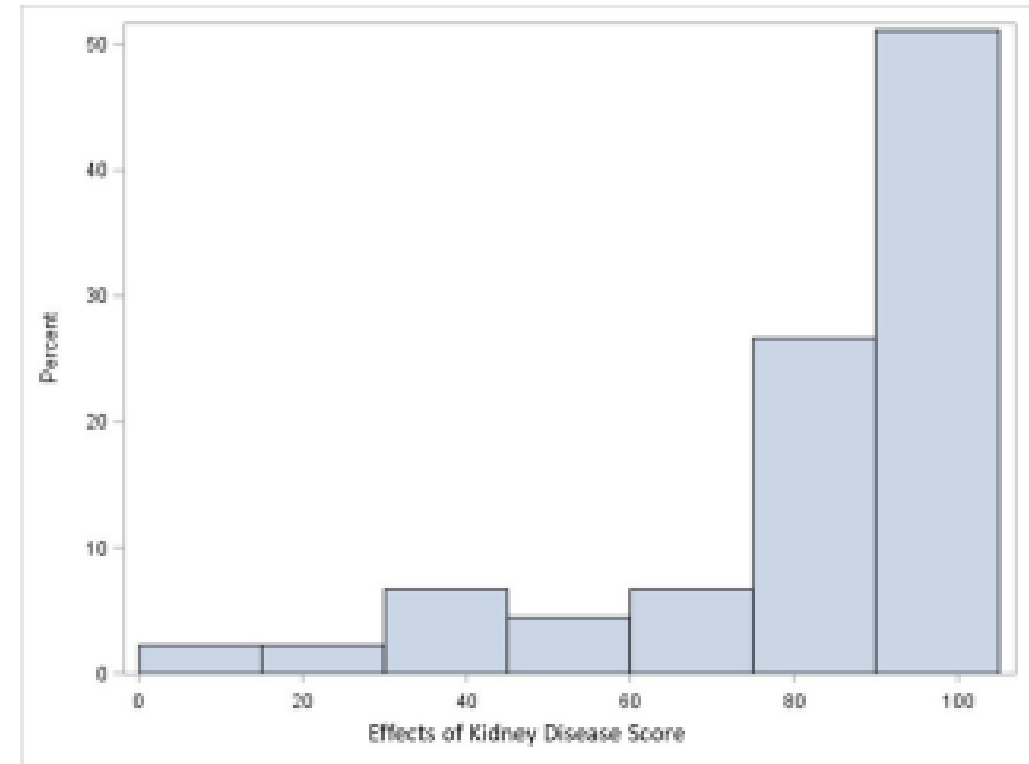
**Figure 1** Kidney Disease Quality of Life-36 Burden of Kidney Disease score for dialysis group (n=83). A higher score indicates lower burden of disease and better quality of life.



**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.

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



Wouter R. Verberne<sup>1\*</sup> , Wanda S. Konijn<sup>2</sup>, Karen Prantl<sup>2</sup>, Janneke Dijkers<sup>1</sup>, Margriet T. Roskam<sup>1</sup>, Johannes J. M. van Delden<sup>3</sup> and Willem Jan W. Bos<sup>1,4</sup>

## Abstract

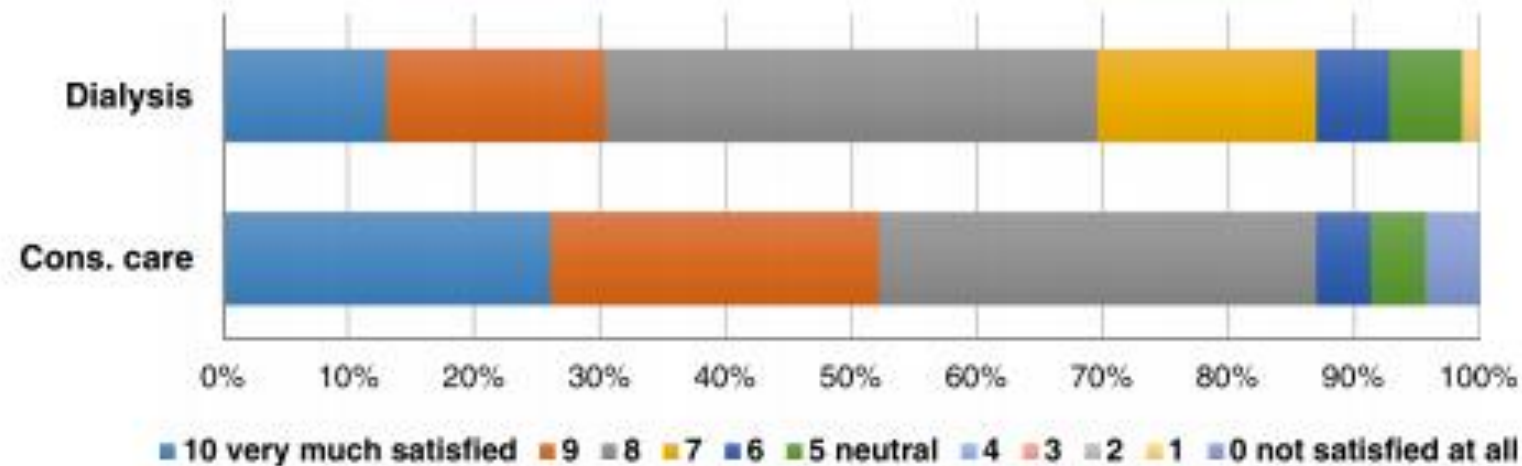
**Background:** Many older patients approaching end-stage kidney disease have to decide whether to go for dialysis or non-dialytic conservative care (CC). Shared decision-making is recommended to align the treatment plan with the patient's preferences and values. Little is known about older patients' 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  $\geq 70$  years who had chosen dialysis ( $n = 75$ ) or CC ( $n = 24$ ) after a shared decision-making process involving an experienced multidisciplinary team.

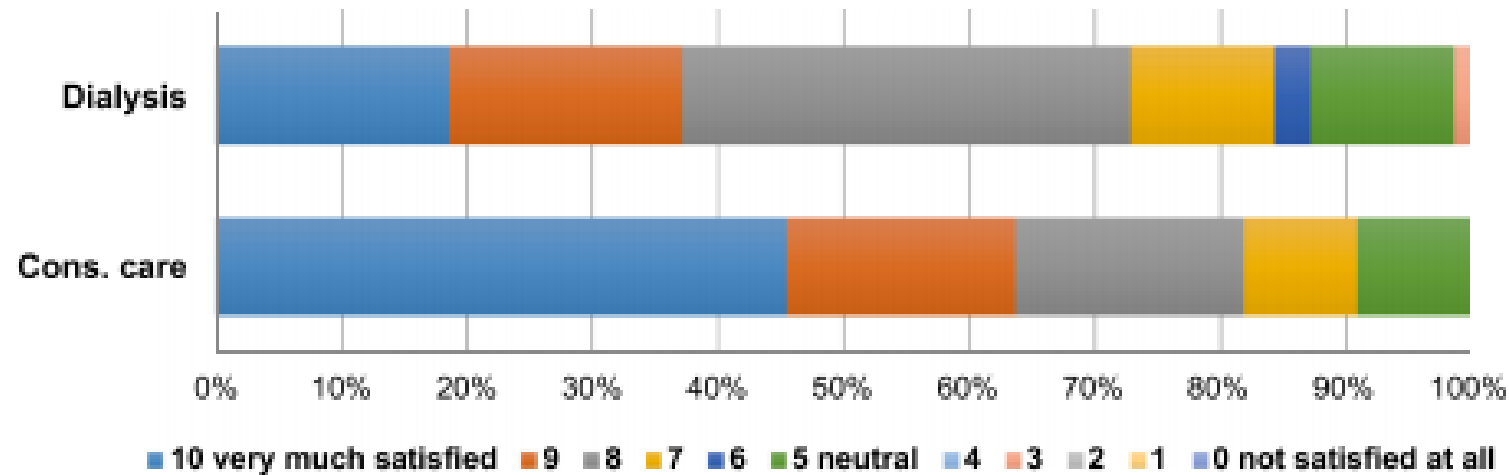
**Results:** Patients stated to be overall satisfied with the shared decision-making process (% with score 6–10 on 11-point Likert scale, dialysis versus CC: 93% vs. 91%,  $P = 0.06$ ), and treatment decision (87% vs. 91%,  $P = 0.03$ ). However, patients also reported negative experiences, especially 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

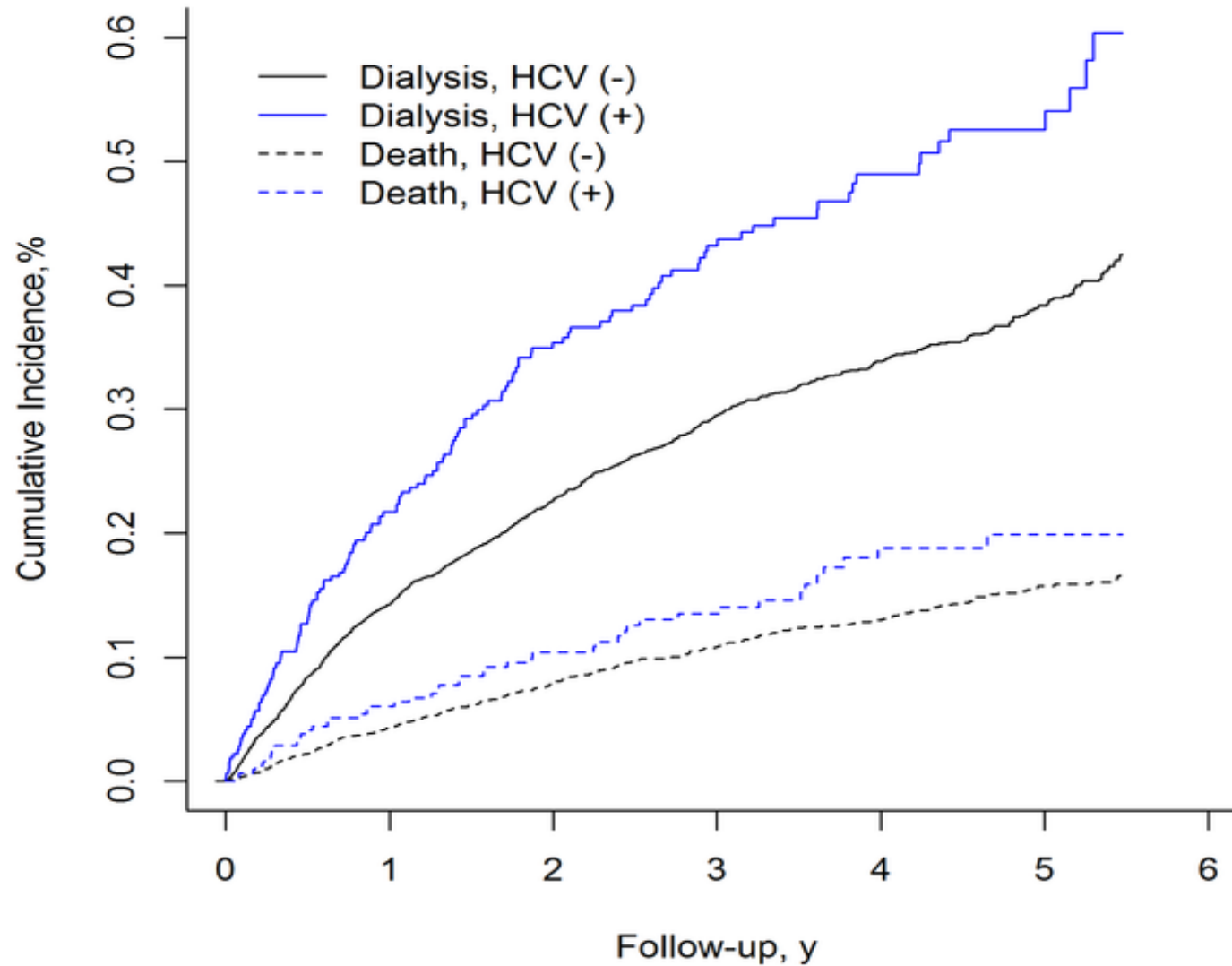


**Fig. 2** Older patients' satisfaction with their treatment decision ( $P = 0.03$ ). Rating on a 11-point Likert scale. Abbreviation: cons. care, conservative care

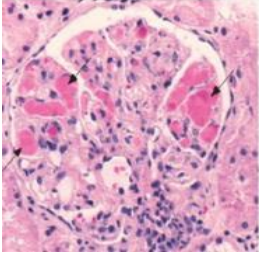
# A vesebetegség rizikója HCV fertőzöttekben emelkedett

- HCV fertőzöttekben magasabb a CKD (Chronic Kidney Disease) incidencia
  - n=1.947.034; hazard ratio: 1.43 (95% CI 1,23; 1,63, p=0,0001)
- HCV pozitív egyéneknél a CKD kialakulásának esélye 23%-kal nagyobb, mint a negatív egyéneknél
  - n=336.234
- HCV pozitivitás a proteinuria független rizikófaktora
  - n=107.356, OR 1,508 (98% CI 1,19; 1,89, p=0,0001)
- HCV szerokonverzió átesett veteránok esetében nem volt magasabb a CKD kialakulásának rizikója
  - n=71.528, HR 0,86 (95% CI 0,86, 1.00)

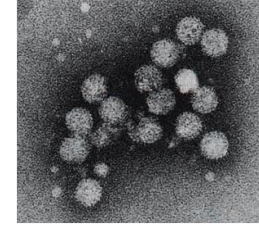
**Cumulative incidence of end-stage renal disease in HCV infection and cases without HCV infection.**







# HCV és vesebetegség



## A HCV okozta vesebetegség fő formái:

- cryoglobulinaemiával társuló nephritis
- membranoproliferatív glomerulonephritis
- polyarteritis nodosa-asszociált nephritis

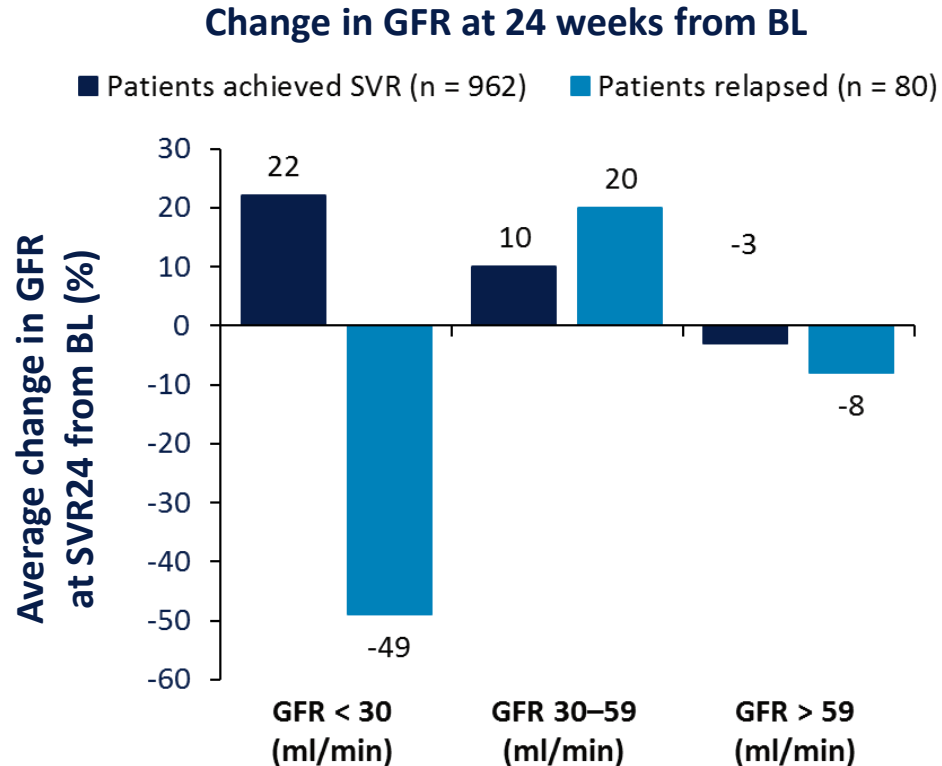
## Lehetséges kapcsolat:

- focalis segmentalis glomerulonephritis
- proliferatív glomerulonephritis
- membranósus glomerulonephritis

*Ozkok A, Yildiz A. World J.Gastroenterol. 2014; 20: 7544-7554.*

*Hunyady B. XVI. Gastro.Továbbképző Tanf. 2016. febr.11-13.*

# DAA Therapy Improves Renal Function in Patients with CKD



Renal function did not differ by genotype, BMI, cirrhosis or duration of therapy (8 weeks vs 12 weeks vs 24 weeks)

Of the patients who achieved SVR24, those with BL CKD stage 4–5 (GFR < 30 ml/min) experienced an average of 22% improvement in renal function after DAA therapy

Predictors of >10% improvement in renal function from BL:

- Female gender (OR 1.9, 95% CI: 1.3–2.8)
- GFR < 30 ml/min (OR 5.7, 95% CI: 2.1–15.5)
- GFR 30–59 ml/min (OR 4.9, 95% CI: 2.9–8.3)

Achievement of SVR was not a significant predictor of renal improvement (OR 0.9, 95% CI: 0.5–1.7)

# EASL Guidelines: Recommendations for the Treatment of Patients with Renal Insufficiency

**Treatment must be delivered without delay**



Patients with clinically significant extrahepatic manifestations (e.g. HCV-related cryoglobulinemia)

**Persons at elevated risk of HCV transmission and in whom HCV treatment may yield transmission reduction benefits: persons on long-term hemodialysis**

Increased risk for nosocomial transmission



Substantial clinical impact of HCV infection in those on hemodialysis



Compelling arguments for HCV therapy as effective antiviral regimens that can be used in advanced renal failure become available

# Összefoglalás - HCV és vesebetegség

- A vesebetegségek és a HCV infekció kapcsolata szoros, sokrétű, számos esetben ok-okozati.
- A HCV fertőzött betegekben keresni kell a vese érintettségét.
- Számos vesebetegségben szűrni kell a betegeket HCV fertőzésre.
- A HCV fertőzött vesebetegek kezelése javasolt, és 90% feletti hatékonysággal lehetséges, ha megtaláljuk a kezelendő betegeket.



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Journal of the Chinese Medical Association 81 (2018) 766–771



[www.jcma-online.com](http://www.jcma-online.com)

Original Article

# Renal transplantation delays major adverse cardiac events (MACEs) in patients with end-stage renal disease: A nationwide population-based study

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Received December 15, 2017; accepted April 24, 2018



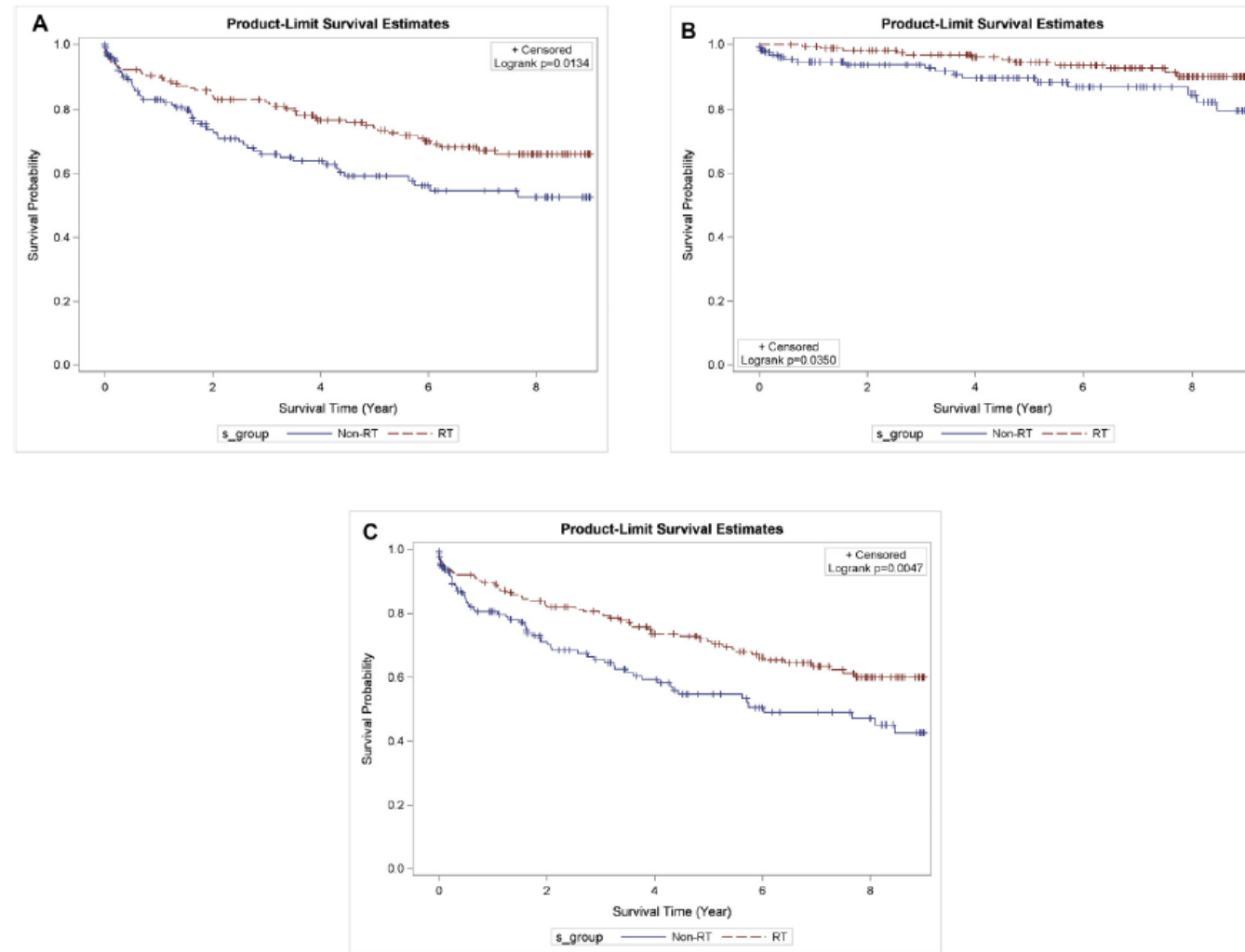
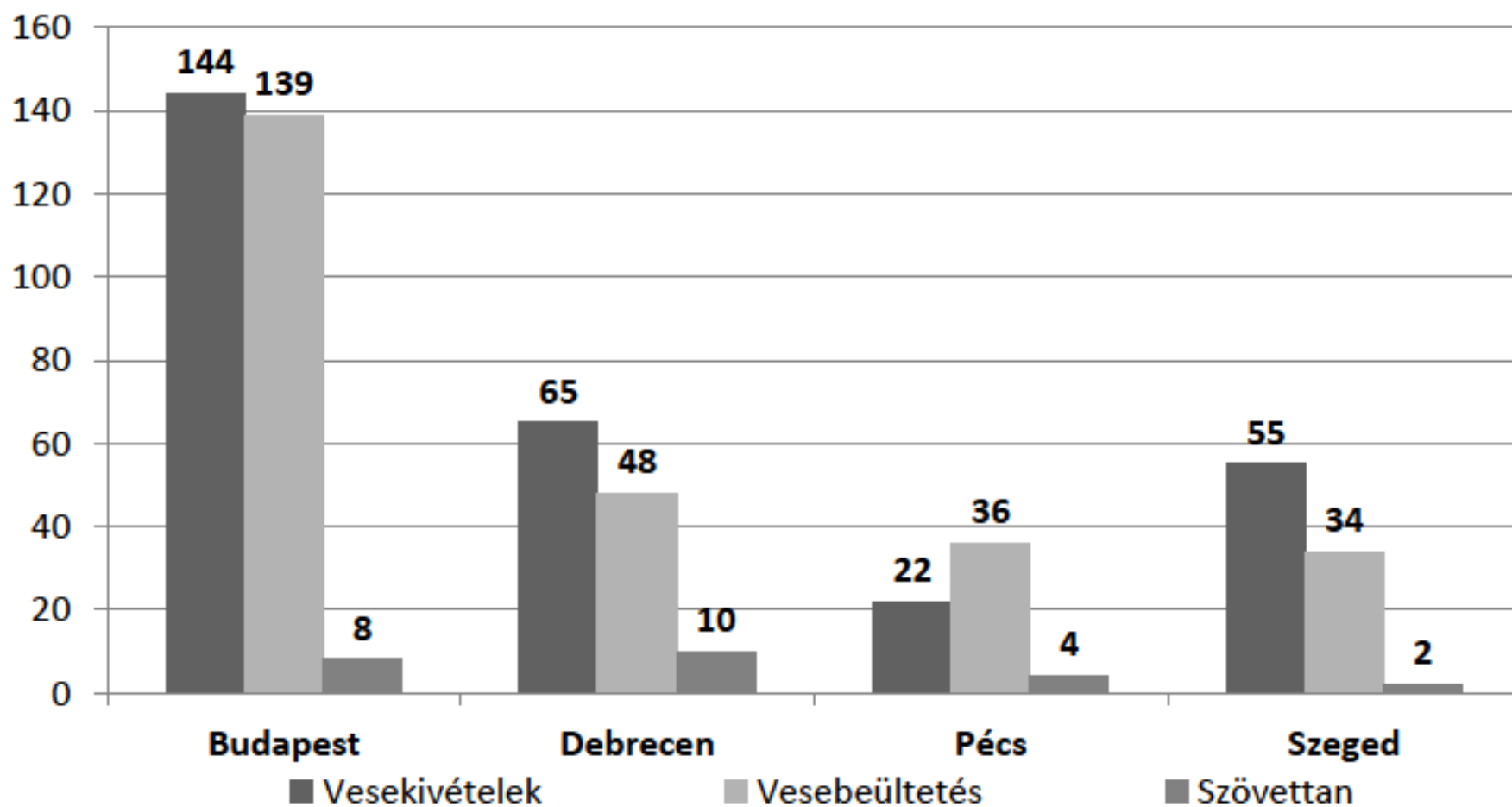
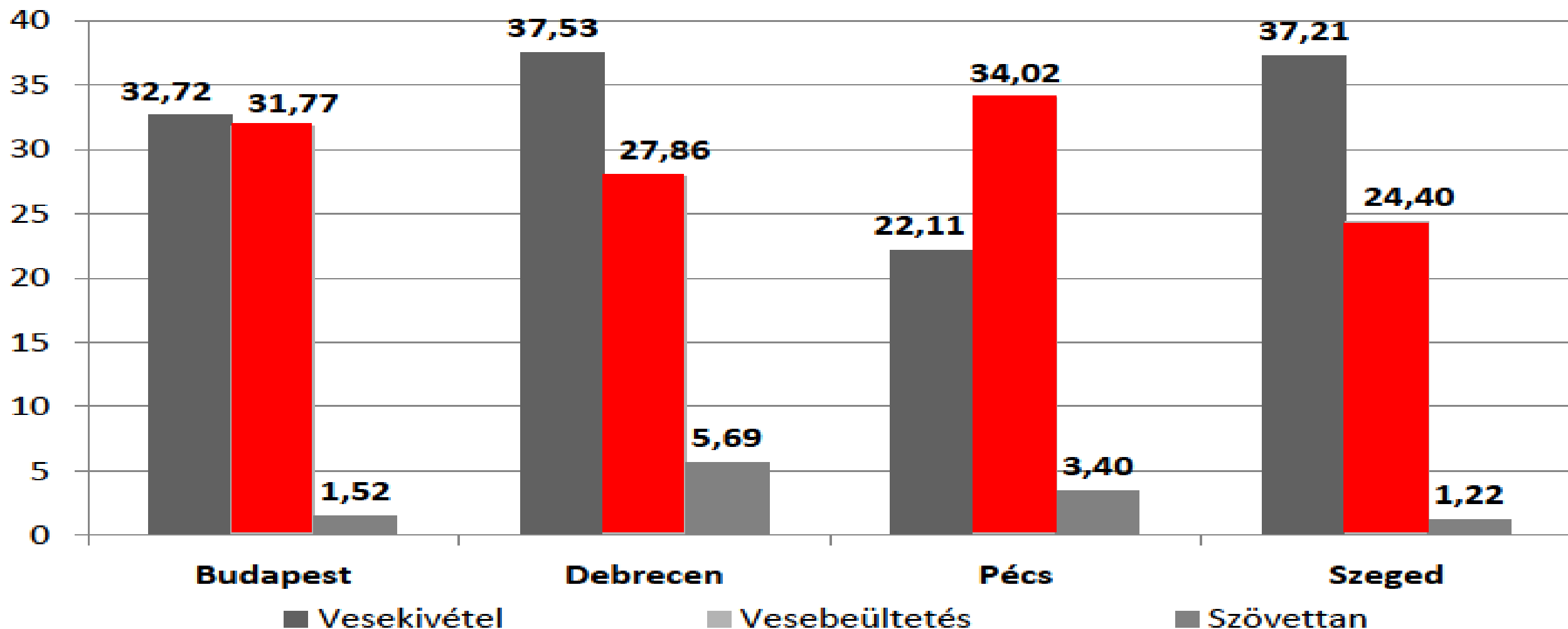


Fig. 1. Kaplan–Meier curve for major adverse cardiac events (MACEs)-free periods (A), stroke-free periods (B), and MACEs-or-stroke-free periods between the groups with and without renal transplantation (RT). These curves show a significantly higher cumulative probability of MACEs-free, stroke-free, and MACEs-or-stroke-free periods in ESRD patients who received RT than in those that never underwent RT ( $p = 0.0134$ ,  $0.035$  and  $0.0047$ , respectively).

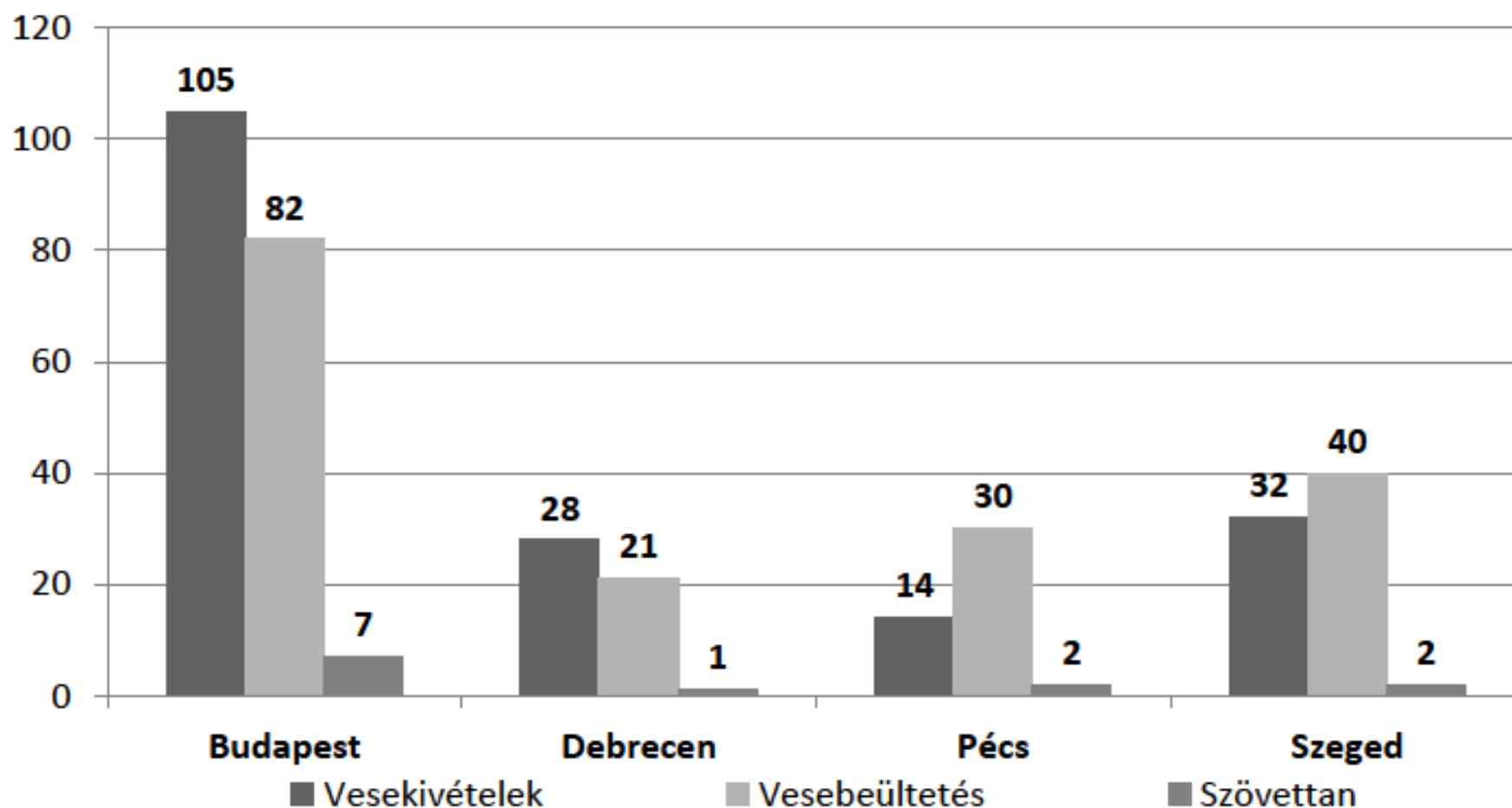
## Vese kivételek és beültetések aktivitása Magyarországon elhunyt donorból 2017.



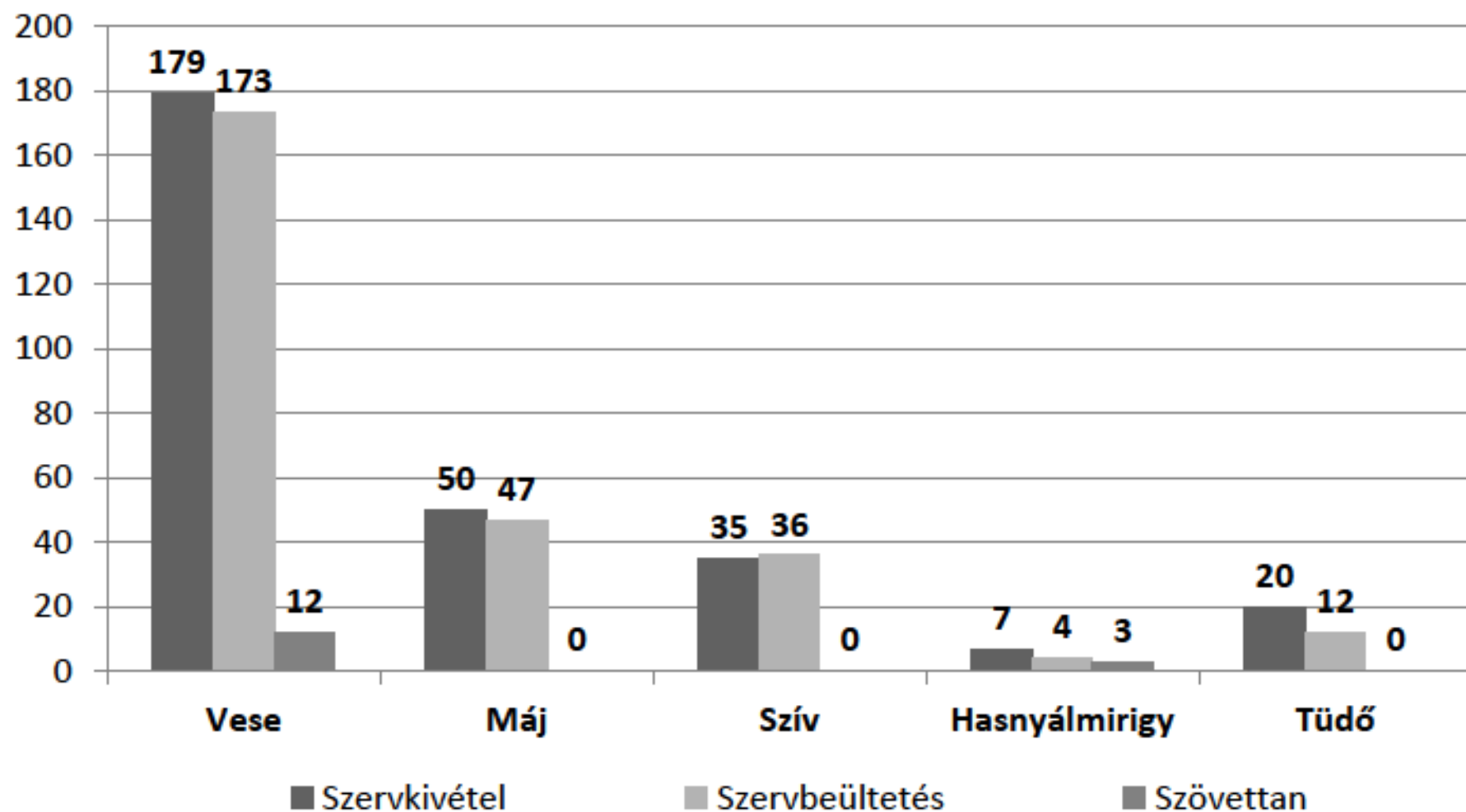
# Vese kivételek és beültetések aktivitása 1 millió lakosra számítva régiónként Magyarországon 2017-ben



## Vese kivételek és beültetések aktivitása Magyarországon elhunyt donorból 2018.06.

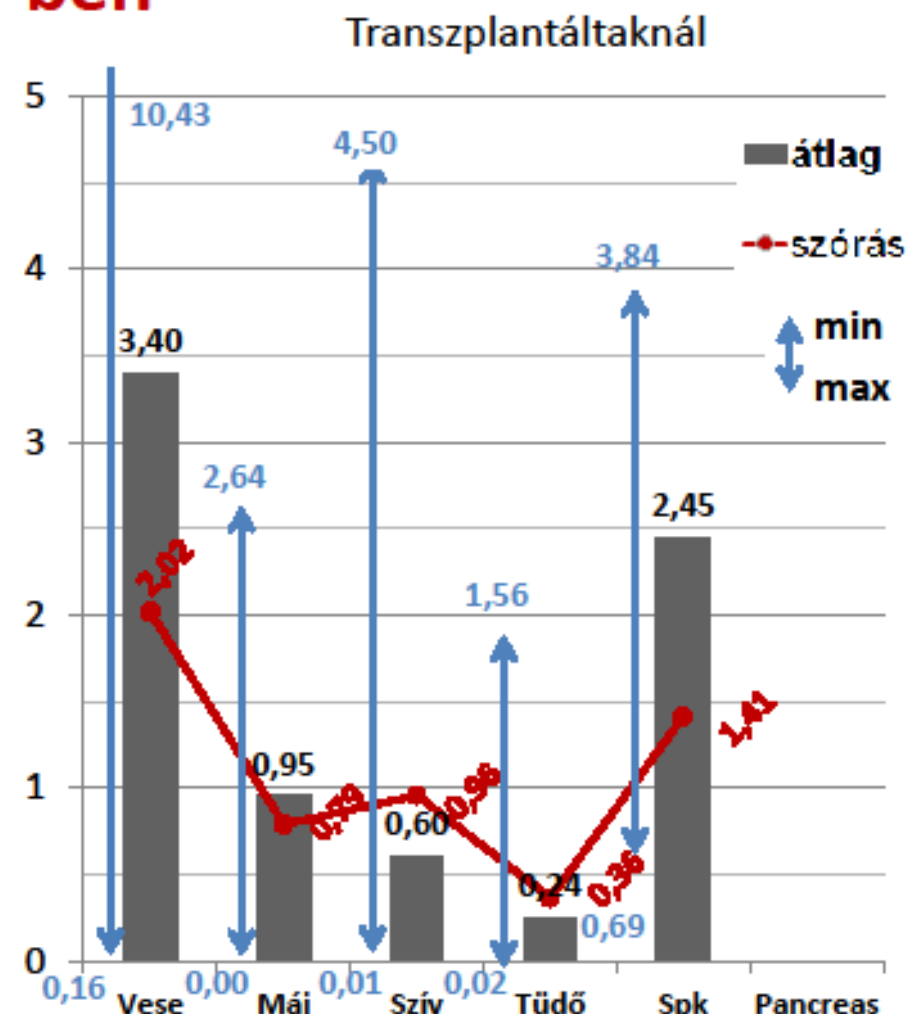
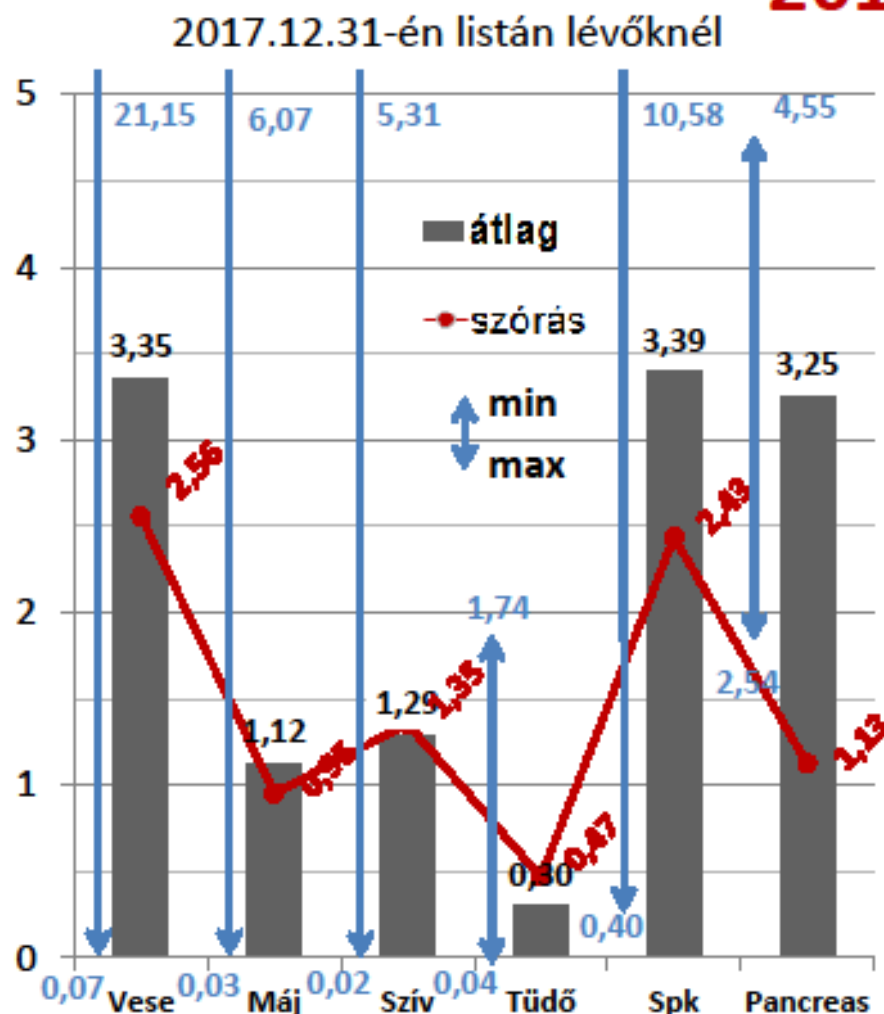


## Szervkivételek és beültetések száma Magyarországon elhunyt donorból szervenként 2018.06.

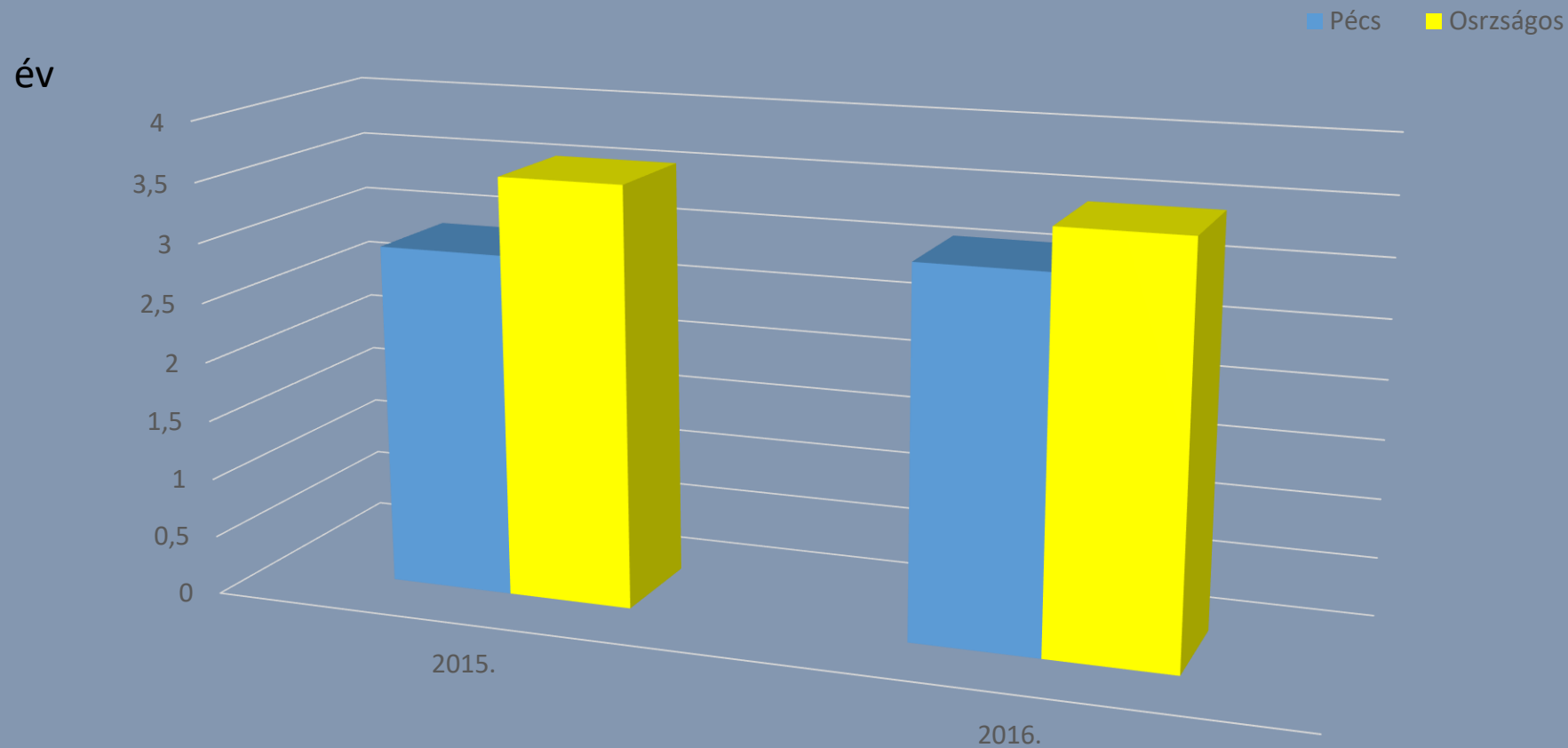




# Várakozási idők átlaga transzplantációs várólistákon Magyarországon 2017-ben

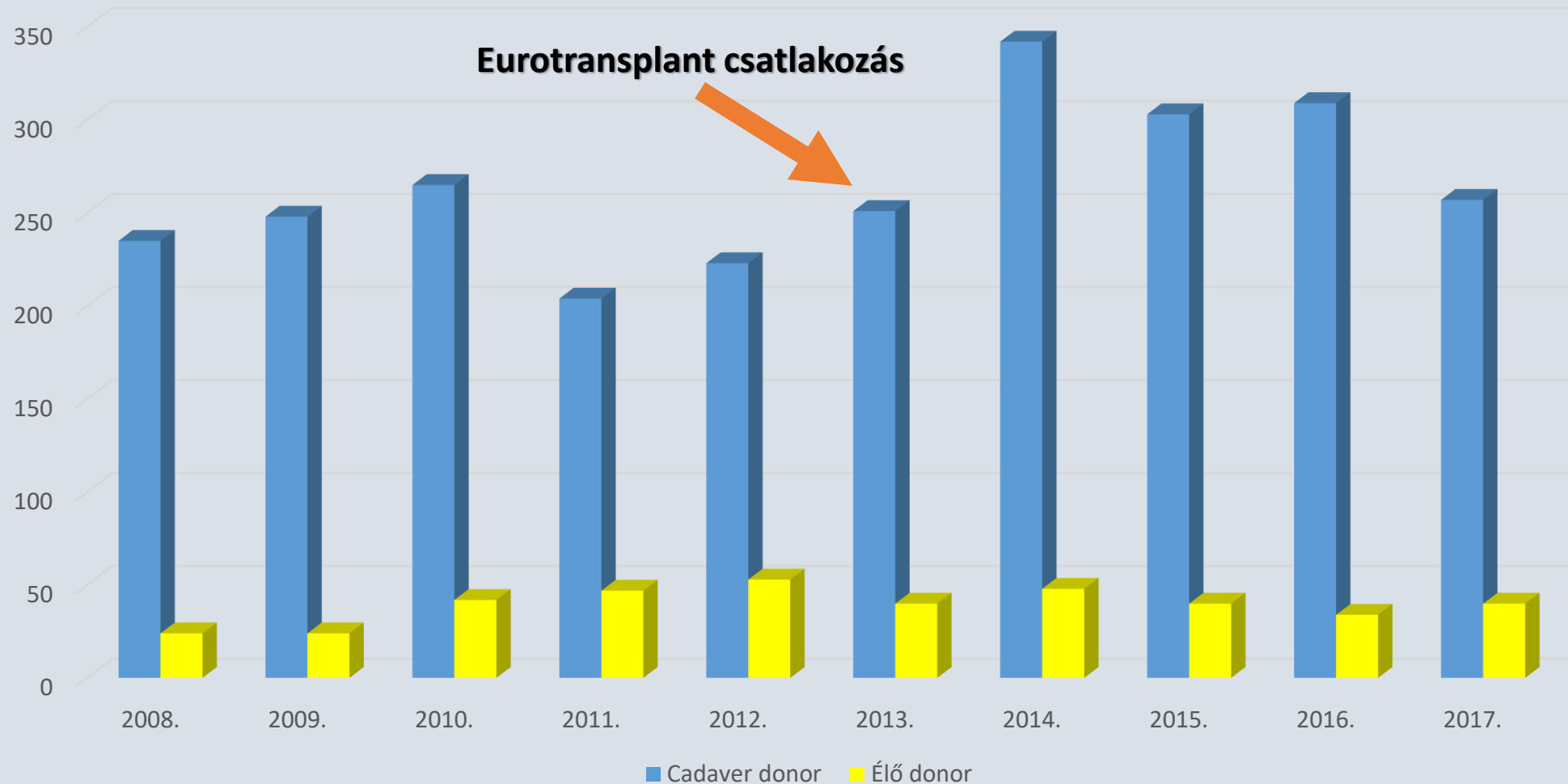


# Átlagos várakozási idő a veseátültetésig



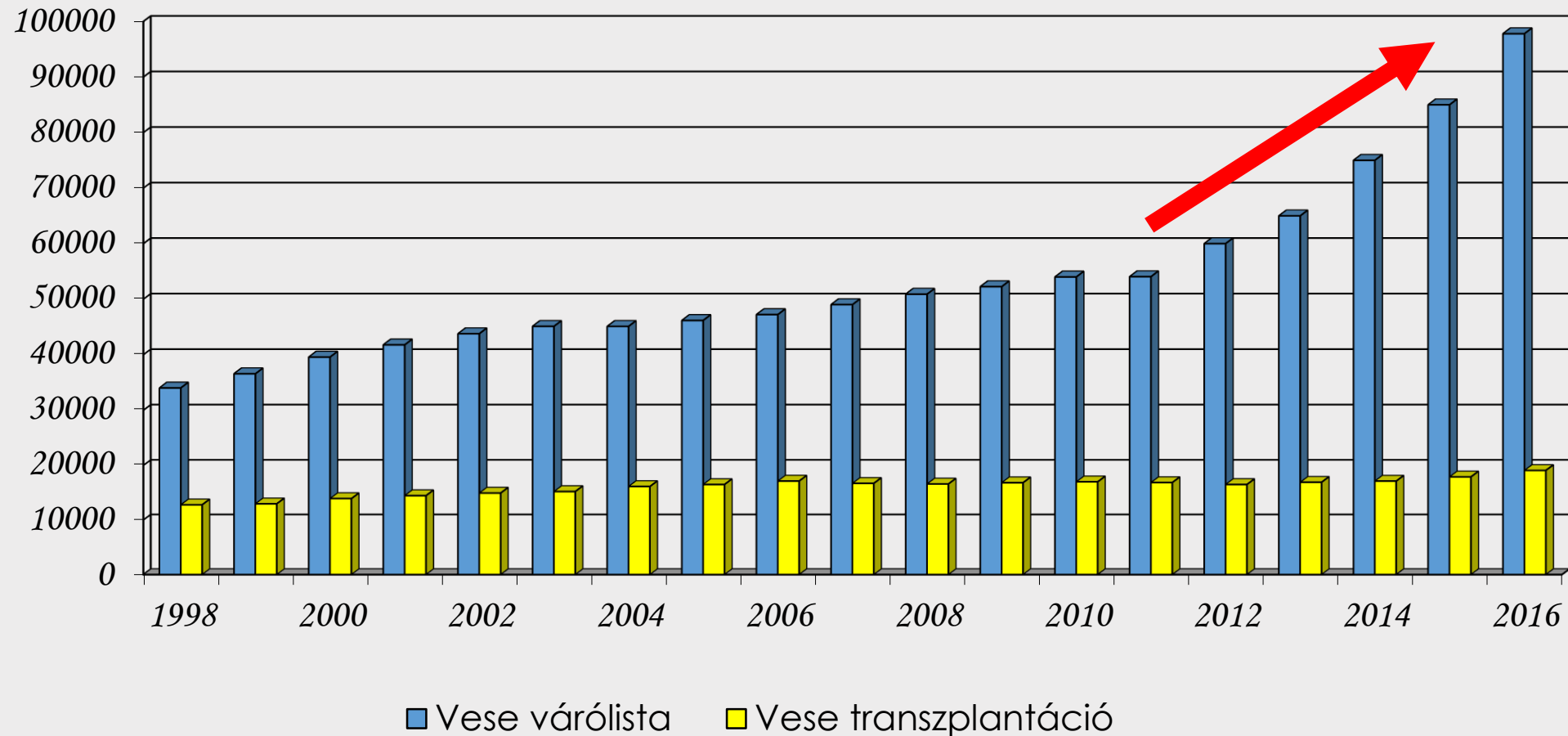
# Agyhalott és élő donorból történő veseátültetések száma

Műtét/év

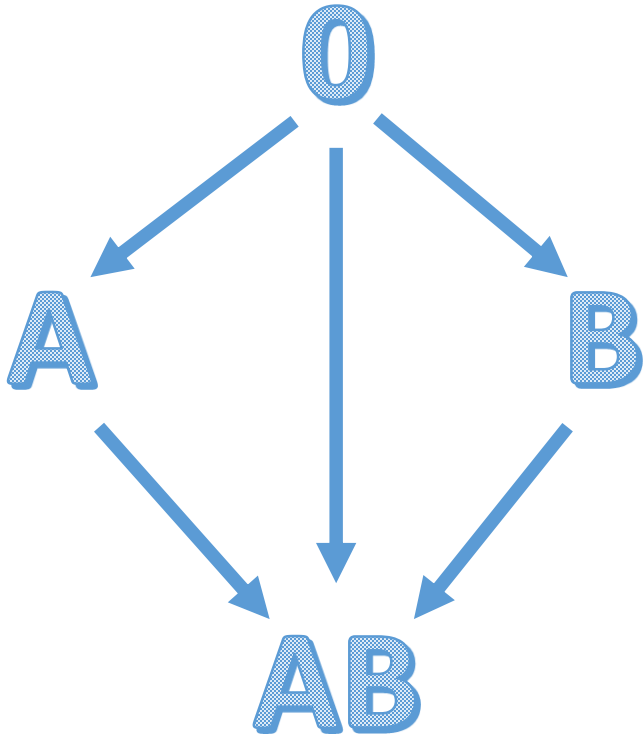


# Kereslet és kínálat

betegszám



# 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.



## *NDT Perspectives*

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

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

Table 1. 2014 matched cohort retrospective studies on the long-term risk of ESRD after living donation

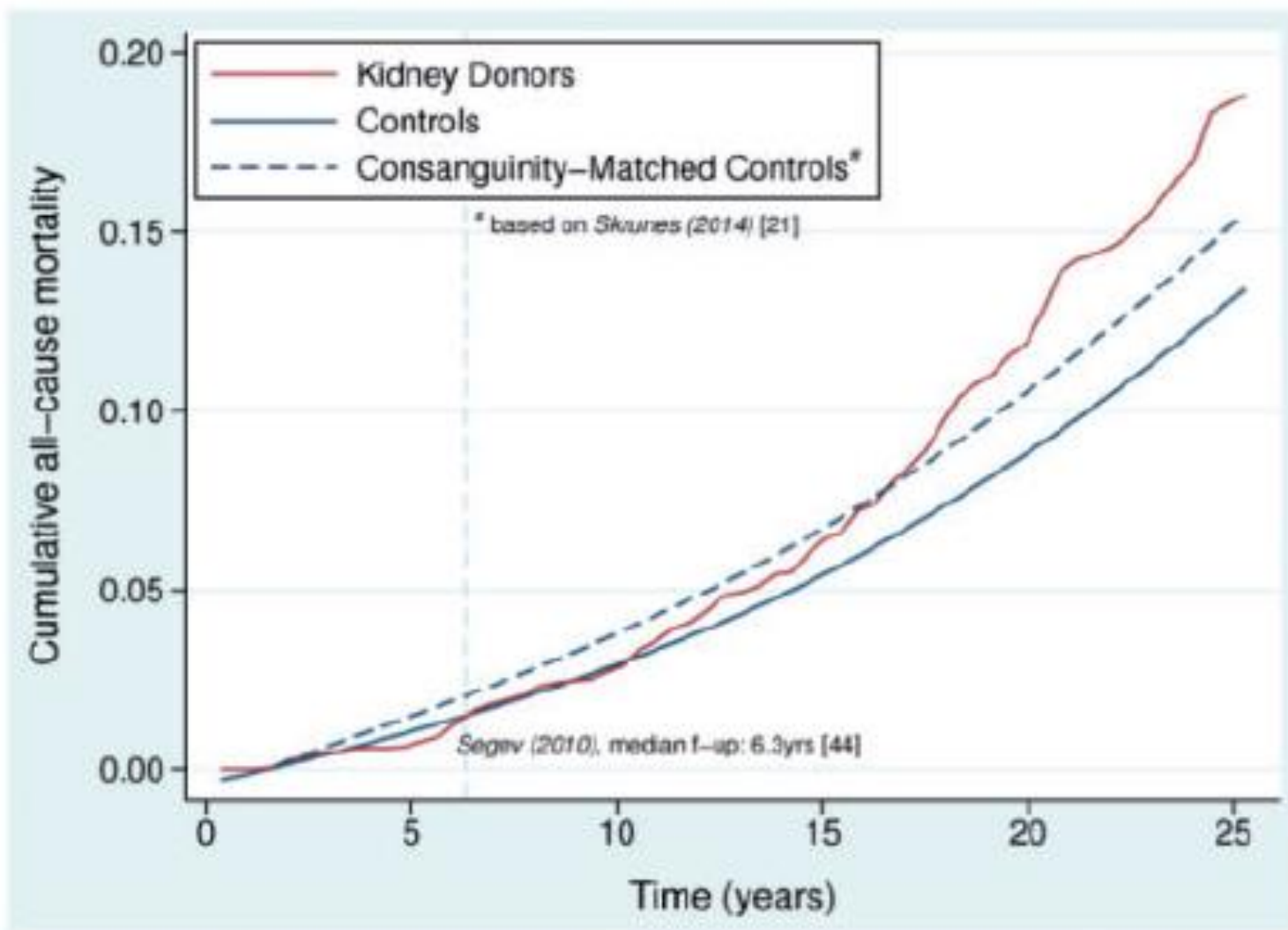
	Mjøen <i>et al.</i> [3] (2014), Norway	Muzaale <i>et al.</i> [4] (2014), USA
Donors	1901	96 217
Matched controls (survey source) <sup>a</sup>	32 621 (HUNT)	9364 (NHANES III) resampled to match 1:1
Time frame, in donors/in controls, calendar year	1963–2007/1984–1987	1994–2001/1988–1994
<i>F</i> , median (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 ( <i>n</i> ), in donors/in controls	0.47% (9)/0.06% (22)	0.10% (99)/0.04% (36) <sup>b</sup>
Relative risk of ESRD	11.4 <sup>c</sup>	~8.0

BP, arterial blood pressure.

<sup>a</sup>Statistical methods used for matching donors with controls: coarsed exact matching and propensity score plus radius matching, respectively.

<sup>b</sup>Numbers after resampling: 17 events in 9364 controls became 36 in 96 217 after resampling matched controls.

<sup>c</sup>Adjusted for age, gender, systolic blood pressure, BMI, smoking status and year of inclusion. Multiple imputations for missing values.



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

IMAGES IN CLINICAL MEDICINE

Chana A. Sacks, M.D., *Editor*

## Uremic Frost in End-Stage Renal Disease



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