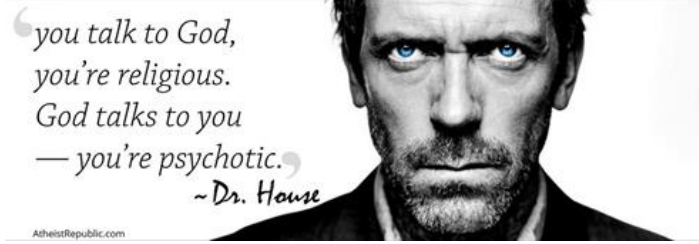
Klinikum St.GEORG



LiNS 2026

Studienübersicht 2025/26

Ralph Wendt

Disclosure

lecture fees / advisory board honaria:

Fresenius Medical Care, Vifor Fresenius Pharma, Amgen, Shire, Novartis, Alexion, Otsuka, Cellpharm, Ablynx, Daiichi Sankyo, Sanofi, AstraZeneca, Boehringer Ingelheim / Lilly, Travere, Bayer, Stadapharm, Roche, GSK

research grants

BMBF, BMG, ERA-PerMed

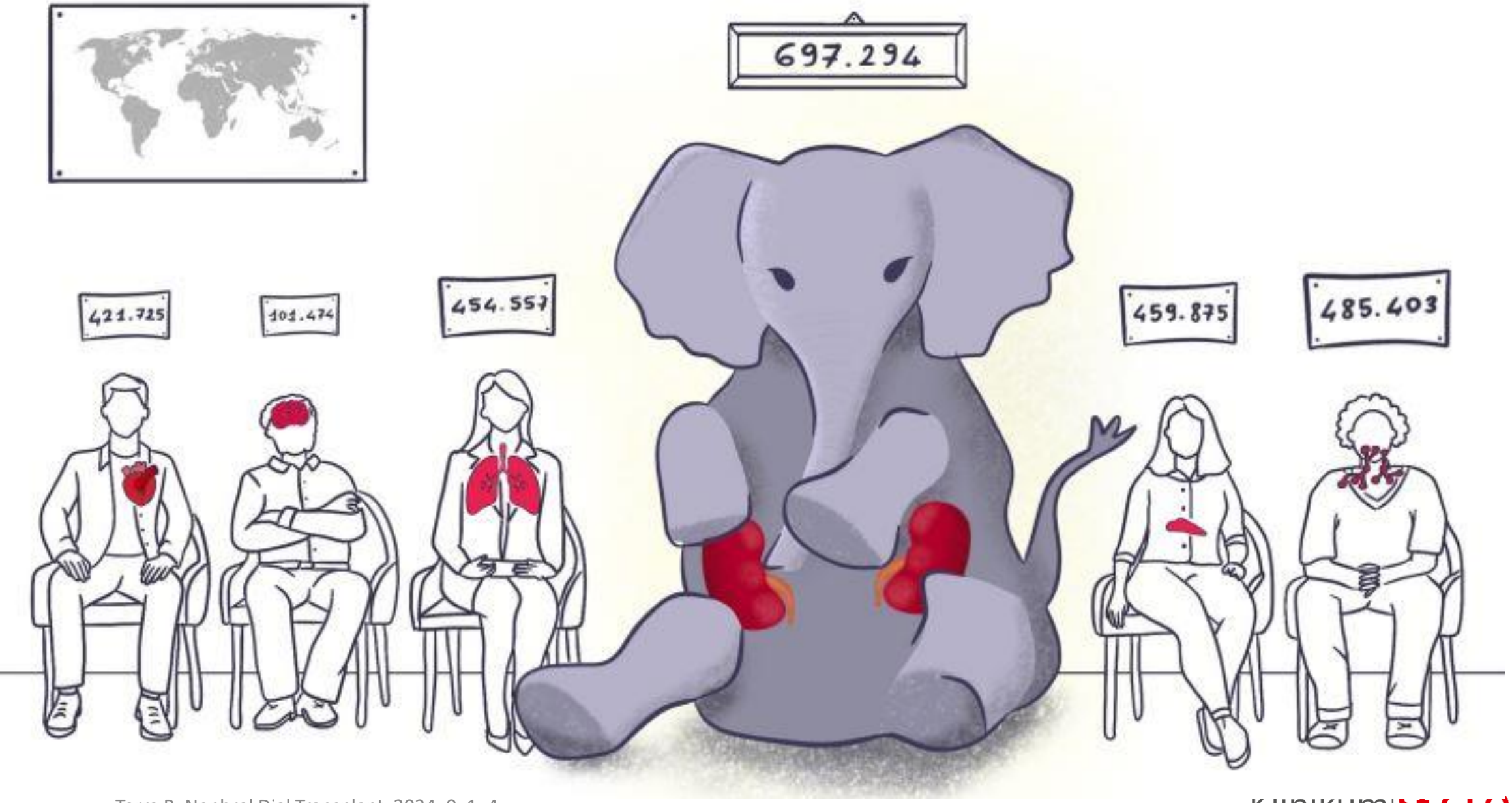
1976

1995

2005

2011

2026



Torra R. Nephrol Dial Transplant, 2024, 0, 1–4

Klinikum St.GEORG

Epidemiology of chronic kidney disease: an update 2022

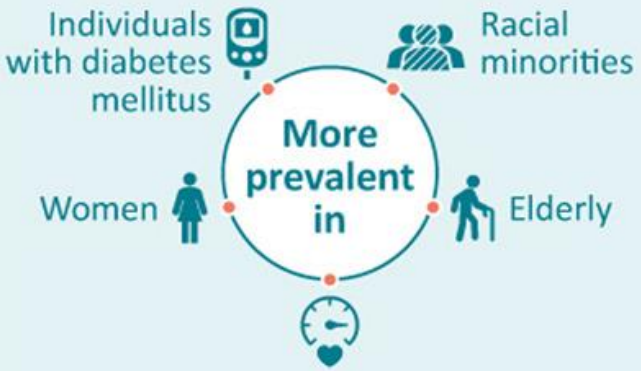
kidney INTERNATIONAL supplements

ISN INTERNATIONAL SOCIETY OF NEPHROLOGY

Extremely common

843,6 Million in 2017

Approximately **1** in 10



Increasing death rate

+41.5% 1990 to 2017

Rank in cause of death

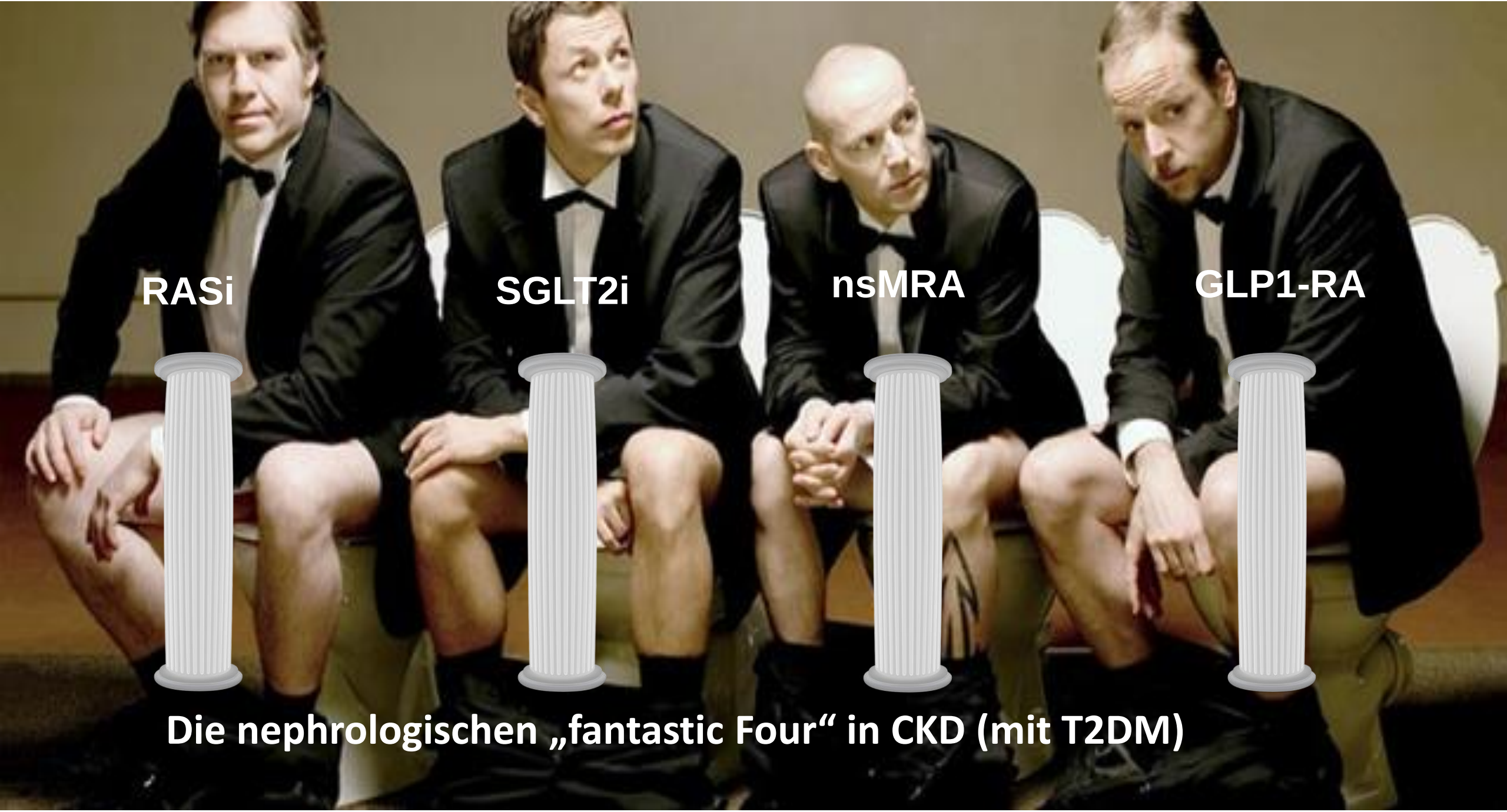
Large burden in low- and middle-income countries

Among the **top 10 causes** of death in Singapore, Greece, and Israel

Kovesdy, 2022

CONCLUSION

Chronic kidney disease (CKD) occurs frequently and has devastating consequences. This should prompt major efforts to develop preventative and therapeutic measures that are effective. The aim of these measures should be lowering the incidence of CKD and slowing its progression.

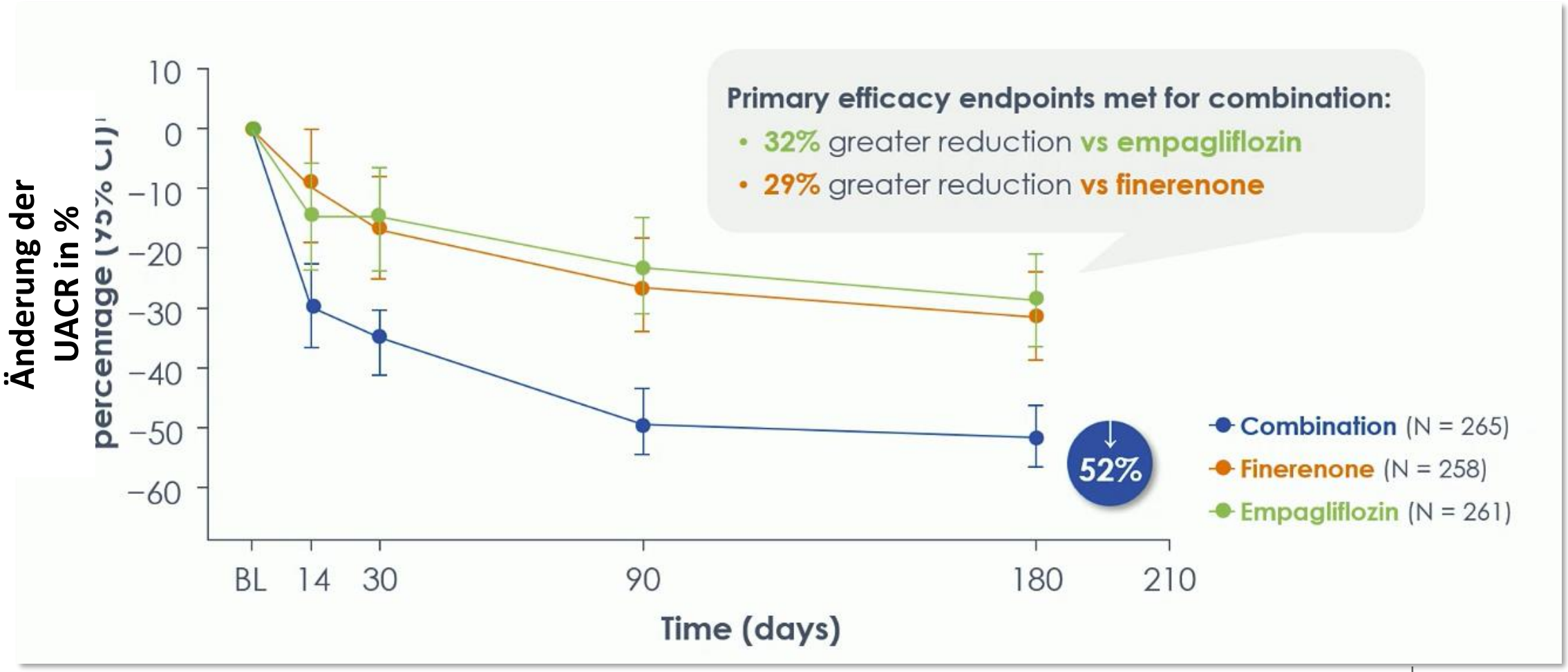


Die nephrologischen „fantastic Four“ in CKD (mit T2DM)

https://pixabay.com/de/vectors/s%C3%A4ule-architektur-griechisch-alt-576066/

CONFIDENCE: Senken Finerenon und SGLT2-I additiv die Albuminurie?

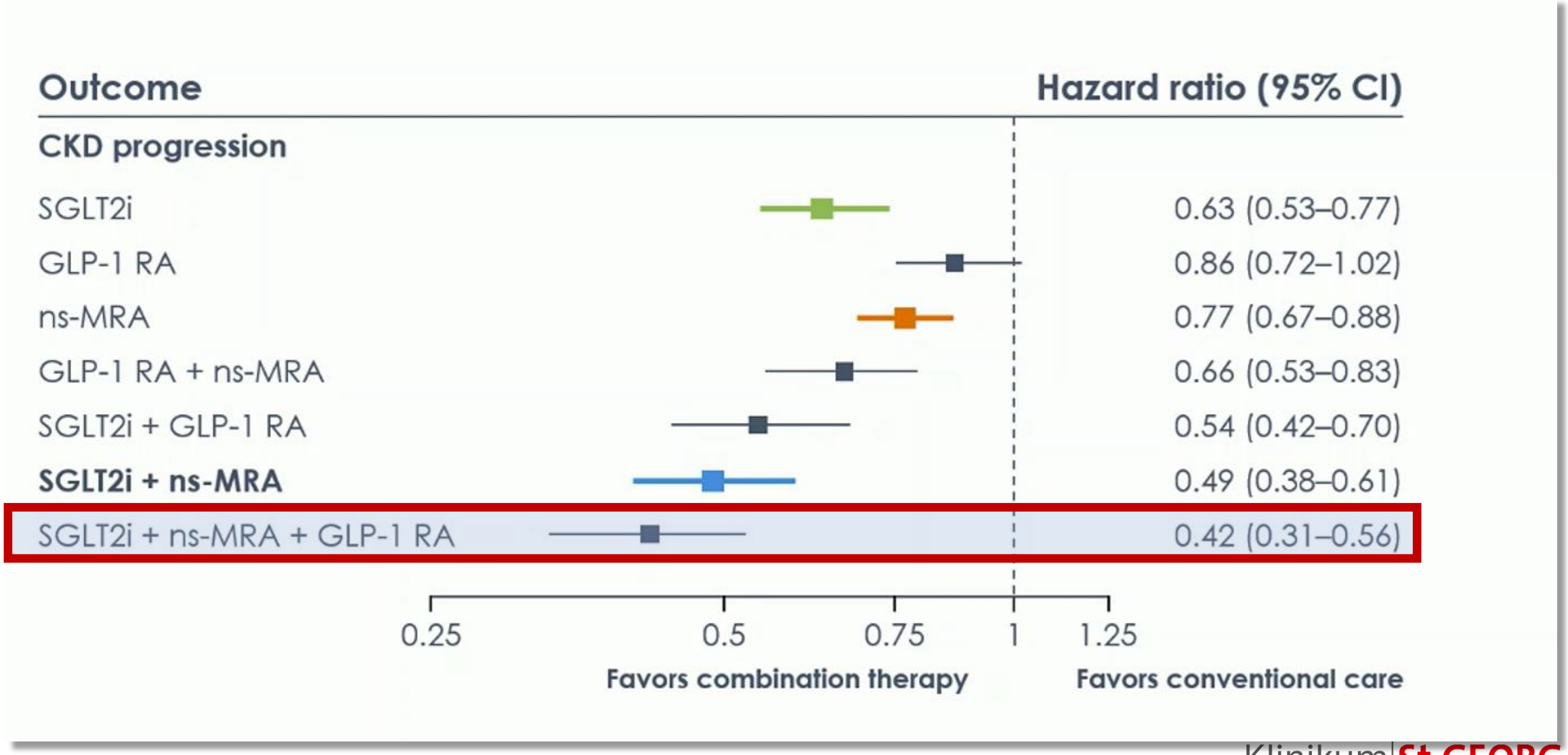
n=800: T2D, eGFR 30-90, UACR ≥100 mg/g – <5000 mg/g; max. tolerierter RAS-I



Klinikum St.GEORG

Agarwal et al., N Engl J Med 2025;393:533-543

CKD-Progressionshemmung durch Kombinationstherapie



Klinikum St.GEORG

Endpunkt: Kreatininverdopplung, Dialysepflicht, Tod durch Nierenversagen

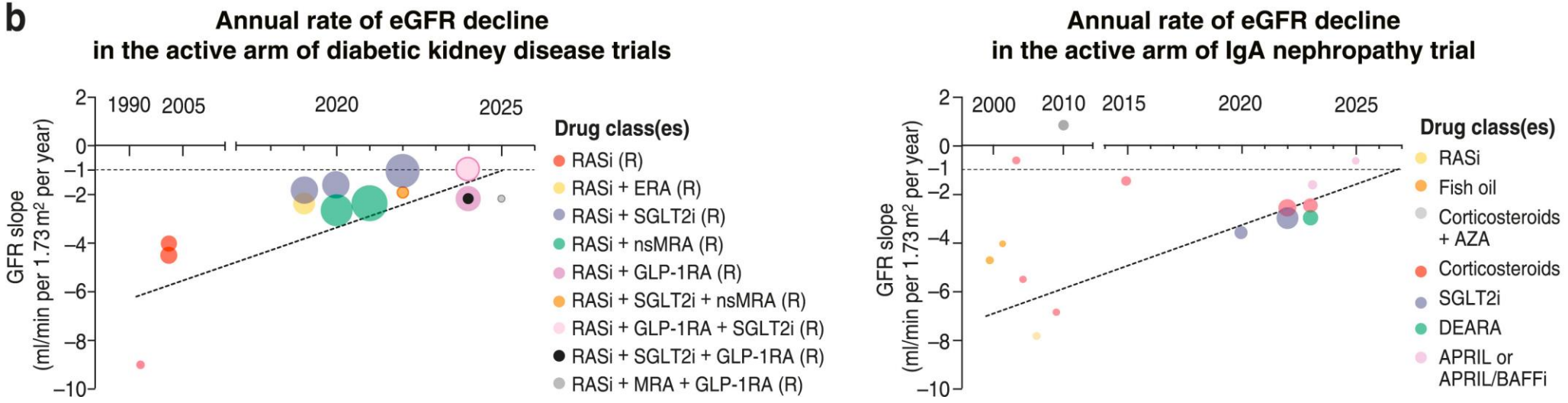
Neuen et al, Circulation 2023

From progression to remission: a new paradigm for success in CKD

a

	Historical paradigm: slow CKD progression	New paradigm: aim to achieve CKD remission
Goal	• Delay the inevitable loss of kidney function	• Halt decline in kidney function to normal healthy aging (<1 ml/min per 1.73 m^2 per year) OR achieve normalization of GFR and albuminuria
Therapeutic context	• Few effective therapies to prevent loss of kidney function	• Combination therapy with highly effective and safe agents (RASi, SGLT2i, ns-MRA, GLP-1RA, disease-specific therapies [e.g., B-cell–targeted therapies])
Workforce and policy focus	• Major focus on the provision of dialysis and kidney transplantation services	• Early detection, population-based screening, risk-based implementation of guideline-directed therapies

b



St.GEORG

Tangri et al., KI 2025

Wann auf der ITS dialysieren ?

Und vor allem wann wieder aufhören?

Early vs Late Initiation Of Kidney Replacement Therapy : A Comparison Of RCTs

#NephJC

	ELAIN	AKIKI	IDEAL-ICU	STARRT-AKI	AKIKI-2
Study Design	RCT, Single center France	RCT, Multi-Centre France	RCT, Multi-Centre	RCT, Multinational	RCT, Multi-Centre France
Study participants (N)	231	620	488	2927	278
Eligibility criterion	KDIGO stage 2 AKI	KDIGO stage 3 AKI	RIFLE - FAILURE	KDIGO Stage 2 or 3	KDIGO stage 3 with oliguria >72 hrs or BUN 40-50 mmol/l
Early KRT criterion	Within 8 hrs	Within 6 hrs	Within 12 hrs	Within 12 hrs	Within 12 hrs
Delayed KRT criterion	Within 12 hrs or no initiation	• Life-threatening complications of AKI • BUN > 40mmol/l • Oliguria persisting >72 hrs	48 hrs after randomisation in the absence of kidney recovery	• Life-threatening complications of AKI • Persistent AKI for ≥ 72 hrs	• BUN >50 mmol/l • Life-threatening complication of AKI
Difference in mortality (Early Vs Late)	At 90 d 39.3% vs 54.7% **(p=0.03)**	At 60 d 48.5% vs 49.7% **(p=0.79)**	At 90 d 58% vs 54% **(p= 0.38)**	At 90 d 43.9% vs 43.7% **(p=0.92)**	At 60 d 44% vs 55% **(p=0.07)**
Other Key outcomes	Shorter KRT duration and hospital stay in early group	Diuresis occurred earlier in delayed arm	No difference in length of ICU and hospital stay	Higher KRT dependency at 90 d in accelerated arm	KRT free days between D0 and D28 10 vs 12 days (p=0.93)
Complications related to AKI OR KRT (Early Vs delayed)	No difference	CRBSI higher in early group	Hyperkalaemia more in delayed group	More in accelerated arm	No difference
Limitations	Small sample, single centre, mostly surgical patients	Included pts with advanced AKI, 50% pts received IHD	Non blinded, stopped early due to futility	Heterogeneity in groups, Decision of KRT at physician discretion	Small sample size, Debate over BUN levels for KRT initiation
	JAMA 2016	NEJM 2016	NEJM 2018	NEJM 2020	Lancet 2021

@Dilushiwijay @Priti899

Klinikum St.GEORG

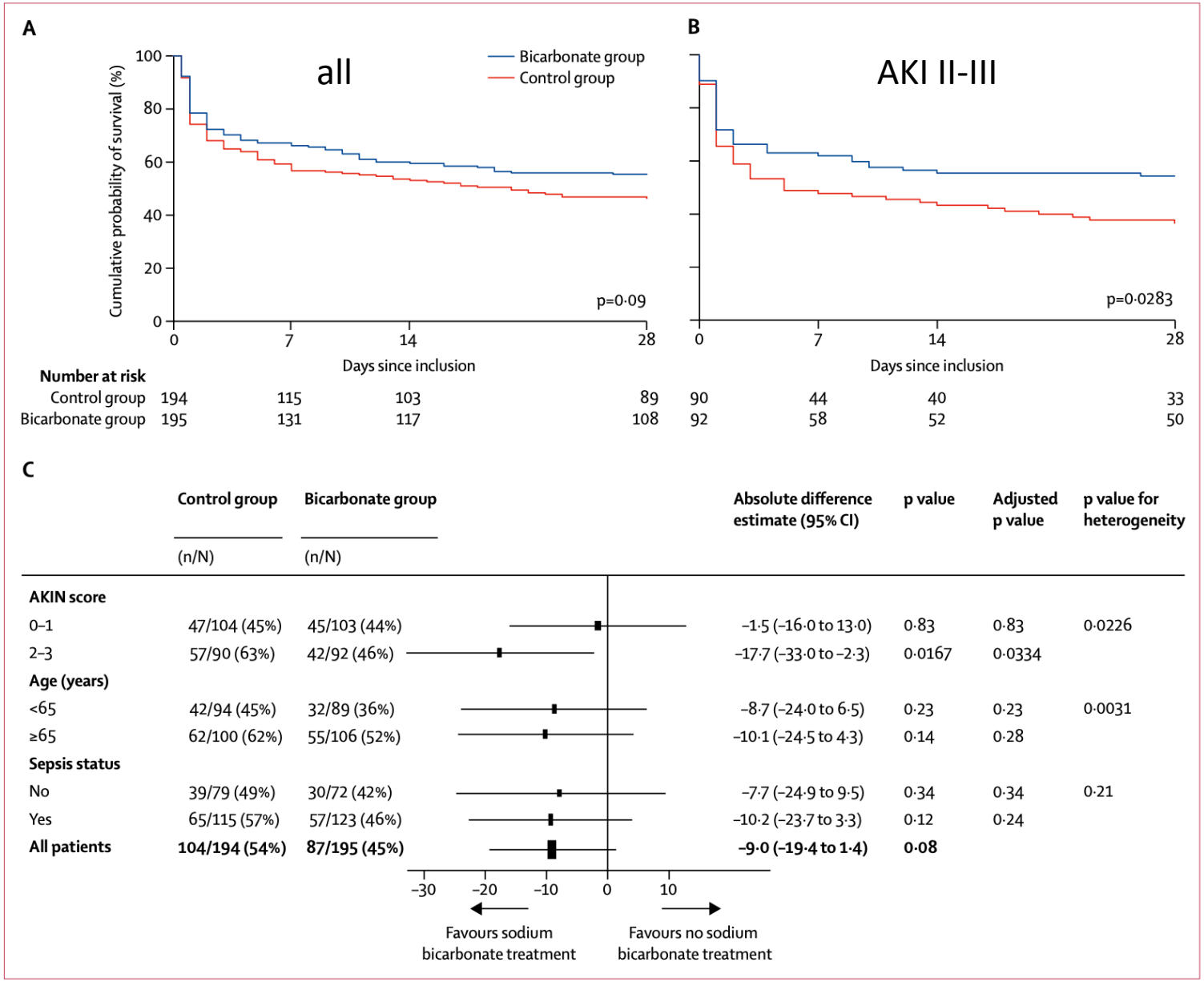
https://www.nephjc.com/news/akiki-2

Bicarbonat bei Azidose bei ITS Patienten?

Gut, schlecht oder egal?

Klinikum St.GEORG

Bicarbonat bei schwerer metabolischer Azidose auf der ITS (BICAR-ICU)

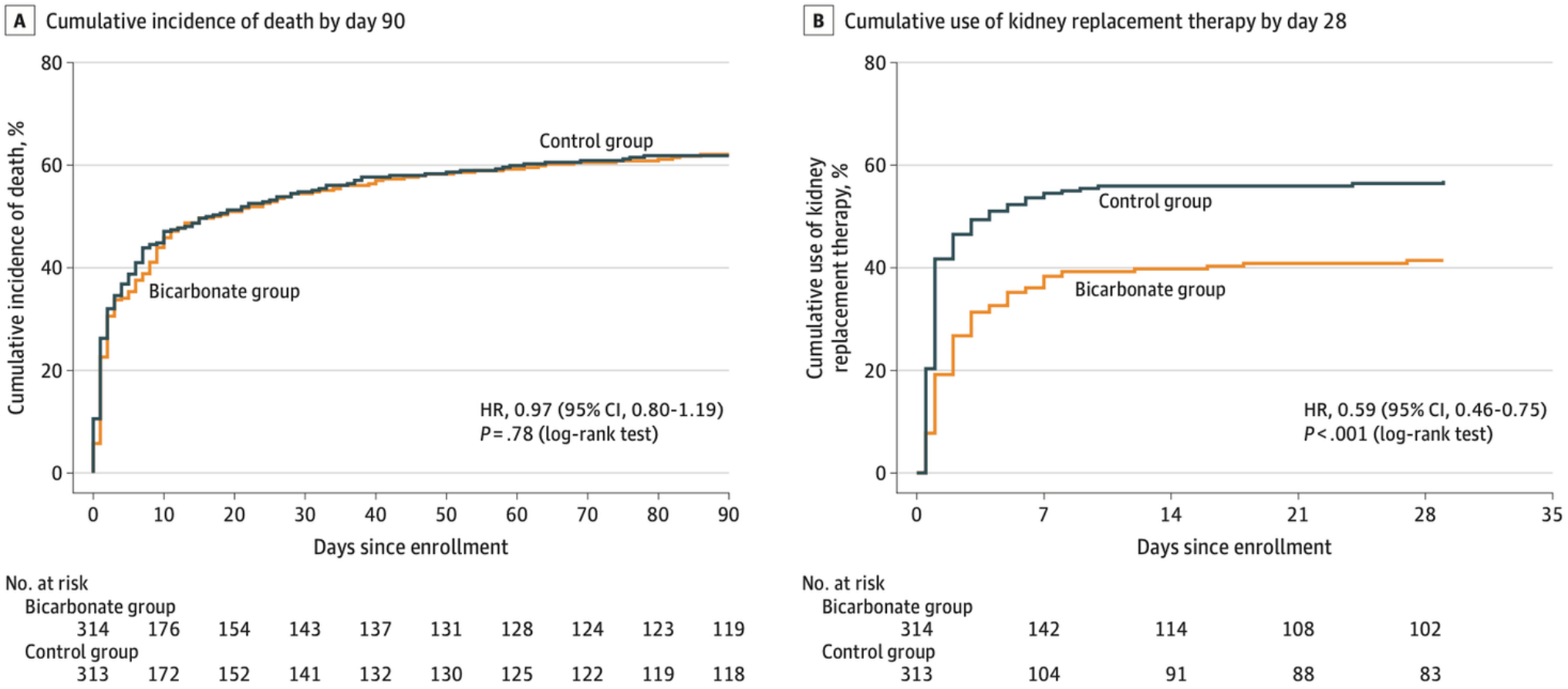


Klinikum St.GEORG

Jaber et al, Lancet, 2018

Bicarbonat bei schwerer metabol. Azidose and Akutem Nierenversagen: BICARICU-2

Figure 2. Cumulative Incidence of Death by Day 90 (Primary Outcome) and Cumulative Use of Kidney Replacement Therapy by Day 28 (Secondary Outcome)



Klinikum St.GEORG

Jung B, et al, JAMA, 2025

BICAR-ICU2: Does correcting acidemia change dialysis decisions, or outcomes?

#NephJC

Multicentre, open-label, RCT in 33 French ICUs

n=851
Adults with severe metabolic acidemia (pH ≤7.20, HCO_3^- ≤20 mmol/L)

Randomized within 48 h of ICU admission

	Primary outcome	Dialysis initiation
Sodium bicarbonate 4.2%	**62.1%**	**35%**
Standard of care	**61.7%** *P=.91*	**50%**

Adverse effects

predictable shifts
↑pH, ↑$PaCO_2$, ↑Na^+, ↓K^+

No excess harm

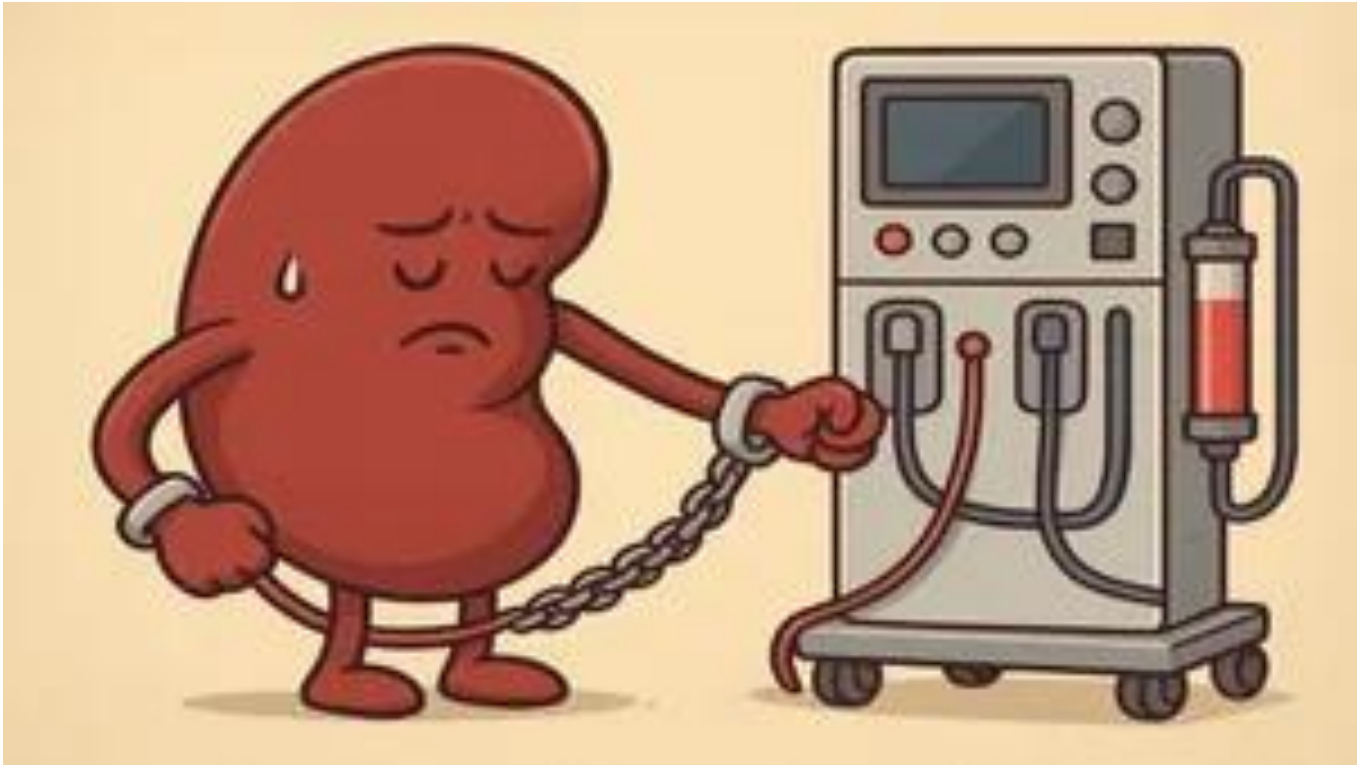
Conclusion: Open-label correction of pH predictably deferred dialysis. The observed reduction in KRT reflected altered thresholds, not renal recovery. The composite endpoint lacked specificity, and a predominantly septic cohort added biological heterogeneity. Bicarbonate improved biochemical metrics without altering clinical outcomes; it rendered acidosis less apparent and dialysis less imminent.

Jung B, et al. *Sodium Bicarbonate for Severe Metabolic Acidemia and Acute Kidney Injury- The BICARICU-2 Randomized Clinical Trial*. JAMA. 2025

Cristina Popa @nephroseeker.medsky.social

Liberation From Acute Dialysis (LIBERATE-D)

Randomized Clinical Trial



Gibt es eine Art „Dialysis-weaning“?

Klinikum St.GEORG

Liu et al., JAMA 2025

https://www.nephjc.com/news/liberated-aki

Original Investigation

A Conservative Dialysis Strategy and Kidney Function Recovery in Dialysis-Requiring Acute Kidney Injury

The Liberation From Acute Dialysis (LIBERATE-D) Randomized Clinical Trial

Kathleen D. Liu, MD, PhD, MAS[1,2]; Edward D. Siew, MD, MSCI[3,4]; Delphine S. Tuot, MDCM, MAS[5] ; et al

Interventionsgruppe:

Dialyse Stop. Neue Dialyse nur wenn:

- Harnstoff > 40mmol/l
- Hyperkalemia (>6 mmol/L)
- schwere metabolische Azidose (pH <7.15 oder HCO3 <12 mEq/L)
- Lungenödem mit Hypoxie trotz Diuretika

Liu et al, JAMA 2025

Konventionelle Gruppe:

3x/Wo Dialyse

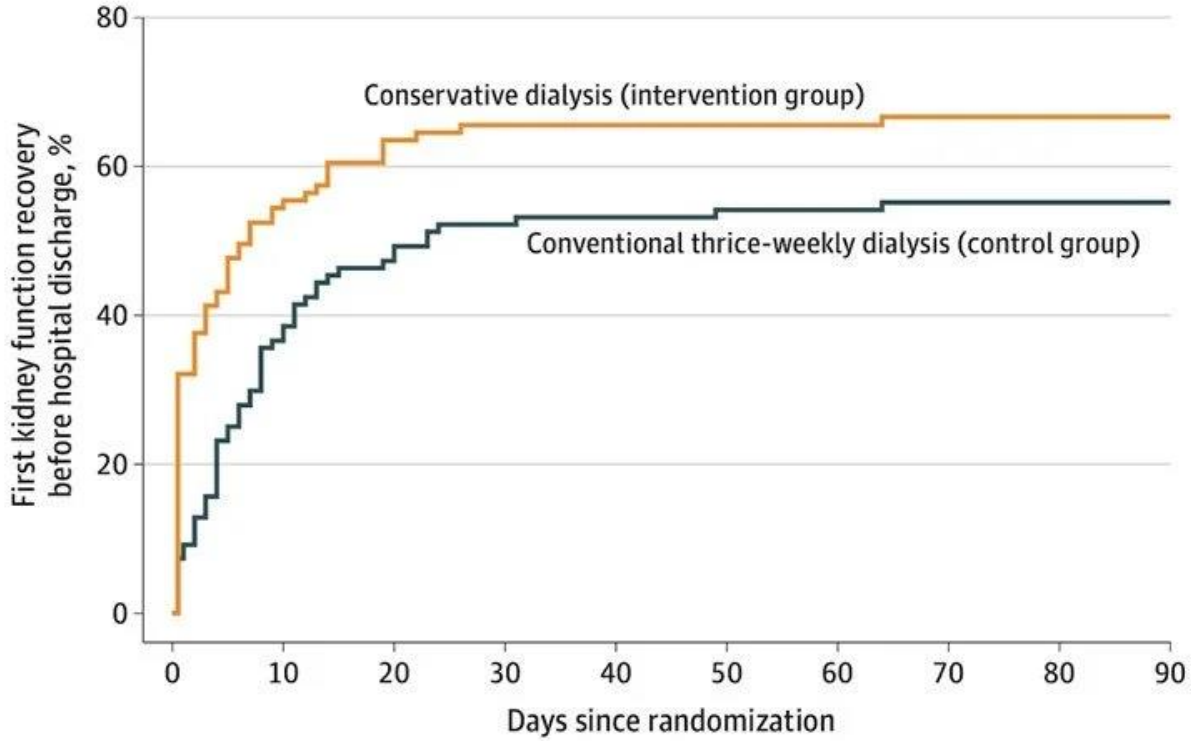
Stop wenn Diurese >1 L/day ohne Diuretika
Oder >2 L/day mit Diuretika oder
CCL (>20 ml/min), or spontaner Krea-Abfall

Klinikum St.GEORG

Liu et al., JAMA 2025

Time to first kidney recovery

Figure 2. Time to First Kidney Function Recovery Before Hospital Discharge



No. of patients without kidney function recovery										
Conservative dialysis	109	45	36	33	31	31	31	30	30	30
Conventional thrice-weekly dialysis	109	65	54	49	47	46	46	45	45	45

Klinikum St.GEORG

Liu et al, JAMA 2025

A Conservative Dialysis Strategy and Kidney Function Recovery in Dialysis-Requiring Acute Kidney Injury: The Liberation From Acute Dialysis Trial (LIBERATE-D)

#NephJC

- **Unblinded, randomized, superiority trial**
- **January 2020 through March 2025**
- **4 centers in the US**
- **AKI-D with baseline eGFR >15 mL/min/1.73 m²**
- **909 patients assessed, 221 randomized**

Cohorts and Dialysis Indications	Primary Endpoint: alive & dialysis free for at least 14 consecutive days including discharge	Secondary Endpoints: # of dialysis sessions per week & dialysis free days up to day 28	
Conservative group (n= 109) Dialysis IF: Severe azotemia (BUN >112 mg/dL) Hyperkalemia (K > 6 mEq/L) Acidosis (pH <7.15 or bicarb <12 mEq/L) Acute pulmonary edema w/ hypoxemia (>5L/min, Fi02 >50%) Clinician judgment	64%	1.8 sessions/wk	21 consecutive dialysis free days
	OR 1.76 (95% CI 1.02- 3.03)	**-1.4 sessions (95% CI -1.8 to -1.0)**	**16 days (95% CI 5 to 27)**
Conventional group (n=109) Thrice weekly dialysis UNTIL: Urine output >1 L/day without diuretics or >2 L/day with diuretics Creatinine clearance (>20 ml/min) Spontaneous serum creatinine ↓	50%	3.1 sessions/wk	5 consecutive dialysis free days

Conclusion: A conservative dialysis strategy in AKI-D resulted in a shorter time to and higher rates of recovery of kidney function in the unadjusted analysis. Given uncertainty regarding the estimated effect size, this approach should be tested in a larger study population.

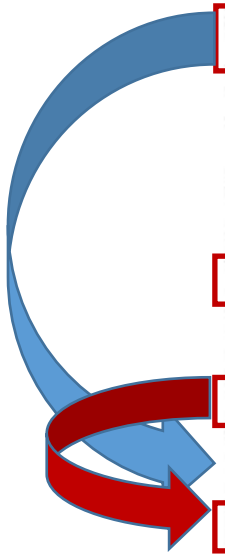
Liu KD, Siew ED, Tuot DS, et al. A Conservative Dialysis Strategy and Kidney Function Recovery in Dialysis-Requiring Acute Kidney Injury: The Liberation From Acute Dialysis (LIBERATE-D) Randomized Clinical Trial. JAMA.2025;doi:10.1001/jama.2025.21530.

Sejal Lakhani (sejalplakhani)

https://www.nephjc.com/news/liberateva

Table 2. Clinical Outcomes by Treatment Groups

	Conservative dialysis intervention group (n = 109)	Conventional thrice-weekly dialysis control group (n = 109)	Estimated difference between proportions (95% CI), %[a]	*P* value
Primary study end point				
Kidney function recovery at hospital discharge, No. (%)	70 (64.2)	55 (50.5)	13.8 (0.8 to 26.8)	.04
Key secondary study end points	**Conservative dialysis intervention group (n = 110)**	**Conventional thrice-weekly dialysis control group (n = 109)**	**Estimated difference between proportions or estimated differences in median (95% CI)[a]**	
Dialysis (No./wk) after randomization, all patients, median (IQR) [No.][b]	1.8 (0 to 2.6) [110]	3.1 (2.6 to 3.5) [110]	−1.4 (−1.8 to −1.0)	<.001
Dialysis-free days to day 28, median (IQR) [No.][c]	21 (0 to 28) [109]	5 (0 to 21) [109]	16 (5 to 27)	<.001
Other secondary study end points				
Time to kidney function recovery by day 90, median (IQR) [No.]	2 (0 to 9) [79]	8.5 (4 to 22) [76]	−6.5 (−10.2 to −2.8)	<.001
Length of hospital stay after study randomization for patients who survived, median (IQR) [No.]	14 (8 to 26) [100]	15.5 (10 to 28) [102]	−1.5 (−5.8 to 2.8)	.43
In-hospital death, No./total No. (%)	10/110 (9.1)	7/109 (6.4)	2.7 (−4.4 to 9.7)	.46
Kidney function recovery at day 28, No./total No. (%)	71/109 (65.1)	59/109 (54.1)	11.0 (−1.9 to 24.0)	.10
Death by day 28, No./total No. (%)	14/110 (12.7)	7/109 (6.4)	6.3 (−1.4 to 14.0)	.11
Kidney function recovery at day 90, No./total No. (%)	72/108 (66.7)	63/108 (58.3)	8.3 (−4.5 to 21.2)	.21
Death by day 90, No./total No. (%)	16/109 (14.7)	20/108 (18.5)	−3.8 (−13.7 to 6.1)	.45



Klinikum St.GEORG

Liu et al, JAMA 2025

Phosphatsenkung bei Dialysepatienten

A tale of believe and grief

Klinikum St.GEORG

Am J Kidney Dis. 2016 Nov;68(5):691-702. doi: 10.1053/j.ajkd.2016.05.015. Epub 2016 Jul 22.

Phosphate-Binding Agents in Adults With CKD: A Network Meta-analysis of Randomized Trials

Suetonia C Palmer [1], Sharon Gardner [1], Marcello Tonelli [2], Dimitris Mavridis [3], David W Johnson [4], Jonathan C Craig [5], Richard French [6], Marinella Ruospo [7], Giovanni F M Strippoli [8]

Affiliations + expand

PMID: 27461851 DOI: 10.1053/j.ajkd.2016.05.015

"There is currently no evidence that phosphate-binder treatment reduces mortality compared to placebo in adults with CKD."

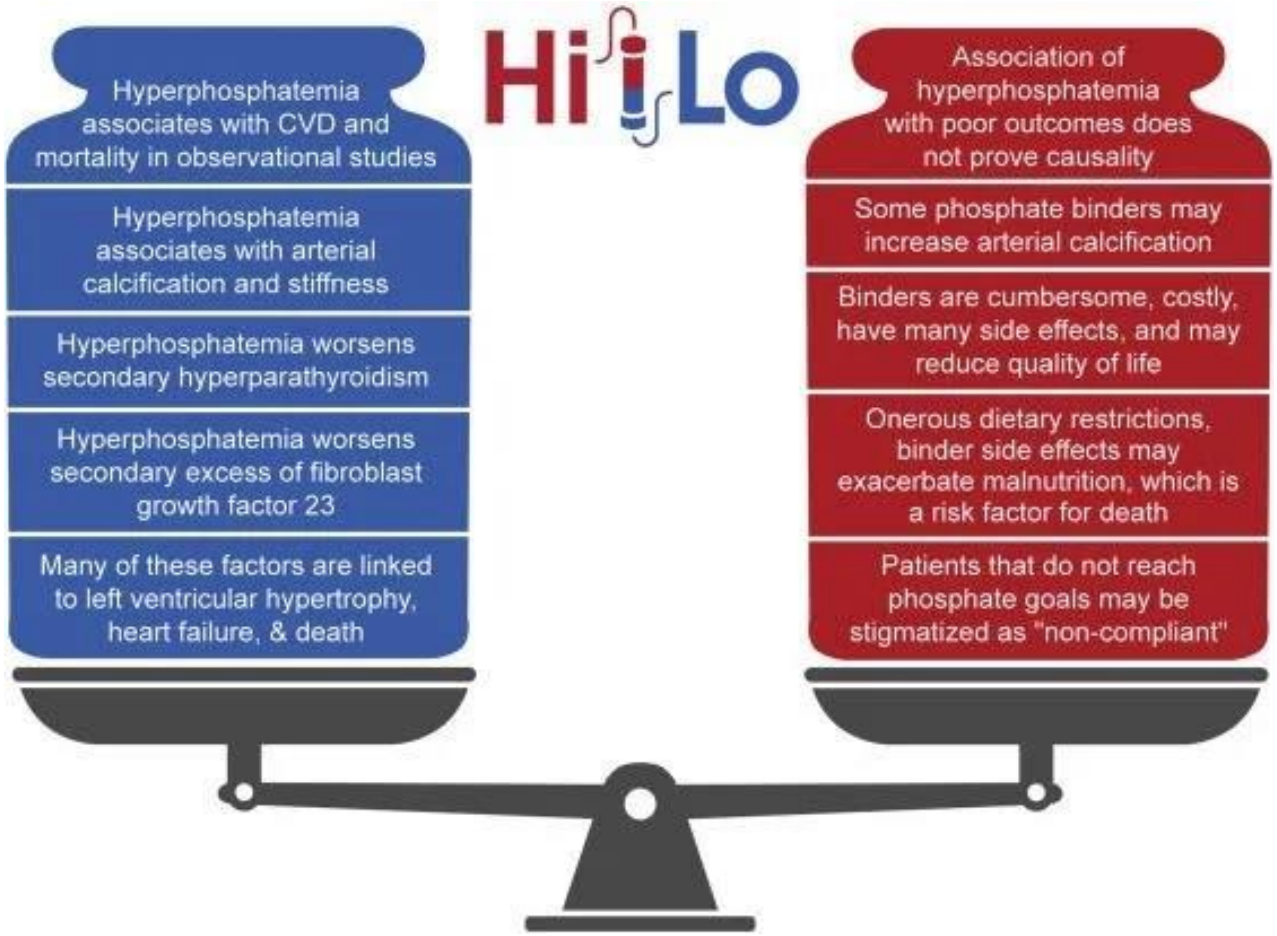
Klinikum St.GEORG

Edmonston et al., J Am Soc Nephrol. 2025

Phosphatsenkung bei Dialysepatienten:

you have to believe ….

Factors in favor of and against more aggressive reduction of serum phosphate levels



Klinikum St.GEORG

Edmonston DL, et al, AJKD, 2021

Edmonston et al., J Am Soc Nephrol. 2025

LANDMARK: Does Lanthanum carbonate reduce cardiovascular events in patients on hemodialysis?

273 dialysis facilities in Japan

2374 pts

≥ 1 risk factors for vascular calcification

Nov 2011 to July 2014

1:1

Lanthanum carbonate
750 mg/d
n = 1154

Calcium carbonate
3000 mg/d
n = 1155

Serum phosphate level 3.5 - 6.0 mg/dL

Treatment of hyperphosphatemia with Lanthanum carbonate did not reduce composite cardiovascular events

Primary Outcome

Composite cardiovascular event rate

4.80

4.30

Difference 0.5 per 100 person-years
HR 1.11 [95% CI 0.88 to 1.41]

Secondary Outcomes

All-cause death rate
Difference 0.43 per 100 person-years
HR 1.10 [95% CI 0.88 to 1.37]

Cardiovascular death rate
Difference 0.61 per 100 person-years
HR 1.51 [95% CI, 1.01 to 2.27]

Effect of Treating Hyperphosphatemia With Lanthanum Carbonate vs Calcium Carbonate on Cardiovascular Events in Patients With Chronic Kidney Disease Undergoing Hemodialysis. JAMA. 2021;325(19):1946-1954.

VA by Missy Hanna
@dr_missyhanna

#NephJC

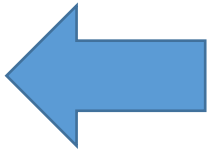
HiLo Studie

- 1. Hi group: Target serum phosphate ≥ 6.5 mg/dl (2.1mmol/L)
- 2. Lo group: Target serum phosphate ≤ 5.5 mg/dl (1.8 mmol/L)

Reached phosphate difference: 0,8mg/dl (0,26mmol/l)

Outcome after a median follow-up of 1.4 years:

57 deaths (16%) in the Hi group
96 deaths (21%) in the Lo group.



Total hospitalizations similar: 720 Hi group vs 685 Lo group.

Klinikum St.GEORG

Edmonston et al., J Am Soc Nephrol. 2025

Is a lower versus higher phosphate target beneficial to patients undergoing hemodialysis? The HiLo Trial

#NephJC

US In-center maintenance hemodialysis patients

Goal to enroll 4400 patients

Transitioned to individual randomization due to baseline imbalances in phosphate

Stopped early due to insufficient enrollment and inadequate separation

Primary hierarchical composite outcome (all-cause death and hospitalization) did not differ:
Win Ratio for Hi versus Lo targets was 0.97 (95% CI, 0.55-1.71)

15 P Phosphorus

	All Cause Mortality (per 100 patient years)	All Cause Hospitalization (per 100 patient years)
High Phosphate Target (≥ 6.5 mg/dl) 352 patients	11	134
	HR .76 (95% CI, 0.48- 1.20)	IR 1.36 (95% CI, 1.11- 1.67)
Low Phosphate Target (< 5.5 mg/dl) 441 patients	13	96

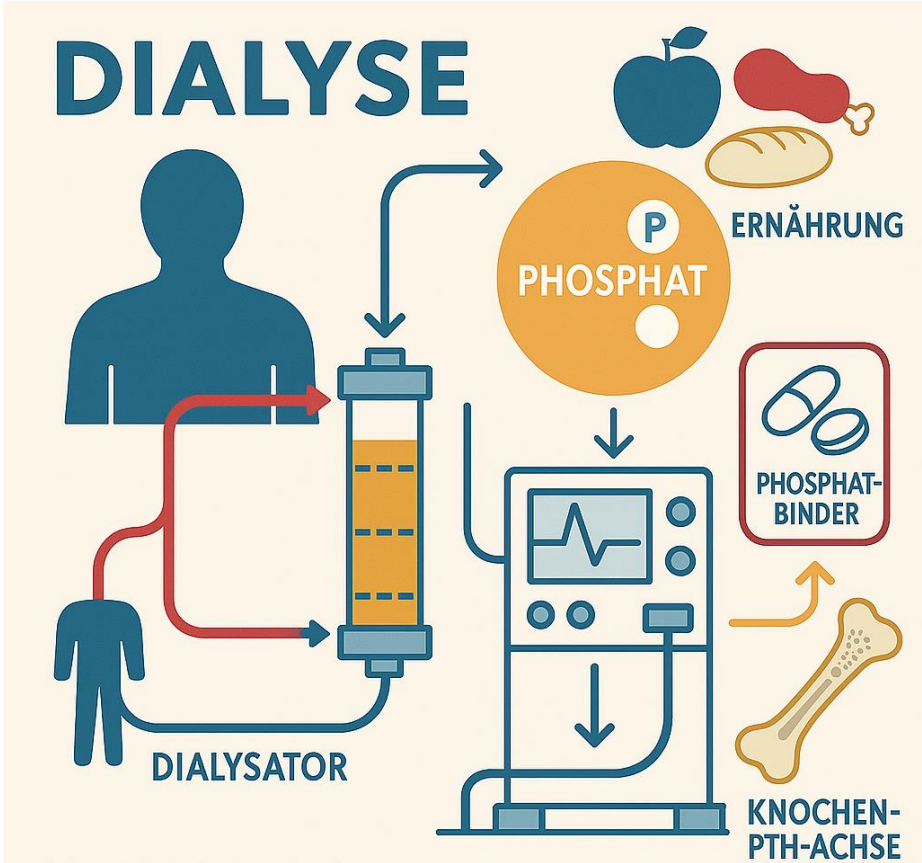
Conclusion: Insufficient enrollment and inadequate phosphate separation (<1 mg/dl) between groups precluded inferences about the effects of phosphate targets on clinical outcomes.

Edmonston D, Isakova T, Dember LM, et al. **Higher versus lower phosphate targets in hemodialysis: The HiLo trial.** *Journal of the American Society of Nephrology*. 2025 Jul 10.

@sejalplakhani

Phosphatsenkung bei Dialysepatienten ist keine evidenzbasierte Intervention.

Es ist „Expert Opinion“ at best….



Spironolacton bei Dialysepatienten

The secret weapon

Spironolacton bei Hämodialysepatienten

Journal of the American College of Cardiology
© 2014 by the American College of Cardiology Foundation
Published by Elsevier Inc.

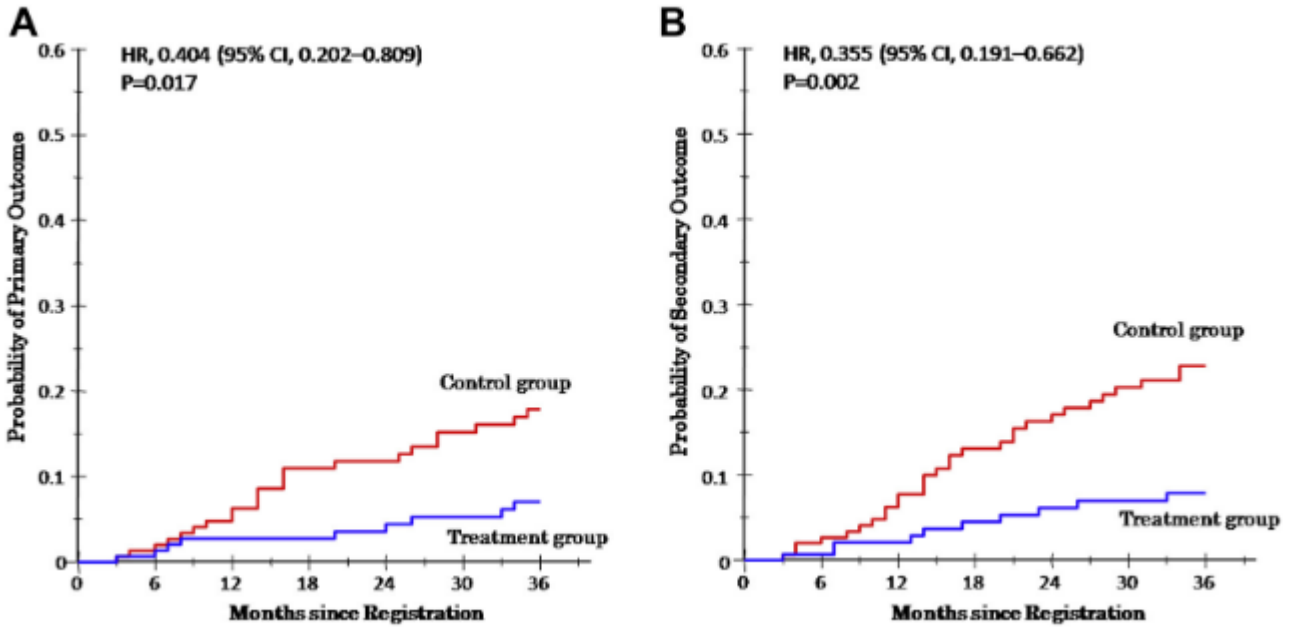
Vol. 63, No. 6, 2014
ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2013.09.056

CME

Spironolactone Reduces Cardiovascular and Cerebrovascular Morbidity and Mortality in Hemodialysis Patients

Yoshihiro Matsumoto, MD,* Yasuo Mori, MD,† Shinji Kageyama, MD,‡ Kazuo Arihara, MD,§ Toshikazu Sugiyama, MD,|| Hiromichi Ohmura, MD,¶ Toru Yakushigawa, MD,† Hatsumi Sugiyama, MD,|| Yasushi Shimada, MD,* Youichi Nojima, MD,* Nobuo Shio, MD‡

A 3-year randomized trial with 309 oligoanuric HD patients



composite of death from CCV events or hospitalization for CCV events

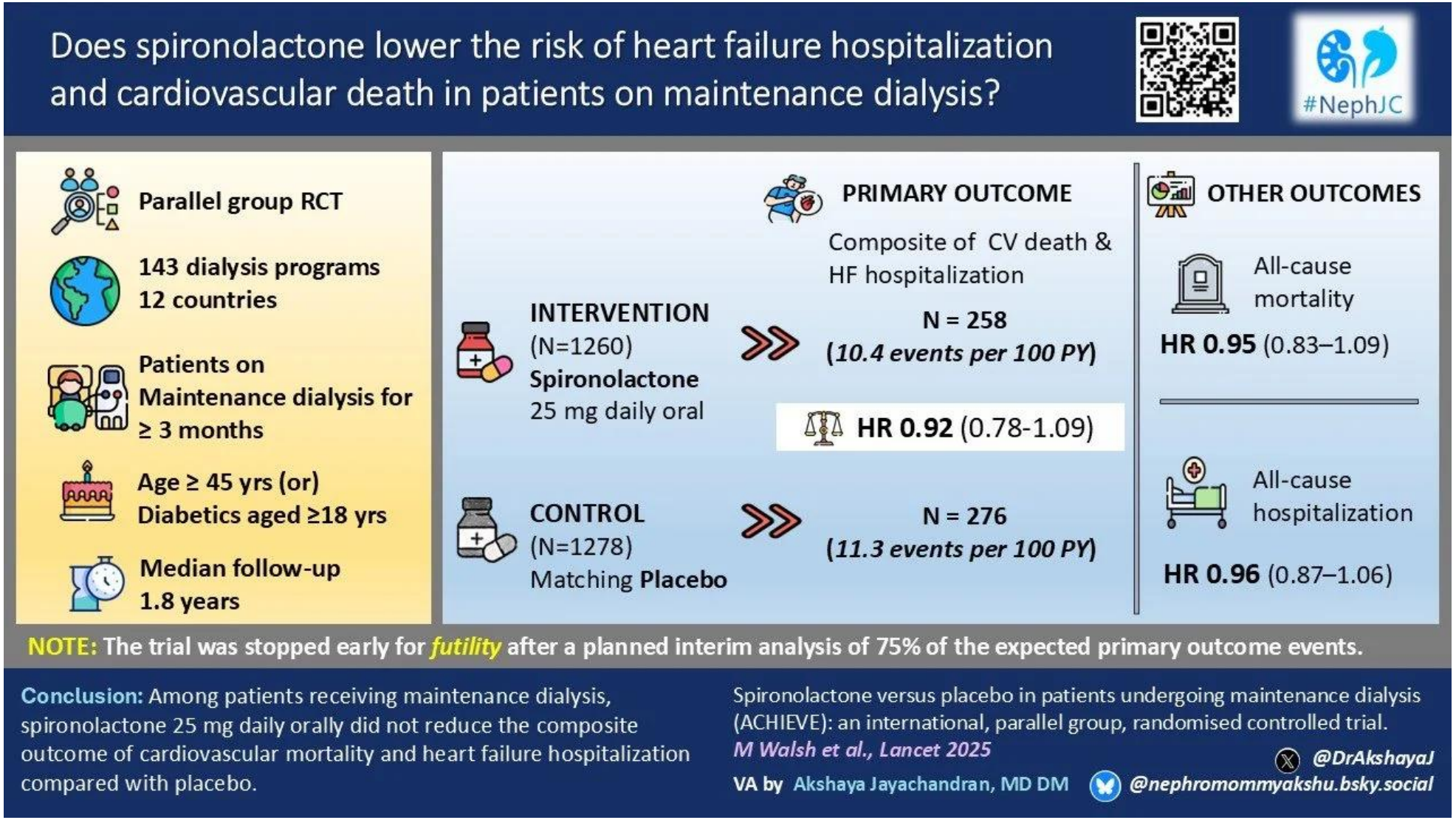
death from all causes

Klinikum St.GEORG

Matsumoto et al., J Am Coll Cardiol. 2014;63(6):528-36

Spironolacton bei Hämodialysepatienten: 2025

(ACHIEVE): an international, parallel-group, randomised controlled trial



St.GEORG

Walsh et al., Lancet. 2025 Aug 16;406(10504):695-704

KFRE: Kidney failure risk equation

Klinikum St.GEORG

THE KIDNEY FAILURE RISK EQUATION

Find out your real risk of kidney failure

WATCH

KIDNEY FAILURE
RISK CALCULATOR

FACTS &
CHRONIC KIDN

KIDNEY FAILURE
RISK CALCULATION

If you don't have the information required below talk to your doctor.

Age (Yrs) | Sex | Region

Select | Select

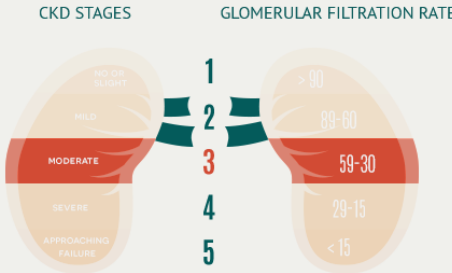
GFR (Ml/Min/1.73M2) | Urine Albumin: Creatinine Ratio | Units

NEXT

ASSESSMENT

STAGE 3

MODERATE DECREASE IN FUNCTION



Patient risk of progression to kidney failure requiring dialysis or transplant:

AT 2 YEARS	AT 5 YEARS
11.05 %	36.47 %

Risk thresholds used in health systems include:

- 3-5 % over 5 years for referral to a kidney doctor
- 10 % over 2 years for team based care (Kidney Doctor, Nurse, Dietician, Pharmacist)
- 20-40 % over 2 years for planning a transplant or fistula

https://www.kidneyfailurerisk.com/

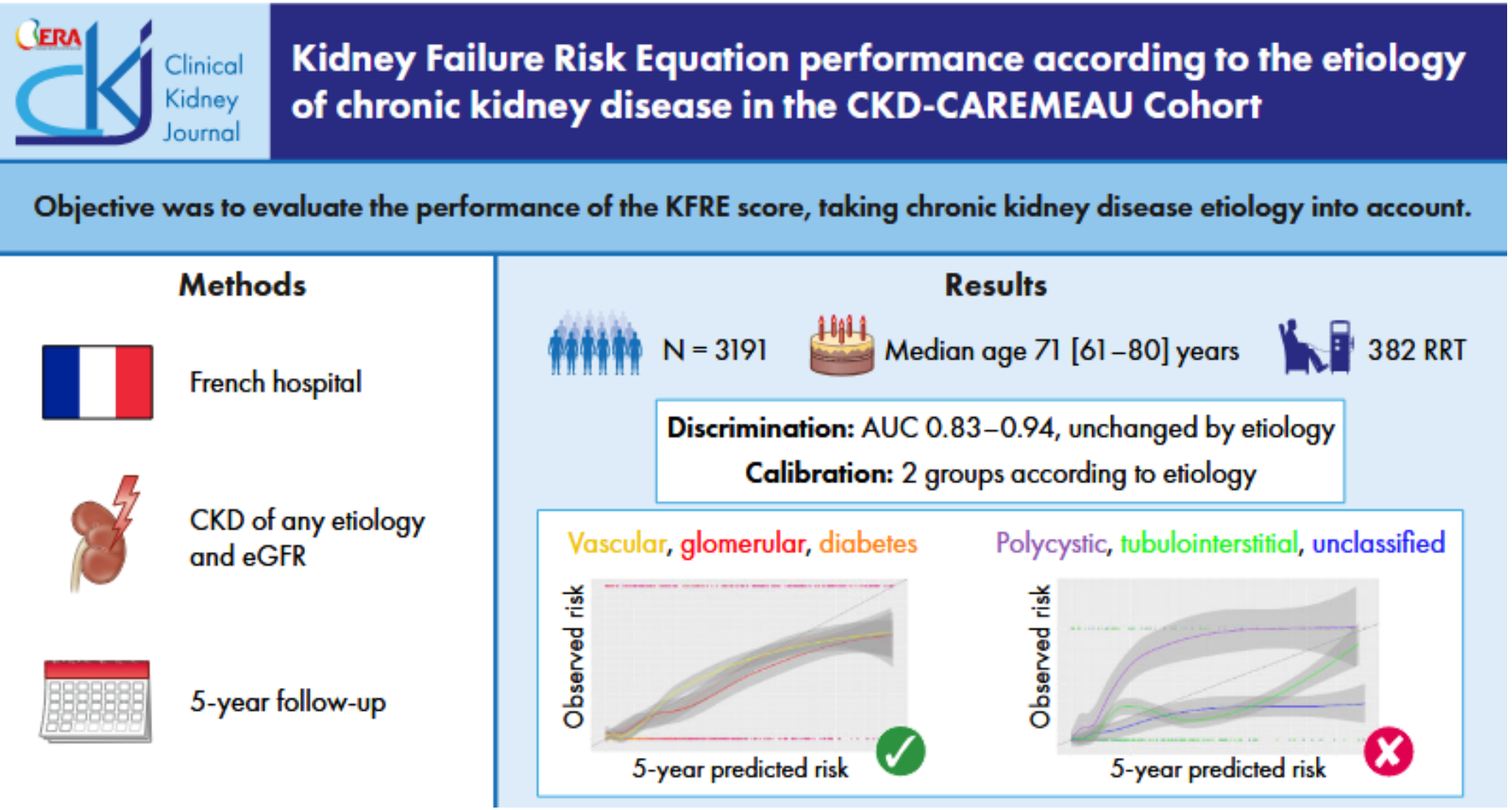
Clinical Kidney Journal, 2025, vol. 18, no. 9, sfaf258
https://doi.org/10.1093/ckj/sfaf258
Advance Access Publication Date: 13 August 2025
Original Article

ORIGINAL ARTICLE

Kidney Failure Risk Equation performance according to the etiology of chronic kidney disease in the CKD-CAREMEAU cohort

Julien Prouvot[1,2], Pedram Ahmadpoor[1], Edouard Clemmer[1], Florian Garo[1], Emilie Pambrun[1], Sylvain Cariou[1], Pascal Reboul[1], Ziyad Messikh[1] and Olivier Moranne[1,2]

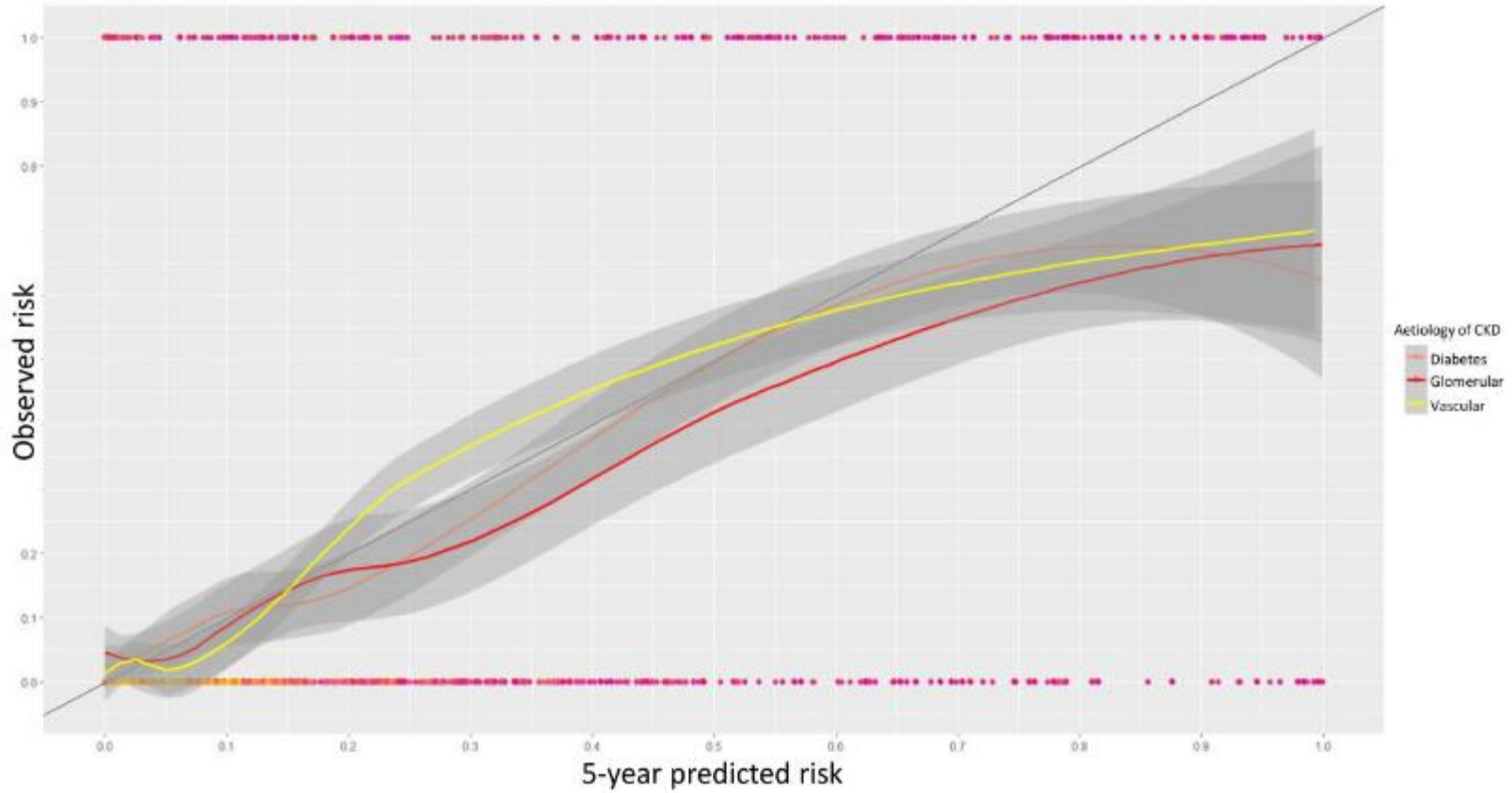
[1]Service Nephrologie Dialyse Apherese, Hopitale Universitaire de Nimes, France and [2]IDESP Universite de Montpellier, France



Klinikum St.GEORG

Prouvot et al., Clinical Kidney Journal, 2025

Calibration of the KFRE score according to the etiology of CKD



Klinikum St.GEORG

Prouvot et al., Clinical Kidney Journal, 2025

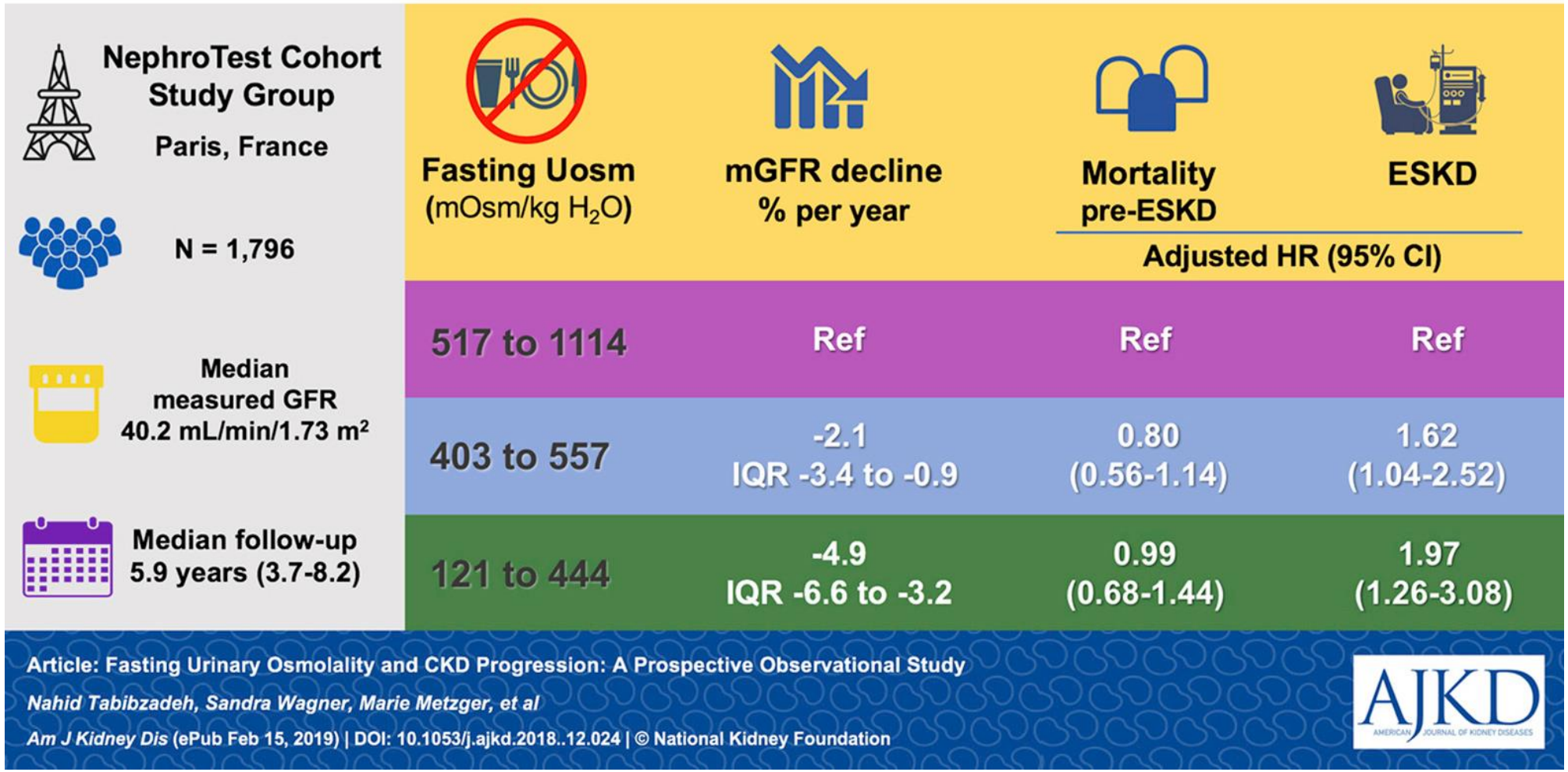
Risikoeinschätzung Progression CKD

UACR, eGFR, DKK3, CKD273, TIMP1…..

Is the more ?

More easy (and cheap) stuff out there?

Urinary Osmolality, CKD Progression, and Mortality



Klinikum St.GEORG

Tabibzadeh Net al., Am J Kidney Dis. 2019 May;73(5):596-604.

Fasting urine osmolality and risk of kidney disease progression in patients with type 2 diabetes

Does fasting urine osmolality provide prognostic value for kidney disease progression in type 2 diabetes?

Methods

Fasting urine osmolality measured in 2 cohorts with type 2 diabetes

Singapore SMART2D

French SURDIAGENE

Cox regression

Progression to end stage kidney disease (ESKD)

Rapid kidney function decline (RKFD)

Results

Association of fasting urine osmolality:

Singapore SMART2D Cohort (n=1711)

2.94* (1.12–7.69)

1.47† (0.95–2.28)

French SURDIAGENE Cohort (n=1097)

1.74* (0.84–3.58)

1.84† (1.06–3.19)

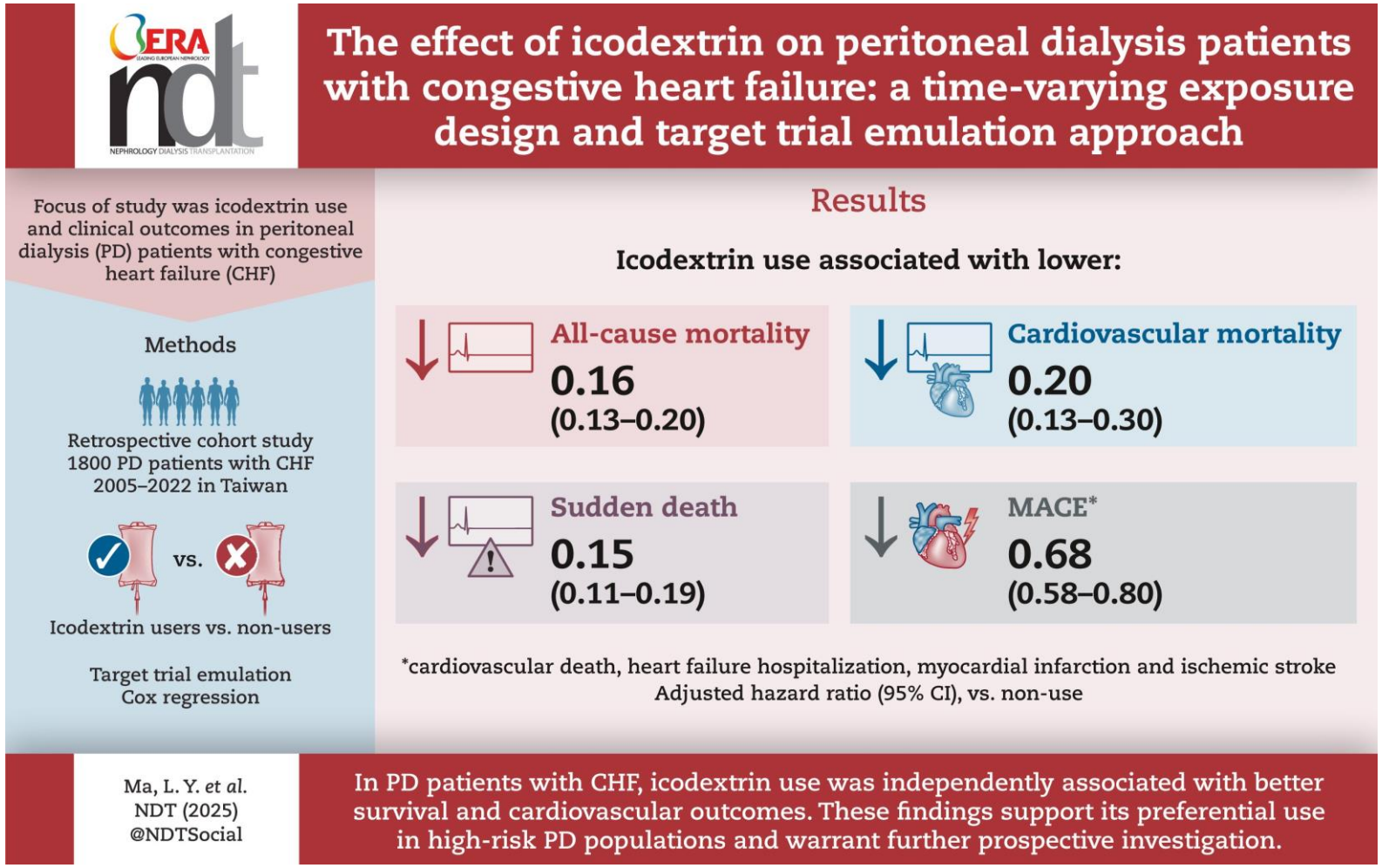
*adjusted hazard ratio, †adjusted odds ratio, (95% CI) for low vs. high tertile

Liu, J. J. *et al.*
NDT (2025)
@NDTSocial

Low level of fasting urine osmolality is associated with increased risk of kidney disease progression independent of conventional risk factors. This readily accessible biomarker may potentially improve risk-stratification for patients with type 2 diabetes.

Nephrol Dial Transplant, gfaf264, https://doi.org/10.1093/ndt/gfaf264

Icodextrin user vs non_user in CHF

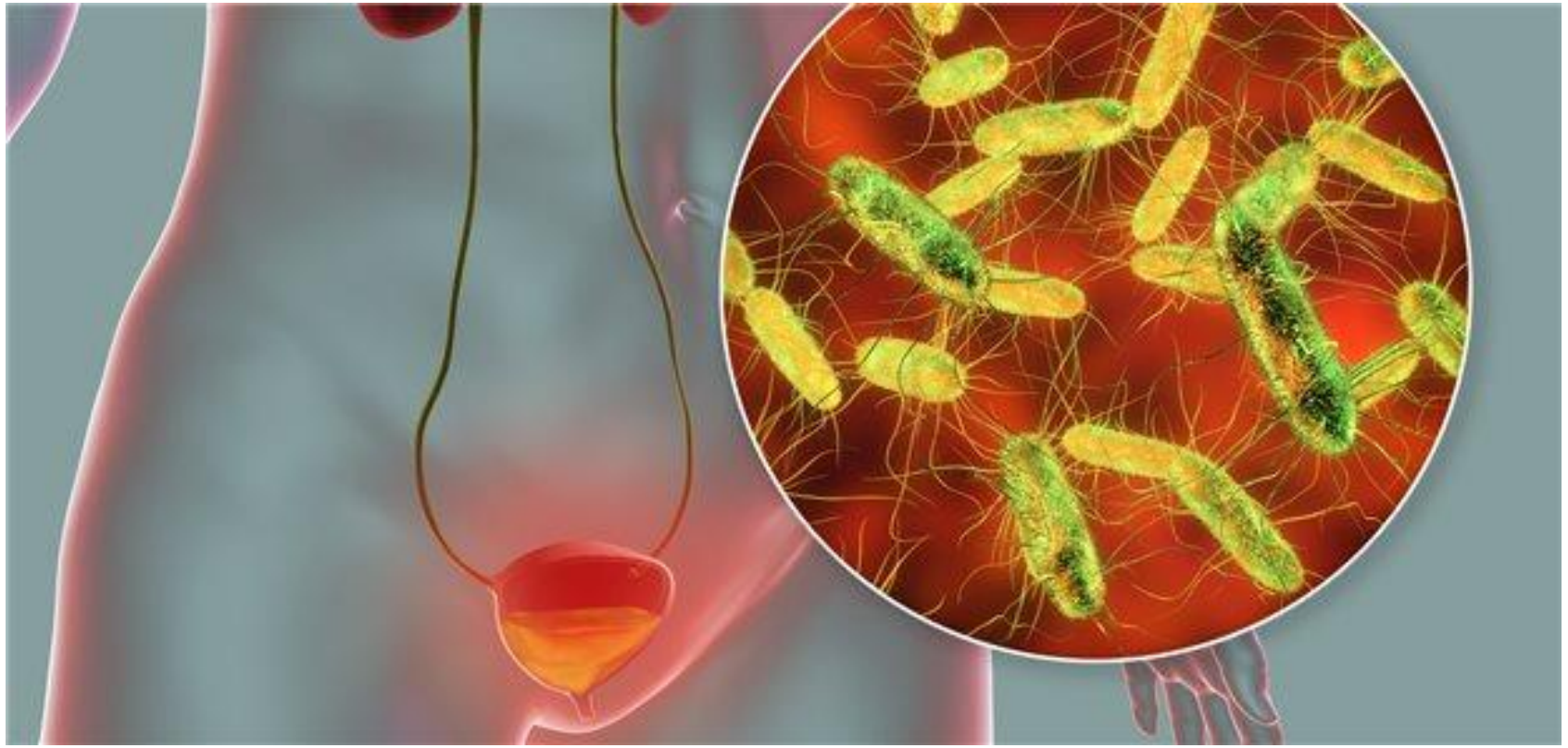


Icodextrin users also showed associations with reduced risks of encapsulating peritoneal sclerosis and transition to hemodialysis

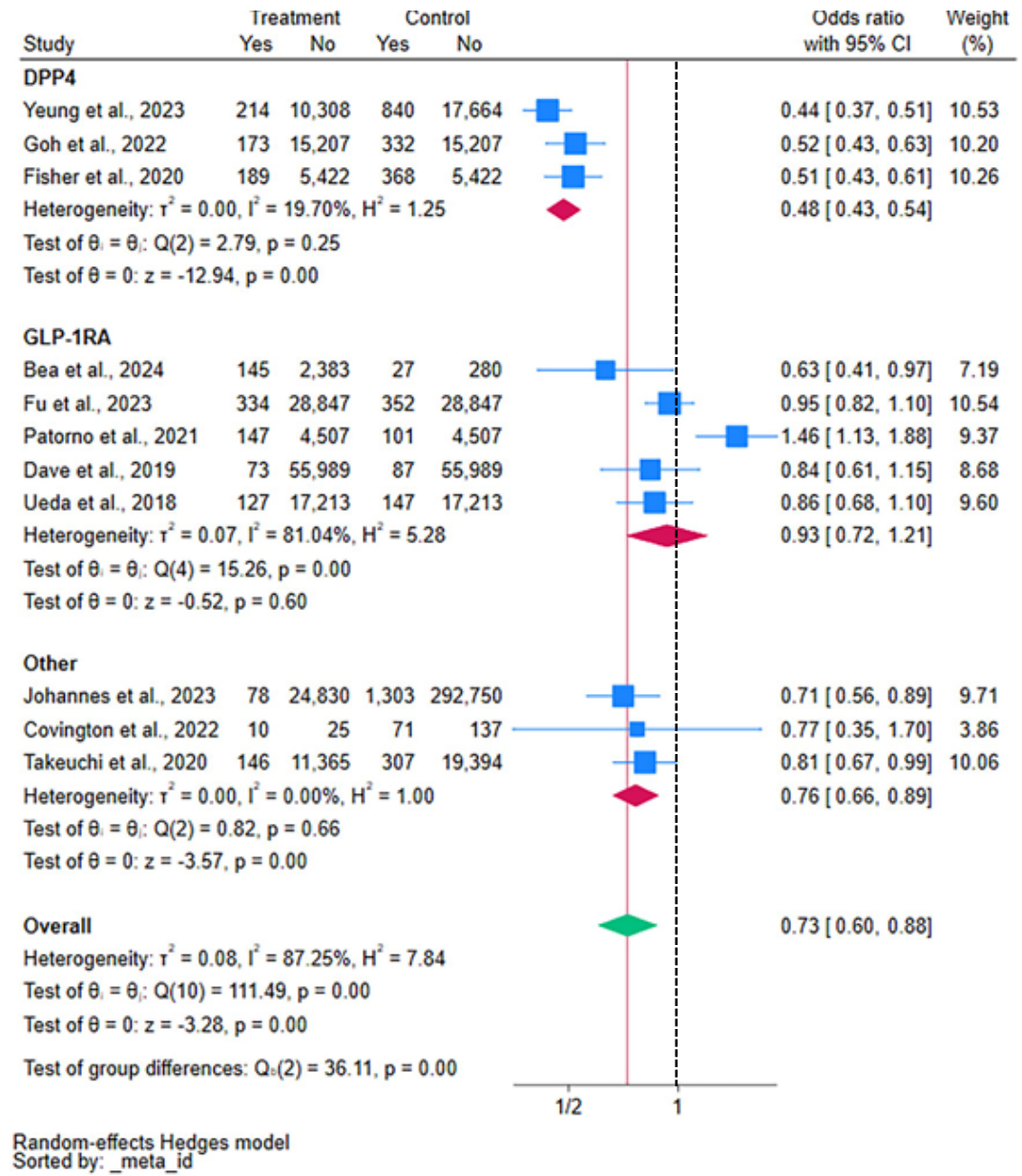
Klinikum St.GEORG

Ma et al., Nephrol Dial Transplant, 2025, gfaf265

Sorge vor vermehrten Harnwegsinfektionen unter SGLT2i Therapie



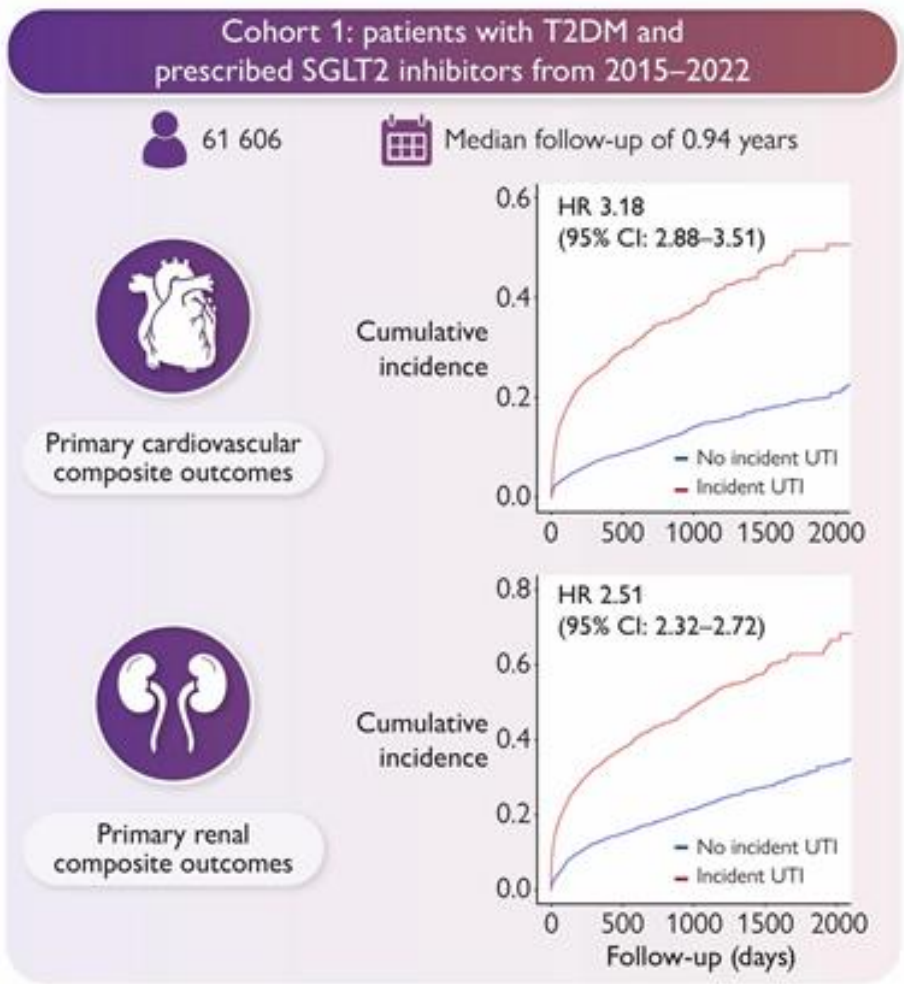
Severe UTI risk in SGLT2 inhibitors compared with GLP1-RAs, non-GLP-1RAs, and DPP4 inhibitors.

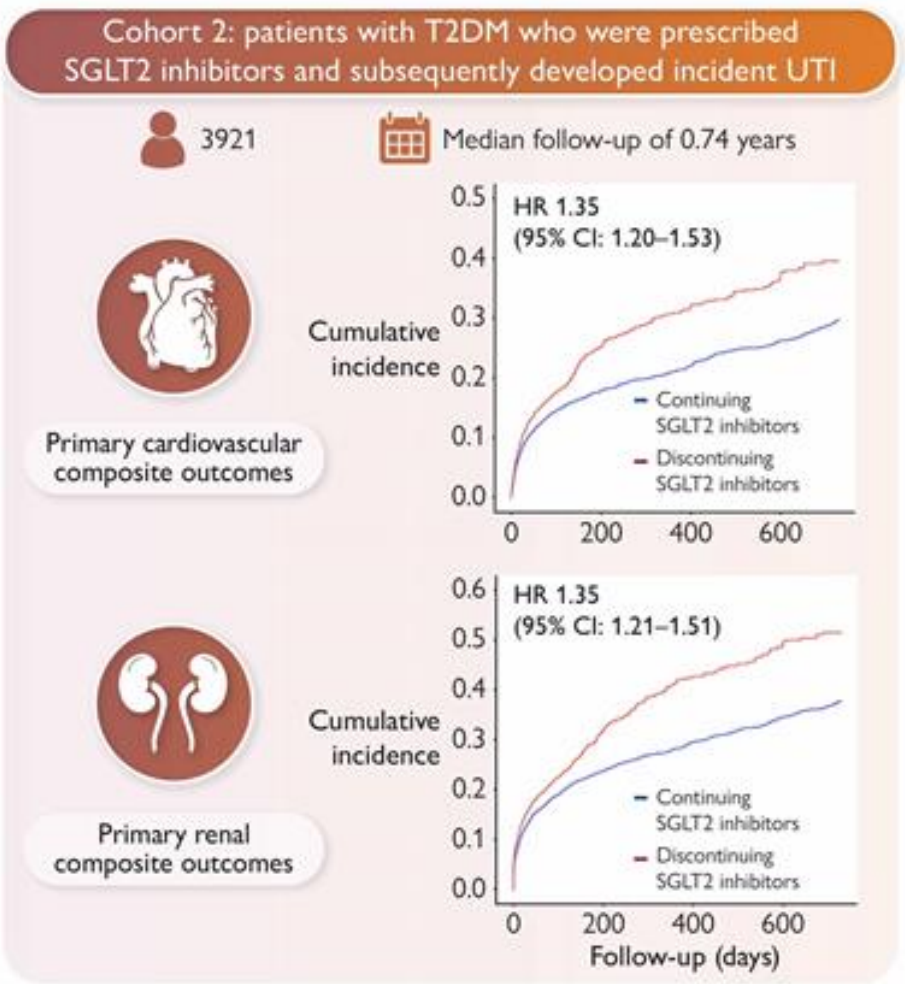


Klinikum St.GEORG

Aboukaoud M et al., Annals of Pharmacotherapy. 2025

Urinary tract infection and continuation of SGLT2i





Following a UTI, 32.31% of patients discontinued SGLT2i

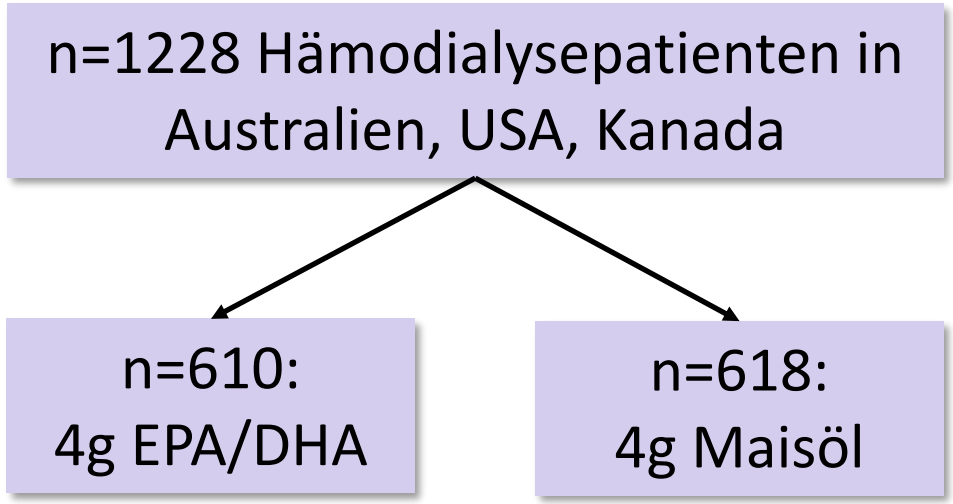
Discontinuation was associated with a higher cardiovascular (HR: 1.35) and renal (HR: 1.35) risks compared to continued use

Risk of recurrent UTI was similar (HR: 0.96, 95% CI: 0.22–4.29).

Klinikum St.GEORG

Wu et al., Eur Heart Journal, Oct. 2025, ehaf788

Fischöl (EPA/DHA) bei Dialysepatienten: Die PISCES Studie



3,5 Jahre Follow-up
Endpunkt: Cardiac death, MI, stroke, amputation

4 g of fish oil
(steam de-odorized, 4 citrus flavored 1g capsules with a total of 1.6g EPA and 0.8g DHA)

Klinikum St.GEORG

Lok et al., NEJM Nov 2025

Review > SAGE Open Med. 2024 Sep 10:12:20503121241275467.
doi: 10.1177/20503121241275467. eCollection 2024.

Effectiveness of fish oil in controlling inflammation in adult patients undergoing hemodialysis: A systematic review and meta-analysis

Kaneez Fatima [1], Aysal Mahmood [1], Faiza Zafar Sayeed [1], Maryam Raza [1], Rahima Azam [1], Nazish Waris [2], Muttia Abdul Sattar [3], Teesha Rani [4], Zainab Wahaj [5], Danisha Kumar [1], Simra Nadeem Siddiqui [6]

Hemodialysis patients, especially those with C-reactive protein > 5 mg/L, responded to fish oil supplementation to reduce their C-reactive protein level

Original Investigation FREE

Effect of High-Dose Omega-3 Fatty Acids vs Corn Oil on Major Adverse Cardiovascular Events in Patients at High Cardiovascular Risk

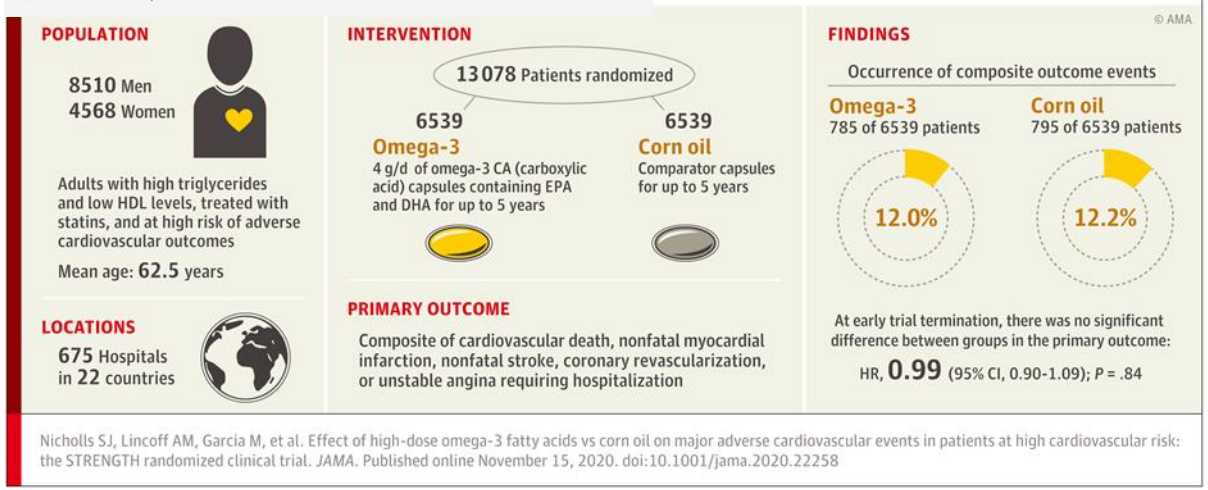
The STRENGTH Randomized Clinical Trial

Stephen J. Nicholls, MBBS, PhD[1]; A. Michael Lincoff, MD[2]; Michelle Garcia, RN, BSN, CCRC[2]; et al

Author Affiliations | Article Information

lycerides, and low HDL cholesterol, does adding a carboxylic
nt improve cardiovascular outcomes?

this omega-3 fatty acid formulation to reduce major adverse



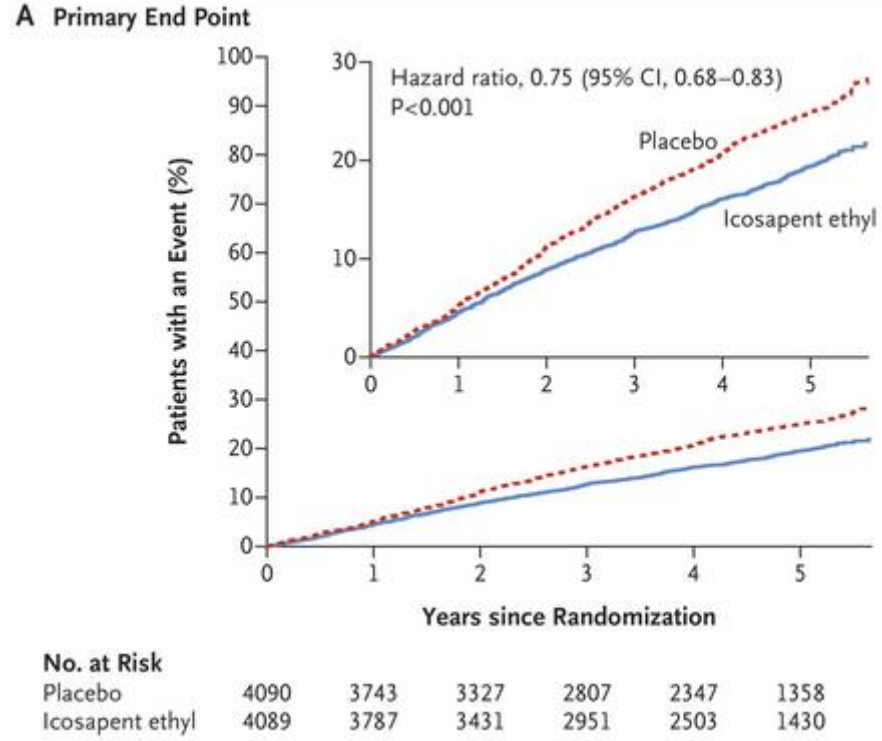
Nicholls SJ, Lincoff AM, Garcia M, et al. Effect of high-dose omega-3 fatty acids vs corn oil on major adverse cardiovascular events in patients at high cardiovascular risk: the STRENGTH randomized clinical trial. *JAMA*. Published online November 15, 2020. doi:10.1001/jama.2020.22258

ORIGINAL ARTICLE

Cardiovascular Risk Reduction with Icosapent Ethyl for Hypertriglyceridemia

Authors: Deepak L. Bhatt, M.D., M.P.H., P. Gabriel Steg, M.D., Michael Miller, M.D., Eliot A. Brinton, M.D., Terry A. Jacobson, M.D., Steven B. Ketchum, Ph.D., Ralph T. Doyle, Jr., B.A., +5, for the REDUCE-IT Investigators* Author Info & Affiliations

Published November 10, 2018 | N Engl J Med 2019;380:11-22 | DOI: 10.1056/NEJMoa1812792 | VOL. 380 NO. 1

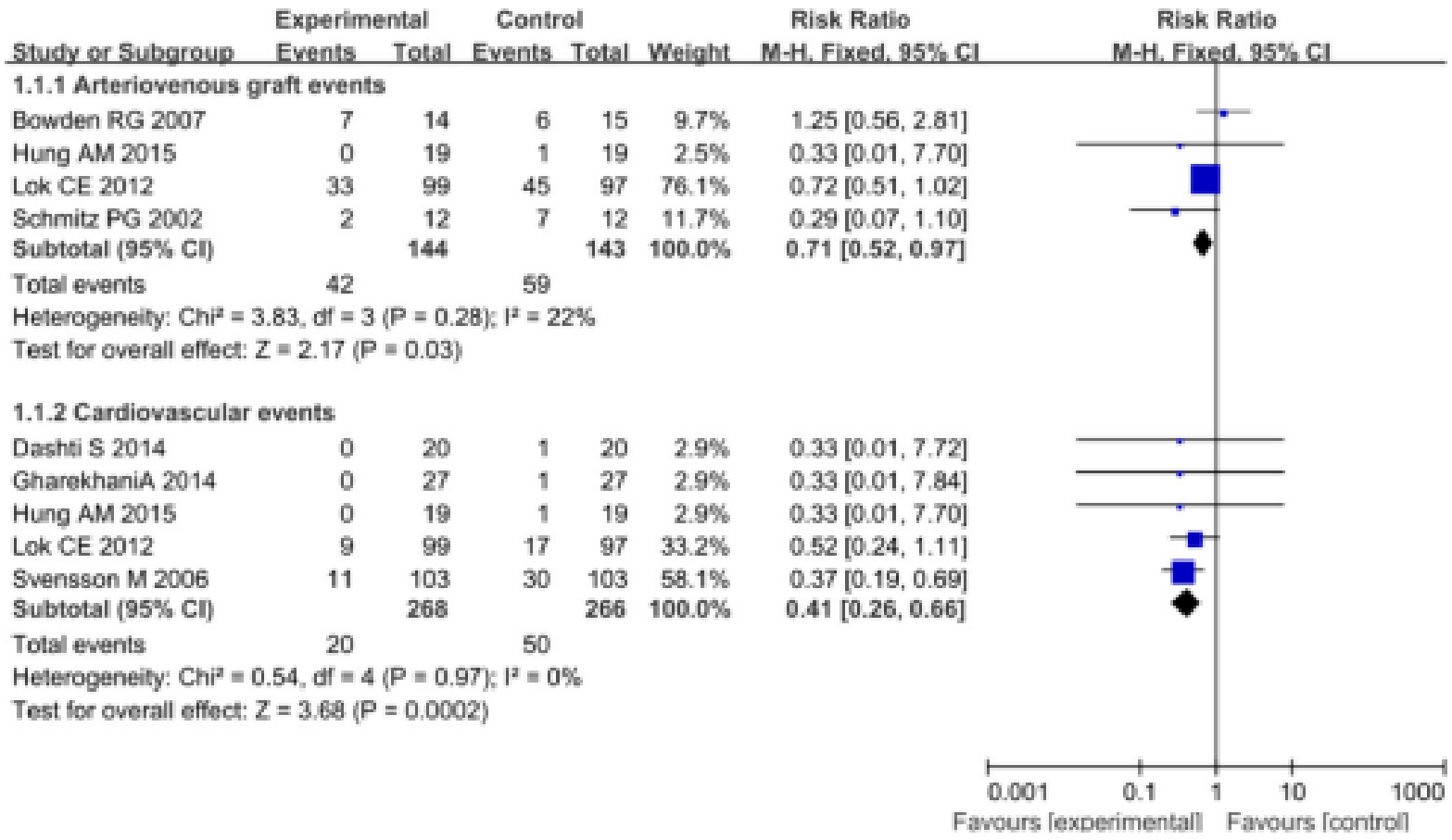


composite end point of cardiovascular death, nonfatal myocardial infarction, nonfatal stroke, coronary revascularization, or unstable angina

Klinikum St.GEORG

Bhatt et al., N Engl J Med 2019;380:11-22

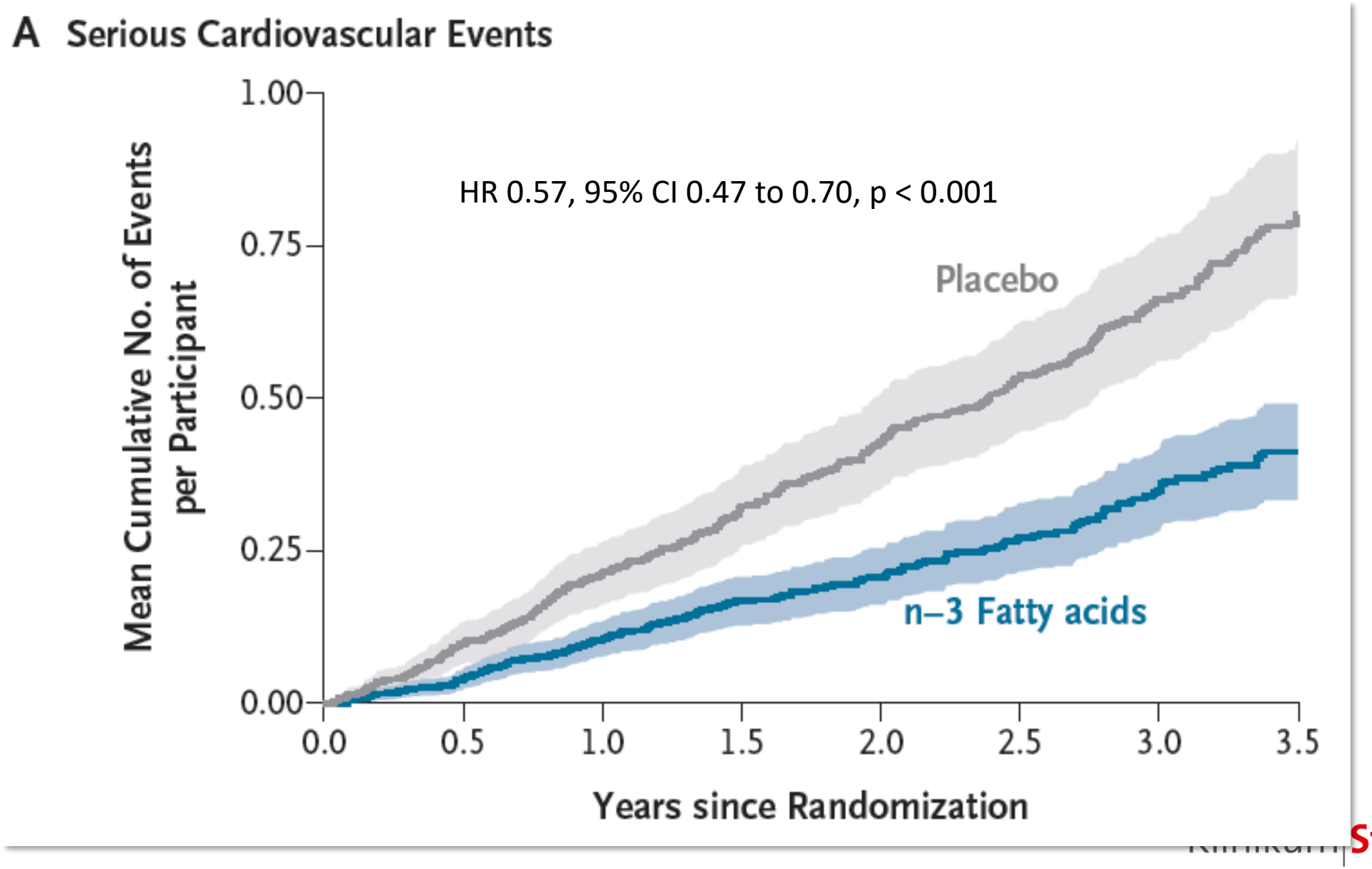
effect of fish oil versus control on AV graft events and cardiovascular events in maintenance HD patients



Study or Subgroup	Experimental Events	Experimental Total	Control Events	Control Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.1.1 Arteriovenous graft events						
Bowden RG 2007	7	14	6	15	9.7%	1.25 [0.56, 2.81]
Hung AM 2015	0	19	1	19	2.5%	0.33 [0.01, 7.70]
Lok CE 2012	33	99	45	97	76.1%	0.72 [0.51, 1.02]
Schmitz PG 2002	2	12	7	12	11.7%	0.29 [0.07, 1.10]
Subtotal (95% CI)		**144**		**143**	**100.0%**	**0.71 [0.52, 0.97]**
Total events	42		59			
Heterogeneity: Chi² = 3.83, df = 3 (P = 0.28); I² = 22%						
Test for overall effect: Z = 2.17 (P = 0.03)						
1.1.2 Cardiovascular events						
Dashti S 2014	0	20	1	20	2.9%	0.33 [0.01, 7.72]
GharekhaniA 2014	0	27	1	27	2.9%	0.33 [0.01, 7.84]
Hung AM 2015	0	19	1	19	2.9%	0.33 [0.01, 7.70]
Lok CE 2012	9	99	17	97	33.2%	0.52 [0.24, 1.11]
Svensson M 2006	11	103	30	103	58.1%	0.37 [0.19, 0.69]
Subtotal (95% CI)		**268**		**266**	**100.0%**	**0.41 [0.26, 0.66]**
Total events	20		50			
Heterogeneity: Chi² = 0.54, df = 4 (P = 0.97); I² = 0%						
Test for overall effect: Z = 3.68 (P = 0.0002)						

Klinikum St.GEORG

He et al., Eur J Clin Pharmacol 2015



St.GEORG

Lok et al., NEJM Nov 2025

PISCES: Sek. Endpunkte

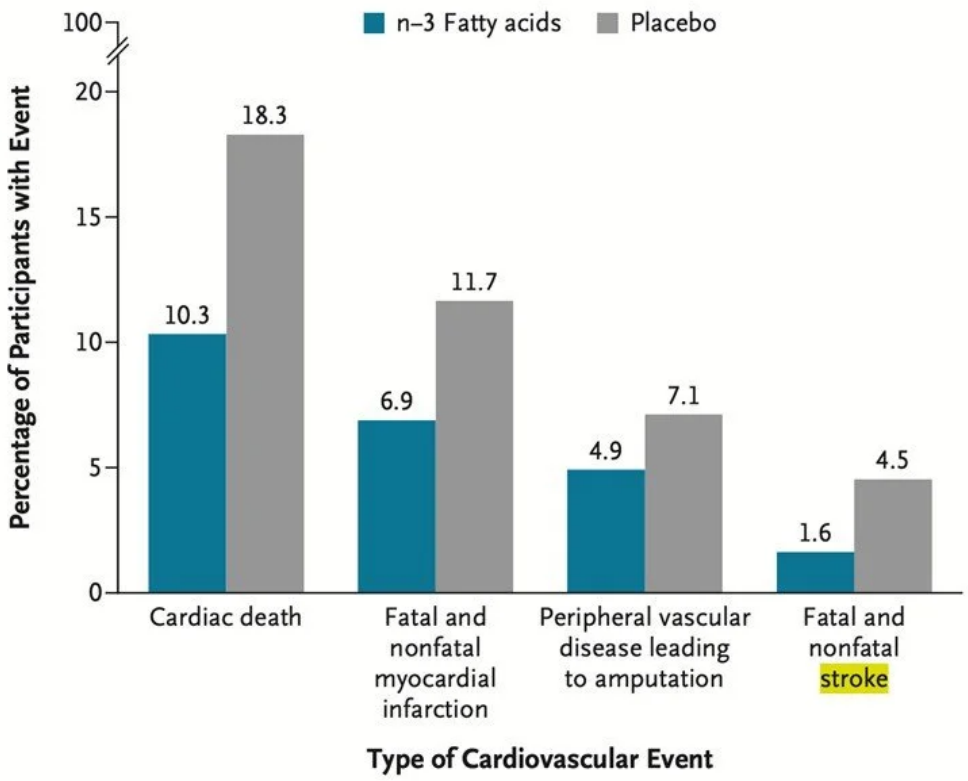


Table 2. Primary and Secondary End Points.*

End Point	Fish Oil		Placebo		Hazard Ratio (95% CI)†
	No. of Events	Rate (no. per 1000 patient-days)	No. of Events	Rate (no. per 1000 patient-days)	
Primary end point					
Primary end-point events among all participants	158	0.31	309	0.61	0.57 (0.47–0.70)
Primary end-point events in subgroups based on history of a cardiovascular event at baseline					
Previous cardiovascular event	81	0.43	164	0.91	0.50 (0.37–0.67)
No previous cardiovascular event	77	0.24	145	0.45	0.55 (0.40–0.76)
Secondary end points					
Primary end-point events plus noncardiac death	266	0.52	381	0.76	0.77 (0.65–0.90)
Death from any cause	175	0.34	195	0.39	0.89 (0.73–1.01)
Components of the primary end point					
Cardiac death	63	0.12	113	0.22	0.55 (0.40–0.75)
Fatal and nonfatal myocardial infarction	49	0.10	96	0.19	0.56 (0.40–0.80)
Peripheral vascular disease leading to amputation	35	0.07	66	0.13	0.57 (0.38–0.86)
Fatal and nonfatal stroke	11	0.02	34	0.07	0.37 (0.18–0.76)
First cardiovascular event or death from any cause	215	0.45	270	0.60	0.73 (0.61–0.87)

All cause death (HR 0.89, 95% CI 0.73 to 1.01)

Klinikum St.GEORG

Lok et al., NEJM Nov 2025

THE “TOO GOOD TO BE TRUE” CAUTION

The NEW ENGLAND JOURNAL of MEDICINE

EDITORIAL

Fish Oil for Patients Receiving Hemodialysis — Red Herring or Great Catch?

Finnian R. Mc Causland, M.B., B.Ch., M.M.Sc.,[1] and David M. Charytan, M.D.[2]

35% mehr Todesfälle (112 vs 82 aus nicht-kardiovaskulärer Ursache

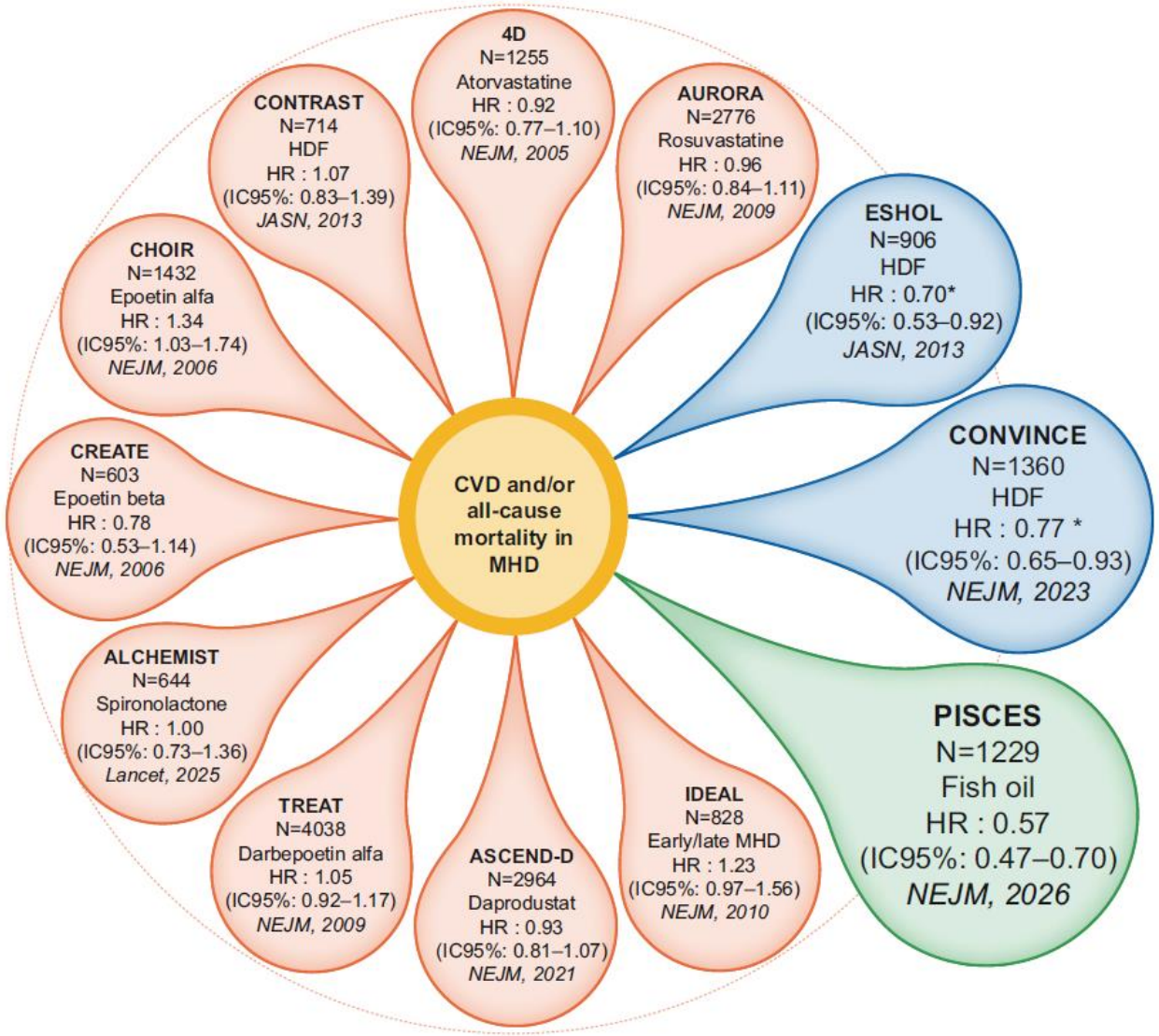
Aber: All cause death (HR 0.89, 95% CI 0.73 to 1.01)

Klinikum St.GEORG

Causland et al., NEJM 2025

D. Fouque and L. Koppe, Nephrol Dial Transplant , 2026

Outcomestudien in Dialysepatienten

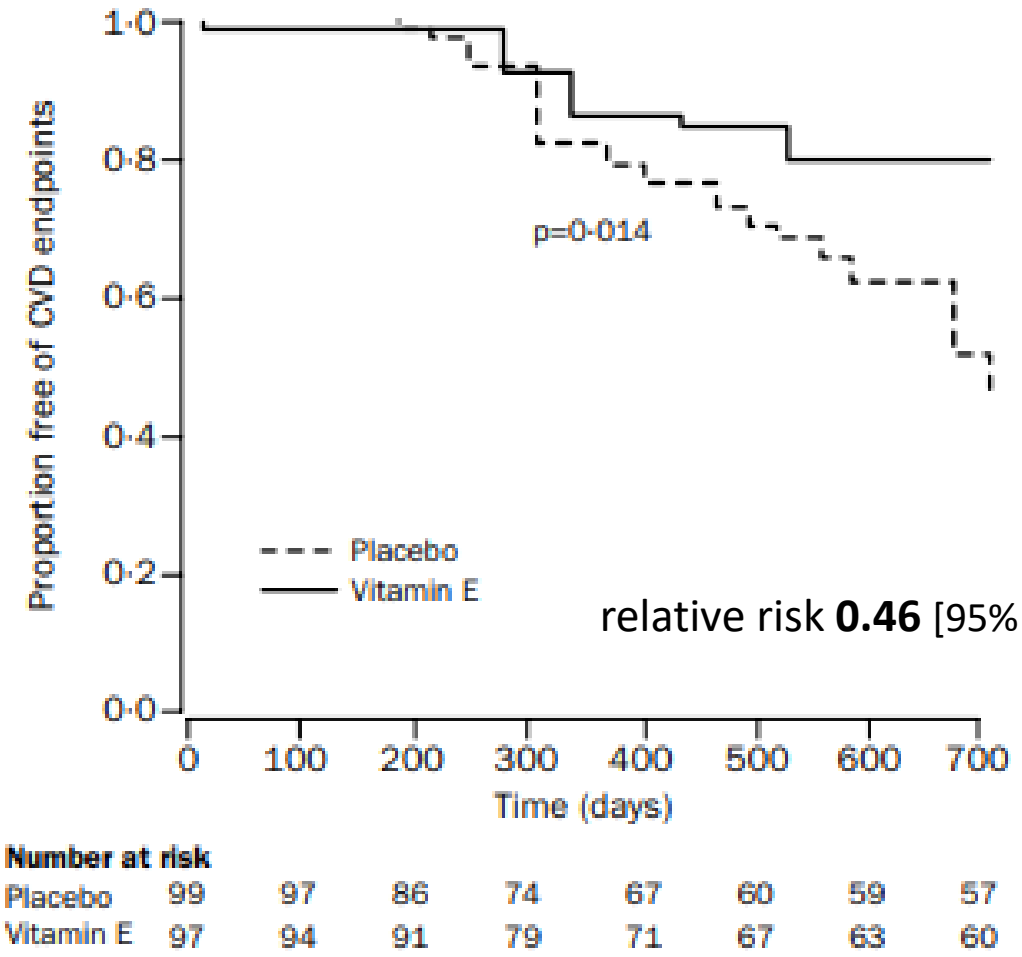


Klinikum St.GEORG

Fouque and Koppe. Nephrol Dial Transplant, 2026

Haemodialysis patients with pre-existing cardiovascular disease:
RCT: 800 IU/day **Vitamin E** or placebo

THE LANCET



relative risk **0.46** [95% CI 0.27-0.78], p=0.014

primary cardiovascular-disease endpoint

myocardial infarction (fatal and non-fatal), ischaemic stroke, peripheral vascular disease (excluding the arteriovenous fistula), and unstable angina

Klinikum St.GEORG

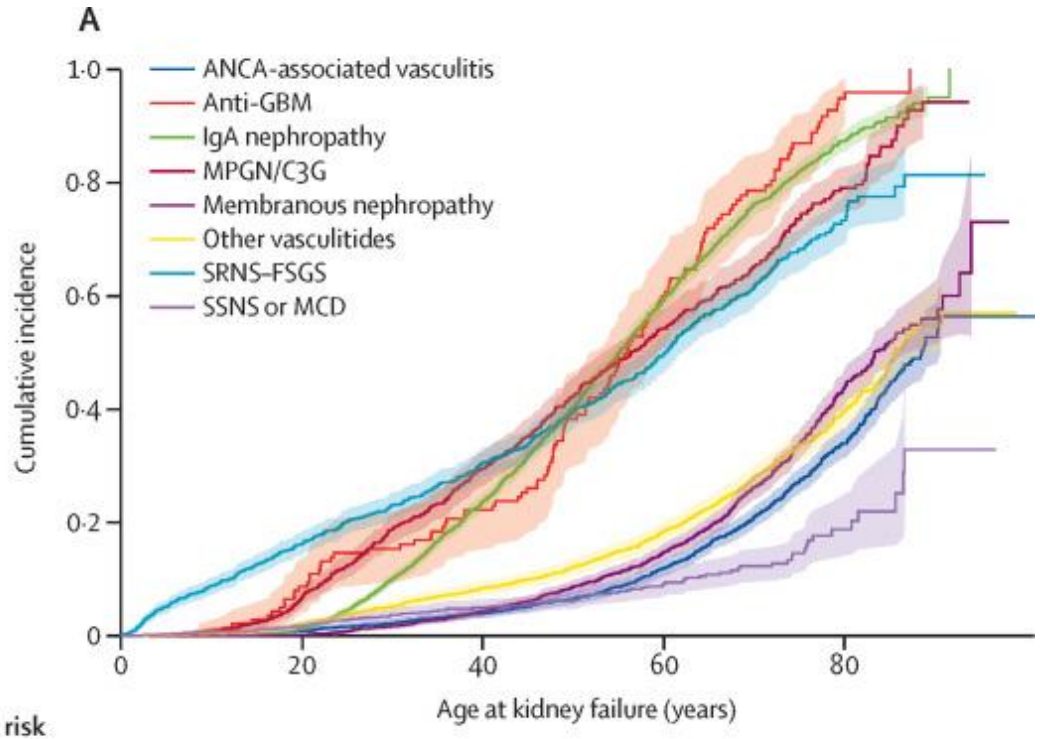
Boaz Met al., Lancet. 2000 Oct 7;356(9237):1213-8.

Wenn ich selbst an der Dialyse wäre….

Feature	PISCES Fish Oil (Study)
Formulation	Ethyl esters of omega-3s
Daily total dose	4 g
EPA content (4 capsules)	1.6 g/day
DHA content (4 capsules)	0.8 g/day
EPA:DHA ratio	~2:1

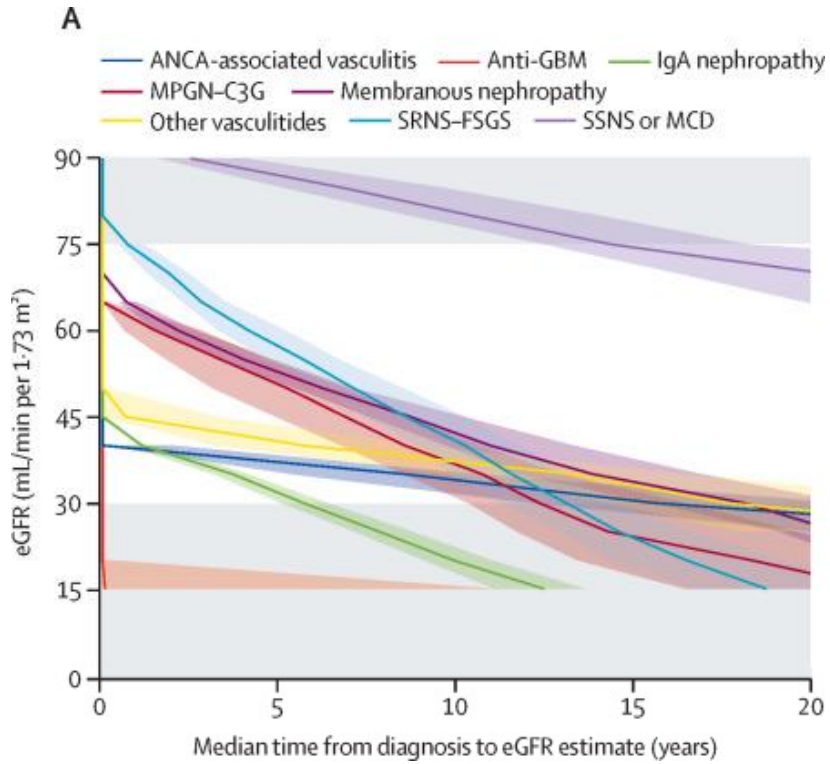
Klinikum St.GEORG

cumulative incidence of kidney failure for glomerular (A) and cystic kidney diseases (B)



Number at risk (number censored)					
ANCA-associated vasculitis	2375 (0)	2344 (10)	2183 (98)	1697 (413)	425 (1390)
Anti-GBM	137 (0)	125 (0)	102 (5)	51 (7)	4 (13)
IgA nephropathy	4147 (0)	4043 (51)	2741 (481)	959 (1193)	79 (1619)
MPGN–C3G	1089 (0)	933 (85)	585 (228)	293 (332)	36 (481)
Membranous nephropathy	2439 (0)	2425 (8)	2209 (126)	1535 (582)	281 (1514)
Other vasculitides	2331 (0)	2062 (221)	1750 (405)	1286 (694)	319 (1427)
SRNS–FSGS	1536 (0)	1094 (203)	727 (403)	364 (598)	40 (809)
SSNS or MCD	1705 (0)	1092 (588)	715 (933)	373 (1252)	60 (1546)

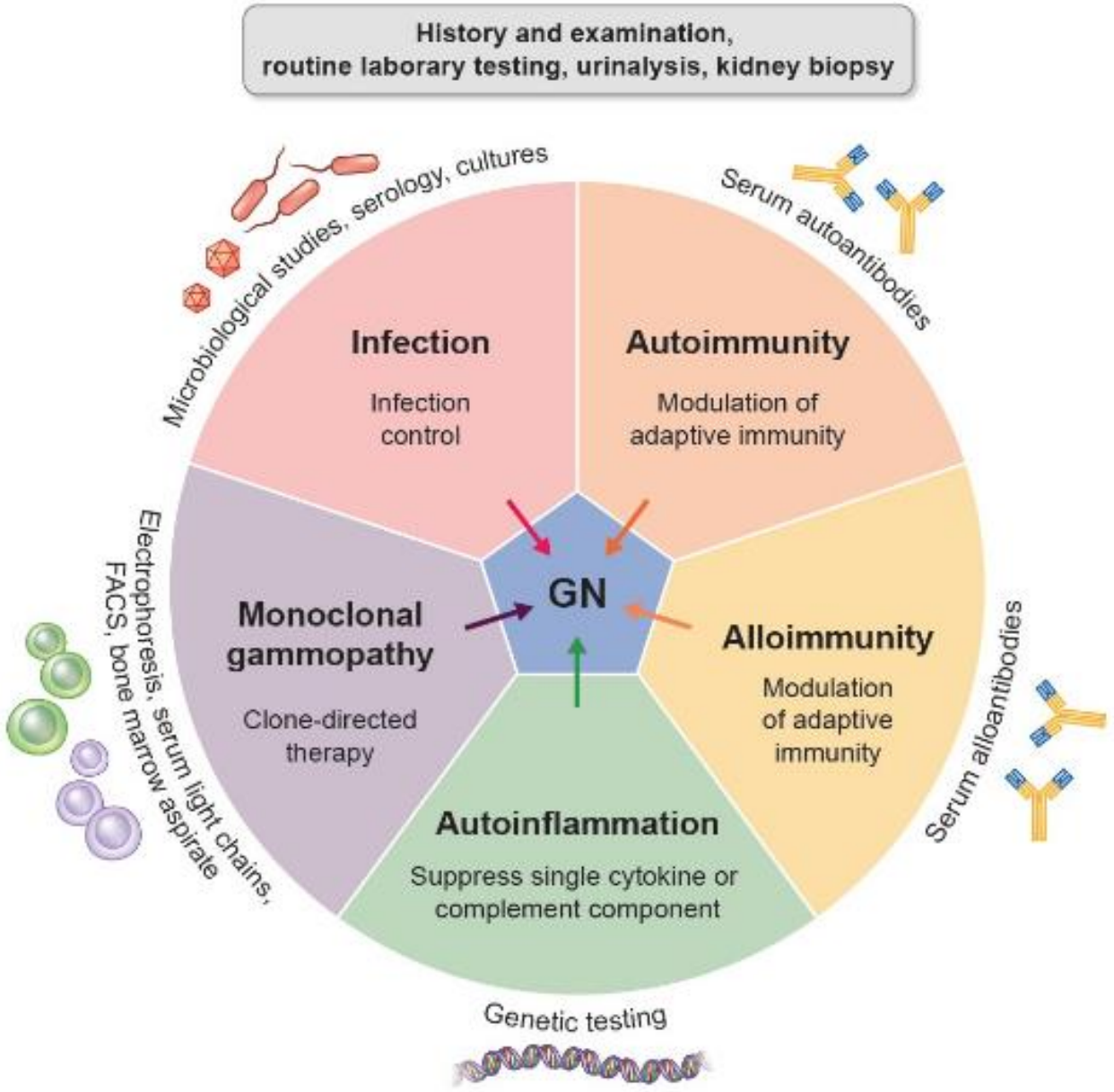
median time from diagnosis to eGFR value for glomerular



Klinikum St.GEORG

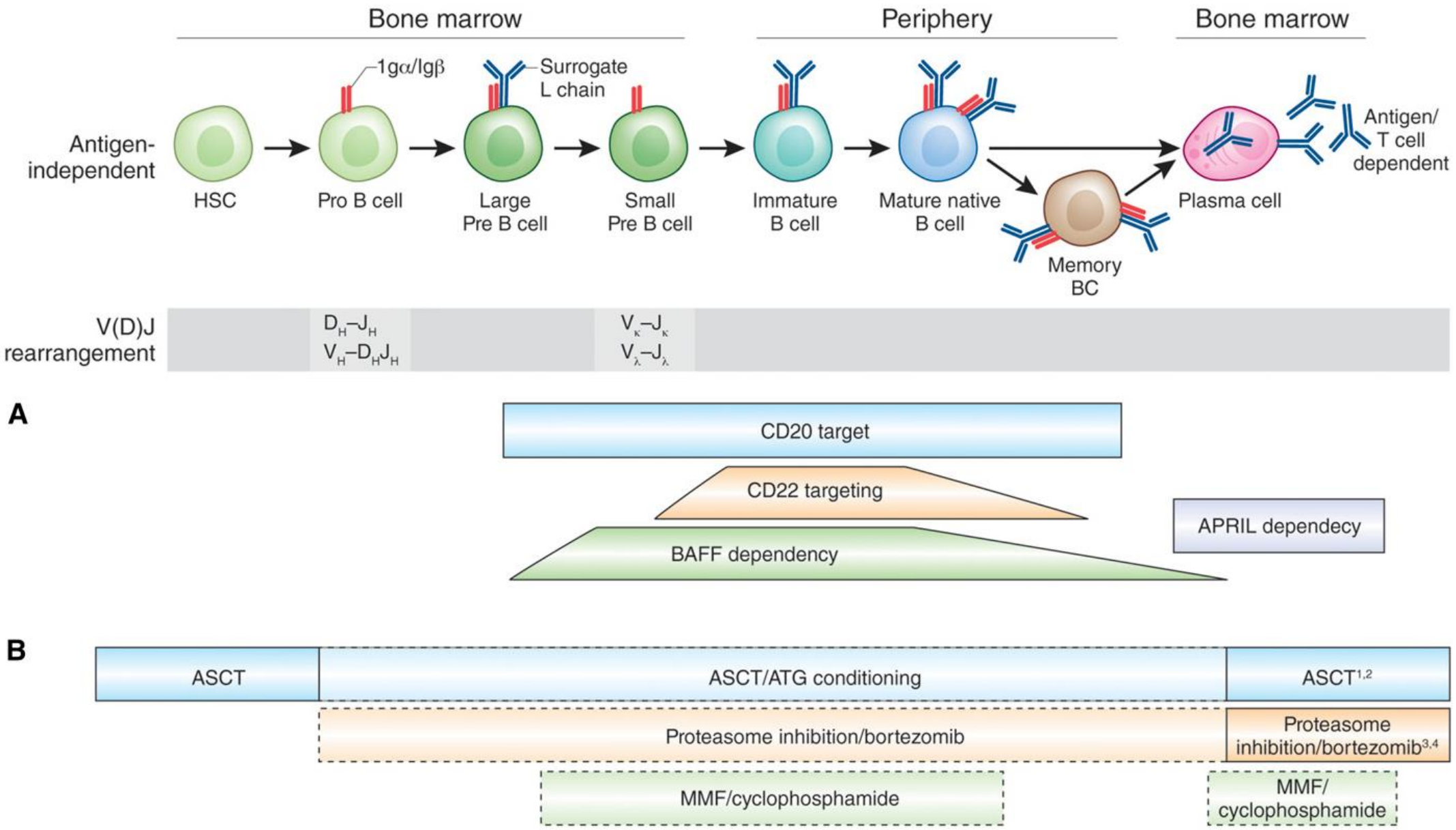
Wong et al., The Lancet, 2024

New classification of glomerulonephritis by pathogenesis



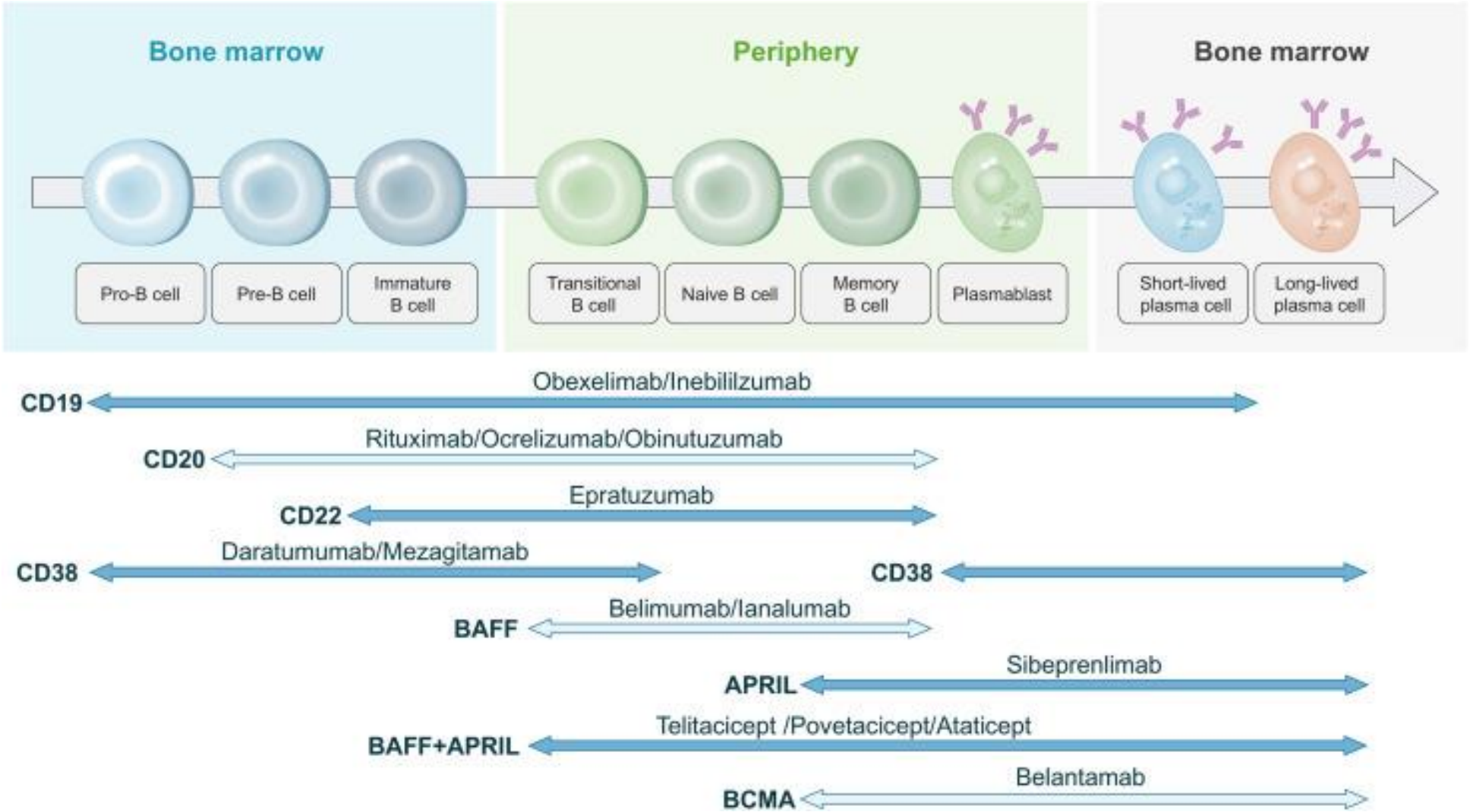
Klinikum St.GEORG

Interventions and their potential to target distinctly B lineage subsets and plasma cells



Schrezenmeier et al., JASN 2018

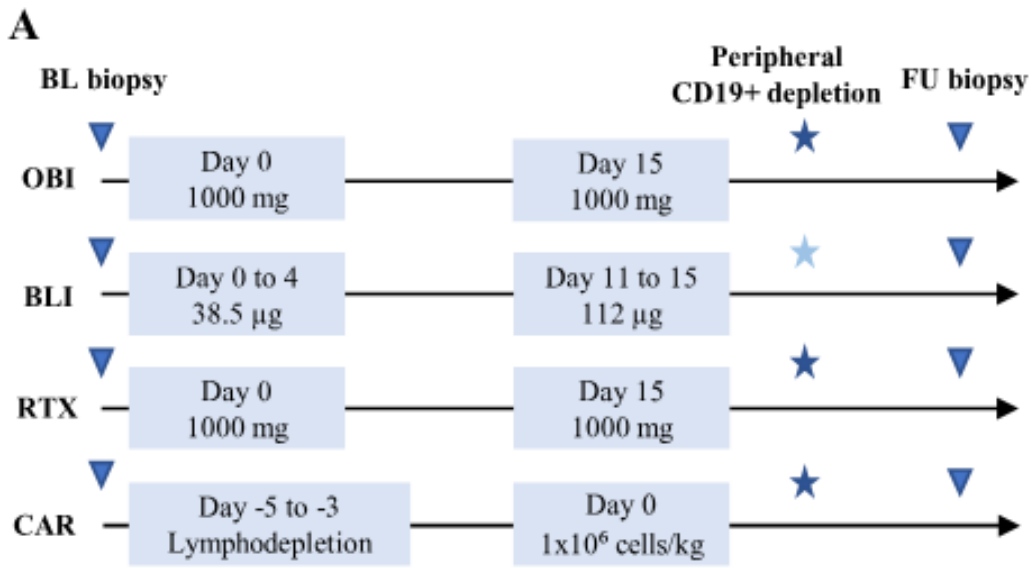
B-cell development and therapeutic targets

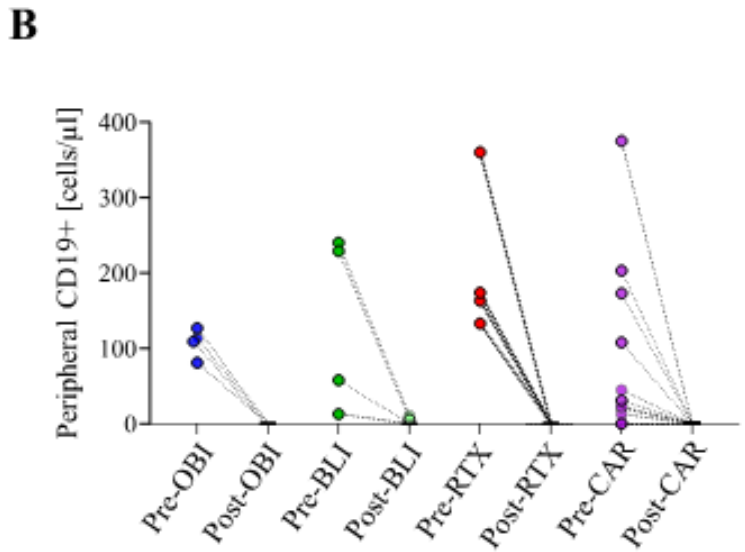


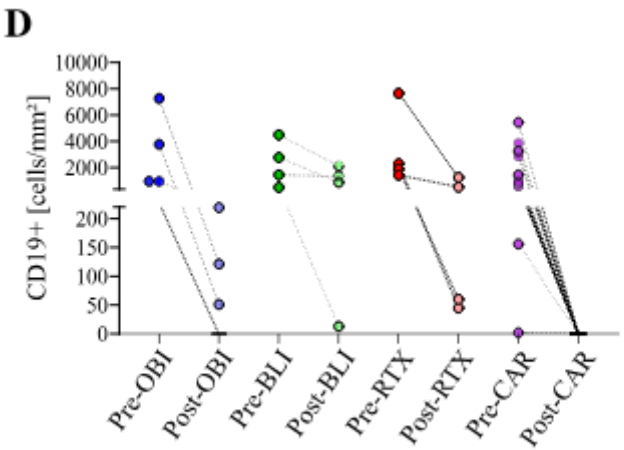
Klinikum St.GEORG

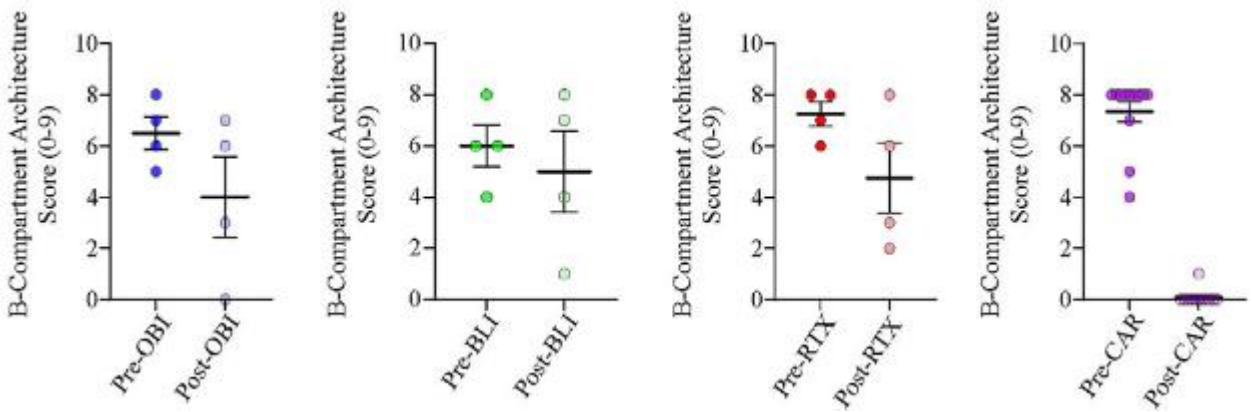
Peng et al., AJKD 2025

Effects of different B-cell-depleting strategies on the lymphatic tissue





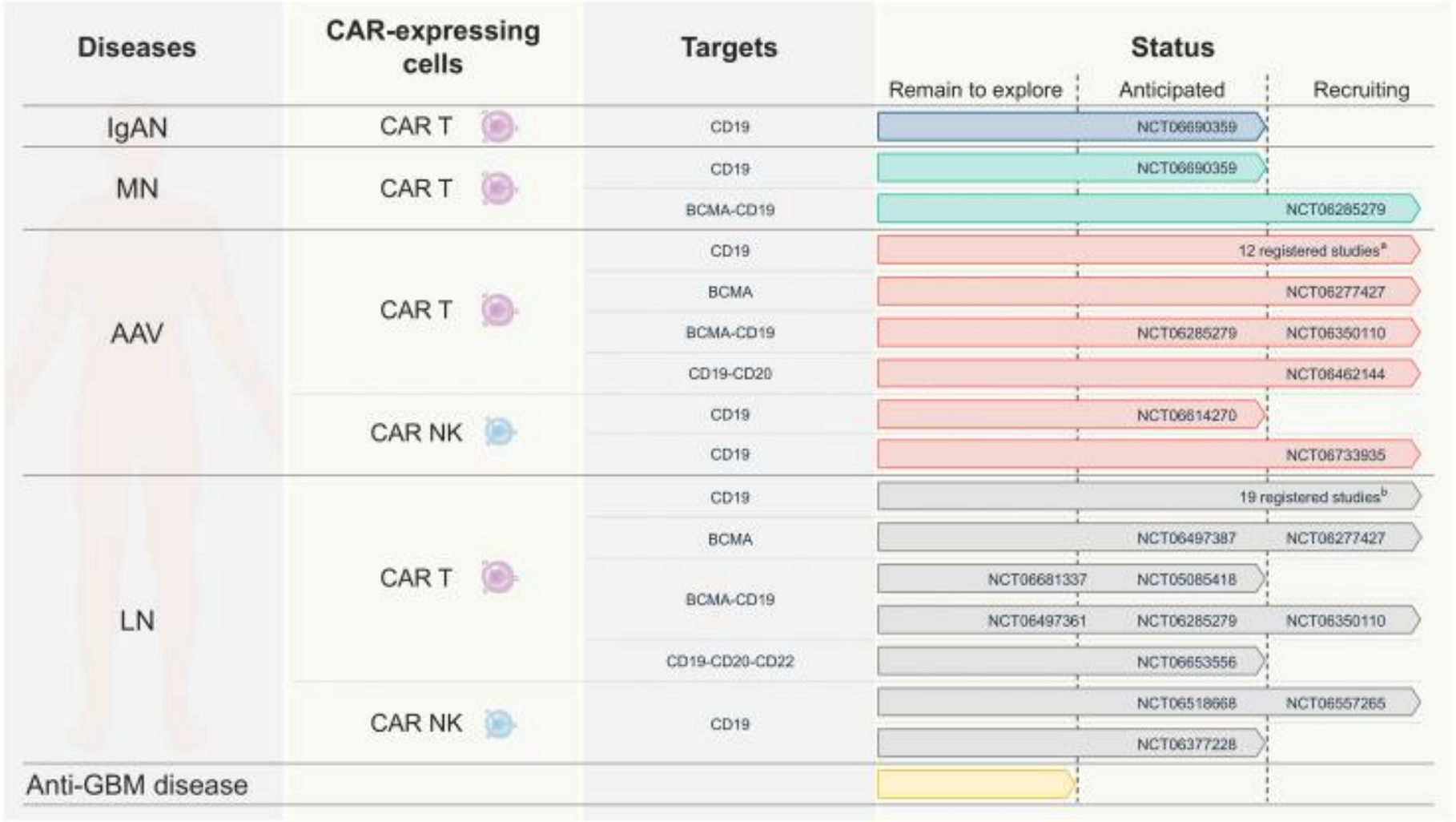




Klinikum St.GEORG

Tur C et al., Ann Rheum Dis. 2025

Laufende CAR Zell Studien bei immun-vermittelten Nierenerkrankungen



Klinikum St.GEORG

Peng et al., AJKD 2025

The NEW ENGLAND JOURNAL of MEDICINE

CURRENT ISSUE SPECIALTIES TOPICS

ATTENTION:Due to global market conditions, you may experience a delivery delay for your print issue of the New England Journal of Medic
website. We regret any print delays and are working to ensure all issues are delivered as soon as possible.

ORIGINAL ARTICLE

CD19 CAR T-Cell Therapy in Autoimmune Disease — A Case Series with Follow-up

Authors: Fabian Müller, M.D., Jule Taubmann, M.D., Laura Bucci, M.D., Artur Wilhelm, Ph.D., Christina Bergmann, M.D., Simon Völkl, Ph.D., Michael Aigner, Ph.D., +20 , and Georg Schett, M.D. Author Info & Affiliations

Published February 21, 2024 | N Engl J Med 2024;390:687-700 | DOI: 10.1056/NEJMoa2308917 | VOL. 390 NO. 8

nature medicine

Explore content About the journal Publish with us

nature > nature medicine > articles > article

Article | Open access | Published: 07 January 2026

CD19 CAR-T cells for treatment-refractory autoimmune diseases: the phase 1/2 CASTLE basket trial

Fabian Müller, Melanie Hagen, Andreas Wirsching, Soraya Kharboutli, Michael Aigner, Simon Völkl, Sascha Kretschmann, Koray Tascilar, Jule Taubmann, Laura Bucci, Maria Gabriella Raimondo, Christina Bergmann, Tobias Rothe, Giulia Corte, Carlo Tur, Luis Muñoz, Sebastian Böltz, Louis Schuster, Fabian Hartmann, Panagiotis Garantziotis, Silvia Spörl, Ingrid Vasova, Armin Gerbitz, Bernd Spriewald, ... Georg Schett

+ Show authors

MEETING REPORT · Volume 57, Issue 12, P2705-2709, December 10, 2024 · *Open Archive*

Download Full Issue

CAR T cells in autoimmune disease: On the road to remission

Georg Schett [1,2] · Carl H. June [3]

Affiliations & Notes Article Info

Klinikum | St.GEORG

Vielen Dank

Wir bauen **Zukunft**. Für Ihre **Gesundheit**.

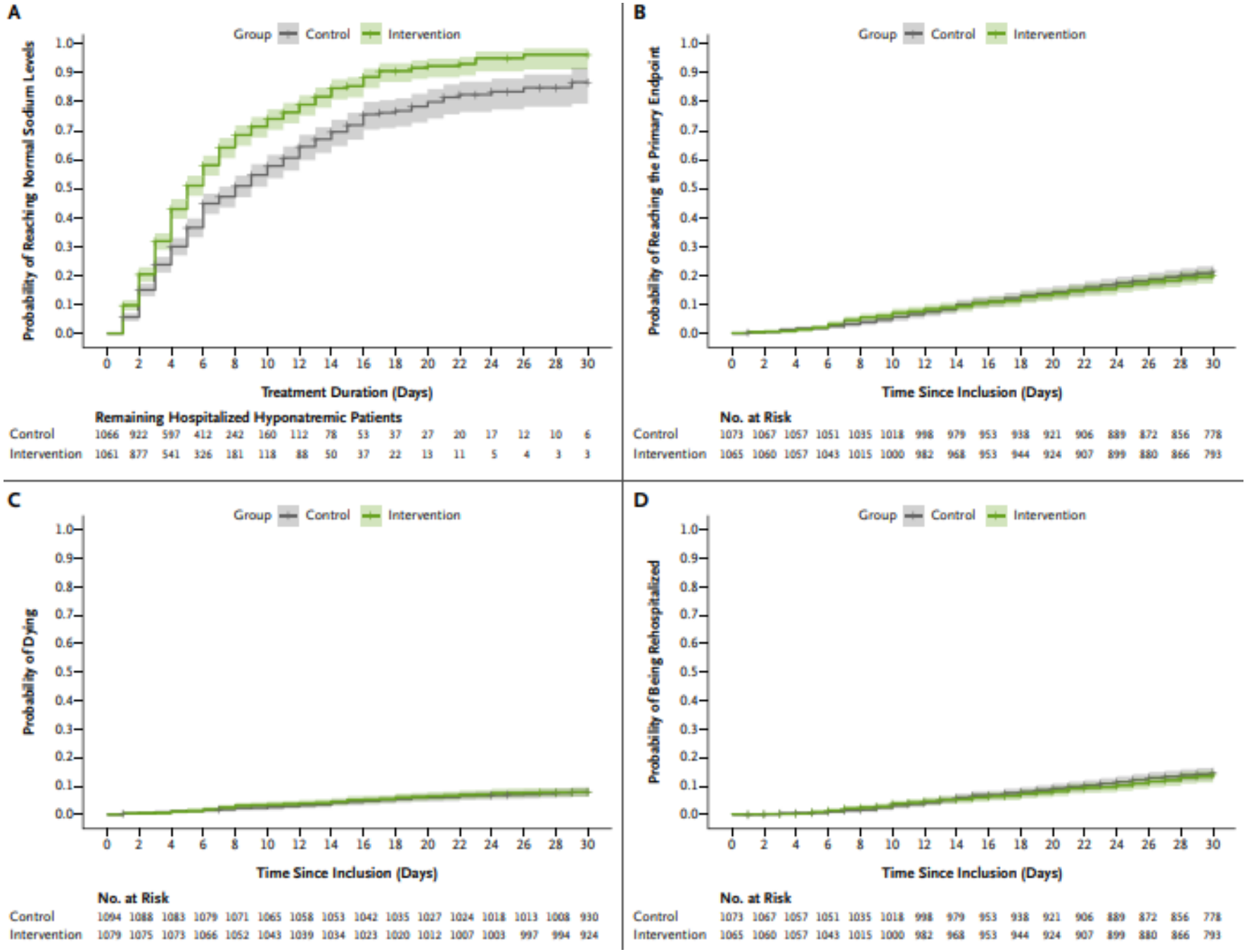
NEJM Evidence

Published February 24, 2026
NEJM Evid 2026;5(3)
DOI: 10.1056/EVIDoa2500086

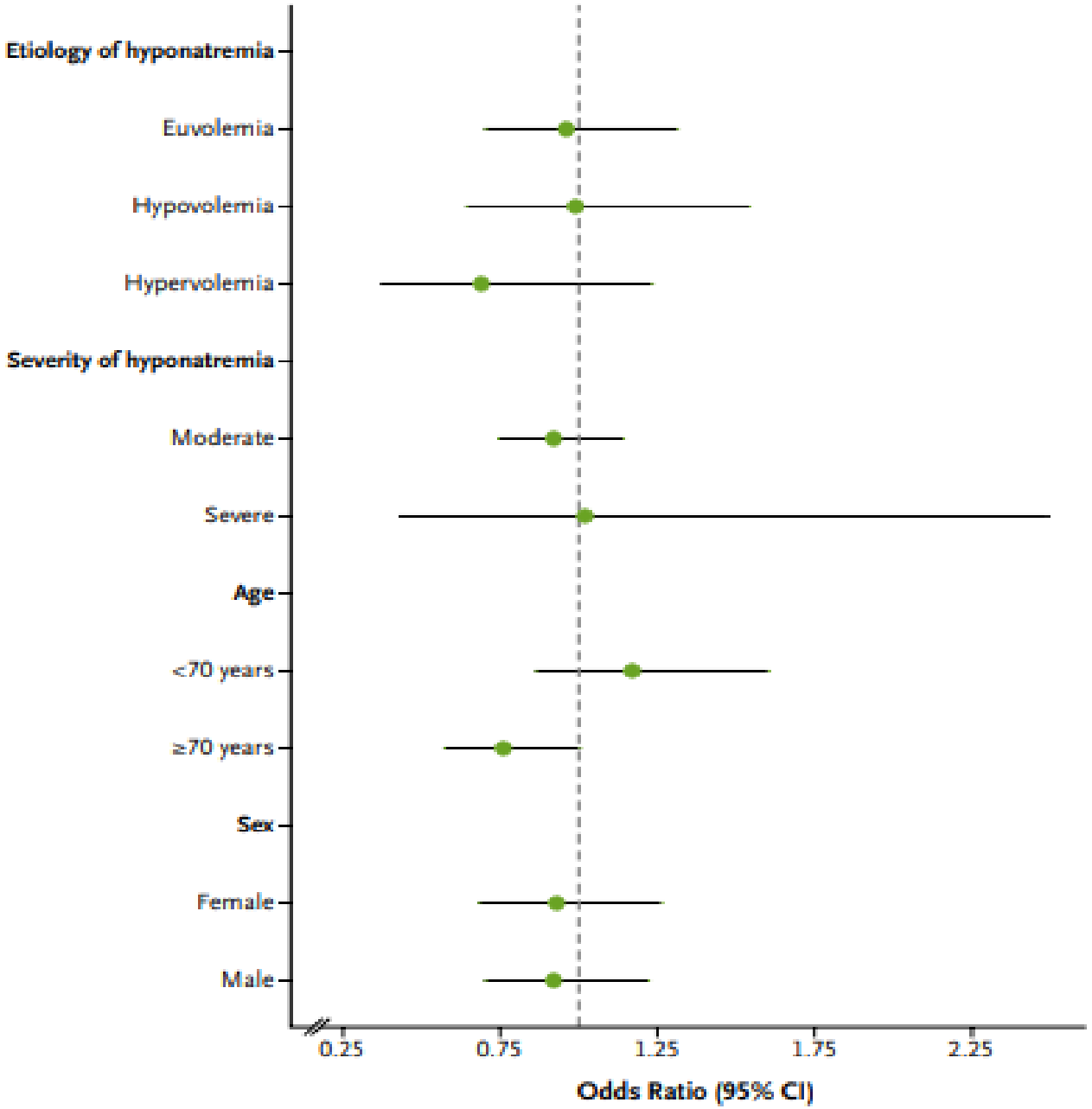
ORIGINAL ARTICLE

A Randomized Trial of Targeted Hyponatremia Correction in Hospitalized Patients

Julie Refardt, M.D., Ph.D.,[1,2,3] Laura Potasso, M.D., Ph.D.,[1,2,4] Anissa Pelouto, M.D.,[3] Moritz Trappe, M.D.,[5,6] Claudia Gregoriano, Ph.D.,[7] Markus Koster, M.D.,[8] Ivana Dora Vodanovic, M.D.,[9] Dario Norello, M.D., Ph.D.,[10] Svenja Ravioli, M.D.,[11,12] Sadrija Cukoski, M.D.,[5,6] Maria Boesing, M.D., Ph.D.,[2,4] Basil Ryser, M.D.,[11] Lana Sambula, M.D.,[9] Nikola Rapsch, M.D.,[5,6] Sophie Monnerat, M.D., Ph.D.,[1,2] Julia Beck, M.D.,[1,2] Sven Lustenberger, M.D.,[1,2] Deborah R. Vogt, Ph.D.,[2] Laura Werlen, Ph.D.,[2] Joyce Santos de Jesus, RN,[1,2] Martina Bontognali, M.D.,[8] Philipp Schuetz, M.D.,[7] Adrienne A.M. Zandbergen, M.D., Ph.D.,[3] Alessandro Peri, M.D., Ph.D.,[10,13] Darko Kastelan, M.D., Ph.D.,[9] Gregor Lindner, M.D.,[11,12] Joerg Leuppi, M.D., Ph.D.,[2,4] Stefan Bilz, M.D.,[8] Beat Mueller, M.D.,[7] Volker Burst, M.D.,[5,6] Ewout J. Hoorn, M.D., Ph.D.,[3] and Mirjam Christ-Crain, M.D., Ph.D.,[1,2] for the HIT study investigators*



Refardt J et al. NEJM Evid2026;5:EVIDoa2500086



Refardt J et al. NEJM Evid2026;5:EVIDoa2500086

Table 2. Hyponatremia Treatment.*

	Overall (N=2173)	Control (N=1094)	Intervention (N=1079)
Main treatment of hyponatremia† — n (%)			
No treatment	411 (19)	384 (35)	27 (2.5)
Isotonic fluids	526 (24)	253 (23)	273 (25)
Fluid restriction	711 (33)	280 (26)	431 (40)
Oral urea	182 (8)	25 (2.3)	157 (15)
Vaptans	66 (3)	16 (1.5)	50 (4.1)
Other	238 (11)	123 (11)	115 (11)
Specific information missing	39 (2)	13 (1.2)	26 (2.4)
Number of different treatments used — n (%)			
0/missing information	450 (21)	397 (36)	53 (5)
1	781 (36)	363 (33)	418 (39)
2	537 (25)	207 (19)	330 (31)
3	259 (12)	87 (8)	172 (16)
≥4	146 (7)	40 (4)	106 (10)

Refardt J et al. NEJM Evid2026;5:EVIDoa2500086

In addition, our data provide no evidence for a correlation between center-specific rates for reaching normonatremia and the primary outcome (Fig. S4).

POST HOC ANALYSES

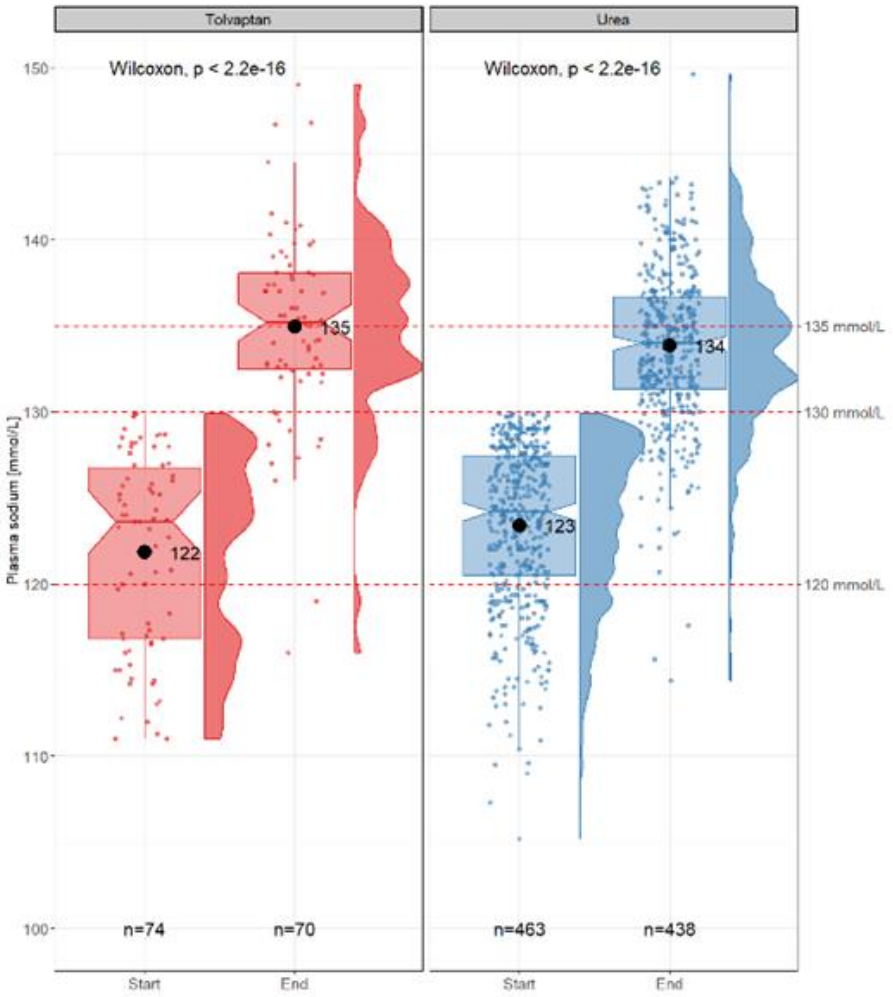
No differences in the primary outcome were observed between the main hyponatremia treatments (descriptive evaluation; Table S6). We note a possible association of the effect of the intervention with the Charlson Comorbidity Index (odds ratio, 0.9; 95% CI, 0.81 to 1.00). Reaching a normal plasma sodium level at discharge, regardless of the treatment group, was associated with decreased odds of the primary outcome of death or rehospitalization within 30 days (odds ratio, 0.74; 95% CI, 0.60 to 0.91).

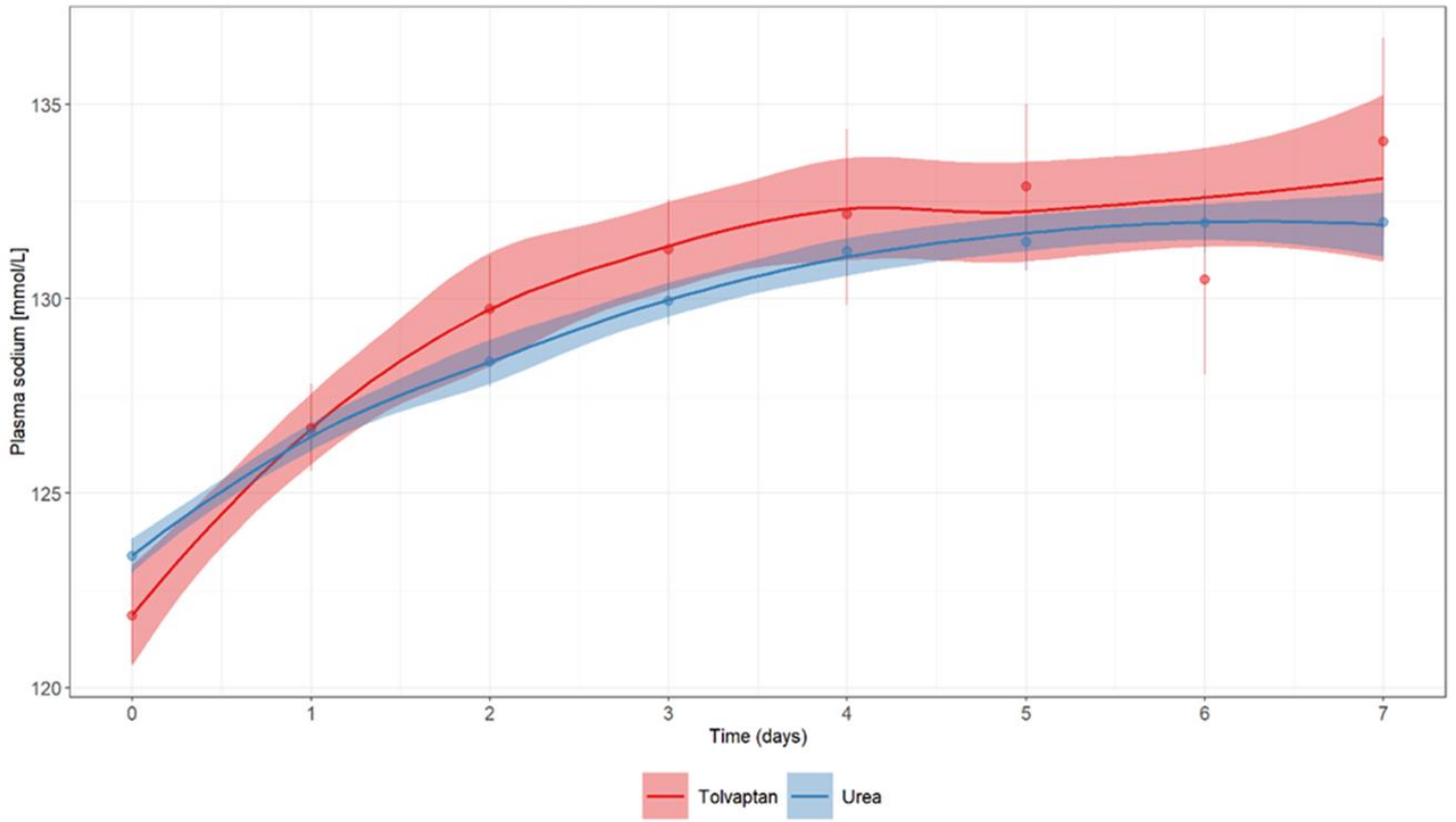
SAFETY ANALYSES

Overcorrection, defined as an increase in plasma sodium level of greater than 12 mmol/l in any 24-hour period or greater than 18 mmol/l in any 48-hour period, occurred in 25 of 1098 patients (2.3%) randomly assigned to the intervention and 16 of 1114 patients (1.4%) randomly assigned to the control group (P=0.14). Among these, 8 of

Refardt J et al. NEJM Evid2026;5:EVIDoa2500086

UreNa study: Urea vs Tolvaptan bei SIAD





Heller…Wendt, submitted, under review