Klinikum St.GEORG

Rezente Studiendaten
What‘s Hot, What‘s New?

Ralph Wendt, Klinik für Nephrologie

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

research grants

BMBF, BMG, ERA-PerMed

1976

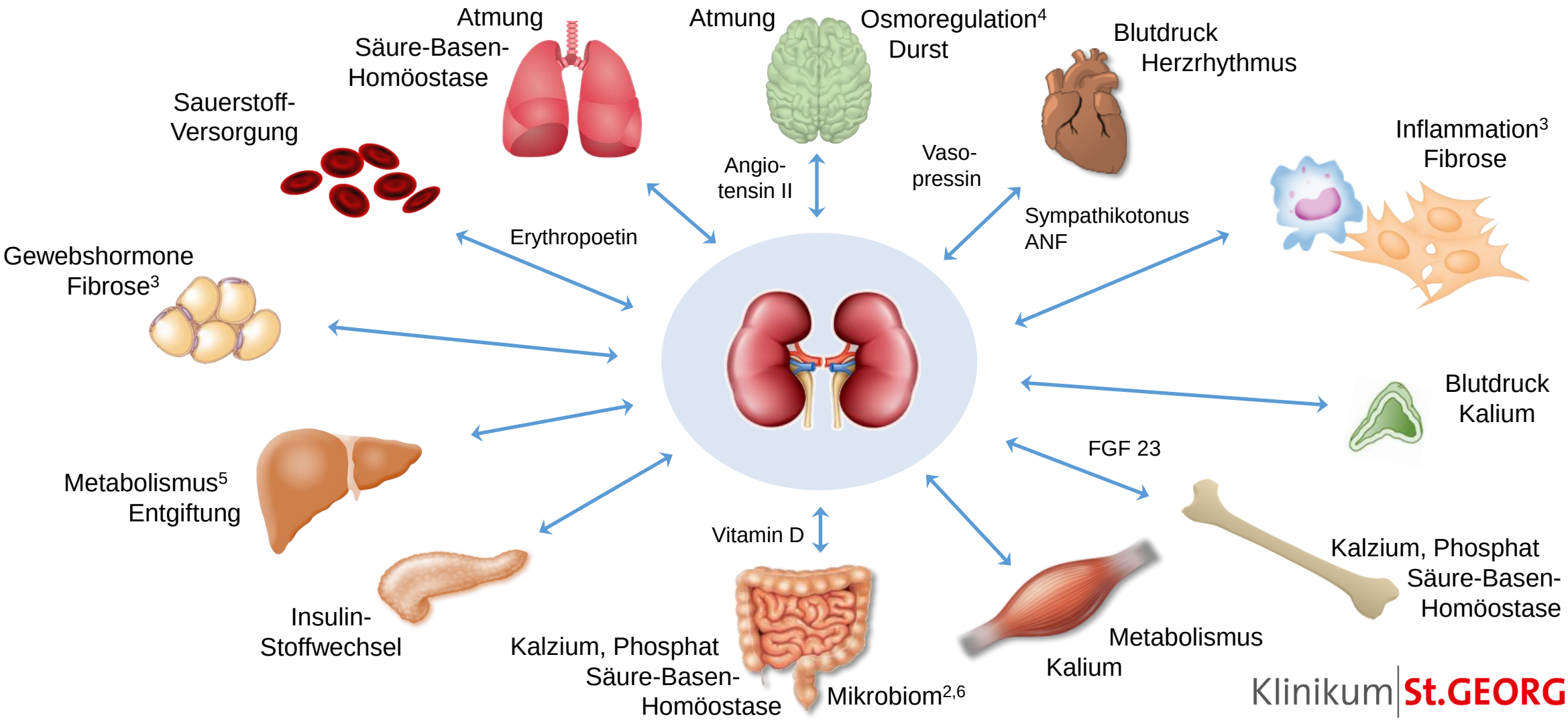
1995

2005

2011

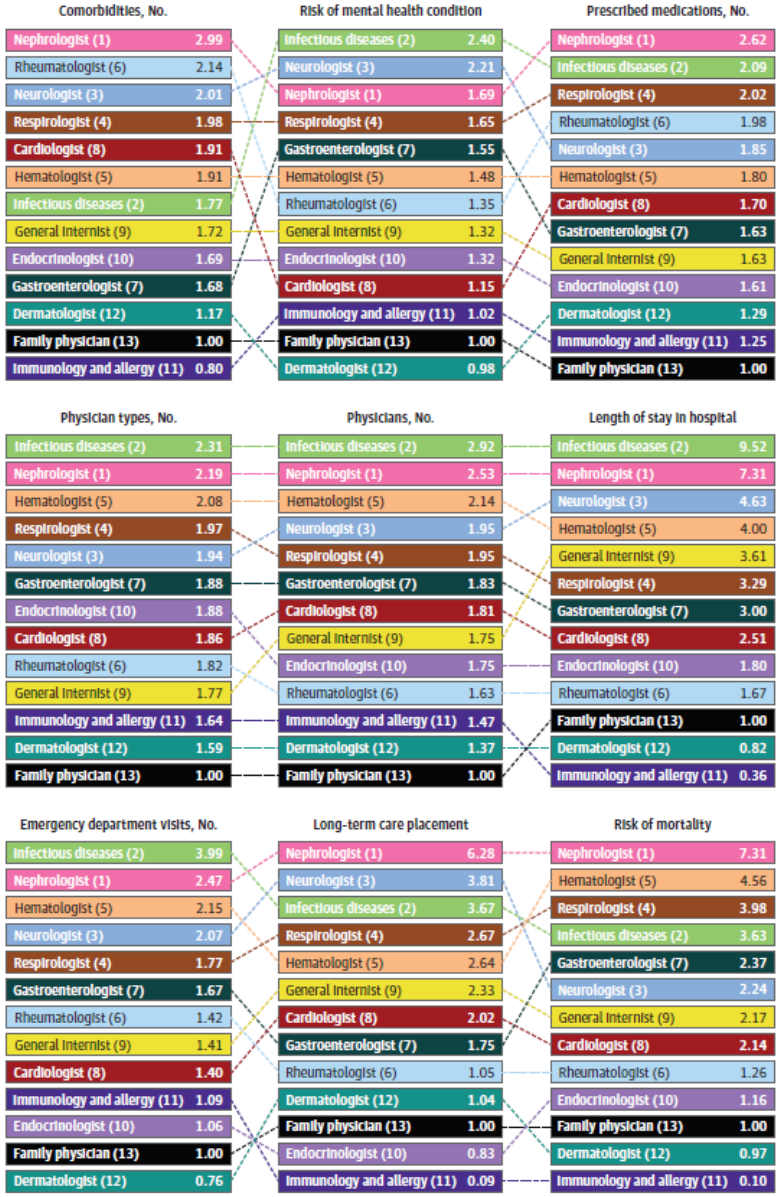
2024

Die Niere ist das klügste Organ (Renozentrisches Weltbild☺)



ANF, atrial natriuretic factor; FGF23, fibroblast growth factor 23 . Referenzen: 1. Eckardt K.-U. et al, Lancet 2013; 382: 158–69 | 2. Colombo I et al, Ir J Med Sci (2021) 190:1205–1212 | 3. Armutcu F et al, Inflammation Research (2019) 68:825–839| 4. Tanaka S & Okusa M, Kidney International (2020) 97, 466–476 | 5. Targher G & Byrne C, Nature Rev Neph 2017, 13:297-310 | 6. Mikusic N et al, Eur J Physiol (2020) 472:303–320

Complexity Rankings by Physician Type



Tonelli et al., JAMA Netw Open. 2018;1(7):e184852

Comparison of the Complexity of Patients Seen by Different Medical Subspecialists in a Universal Health Care System

Marcello Tonelli, MD, SM, MSc; Natasha Wiebe, MMath, PStat; Braden J. Manns, MD, MSc; Scott W. Klarenbach, MD, MSc; Matthew T. James, MD, PhD; Pietro Ravani, MD, PhD; Neesh Pannu, MD, SM; Jonathan Himmelfarb, MD; Brenda R. Hemmelgarn, MD, PhD

Overall rank

1. Nephrologist (1)
2. Infectious diseases (2)
3. Neurologist (3)
4. Respirologist (4)
5. Hematologist (5)
6. Rheumatologist (6)
7. Gastroenterologist (7)
8. Cardiologist (8)
9. General internist (9)
10. Endocrinologist (10)
11. Immunology and allergy (11)
12. Dermatologist (12)
13. Family physician (13)

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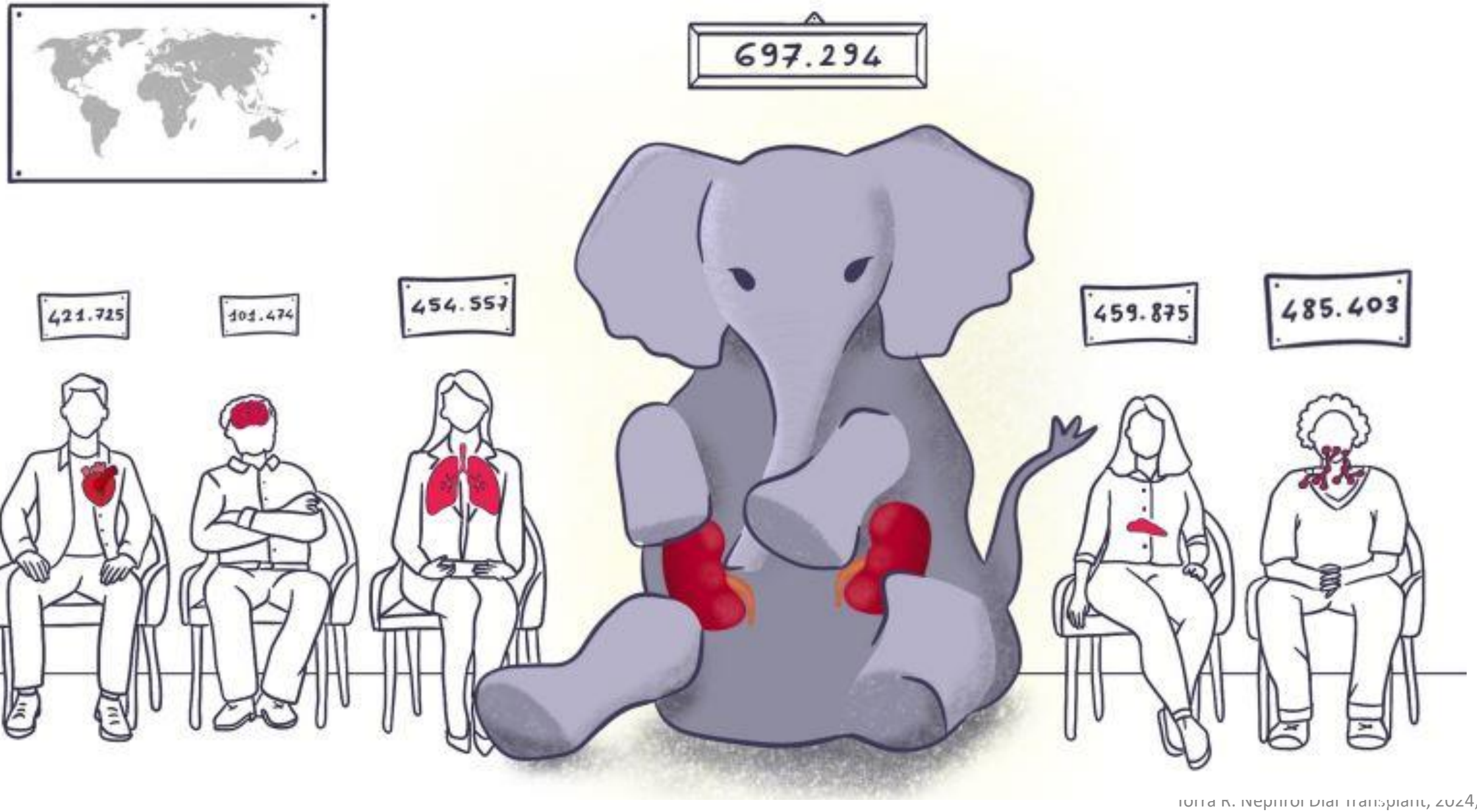

697.294
421.725
101.474
454.557
459.875
485.403

Eine Globale Krise !!!!

nature
Nature | Vol 628 | 4 April 2024 |

Time to sound the alarm about the hidden epidemic of kidney disease

With rates rising around the world, public-health leaders must prioritize prevention, treatment, funding and data.

Epidemiology of chronic kidney disease: an update 2022

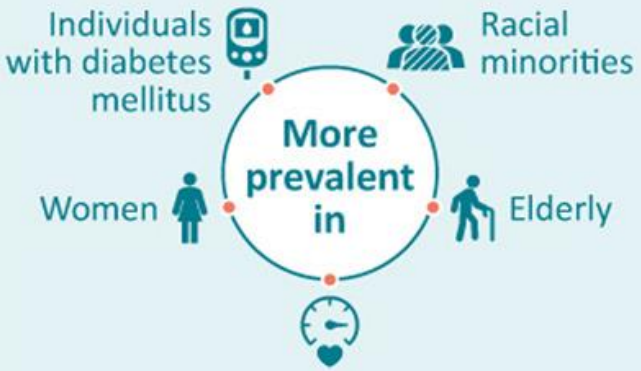
kidney INTERNATIONAL supplements

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

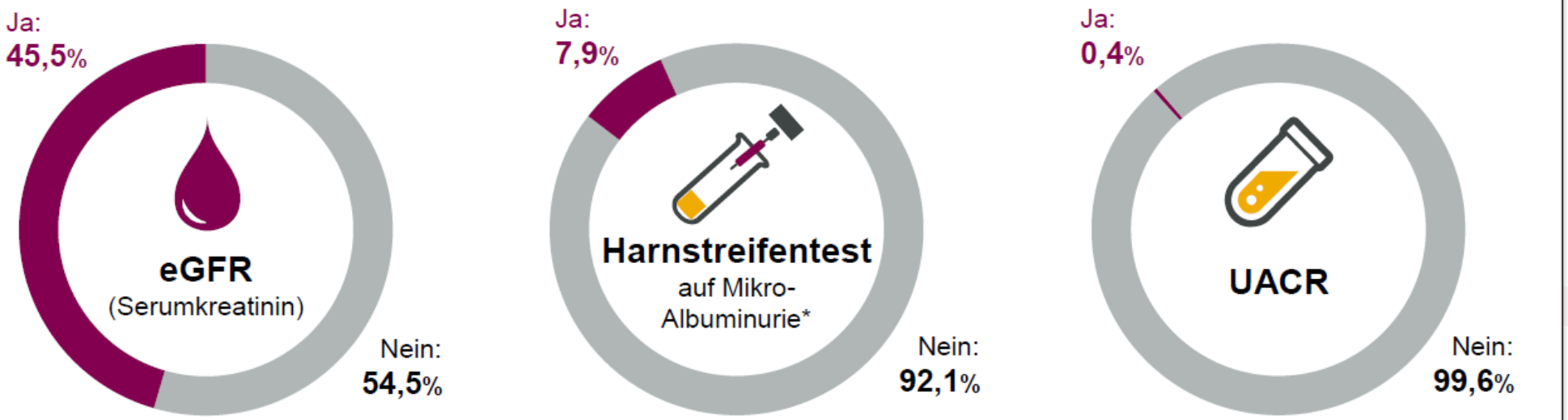
Chronic kidney disease (CKD) occurs frequently and has devastating consequences. This should prompt major efforts to develop preventative and therapeutic measures that are effective. The aim of these measures should be lowering the incidence of CKD and slowing its progression.

InspeCKD

Häufigkeit CKD-spezifischer Labortests in der Gesamtpopulation

Gesamtpopulation
n=448.837

Welche Testungen wurden im Beobachtungszeitraum ≥1x durchgeführt?



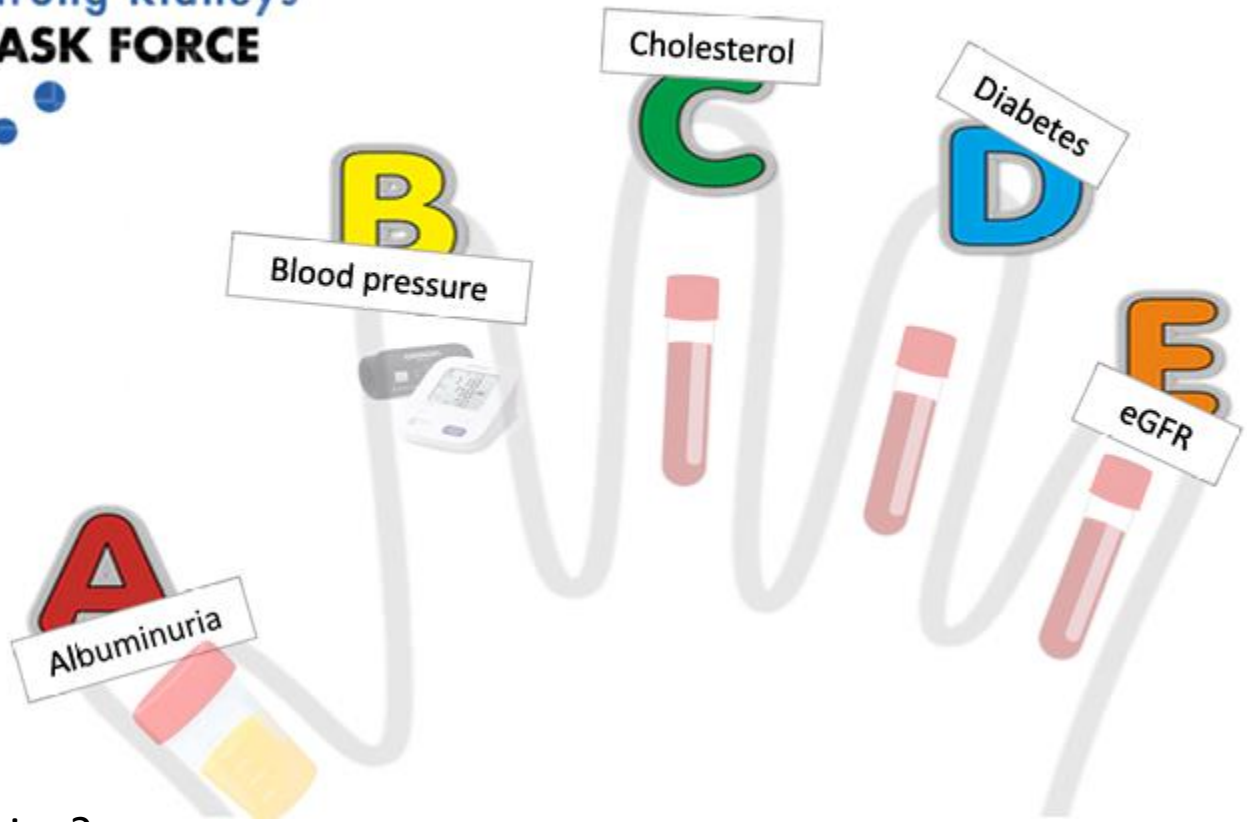
Das CKD-Screeningverhalten für Risikopatient:innen ist nicht leitliniengemäß und somit unzureichend[1,2]

*Semiquantitativ.
CKD, chronische Nierenkrankheit; eGFR, geschätzte glomeruläre Filtrationsrate; UACR, Albumin-Kreatinin-Verhältnis im Urin.

Modifiziert nach: 1. Wanner C et al., MMW-Fortschritte der Medizin. 2024; 166(S4): 9-17.; 2. KDIGO 2024. Clinical Practice Guideline for the Evaluation and Management of CKD. (Abrufbar unter: https://kdigo.org/wp-content/uploads/2024/03/KDIGO-2024-CKD-Guideline.pdf).

Strong Kidneys ABCDE Campaign

Strong Kidneys
TASK FORCE



A) Do I have Albumin in my urine?
B) What is my Blood pressure?
C) What is my Cholesterol?
D) Do I have Diabetes?
E) What is my current kidney function (eGFR)?

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Ferro et al., Nephrol Dial Transplant. 2025 Mar 19:gfaf057

Nierenpunktion bei Patienten mit CKD und Diabetes ?

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Association of different patterns of atypical features, or kidney biopsy indications, with non-diabetic or hypertensive kidney disease (NDHKD)

AJN
American Journal
of Nephrology

Jan 2006 - Dec 2015

Type 2 Diabetes

Kidney Biopsies
n = 463

40% diagnosed with NDKKD

KB indications were determined according to the presence of different atypical features considered sequentially

1 Presence of any feature suggesting NDHKD which is not among the following ones

2 Recent onset of Nephrotic syndrome

3 Low or rapidly declining eGFR

4 Rapid increase in proteinuria

5 Short duration of diabetes

6 Presence of hematuria

7 Normal retinal examination

Predictors of NDHKD
(identified by logistic regression analysis)

- $eGFR_{CKD-EPI} > 15$ mL/min/1.73 m^2
- Urine protein to creatinine ratio < 0.3 g/mmol
- Hematuria
- HbA1C < 7%
- Diabetes duration < 5 years

Conclusion: Despite the association of hematuria with NDHKD, the results suggest that presence of hematuria and absence of DR are insufficient to indicate KB in the absence of concurrent atypical features. Conversely, rapid progression of proteinuria and rapid deterioration of eGFR are major signals of NDHKD.

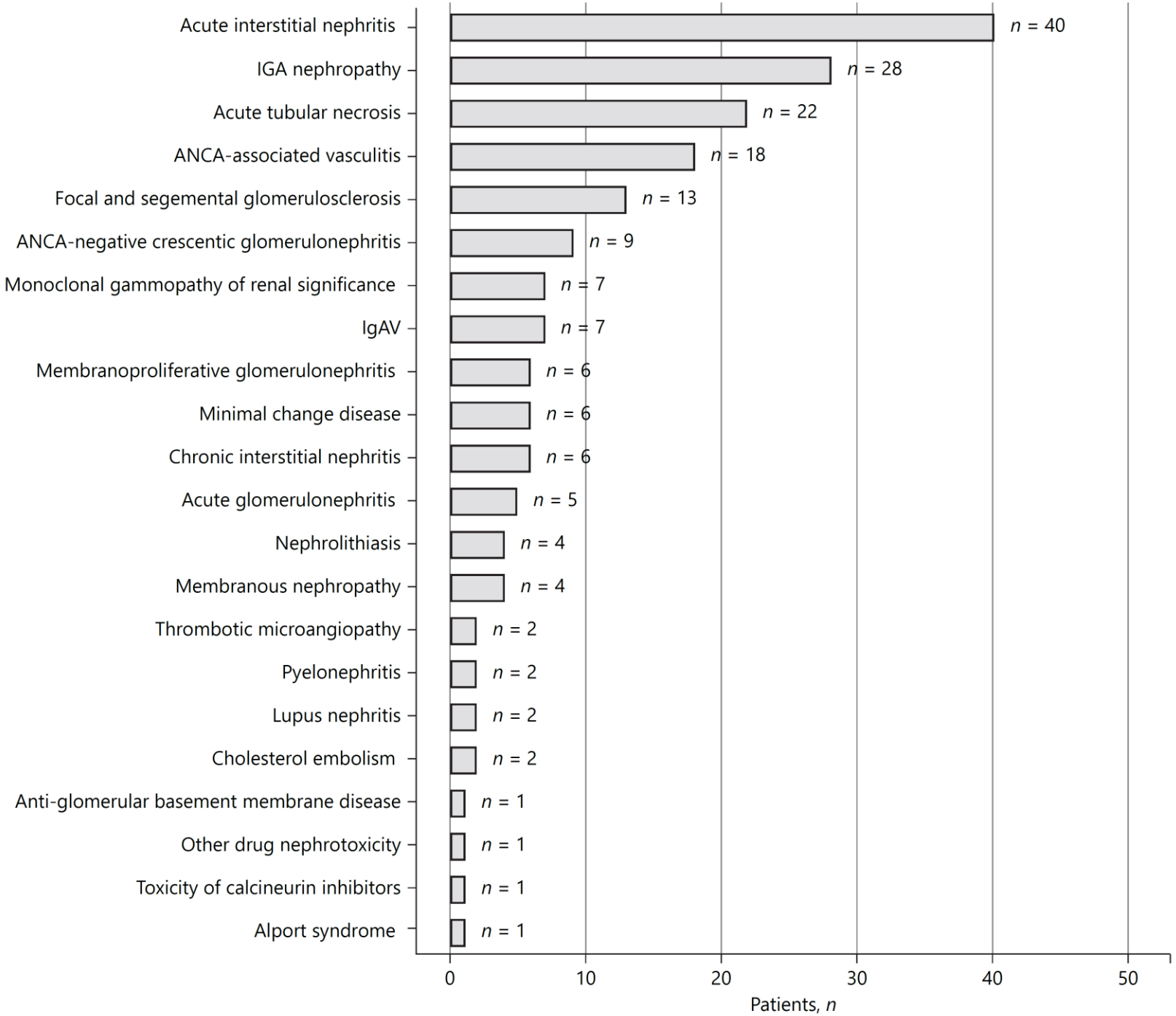
Chemouny JM, Bobot M, Sannier A, Maisons V, Jourde-Chiche N, Ferriere E, Joly D, Vigneau C, Rioux-Leclercq N, Barba C, Daniel L, Halimi J-M, Vrtovsnik F: Kidney Biopsy in Type 2 Diabetes: A Multicenter Cross-Sectional Study.
Am J Nephrol DOI: 10.1159/000514259

Visual Abstract by Edgar Lerma @edgarvlermamd

Klinikum St.GEORG

Chemouny et al., Am J Nephrol 2021;52:131–140

Nicht-diabetische Diagnosen nach Nierenbiopsie bei Diabetikern



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Chemouny et al., Am J Nephrol 2021;52:131–140

Kidney Medicine

Kidney Biopsy Findings Among Patients With Diabetes in the Cleveland Clinic Kidney Biopsy Epidemiology Project

Alvin G. Kwon, Hanny Sawaf, Gilda Portalatin, Shruti Shettigar, Leal C. Herlitz, Tariq Shafi, Hong Liang, Adam Kabuka, Scott Cohen, Surafel K. Gebreselassie, and Shane A. Bobart

Table 1. Patient Characteristics of Patients With Diabetes in the CCKBEP by Biopsy Result

Variable	All (n=1,242)	Non-DKD (n=780)	DKD alone (n=462)	*P* value
Age, y	63 (53-71)	65 (55-72.5)	60 (50-68)	<0.001
Age, y				<0.001
18≤age≤50	240 (19.3)	124 (15.9)	116 (25.1)	
50<age≤60	298 (24.0)	178 (22.8)	120 (26.0)	
60<age≤70	379 (30.5)	236 (30.3)	143 (31.[illegible])	
Age>70	325 (26.2)	242 (31.0)		
Sex (male)	730 (58.8)	473 (60.[illegible])		0.08
Race (White)	823 (66.3)			<0.001
Hemoglobin A1c (%) (n=985)	6.7 (6.[illegible])		7.5 (6.5-9.0) (n=391)	<0.001
Hemoglobin A1c ≥7%			245 (62.7)	<0.001
Hypertension		720 (92.3)	444 (96.1)	0.008
Retinopathy		84 (10.8)	180 (39.0)	<0.001
[illegible]	3.4 (2.8-3.9)	3.4 (2.8-4.0) (n=724)	3.3 (2.8-3.7) (n=419)	0.001
	532 (46.5)	361 (49.9)	171 (40.8)	0.003
[illegible], serum (mg/dL) (n=1,153)	2.5 (1.6-3.9)	2.5 (1.6-4.0) (n=623)	2.6 (1.7-3.5) (n=373)	0.55
[illegible] mL/min/1.73 m²[a] (n=1,153)	24.2 (14.9-42.0)	25.2 (13.9-43.8)	25.3 (16.4-42.5)	0.40
eGFR <60 mL/min/1.73 m²	996 (86.4)	623 (85.2)	373 (88.4)	0.13
HIV 1/2, positive (n=132)	5 (3.8)	2 (2.3) (n=89)	3 (7.0) (n=43)	0.33
Hepatitis C, positive (n=145)	12 (8.3)	8 (9.5) (n=84)	4 (6.6) (n=61)	0.76
Protein, random urine output				<0.001
Negative (<10 mg/dL)	117 (9.4)	99 (12.7)	18 (3.9)	
Equal to trace (10-30 mg/dL) or more	1,125 (90.6)	681 (87.3)	444 (96.1)	
Hematuria, random urine output (n = 1,094)[b]	711 (65.0)	448 (64.6) (n=694)	263 (65.8) (n=400)	0.69
Protein to creatinine ratio, random urine output (mg/mg) (n=754)	3.0 (1.1-6.0)	2.1 (0.8-5.1) (n=459)	4.4 (1.9-7.4) (n=295)	<0.001
Protein to creatinine ratio ≥3 mg/mg	379 (50.3)	190 (41.4)	189 (64.1)	<0.001
Albumin to creatinine ratio, random urine output (mg/g) (n=562)	886 (115-2,443.6)	478 (59-1,906) (n=329)	1,462 (447-2,975) (n=233)	<0.001
Albumin to creatinine ratio ≥886 mg/g	282 (50.2)	135 (41.0)	147 (63.1)	<0.001
Sum ACR (mg/g) (n=890)	1,234 (238-3,037)	847 (128-2,451)	1970 (650-3,753)	<0.001
Sum ACR ≥ 300 mg/g	644 (72.4)	347 (64.0)	297 (85.3)	<0.001

All (n=1,242) Non-DKD (n=780) DKD alone (n=462)

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Kwon et al., Kidney Med. 2024, 6(10):100889

Factors Associated with non-DKD (n=780) Compared With DKD Alone (n=462) Among Patients With Diabetes

Variables	Adjusted Odds Ratio	95% Confidence Interval	*P* Value
Hemoglobin A1c (%)			
≥7	Ref		
<7	3.08	(2.16-4.39)	<0.001
eGFR (mL/min/1.73 m^2)[b]			
<60 (ref)	Ref		
≥60	2.39	(1.28-4.45)	0.006
Sum ACR (mg/g)			
≥300	Ref		
<300	2.94	(1.84-4.72)	<0.001
Protein to creatinine ratio, random urine output (mg/mg)			
≥3	Ref		
<3	1.80	(1.24-2.61)	0.002
Retinopathy			
Yes	Ref		
No	3.98	(2.69-5.90)	<0.001

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Kwon et al., Kidney Med. 2024, 6(10):100889

Fallstricke bei der Blutdruckmessung in der Praxis

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https://steemit.com/deutsch/@asmr-austria/kontrolle-des-blutdrucks-120-zu-80-doch-was-bedeuten-diese-beiden-zahlen

State of the Art / Hintergrund

Blutdruckmessung in der Praxis-Routine

- Ø 23mmHg zu hoch

Sebo et al., Journal of Hypertension 2014. 32(3):p 509-517

Blutdruckmessung in der Praxis: Wohin soll der Arm?

Referenz

\+ SBP Δ 3.9mmHg
DBP Δ 4.0mmHg

\+ SBP Δ 6.5mmHg
DBP Δ 4.4mmHg

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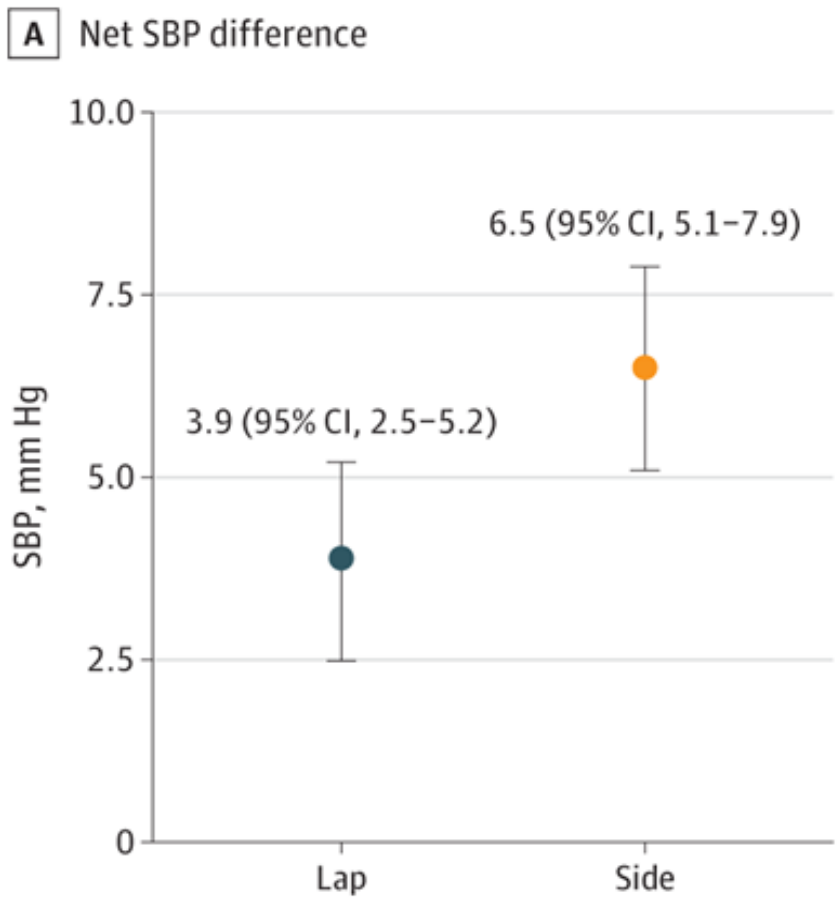
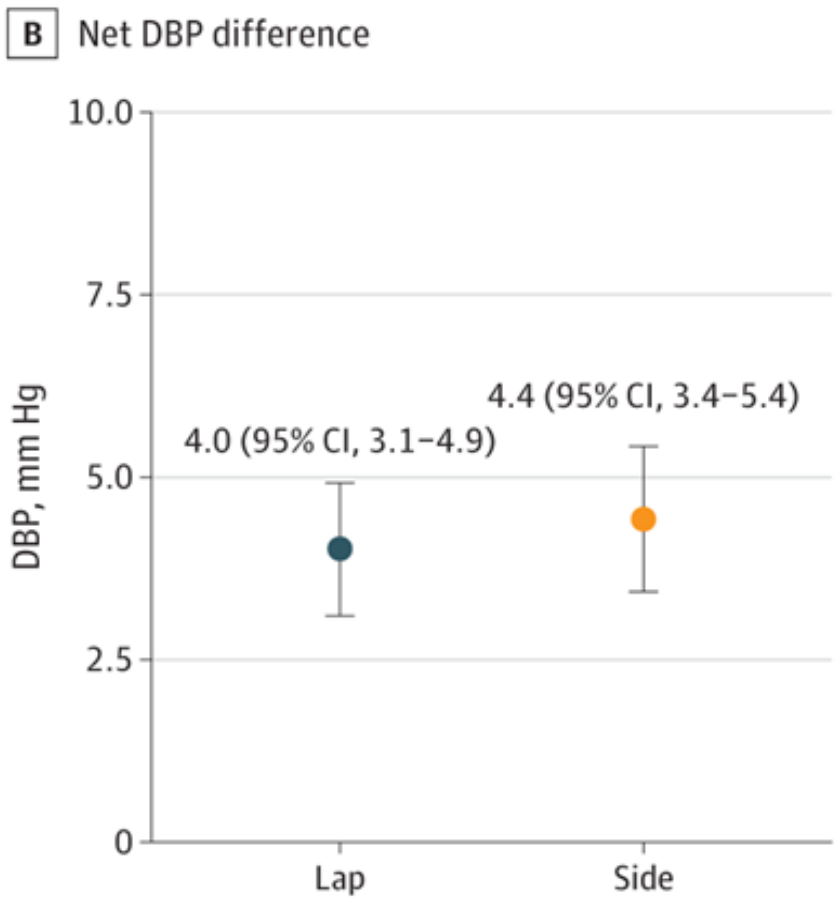
Liu et al., JAMA Intern Med. 2024;184(12):1436-1442
Bildquelle: Linda Carroll auf nbcnews.com https://www.nbcnews.com/health/heart-health/arm-position-blood-pressure-increase-hypertension-check-rcna174245

Blutdruckmessung in der Praxis: Wohin soll der Arm?





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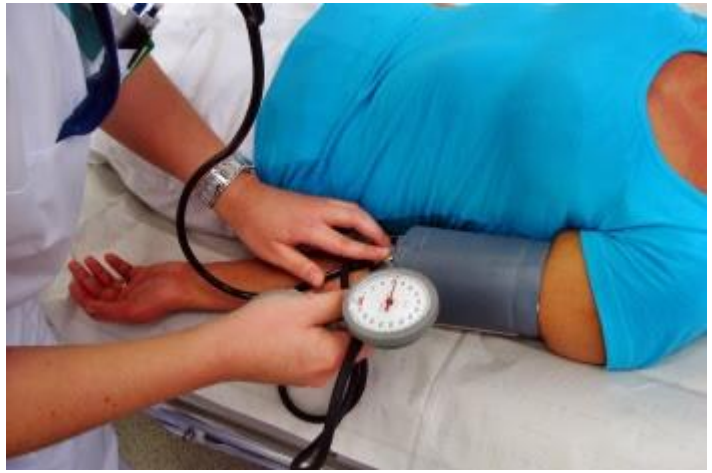
Liu et al., JAMA Intern Med. 2024;184(12):1436-1442

This Issue | Views 7,895 | Citations 0 | Altmetric 124

Original Investigation

January 22, 2025

Supine Blood Pressure and Risk of Cardiovascular Disease and Mortality



Duc M. Giao, MD[1,2]; Hannah Col, MPH[3]; Fredrick Larbi Kwapong, MD, MPH[3]; et al

» Author Affiliations

JAMA Cardiol. 2025;10(3):265-275. doi:10.1001/jamacardio.2024.5213

16.4% of those without seated hypertension had supine hypertension.

Supine hypertension was associated with
incident CHD [HR 1.60)
heart failure (HR, 1.83)
stroke (HR, 1.86)
fatal CHD (HR, 2.18)
all-cause mortality (HR, 1.43) during a median follow-up of 28 years

Supine hypertension regardless of seated hypertension had a higher HR for CVD risk than seated hypertension alone.

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Giao et al., JAMA Cardiol. 2025;10(3):265-275

Was ist eine normale Nierenfunktion, insbesondere im höheren Alter ?

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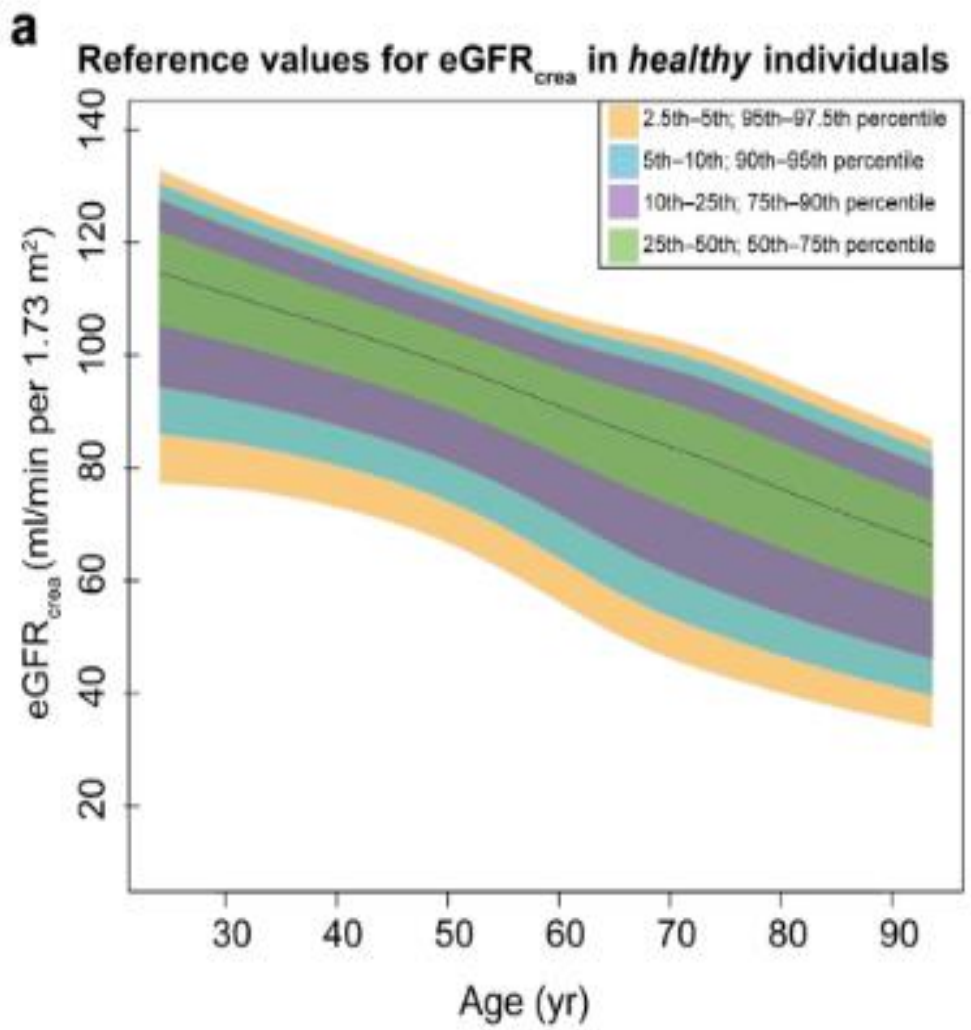
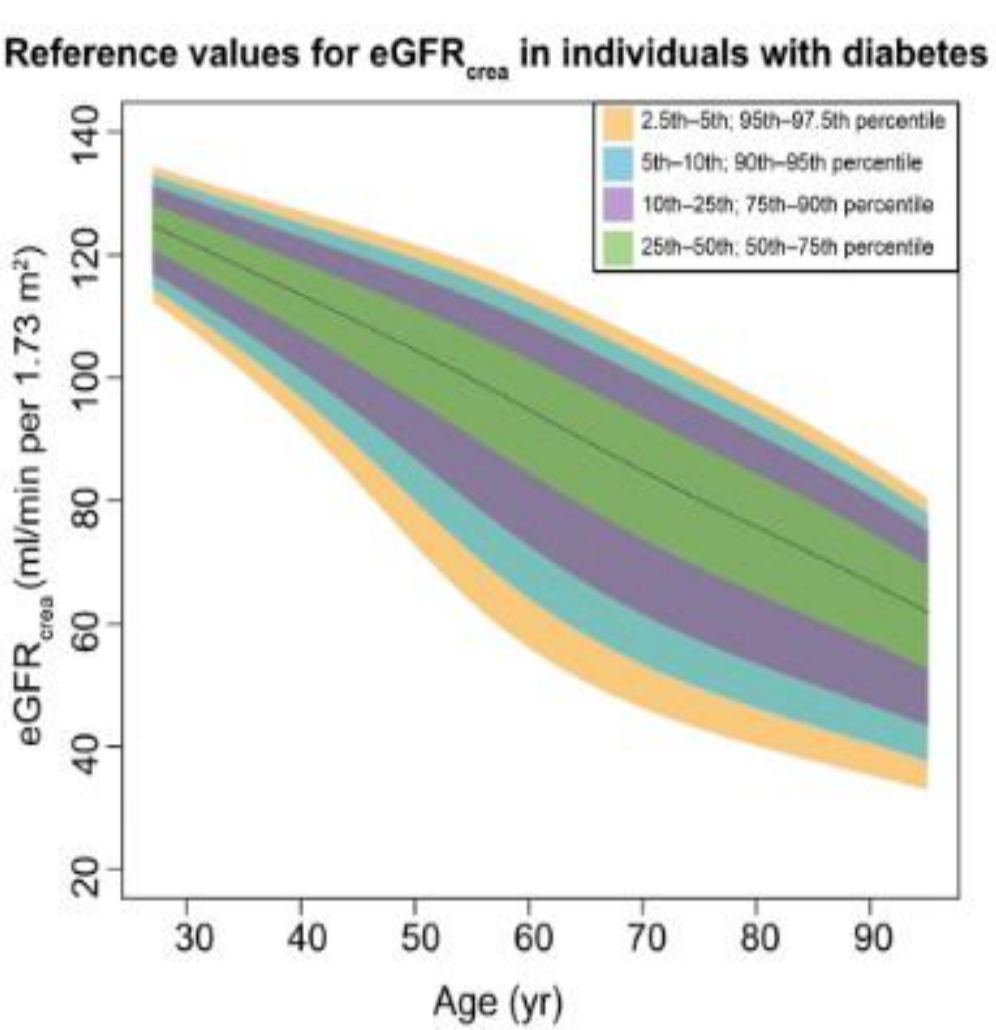
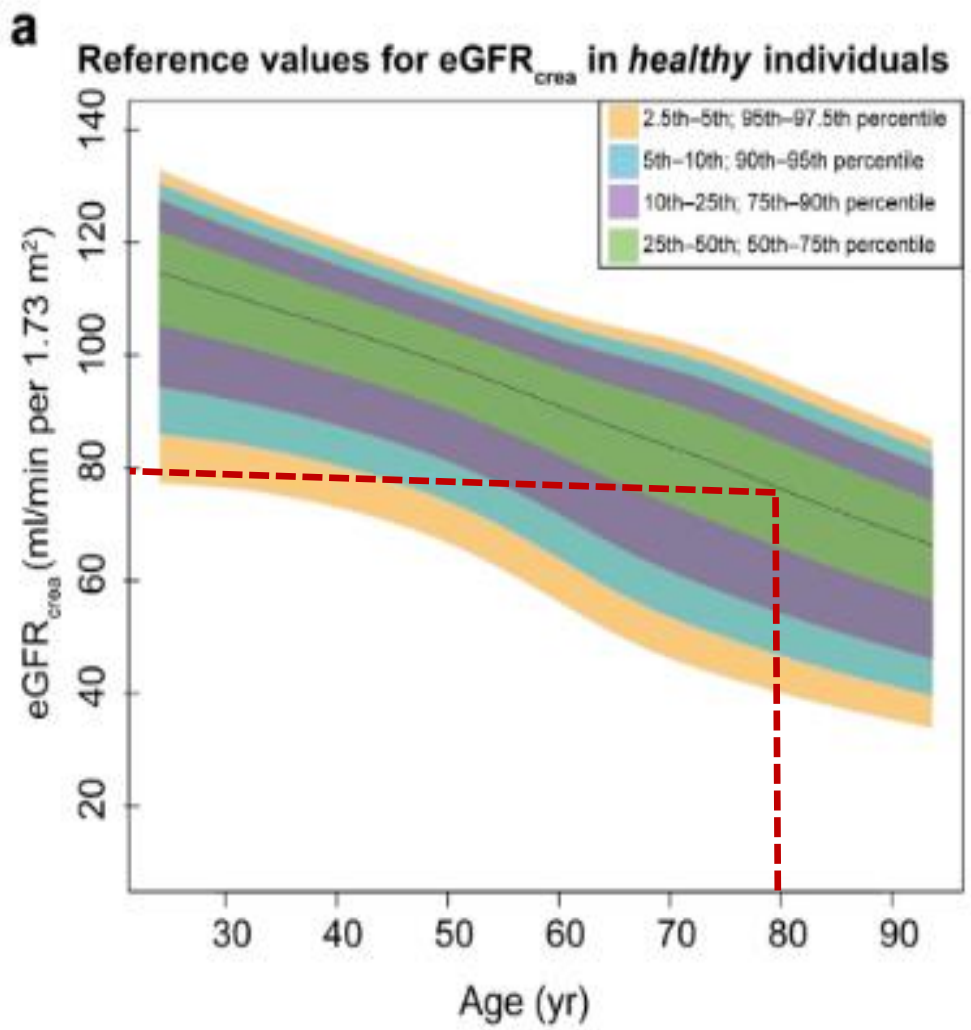
Verlauf der eGFR bei gesunden Personen und bei Diabetikern

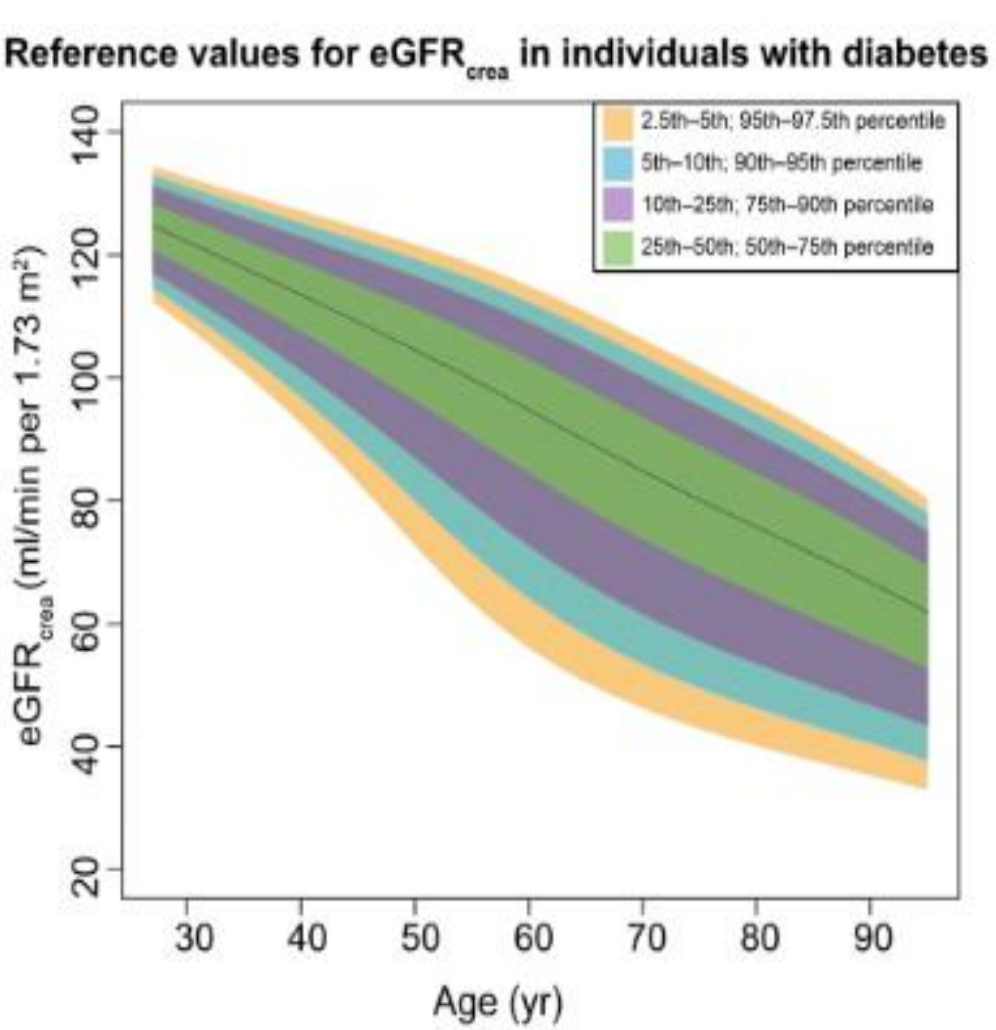




Herold et al., Kidney Int 2024 Oct;106(4):699-711.

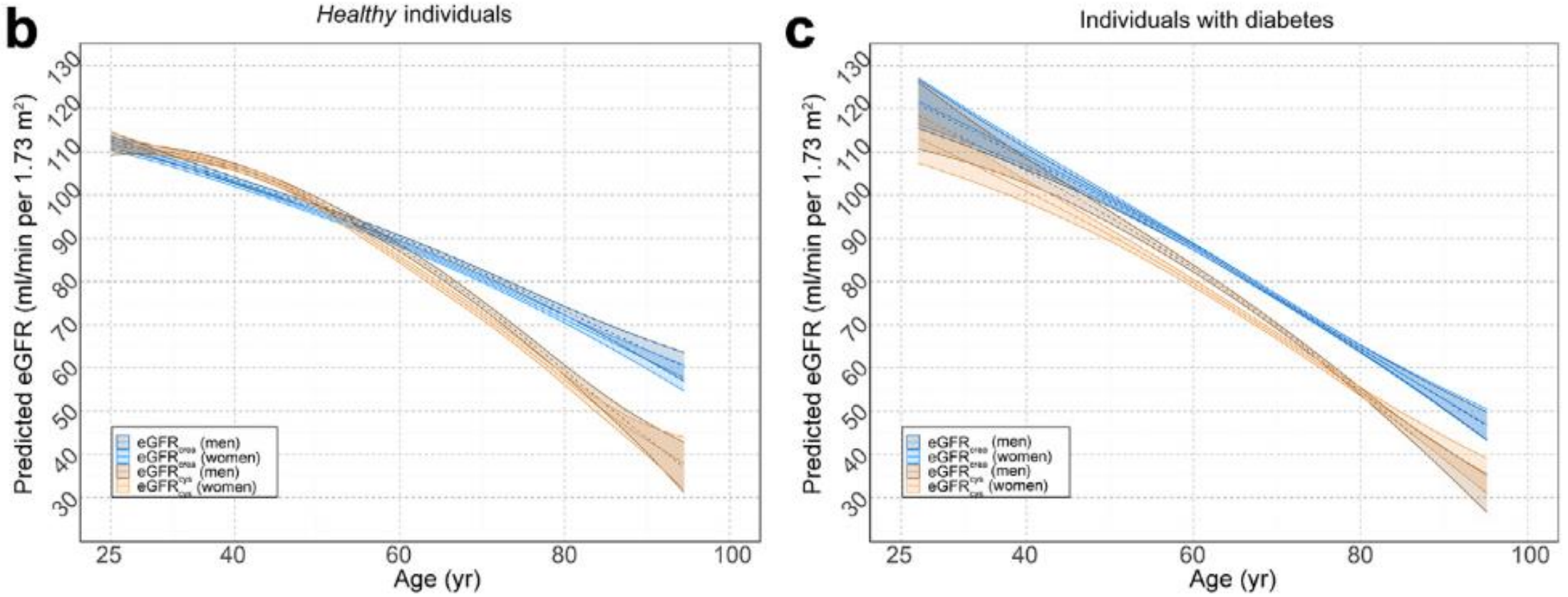
Referenzwerte für die eGFRcrea





Herold et al., Kidney Int 2024 Oct;106(4):699-711.

Längsschnittanalyse der Abnahme der geschätzten glomerulären Filtrationsrate (eGFR) im Laufe des Alters



Jährliche eGFRcrea Abnahme von **-0.79** [-0.83, -0.76] bei gesunden Personen (links) und **-1.20** mL/min/1.73m^2 [-1.33, -1.08] Patienten mit Diabetes (rechts)

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Herold et al., Kidney Int 2024 Oct;106(4):699-711.

Intensive Blutdruckkontrolle bei Patienten mit hohem kardiovaskulärem Risiko

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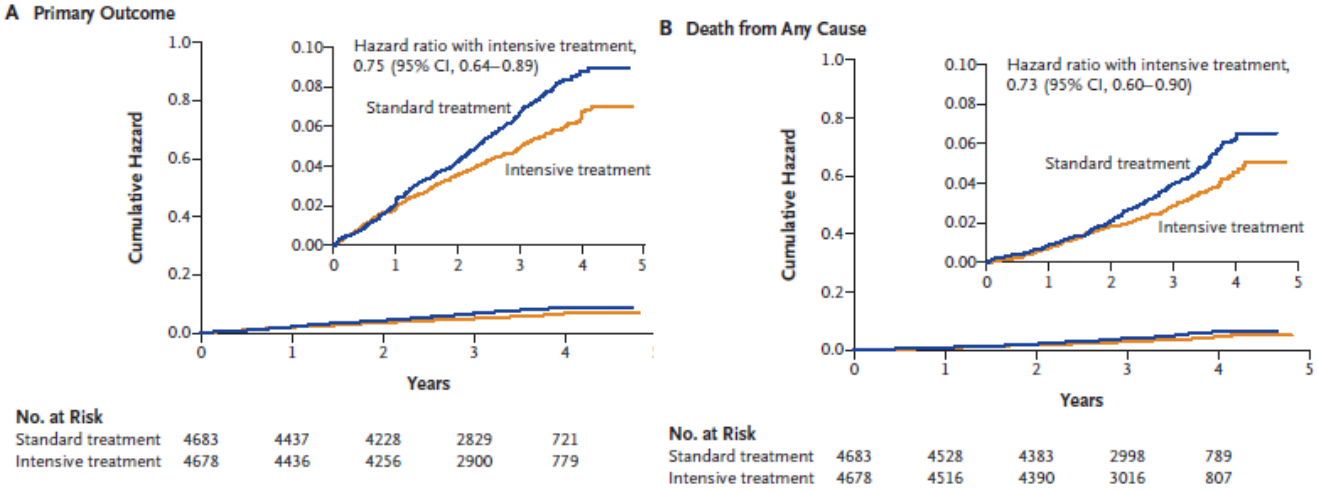
State of the Art / Hintergrund

A Randomized Trial of Intensive versus Standard Blood-Pressure Control

The SPRINT Research Group*



No. at Risk

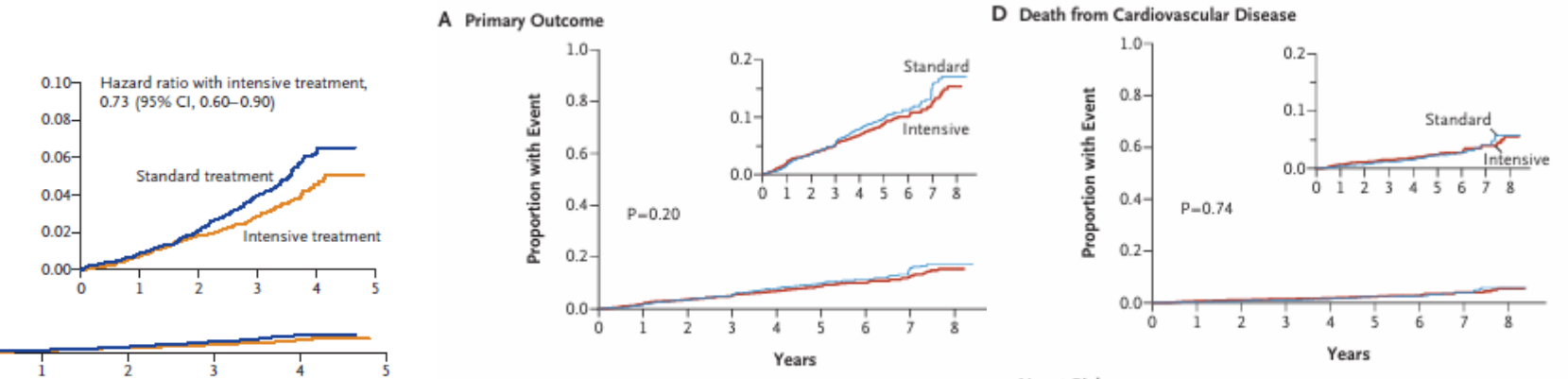
Standard treatment	4683	4437	4228	2829	721
Intensive treatment	4678	4436	4256	2900	779

No. at Risk

Standard treatment	4683	4528	4383	2998	789
Intensive treatment	4678	4516	4390	3016	807

Effects of Intensive Blood-Pressure Control in Type 2 Diabetes Mellitus

The ACCORD Study Group*



No. at Risk

Intensive	2362	2273	2182	2117	1770	1080	298	175	80
Standard	2371	2274	2196	2120	1793	1127	358	195	108

No. at Risk

Intensive	2362	2304	2252	2201	1870	1143	317	188	91
Standard	2371	2313	2268	2218	1922	1220	393	221	118

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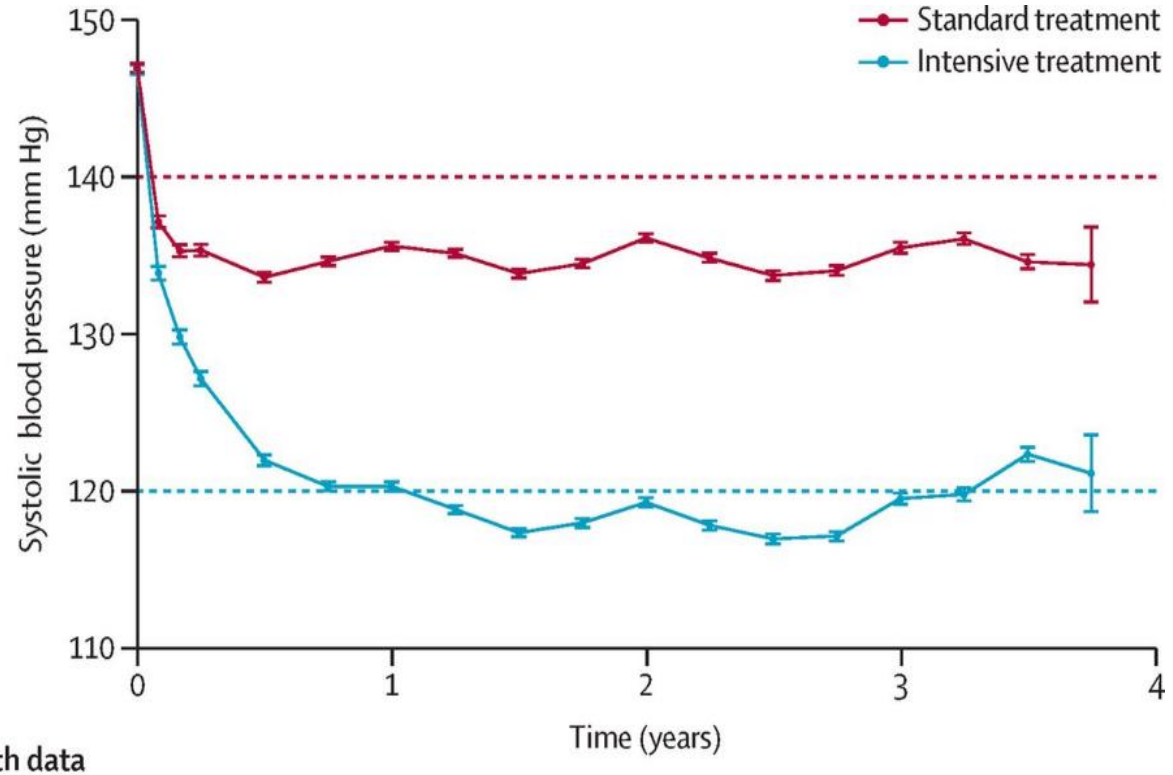
SPRINT Research Group et al., N Engl J Med 2015;373:2103-16
ACCORD Study Group et al., N Engl J Med 2010;362:1575-85

Intensive Blutdruckkontrolle bei Patienten mit hohem kardiovaskulärem Risiko (ESPRIT-Studie)

11.255 Teilnehmer mit hohem cv Risiko

4.359 mit Diabetes
3.022 mit Z.n. stroke



Number with data								
Standard treatment	5631	5077	5283	5223	5081	4791	4180	3226
Intensive treatment	5624	5029	5276	5205	5075	4832	4211	3250
Mean number of medications								
Standard treatment	1·7	2·0	2·0	2·0	2·0	2·0	2·0	2·1
Intensive treatment	1·7	2·5	2·6	2·7	2·7	2·8	2·8	2·8

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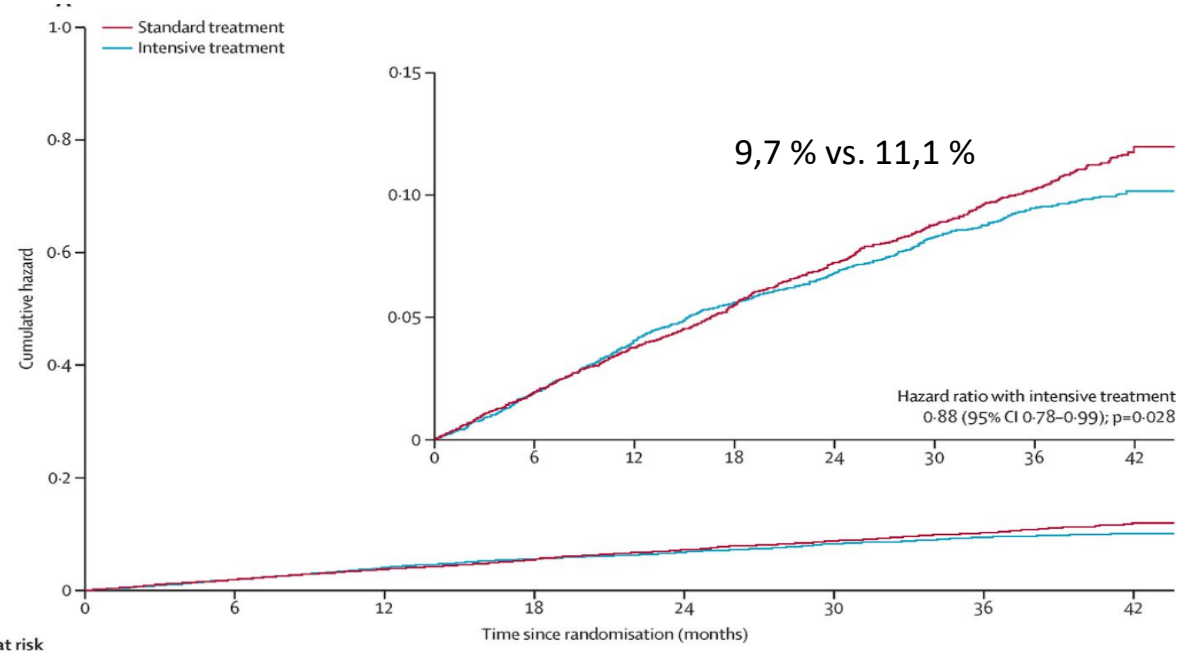
Liu et al., Lancet 2024 Jul 20;404(10449):245-255.

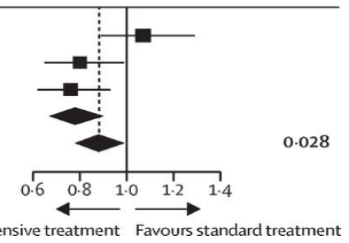
Intensive Blutdruckkontrolle bei Patienten mit hohem kardiovaskulärem Risiko (ESPRIT-Studie)



Number at risk (number censored)								
Standard treatment	5631	5519 (4)	5410 (10)	5299 (24)	5183 (42)	5081 (57)	3955 (1106)	389 (4619)
Intensive treatment	5624	5510 (6)	5380 (18)	5279 (31)	5197 (45)	5097 (64)	3967 (1132)	400 (4677)

B

First event	(n participants with event [% per year])		Hazard ratio (95% CI)	p value
	Intensive treatment	Standard treatment		
≤1 year	226 (4·1%)	211 (3·8%)	1·07 (0·89–1·29)	
>1 year to ≤2 years	156 (3·0%)	195 (3·7%)	0·80 (0·65–0·99)	
>2 years	165 (2·6%)	217 (3·4%)	0·76 (0·62–0·93)	
>1 year	321 (2·7%)	412 (3·5%)	0·78 (0·67–0·90)	
Overall	**547 (3·2%)**	**623 (3·6%)**	**0·88 (0·78–0·99)**	**0·028**



- Bluthochdruckpatienten mit hohem kardiovaskulärem Risiko (inkl. Diabetes oder Schlaganfall in der Vorgeschichte)
- syst. BD von < 120mmHg vs. < 140mmHg geht mit Reduktion der Anzahl schwerer vaskulärer Ereignisse einher bei einem geringen zusätzlichen Risiko für schwerwiegende unerwünschte Ereignisse

Klinikum St.GEORG

Liu et al., Lancet 2024 Jul 20;404(10449):245-255.

Does strict BP control reduce vascular events in high CV risk patients? The ESPRIT Trial

#NephJC

METHODS

- High CV risk patients
- Multicenter: China
- Open label RCT, blinded-outcome
- Mean follow-up: 3.4 years
- N = 11,255

OUTCOMES

Primary: Composite of MI, revascularisation, hospitalisation for HF, stroke, or death from CV causes

Serious adverse events: Syncope

CONTROL

Standard treatment, target <140 mmHg systolic blood pressure. N = 5631

11.1%

[HR] 0·88, 95% **CI 0·78-0·99**

9.7%

INTERVENTION

Intensive treatment, target <120 mmHg systolic blood pressure. N = 5624

0.1%

[HR] 3·00, 95% **CI 1·35-6·68**

0.4%

Conclusion: For hypertensive patients at high cardiovascular risk, regardless of diabetes or history of stroke, targeting systolic blood pressure of less than 120 mm Hg, as compared with less than 140 mm Hg, prevents major vascular events, with minimal excess risk.

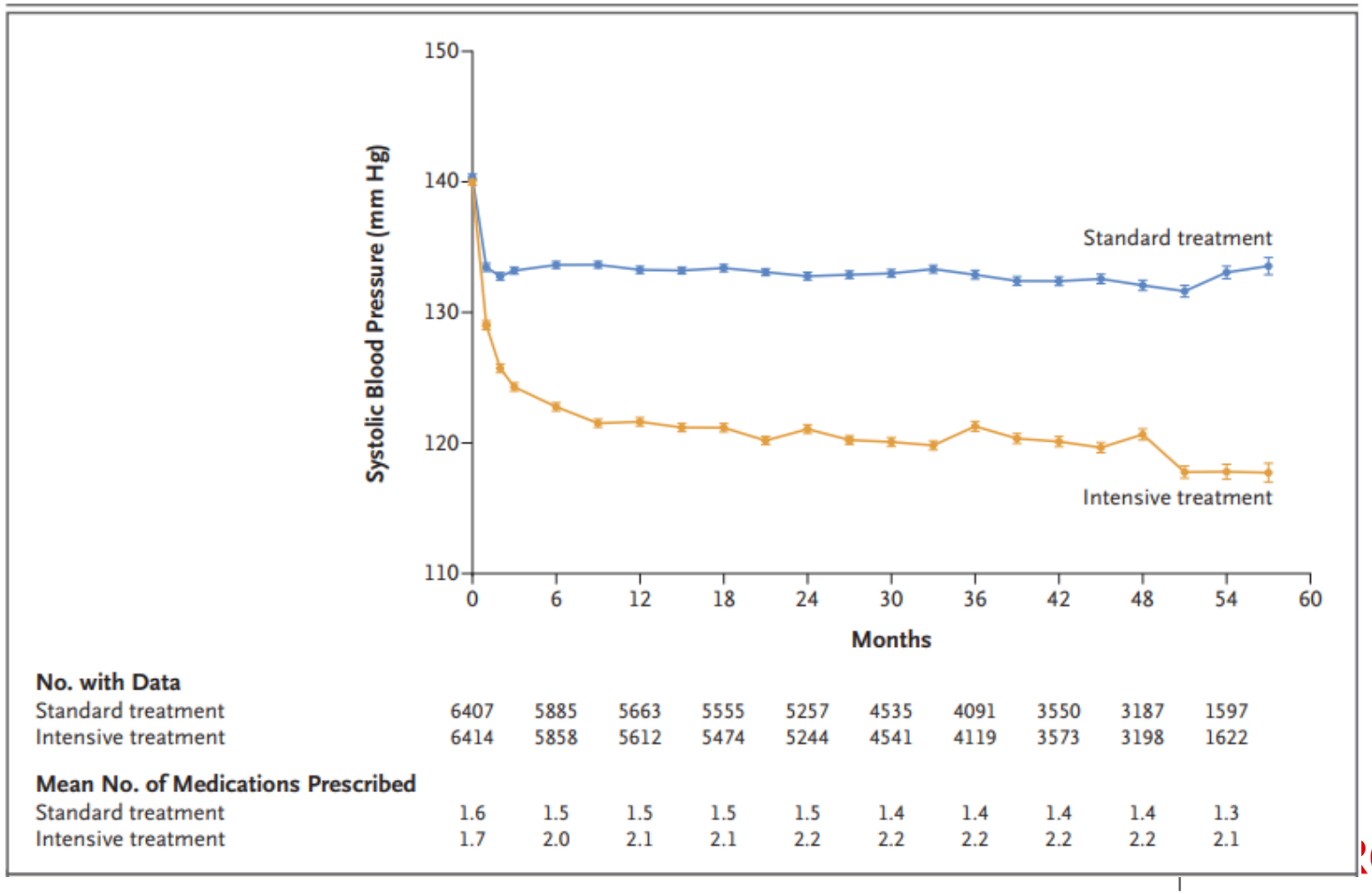
Liu J, , et al. ESPRIT Collaborative Group. Lowering systolic blood pressure to less than 120 mm Hg versus less than 140 mm Hg in patients with high cardiovascular risk with and without diabetes or previous stroke: an open-label, blinded-outcome, randomised trial. Lancet. 2024 Jul

VA by Francisco Santamaria @SantamariaFcoMD

Klinikum St.GEORG

Intensive Blutdruckkontrolle bei Patienten mit Typ-2 Diabetes (BPROAD-Studie)

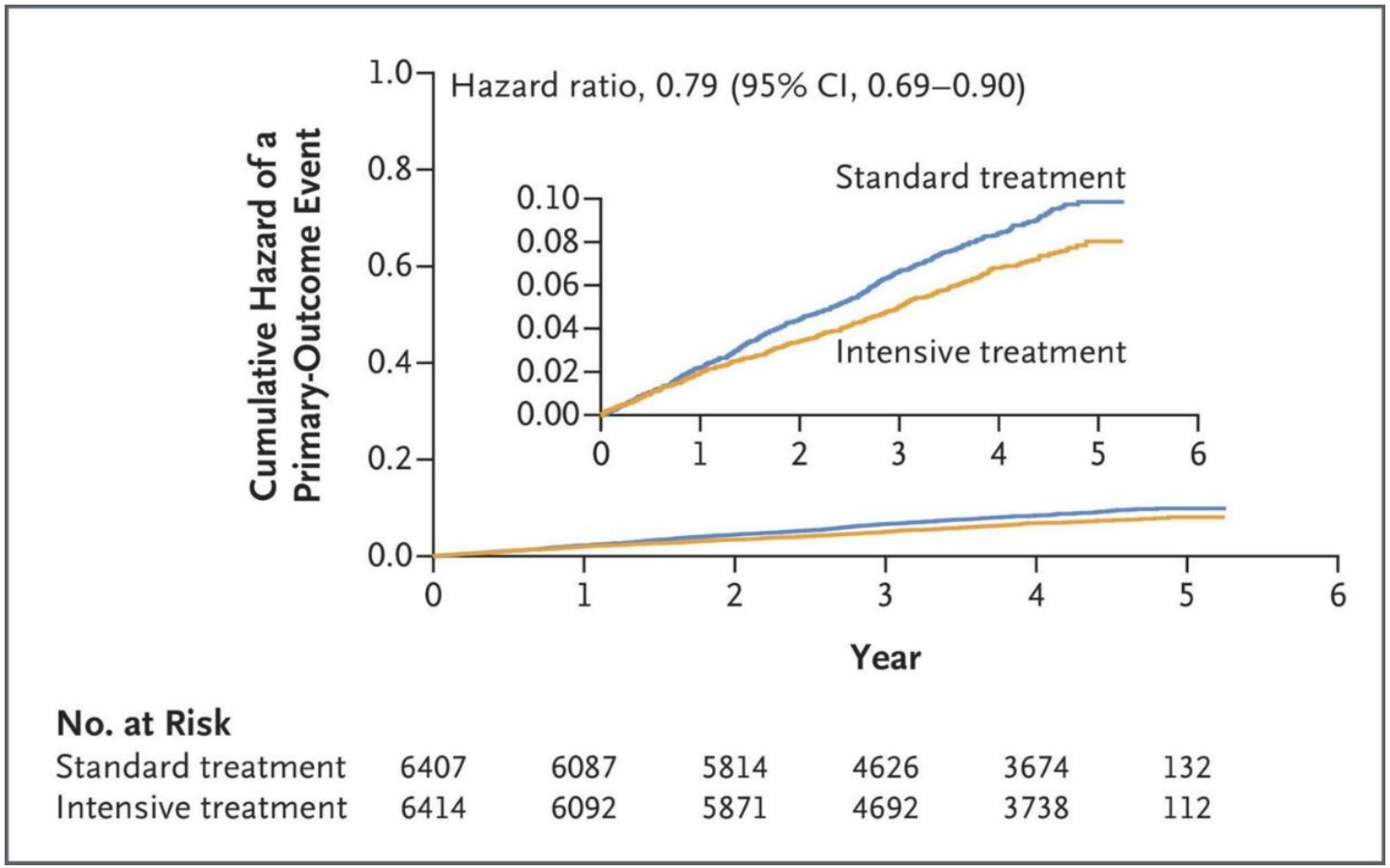
12.821 Patienten > 50 Jahre
mit Typ-2-Diabetes u. Hypertonie
und einem erhöhten cv Risiko



No. with Data										
Standard treatment	6407	5885	5663	5555	5257	4535	4091	3550	3187	1597
Intensive treatment	6414	5858	5612	5474	5244	4541	4119	3573	3198	1622
Mean No. of Medications Prescribed										
Standard treatment	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
Intensive treatment	1.7	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1

Bi et al., N Engl J Med 2024, doi: 10.1056/NEJMoa2412006

Intensive Blutdruckkontrolle bei Patienten mit Typ-2 Diabetes (BPROAD-Studie)



- Auch bei Patienten mit T2D wird die Inzidenz schwerer kardiovaskulärer Ereignisse bei einer intensiven Blutdruckbehandlung gesenkt
- Preis: mehr symptomatische Hypotonien und Hyperkaliämien
- für die überwiegende Mehrzahl der Patienten mit Diabetes und hohem cv Risiko geht eine intensive Blutdrucksenkung mit kardiovaskulären Vorteilen einher
- Cave: automatisierte Blutdruckmessung

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Bi et al., N Engl J Med 2024, doi: 10.1056/NEJMoa2412006

Does intensive blood pressure control have a long-term effect on kidney function?

CJASN
Clinical Journal of the American Society of Nephrology

SPRINT data linked with EHR (electronic health record) data

3041 participants

8.3 years
Median availability of EHR creatinine values

Intensive treatment
vs
Standard treatment

Intervention phase
vs
Observational phase
Overall median follow-up 8.3 years

Primary outcome

	Estimated eGFR at 8.3 years	Total slope of decline in eGFR in intervention phase	Post-trial slope of decline in eGFR in observational phase
Standard Treatment Target systolic BP <140 mmHg 1543	63.8 mL/min/1.73m² [62.2 to 63.4]	-0.67 mL/min/1.73m²/year [-0.79 to -0.56]	-1.02 mL/min/1.73m²/year [-1.24 to -0.81]
	p<0.001	p<0.001	p=0.28
Intensive Treatment Target systolic BP <120 mmHg 1498	62.1 mL/min/1.73m² [61.7 to 62.4]	-0.96 mL/min/1.73m²/year [-1.08 to -0.85]	-0.85 mL/min/1.73m²/year [-1.07 to -0.64]

Secondary outcome

In participants without baseline CKD:
Intensive treatment was associated with a higher risk of ≥30% eGFR decline during the intervention phase [HR 3.27 (2.43,4.40)] but not the observational phase [HR 1.13 (0.87,1.46)]

In participants with baseline CKD:
Intensive treatment was associated with a higher risk of ≥50% eGFR decline eGFR or reaching end-stage kidney failure only during the intervention phase [HR 1.95 (1.03, 3.70)]

Conclusions: Intensive BP lowering was associated with a steeper total slope of decline in eGFR during the intervention phases of the trial, but not during post-trial long-term follow-up. The effects of intensive treatment on secondary kidney outcomes was similar.

Paul E. Drawz, Kristin M. Lenoir, Nayanjot Kaur Rai, et al. ***Effect of Intensive Blood Pressure Control on Kidney Outcomes: Long-Term Electronic Health Record–Based Post-trial Follow-Up of SPRINT***. CJASN doi: 10.2215/CJN.0000000000000335. **Visual Abstract by Michelle Lim, MBChB, MRCP**

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Drawz et al., Clin J Am Soc Nephrol. 2023 Oct 25;19(2):213–223

Intensive lowering of systolic blood pressure did not decrease the incidence of kidney failure

JASN®
Journal of the American Society of Nephrology

SPRINT Secondary analysis

102 clinical sites in United States and Puerto Rico 2010-2020

N=9279 Patients ≥50 yrs with hypertension and high cardiovascular risk

101 cases of kidney failure (*i.e.*, initiation of dialysis therapy or transplantation)

8.6 years median follow-up (interquartile range 8.0 to 9.1 years)

9% with eGFR<45 ml/min/1.73 m^2 at baseline

*Compared with standard treatment (SBP <140 mm Hg)

Intensive treatment* (SBP <120 mm Hg)

Kidney failure

Cause-specific HR 1.20
95%CI 0.81-1.78

Kidney failure among participants with baseline eGFR<45 ml/min/1.73 m^2

HR 1.43
95%CI 0.89-2.30

Conclusions: There were higher rates of dialysis or transplantation among SPRINT participants randomized to intensive treatment, but the modest differences observed were not statistically significant.

Nicholas M. Pajewski, Srinivasan Beddhu, Adam P. Bress, et al. ***The Legacy Effect of Intensive versus Standard BP Control on the Incidence of Needing Dialysis or Kidney Transplantation***. JASN doi: 10.1681/ASN.0000000000000459. **Visual Abstract by Paolo Nikolai So, MD**

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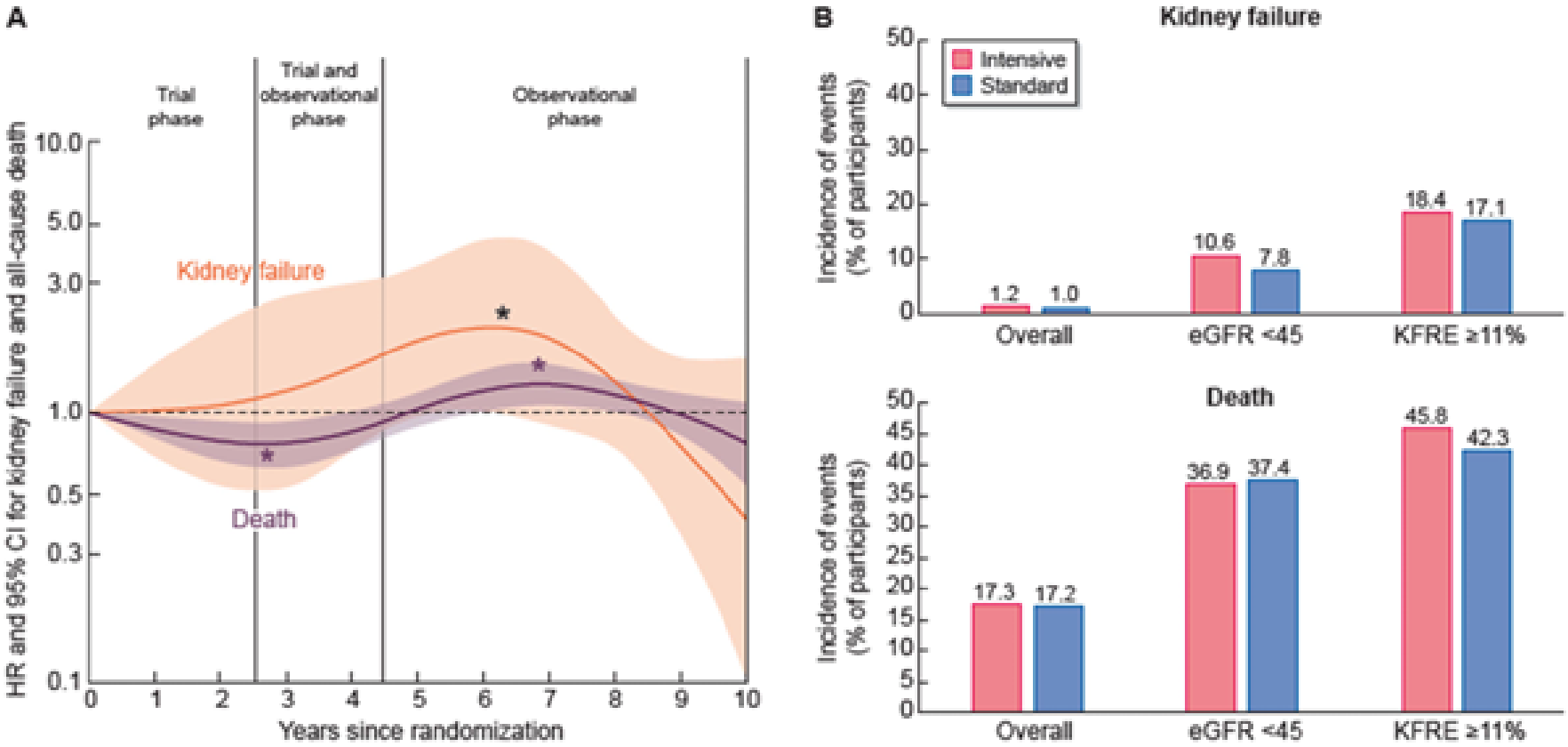
Pajewski et al., J Am Soc Nephrol. 2024 Dec 1;35(12):1737-1745

Long-term kidney and survival outcomes of participants in the SPRINT trial



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Fernandez-Fernandez et al., , NDT 2025; gfaf053

RASi Initiierung bei fortgeschrittener Niereninsuffizienz

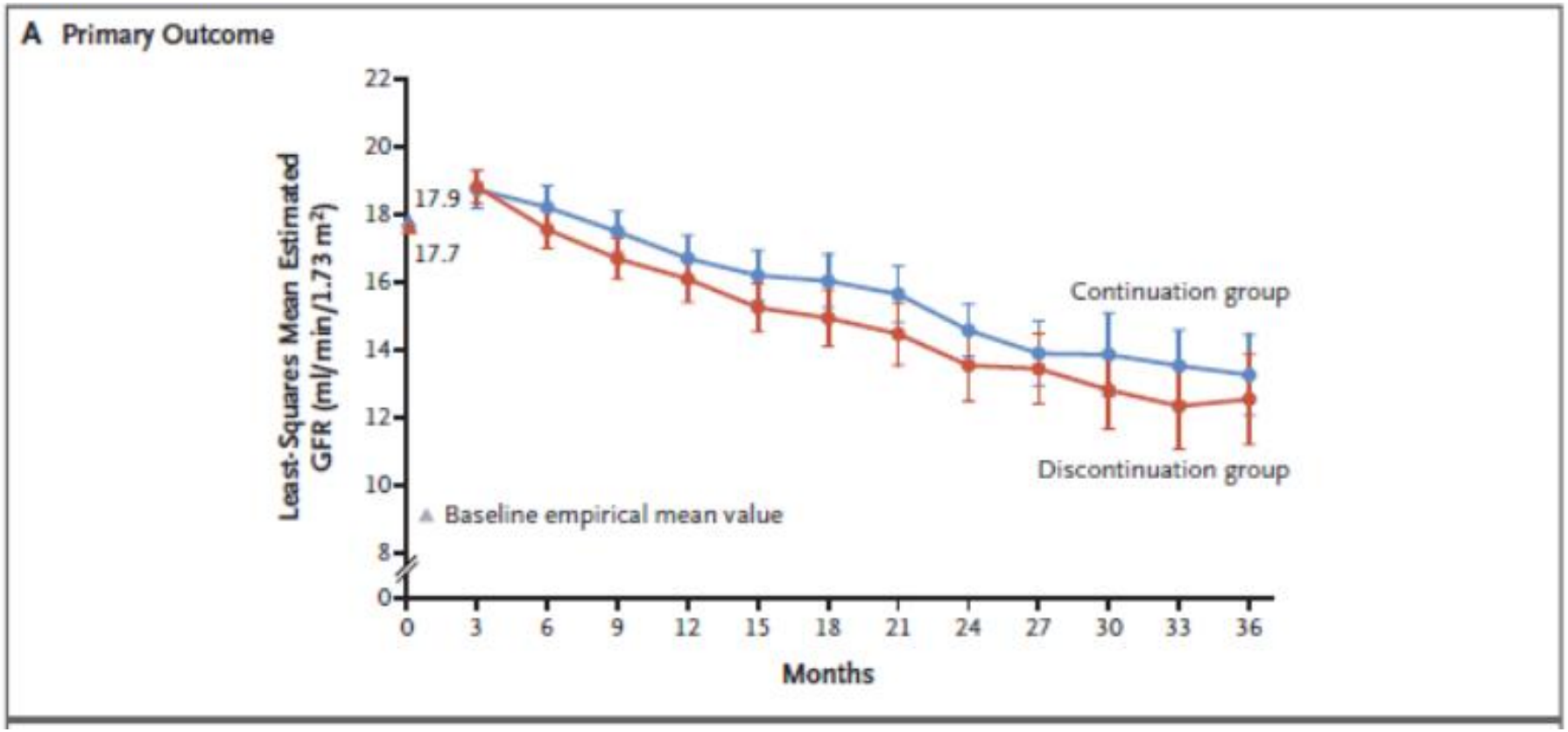
Klinikum St.GEORG

STOP-ACEi Studie: RAS-Hemmer bei hochgradig eingeschränkter Nierenfunktion absetzen oder nicht absetzen – das ist die Frage?

1) Führt das Absetzen von RAS-Inhibitoren bei einer eGFR <30ml/min/1,73m² zu einer Erhöhung oder Stabilisierung der eGFR?

2) Kann durch das Absetzen von RAS-Inhibitoren bei einer eGFR<30ml/min/1,73m² die Notwendigkeit der Einleitung von Nierenersatzverfahren verzögert werden?

STOP-ACEi Studie



eGFR-Verlauf im 3-Jahres-Follow-up

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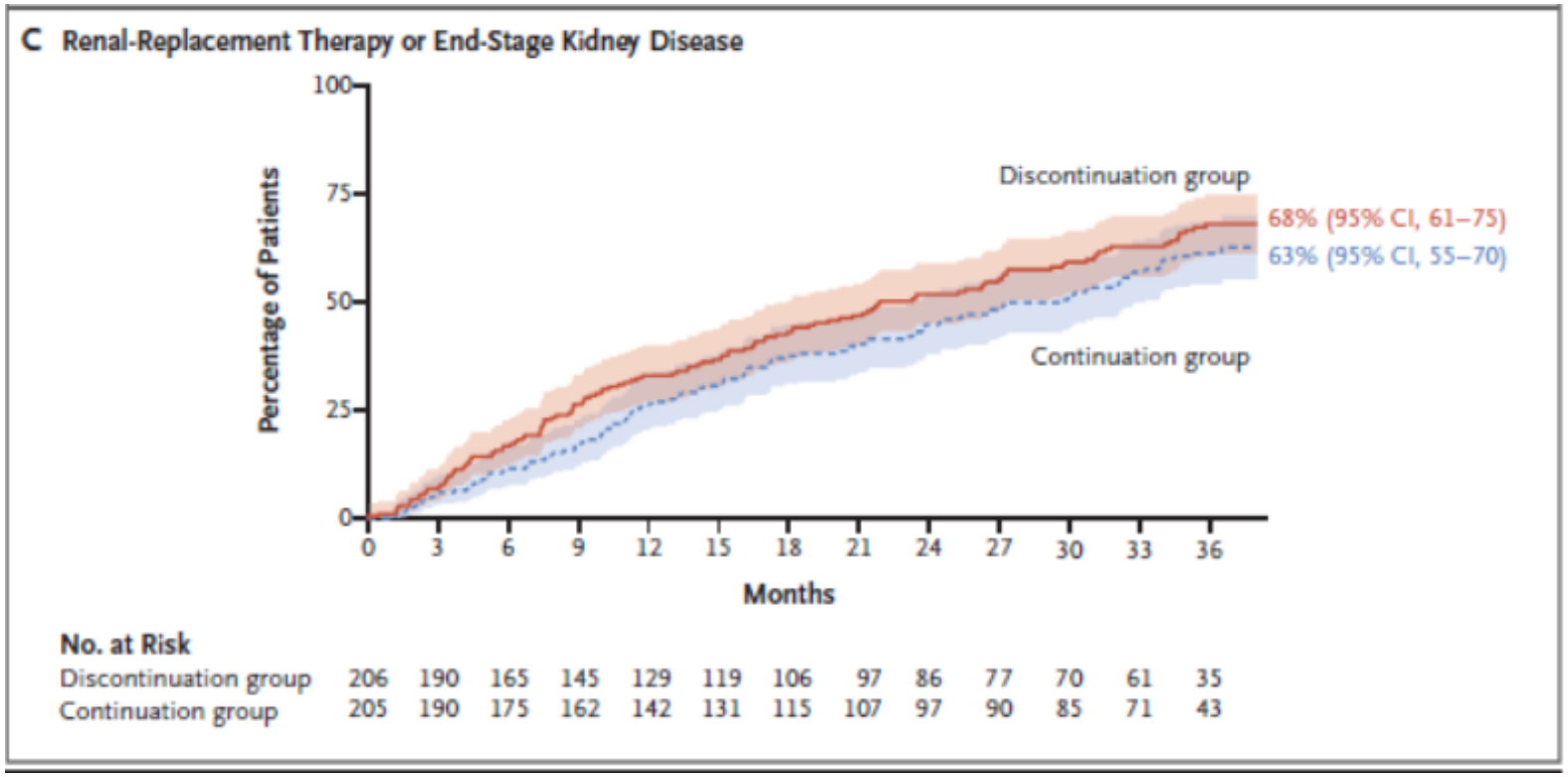
Bhandari S, et al., N Engl J Med. 2022 Dec 1;387(22):2021-2032.

STOP-ACEi Studie



Anteil der Patienten mit Beginn einer Nierenersatztherapie oder Erreichen von ESKD

Mehr Nierenersatzverfahren in der Gruppe mit abgesetzten RAS-Hemmern (HR 1,28 (0,99 – 1,65) und numerisch mehr kardiovaskuläre Ereignisse (108 in Absetzgruppe versus 88 in der Fortsetzungsgruppe)

RASi sollten ohne speziellen individuellen Grund bei Patienten mit einer eGFR < 30 ml/min/1,73 m^2 nicht abgesetzt werden.

Klinikum St.GEORG

Bhandari S, et al., N Engl J Med. 2022 Dec 1;387(22):2021-2032.

State of the Art / Hintergrund

RASi nicht Absetzen ist also geklärt….

Was ist aber mit Neu-Ansetzen bei hochgradiger Niereninsuffizienz?

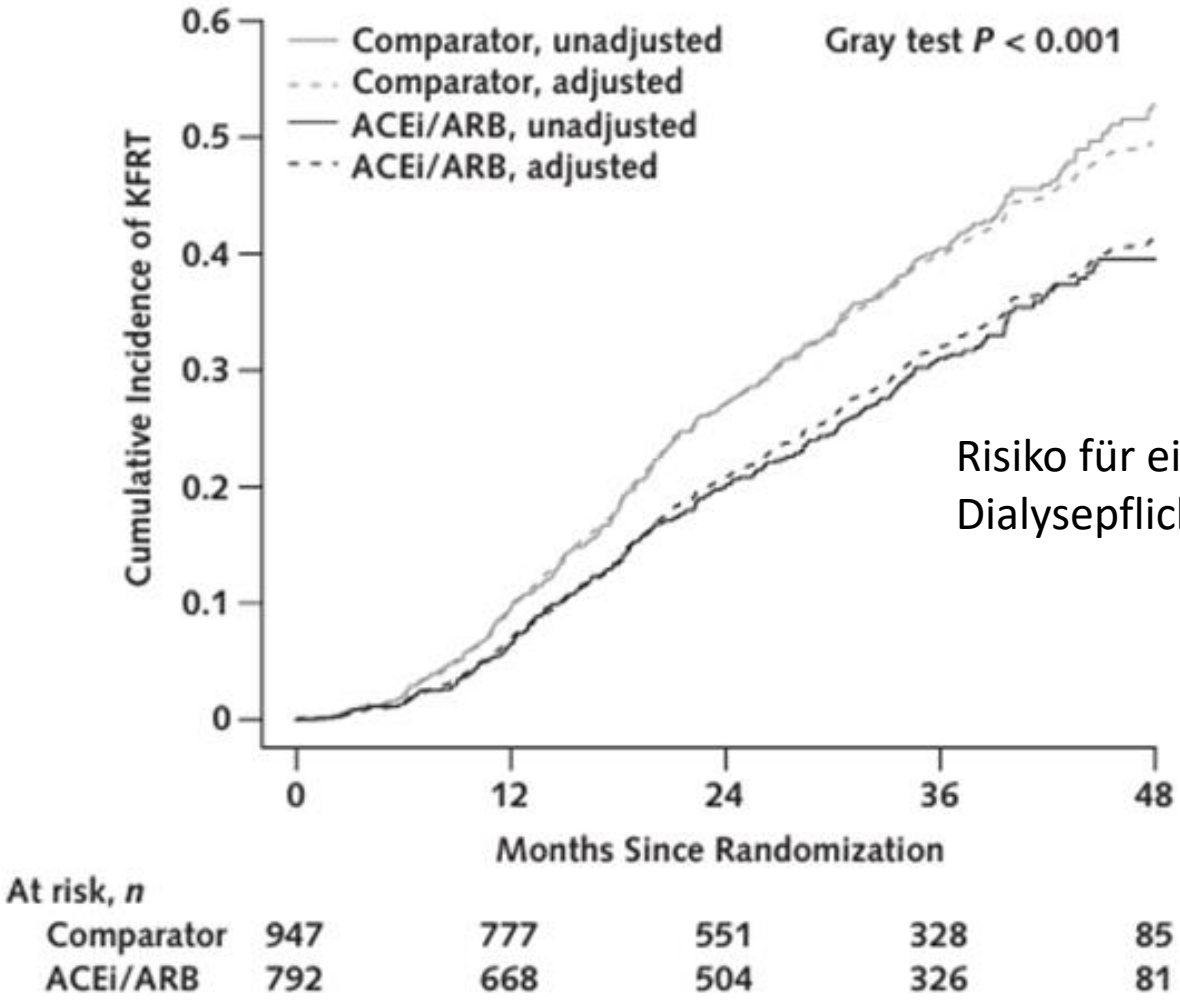
Studie: RASi Initiierung bei fortgeschrittener Niereninsuffizienz

- Beginn einer ACEi- oder ARB-Behandlung im Vergleich zu einer Nicht-ACEi- oder ARB-Vergleichsgruppe bzgl. der Rate von Notwendigkeit von Nierenersatzverfahren und Tod bei einer eGFR von unter 30 ml/min/1,73 m^2

RASi Initiierung bei fortgeschrittener Niereninsuffizienz

- 1739 Teilnehmer aus 18 Studien
- Alter im Mittel 54,9 Jahre
- mittlere eGFR 22,2 ml/min/1,73 m²

- kein Einfluss auf das Sterberisiko.
- Nutzen der RASi unabhängig von Alter, eGFR, Albuminurie oder Diabetes-Vorgeschichte.



Risiko für eine Progression zur Dialysepflichtigkeit -34 %.

GEORG

Ku et al., Ann Intern Med. 2024;177:953-963

What is the role of initiation of ACEi or ARB in advanced chronic kidney disease?

#NephJC

Systematic review and meta-analysis

Ovid Medline & CKD EPI Clinical Trials Consortium

1739 participants from 18 trials

Mean eGFR 22.2 ml/min/1.73 m^2

Objective

To compare use of ACEi/ARB Vs. placebo or other antihypertensives in patients with Stage 4 CKD with rates of KFRT and death

Findings

624 (35.9%) developed KFRT

133 (7.6%) died during a median follow-up of 34 months

KFRT- Kidney failure with renal replacement therapy

Outcomes

ACEi/ARB treatment initiation led to lower risk for KFRT HR 0.66 (95% CI, 0.55 to 0.79)

No risk reduction for risk of death
HR 0.86
(95 % CI 0.58-1.28)

Conclusion: Initiation of ACEi or ARB therapy protects against KFRT, but not death, in people with advanced CKD

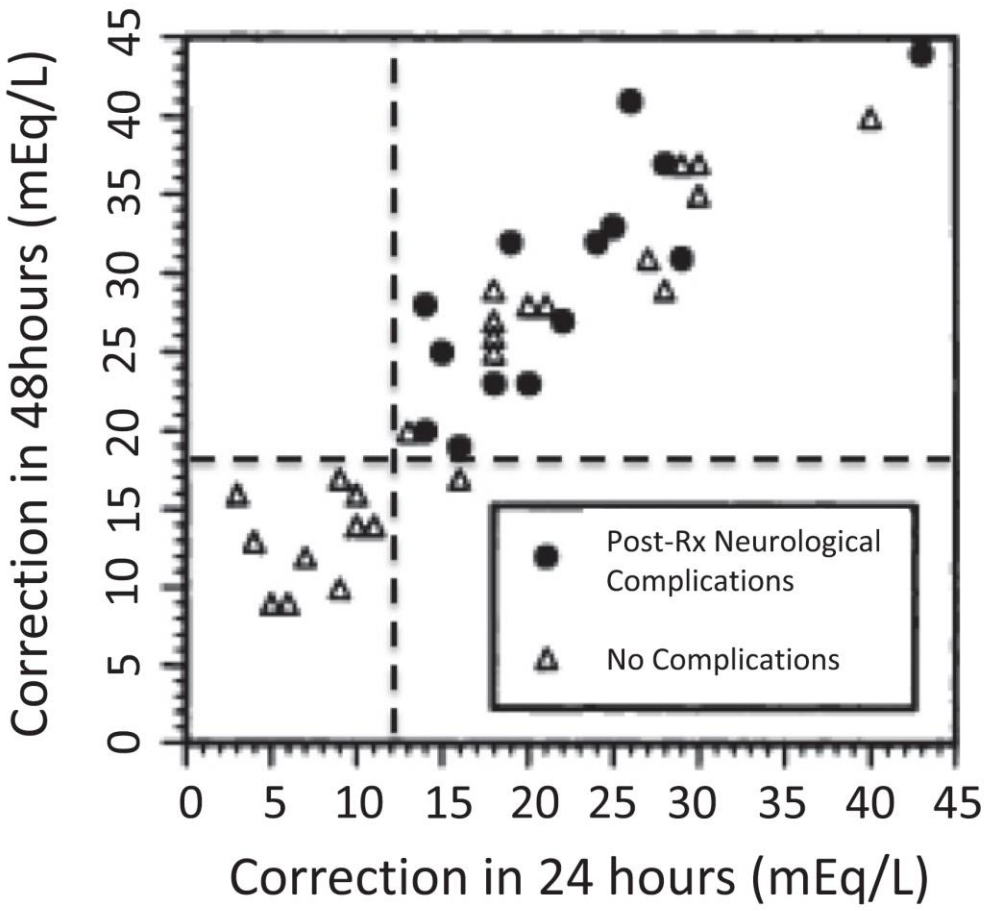
Reference: Ku E et al Ann Intern Med. 2024 Jul;177(7):953-963. doi: 10.7326/M23-3236

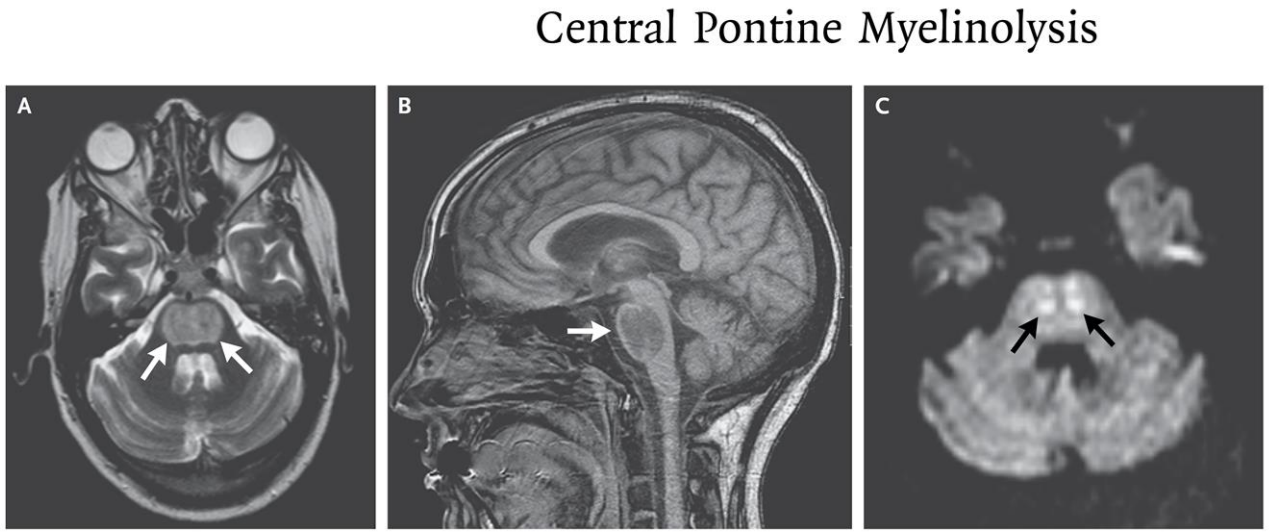
VA by Nikhil Elenjickal MD, DNB @DrNikhilJ1

Korrekturraten bei Hyponatriämie

Klinikum St.GEORG

State of the Art / Hintergrund





Daher: empfohlene langsame Korrektur einer schweren Hyponatriämie (<8 oder 6-10 mEq/L pro 24 h)

Klinikum St.GEORG

Stern R.H. Clin J Am Soc Nephrol 13, 2018
Tavare AN, Murray D., N Engl J Med 2016; 374(7):e8, DOI: 10.1056/NEJMicm1504134

Hyponatriämie, Korrekturgeschwindigkeit und ODS

- 22.858 Krankenhausaufenthalte mit Hyponatriämie
- initiales S-Natrium im mittel 125 mmol/l (±4,6mmol/l)
- 11,9 % mit S-Natrium 110 - 119 mmol/l, 1,2 % S-Natrium < 110 mmol/l

- „nur“ 12 Patienten entwickelten ein ODS (0,05 %)
- 7/12 (58 %) der Patienten mit ODS hatten keine zu rasche Korrektur des S-Natrium.
- Aber: ….

Mortalität bei schneller Natriumkorrektur (>8mmol/l/24h): 5,12%

Mortalität bei langsamerer Korrektur (<8mmol/l/24h): 9,2%

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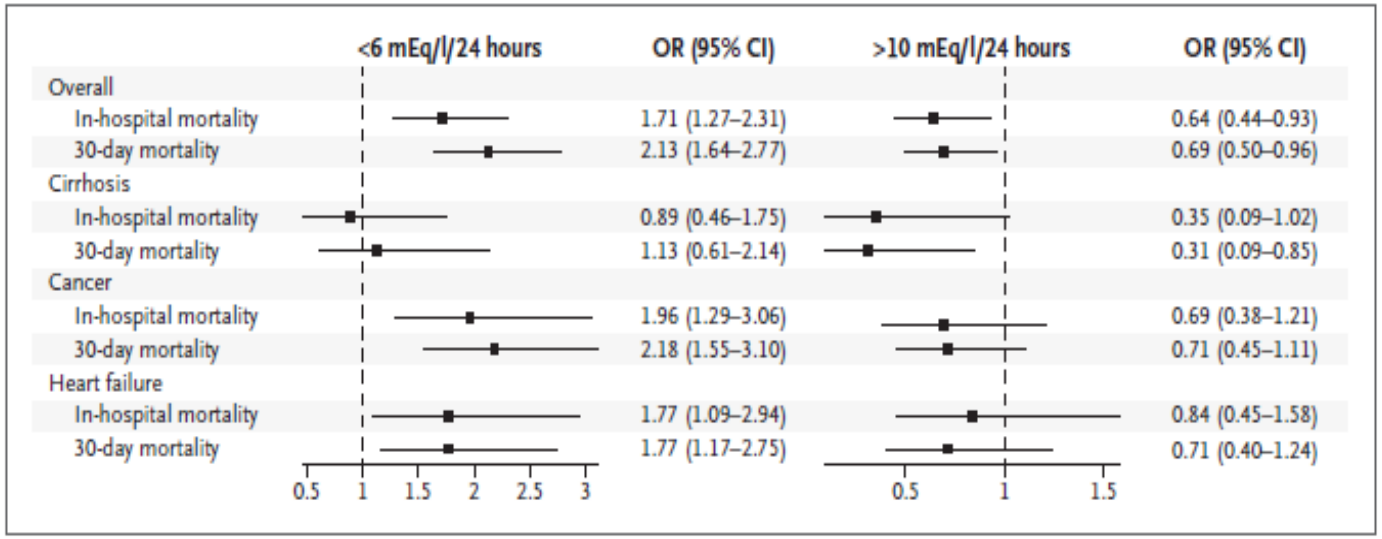
MacMillan, T. E. et al., NEJM Evid. 2023 Oct;2(10):EVIDe2300228.

Hyponatriämie, Natriumkorrektur, ODS und Sterblichkeit

Multizentrische Beobachtung bei 3.274 Patienten mit schwerer Hyponatriämie (S-Natrium < 120 mEq/l)

Drei Gruppen nach Korrekturraten: < 6 mEq/l/24 h, 6 bis 10 mEq/l/24 h und >10 mEq/l/24 h



multivariable Analyse mit Adjustierung für Alter, Geschlecht, Rasse, Serum-Natriumspiegel bei der Aufnahme und Charlson Komorbiditätsindex

7 Patienten mit ODS (5 von diesen 7 mit Natriumkorrekturrate von ≤8 mEq/l/24 h !!)

6 der 7 ODS Patienten hatten eine Alkoholabhängigkeit, Unterernährung, Hypokaliämie oder Hypophosphatämie.

Klinikum St.GEORG

Seethapathy H, et al., NEJM Evid. 2023 Oct;2(10):EVIDoa2300107.

Intern Med J. 2023 Jul;53(7):1154-1162. doi: 10.1111/imj.15855. Epub 2022 Sep 16.

Osmotic demyelination syndrome: novel risk factors and proposed pathophysiology

Ravi Ambati [1 2], Lay K Kho [1 2], David Prentice [1 2], Andrew Thompson [3]

15 Osmotische Demyelinisierungs-Syndrome

Davon „nur“ 2 (13%) bei schneller Korrektur (>8mmol/l/24h)

Aber 93% hatten eine Hypokaliämie !!

Table 1 Patient characteristics ($n = 15$)

Demographic ($n = 15$)	
Sex (females)	5 (33.3%)
Average age at diagnosis (range) (years)	53.6 (35–75)
Comorbidities ($n = 15$)	
Malnutrition	9 (60%)
Chronic alcoholism	10 (66.7%)
Diabetes mellitus	4 (26.7%)
Depression	6 (40%)
Hypertension	4 (26.7%)
Cirrhosis	3 (20%)
Bloods	
Hyponatraemia	14 (93.3%)
Normonatraemia	1 (6.7%)
Mild (130–134 mmol/L)	4 (26.7%)
Moderate (120–129 mmol/L)	8 (53.3%)
Severe (<120 mmol/L)	2 (13.3%)
Overcorrection (>8 mmoL/24 h)	2 (13.3%)
Hypokalaemia	14 (93.3%)
Hypophosphataemia (<0.75 mmol/L)	9 (60%)
Radiology	
Pontine only	9 (60%)
Extra-pontine only	1 (6.7%)
Both	5 (33.3%)

Ambati et al., Intern Med J . 2023 Jul;53(7):1154-1162

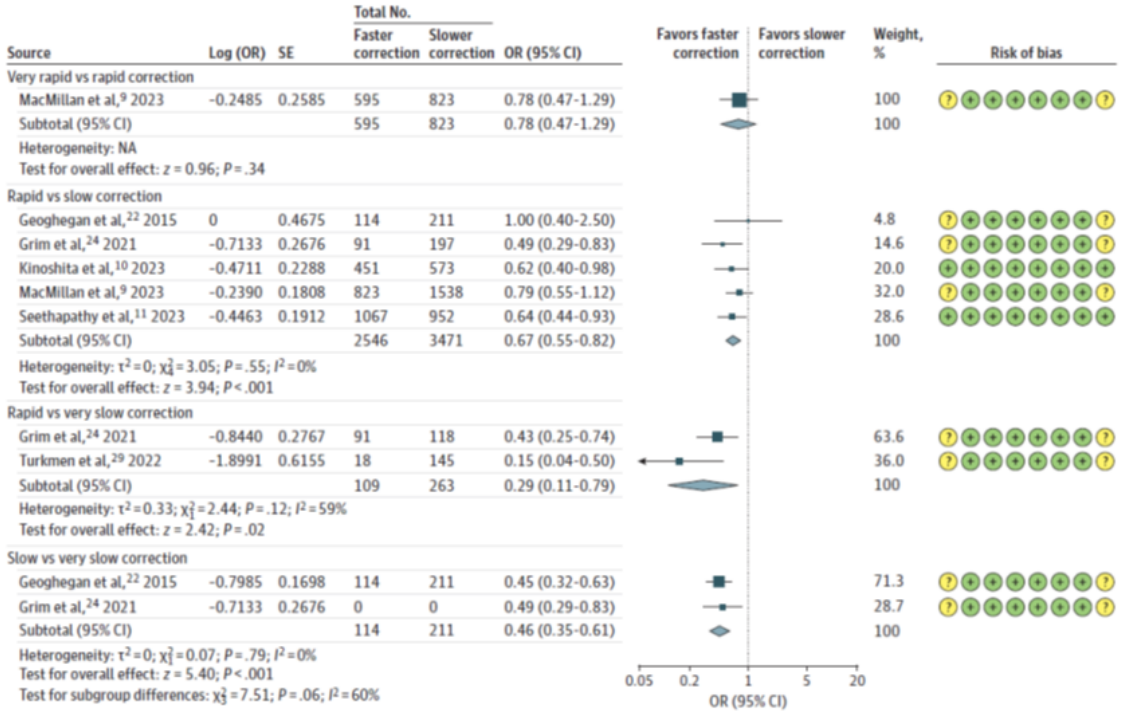
Die aktuelle Studie: Natriumkorrektur-Raten

- Schnelle Korrektur ≥8 - 10 mEq/L pro 24 h
- Langsame Korrektur 6-10 mEq/L pro 24 h
- sehr langsame Korrektur <4-6 mEq/L pro 24 h

Schnelle Korrektur im Vergleich zu einer langsamen Korrektur:
32 weniger Todesfälle im KH pro 1.000 behandelte Patienten

Schnelle Korrektur im Vergleich zu einer sehr langsamen Korrektur:
221 weniger Todesfälle im KH pro 1.000 behandelte Patienten

Rasche Korrektur im Vergleich zu einer langsamen und sehr langsamen Korrektur:
61 bzw. 134 weniger Todesfälle je 1.000 behandelte Patienten nach 30 Tagen



Source	Log (OR)	SE	Total No. Faster correction	Total No. Slower correction	OR (95% CI)	Weight, %
Very rapid vs rapid correction						
MacMillan et al,[9] 2023	-0.2485	0.2585	595	823	0.78 (0.47-1.29)	100
Subtotal (95% CI)			595	823	0.78 (0.47-1.29)	100
Heterogeneity: NA						
Test for overall effect: $z = 0.96$; $P = .34$						
Rapid vs slow correction						
Geoghegan et al,[22] 2015	0	0.4675	114	211	1.00 (0.40-2.50)	4.8
Grim et al,[24] 2021	-0.7133	0.2676	91	197	0.49 (0.29-0.83)	14.6
Kinoshita et al,[10] 2023	-0.4711	0.2288	451	573	0.62 (0.40-0.98)	20.0
MacMillan et al,[9] 2023	-0.2390	0.1808	823	1538	0.79 (0.55-1.12)	32.0
Seethapathy et al,[11] 2023	-0.4463	0.1912	1067	952	0.64 (0.44-0.93)	28.6
Subtotal (95% CI)			2546	3471	0.67 (0.55-0.82)	100
Heterogeneity: $\tau^2 = 0$; $\chi^2_4 = 3.05$; $P = .55$; $I^2 = 0\%$						
Test for overall effect: $z = 3.94$; $P < .001$						
Rapid vs very slow correction						
Grim et al,[24] 2021	-0.8440	0.2767	91	118	0.43 (0.25-0.74)	63.6
Turkmen et al,[29] 2022	-1.8991	0.6155	18	145	0.15 (0.04-0.50)	36.0
Subtotal (95% CI)			109	263	0.29 (0.11-0.79)	100
Heterogeneity: $\tau^2 = 0.33$; $\chi^2_1 = 2.44$; $P = .12$; $I^2 = 59\%$						
Test for overall effect: $z = 2.42$; $P = .02$						
Slow vs very slow correction						
Geoghegan et al,[22] 2015	-0.7985	0.1698	114	211	0.45 (0.32-0.63)	71.3
Grim et al,[24] 2021	-0.7133	0.2676	0	0	0.49 (0.29-0.83)	28.7
Subtotal (95% CI)			114	211	0.46 (0.35-0.61)	100
Heterogeneity: $\tau^2 = 0$; $\chi^2_1 = 0.07$; $P = .79$; $I^2 = 0\%$						
Test for overall effect: $z = 5.40$; $P < .001$						
Test for subgroup differences: $\chi^2_3 = 7.51$; $P = .06$; $I^2 = 60\%$						

Adjustierte In-Krankenhaus Sterblichkeit in Abhängig von der Geschwindigkeit der Natriumkorrektur

Klinikum St.GEORG

Ayus et al., JAMA Intern Med. 2025;185(1):38-51.

Was bringt die Korrektur einer chronischen Hyponatriämie ?

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State of the Art / Hintergrund

- Hyponatriämie ist die häufigste Elektrolytstörung
- geht mit erheblicher Morbidität und Mortalität einher
- Patienten sind häufig oligo- oder asymptomatisch, insbesondere bei chronischer Hyponatriämie

- Unklarheiten bezüglich der Notwendigkeit einer Natriumkorrektur

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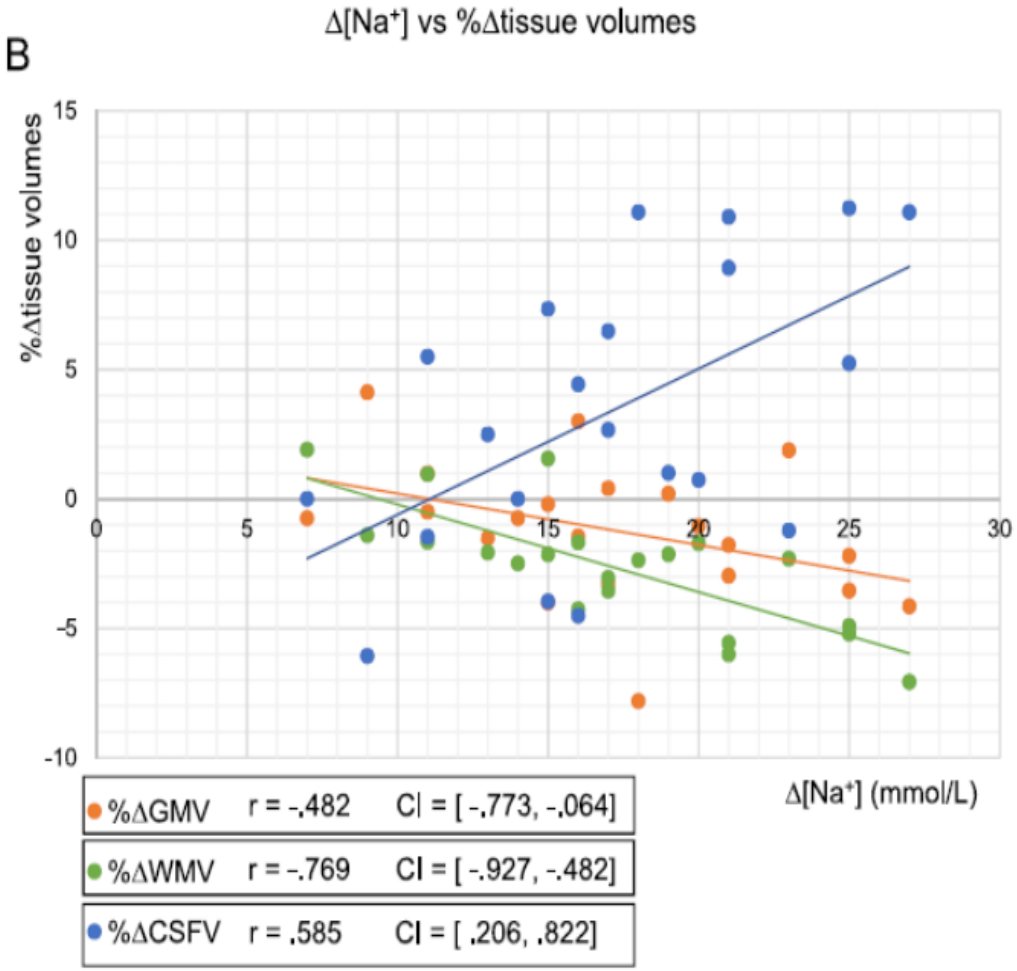
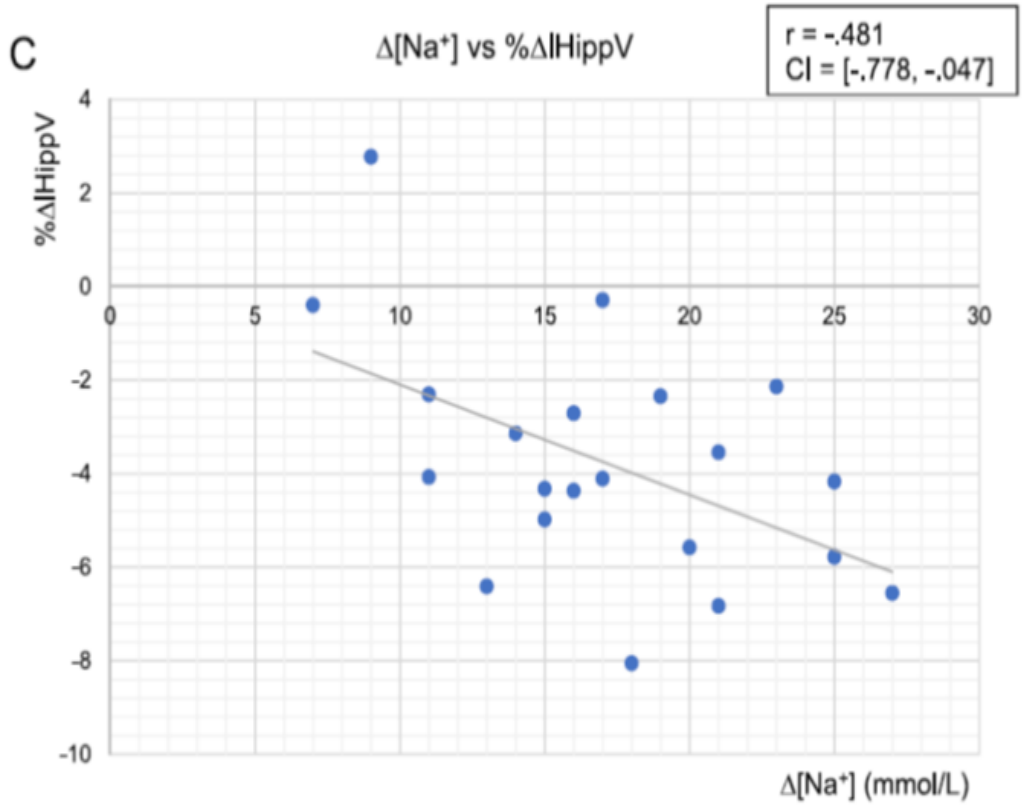
https://steemit.com/deutsch/@asmr-austria/kontrolle-des-blutdrucks-120-zu-80-doch-was-bedeuten-diese-beiden-zahlen

Was passiert während der Hyponatriämie-Korrektur im Gehirn?





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Suarez et al., Am J Kidney Dis. 2024:84(1):38-48

Was passiert funktionell während der Korrektur einer Hyponatriämie?

	No. of Pts.	Session 1	Session 2	Difference	CI[a]	Cohen *d*
[Na^+], mmol/L	21	118.4 ± 6.1	135.5 ± 3.5	17.1 ± 5.4	14.71 to 19.62	−3.18
MMSE score	19	25.8 ± 4.5	27.8 ± 3.1	2.0 ± 2.8	0.79 to 3.21	−0.70
DemTect score	19	9.9 ± 4.0	12.0 ± 3.5	2.1 ± 4.4	0.21 to 3.68	−0.47
TMT-A, s	19	98.8 ± 96.2	49.9 ± 29.7	−48.9 ± 76.1	−80.46 to −22.45	0.64
TMT-B, s	19	188.6 ± 106.4	121.8 ± 95.4	−66.9 ± 88.9	−104.45 to −32.20	0.75
BDI score	18	30.5 ± 15.3	17.2 ± 11.2	−13.3 ± 11.8	−18.89 to −8.56	1.13
TUG, s	13	12.4 ± 4.9	9.9 ± 3.7	−2.5 ± 5.2	−0.59 to 5.67	0.49

Values given as mean ± standard deviation where applicable. Abbreviations: BDI, Beck Depression Inventory; CI, confidence interval; MMSE, Mini-Mental Status Examination; [Na^+], plasma sodium concentration; TMT, Trail Making Test; TUG, Timed Up and Go.
[a]Bootstrapped CI comparing both sessions' means (2-tailed) and effect sizes.

Klinikum St.GEORG

Suarez et al., Am J Kidney Dis. 2024:84(1):38-48

Konklusionen

- Patienten mit Hyponatriämie sind zumeist stärker beeinträchtig, als bei kursorischer Anamnese und Untersuchung auffällig wird
- Die Korrektur der Hyponatriämie führt zu einer deutlichen Verbesserung der Kognition sowie zu einer Verringerung ihres Gehirnvolumens
- Volumen-Effekte waren besonders ausgeprägt im Hippocampus (besonders wichtig für Gedächtnis Modulation)
- Die Korrektur von Hyponatriämie sollte auch bei vermeintlich oligosymptomatischen Patienten konsequent angestrebt und induziert werden

Neue Optionen bei Lupusnephritis

Klinikum St.GEORG

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Efficacy and Safety of Obinutuzumab in Active Lupus Nephritis

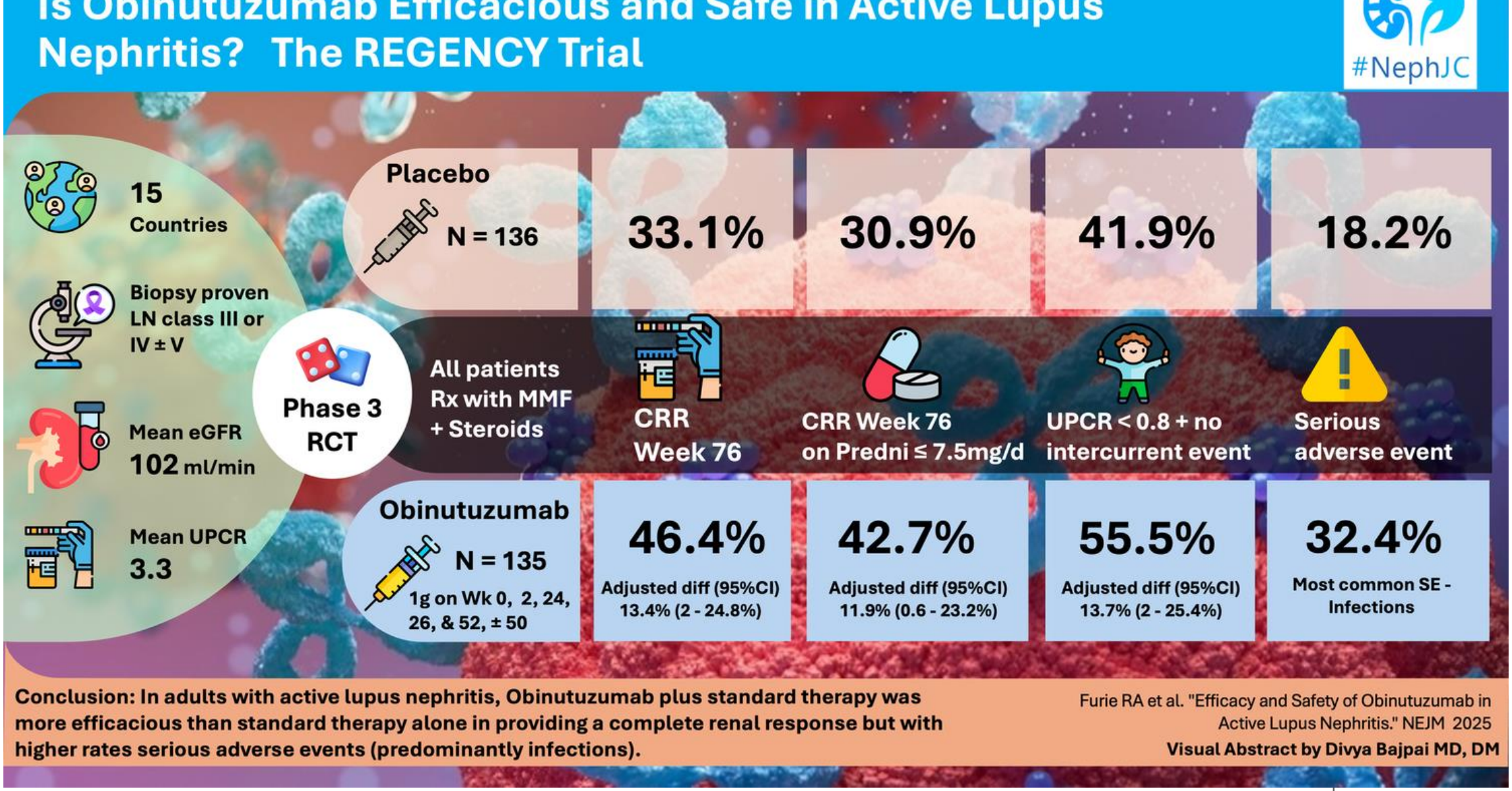
R.A. Furie,[1] B.H. Rovin,[2] J.P. Garg,[3] M.B. Santiago,[4,5,6] G. Aroca-Martínez,[7,8] A.E. Zuta Santillán,[9] D. Alvarez,[11] C. Navarro Sandoval,[10] A.M. Lila,[13] J.A. Tumlin,[14] A. Saxena,[15] F. Irazoque Palazuelos,[16] H. Raghu,[3] B. Yoo,[3] I. Hassan,[17] E. Martins,[18] H. Sehgal,[18] P. Kirchner,[18] J. Ross Terres,[3] T.A. Omachi,[3] T. Schindler,[18] W.F. Pendergraft III,[3] and A. Malvar,[12] for the REGENCY Trial Investigators*

Klinikum St.GEORG

Furie et al., NEJM 2025

Is Obinutuzumab Efficacious and Safe in Active Lupus Nephritis? The REGENCY Trial

#NephJC



Conclusion: In adults with active lupus nephritis, Obinutuzumab plus standard therapy was more efficacious than standard therapy alone in providing a complete renal response but with higher rates serious adverse events (predominantly infections).

Furie RA et al. "Efficacy and Safety of Obinutuzumab in Active Lupus Nephritis." NEJM 2025

Visual Abstract by Divya Bajpai MD, DM

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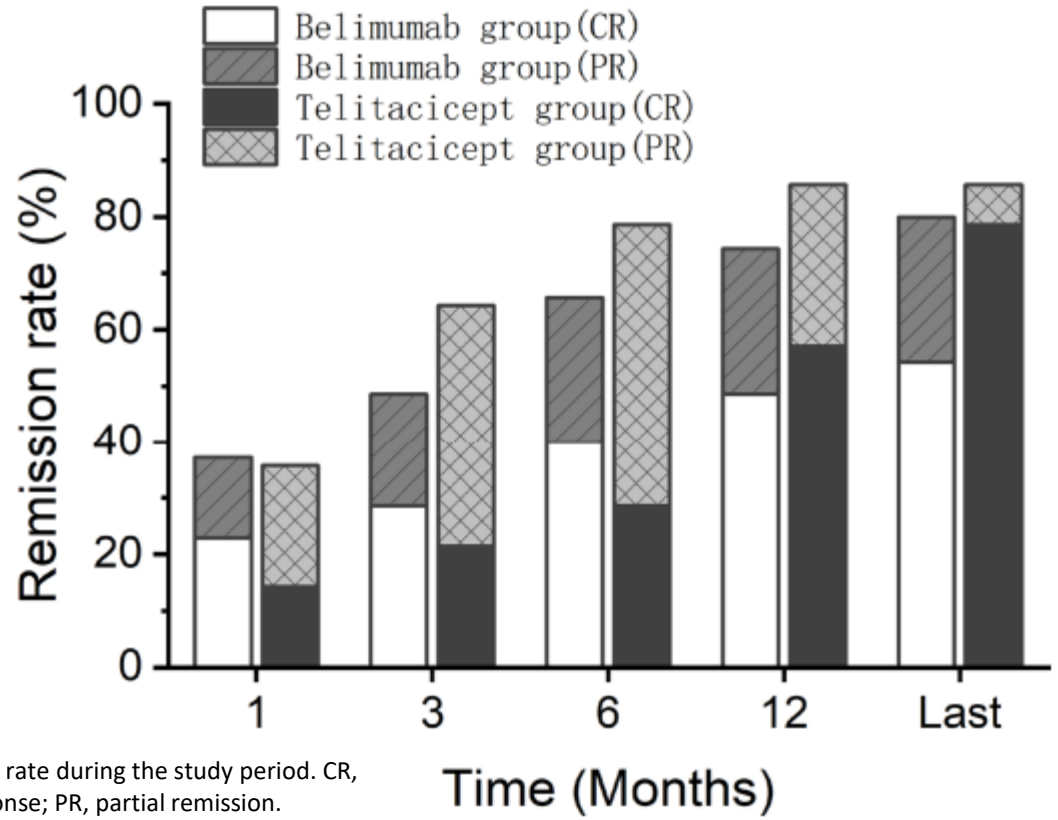
Furie et al., NEJM 2025

LUPUS SCIENCE & MEDICINE

Belimumab versus telitacicept in sequential treatment after rituximab for refractory lupus nephritis: a real-world multicentre study

Yiting Chen,[1] Xin Lei,[1] Jianhang Xu,[1] Xiaochan Chen,[2] Hong Pan,[3] Qiankun Zhang,[4] Junni Wang,[1] Pingping Ren,[1] Lan Lan,[1] Nan Shi,[1] Liangliang Chen,[1] Yaomin Wang,[1] Jianghua Chen,[1] Lie Jin,[4] Yi Yang,[3] Jing Xue,[2] Fei Han [1]



Renal response rate during the study period. CR, complete response; PR, partial remission.

49 refractory lupus nephritis patients categorised into two treatment groups: belimumab group (n=35) and telitacicept group (n=14) following RTX

In 2–4weeks after the last RTX dose, patients received belimumab or telitacicept.

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Chen et al., Lupus Science & Medicine 2025;12:e001296

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 FEBRUARY 22, 2024 VOL. 390 NO. 8

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

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., Tobias Rothe, Ph.D., Ioanna Minopoulou, M.D., Carlo Tur, M.D., Johannes Knitza, M.D., Soraya Kharboutli, M.D., Sascha Kretschmann, Ph.D., Ingrid Vasova, M.D., Silvia Spoerl, M.D., Hannah Reimann, Ph.D., Luis Munoz, M.D., Roman G. Gerlach, Ph.D., Simon Schäfer, Ph.D., Ricardo Grieshaber-Bouyer, M.D., Anne-Sophie Korganow, M.D., Dominique Farge-Bancel, M.D., Dimitrios Mougiakakos, M.D., Aline Bozec, Ph.D., Thomas Winkler, Ph.D., Gerhard Krönke, M.D., Andreas Mackensen, M.D., and Georg Schett, M.D.

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Müller et al., N Engl J Med 2024;390:687-700.

Clinical Kidney Journal, 2025, vol. 18, no. 1, sfae359

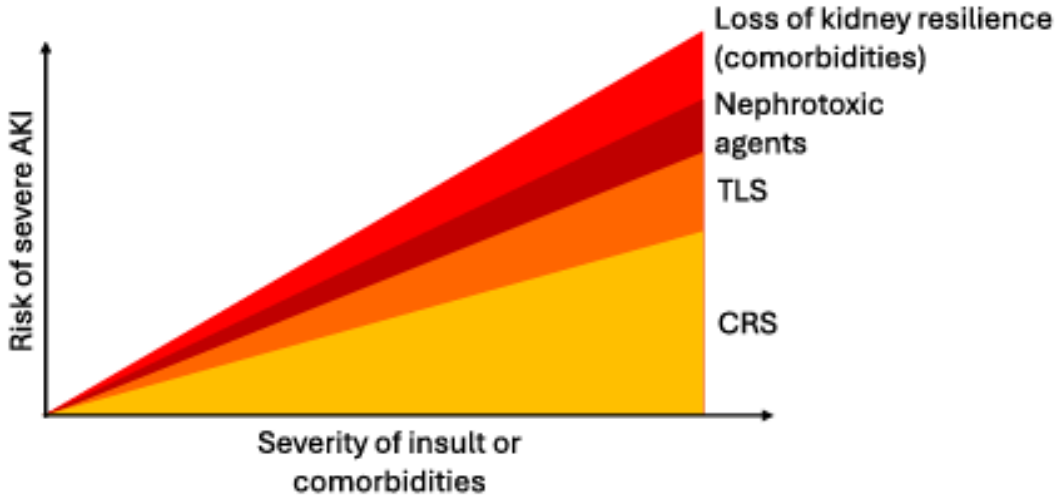
https://doi.org/10.1093/ckj/sfae359
Advance Access Publication Date: 15 November 2024
CKJ Review

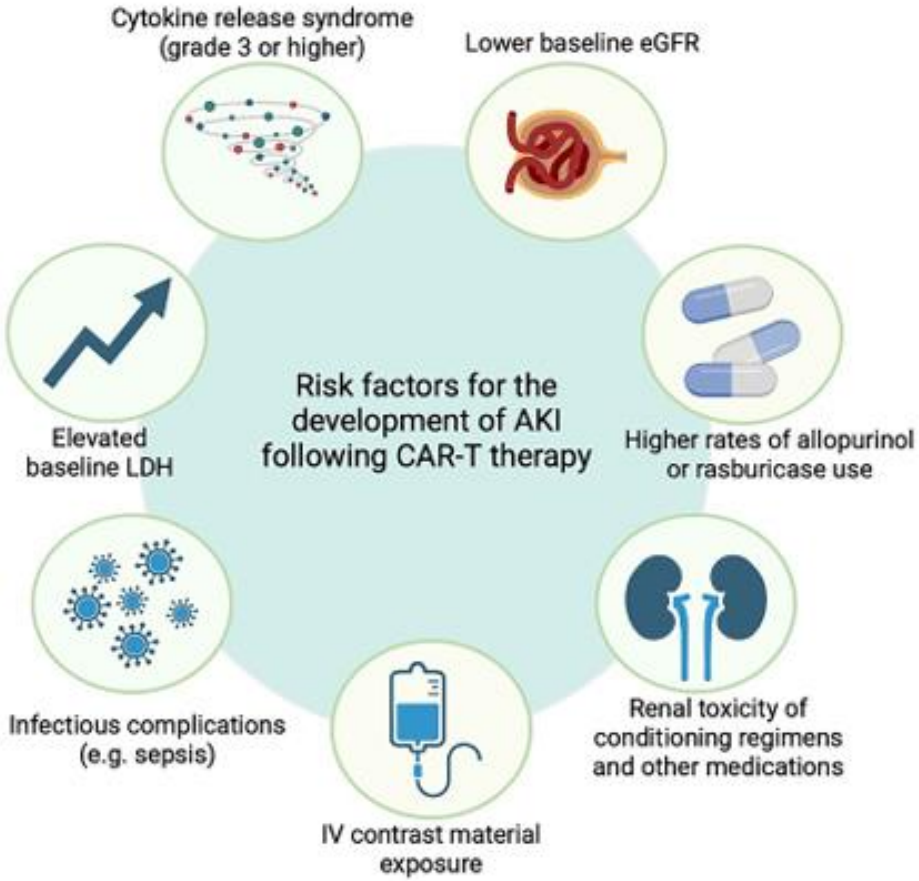
The potential risk factors for nephrotoxic adverse effects of CAR-T cell therapy.

CKJ REVIEW

Acute kidney injury following CAR-T cell therapy: a nephrologist's perspective

Mehmet Kanbay[1], Berk Mizrak[2], Ezgi N. Alper[2], Sidar Copur[2] and Alberto Ortiz[3]





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Kanbay et al., Clinical Kidney Journal , 2025, vol. 18, no. 1, sfae359

CLINICAL CANCER RESEARCH

ABOUT ARTICLES FOR AUTHORS ALERTS NEWS CANCER HALLMA

Volume 30, Issue 20

15 October 2024

TRANSLATIONAL CANCER MECHANISMS AND THERAPY | OCTOBER 15 2024

Second Primary Malignancies after CAR T-Cell Therapy: A Systematic Review and Meta-analysis of 5,517 Lymphoma and Myeloma Patients

Tobias Tix; Mohammad Alhomoud; Roni Shouval; Edward R. Scheffer Cliff; Miguel-Angel Perales; David M. Cordas dos Santos; Kai Rejeski

+ Author & Article Information

Clin Cancer Res (2024) 30 (20): 4690–4700.

https://doi.org/10.1158/1078-0432.CCR-24-1798 Article history

With a median follow-up of 21.7 months, the overall SPM point estimate was 6.0% (95% confidence interval, 4.8%–7.4%).

However, our findings do not indicate that SPM frequency is higher with CAR-T versus previous standard-of-care strategies.

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Tix et al., Clin Cancer Res (2024) 30 (20): 4690–4700.

Semaglutid bei Patienten mit chronischer Nierenerkrankung und Diabetes Typ 2 (FLOW Studie)

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State of the Art / Hintergrund

Nephroprotektive Therapiestrategien

- RAASi
- SGLT2i
- nsMRA

- Subgruppenanalysen aus GLP1-RA Therapiestudien ergaben Hinweise für mögliche nephroprotektive Effekte

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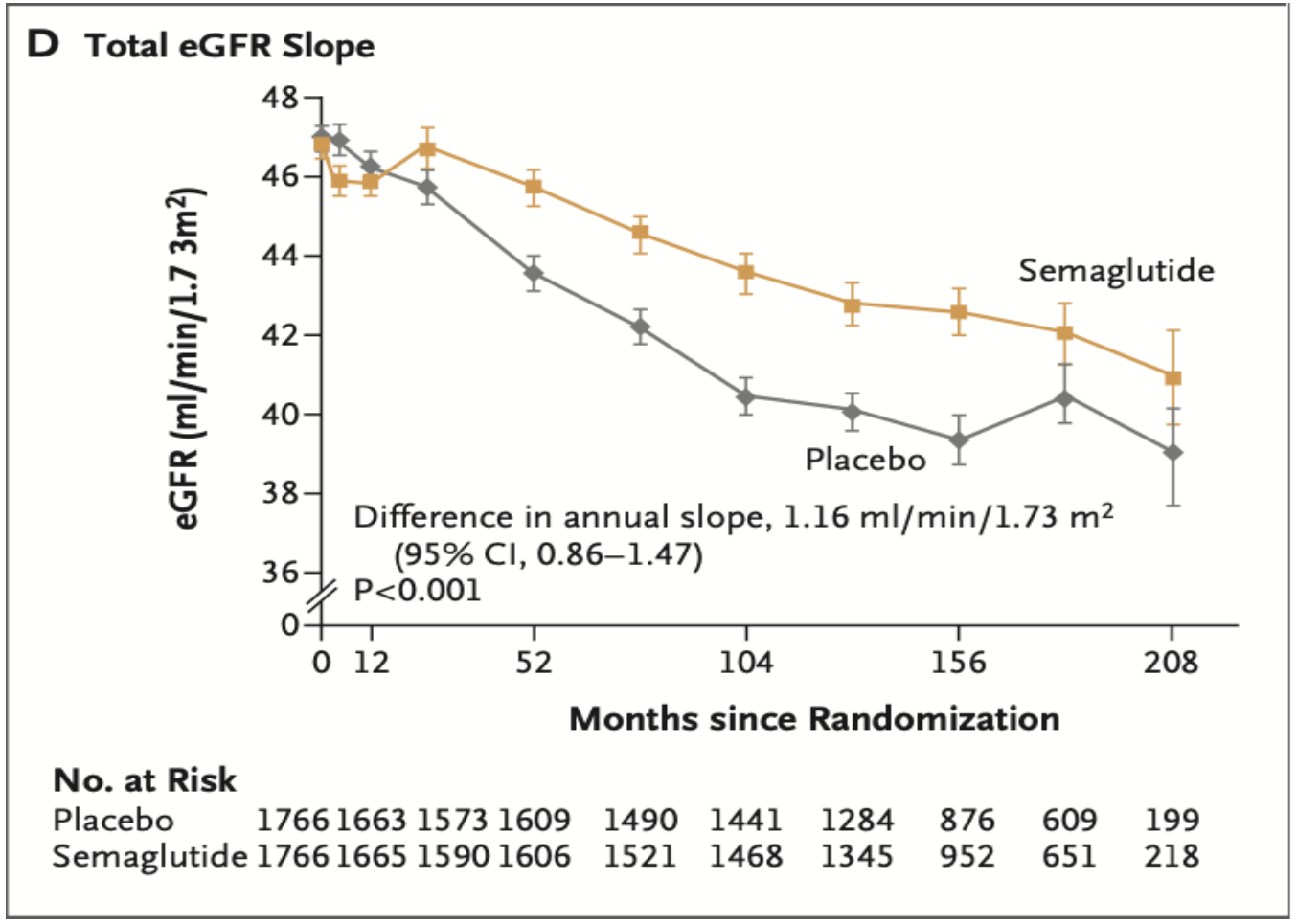
Sebo et al., Journal of Hypertension 2014. 32(3):p 509-517

Semaglutid bei Patienten mit chronischer Nierenerkrankung und Diabetes Typ 2 (FLOW Studie)



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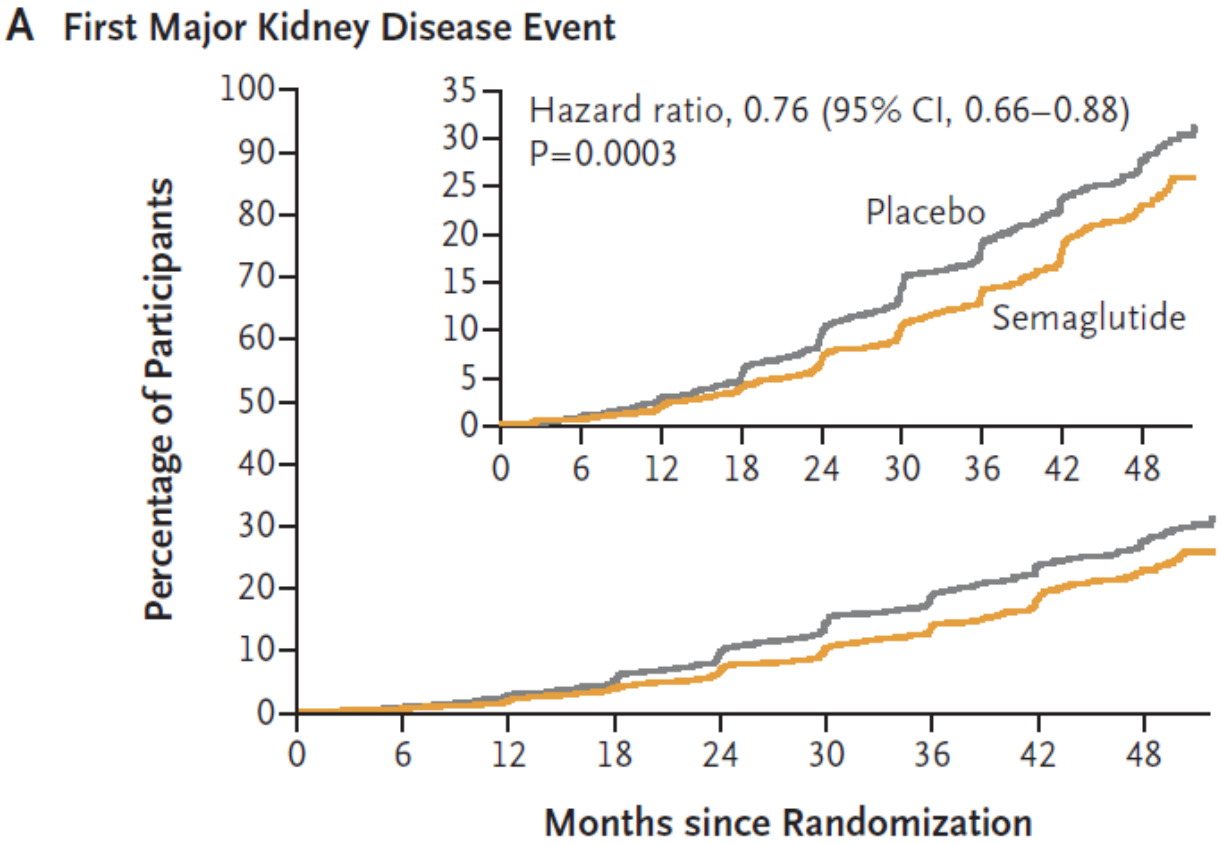
Perkovic et al., N Engl J Med 2024;391:109-121

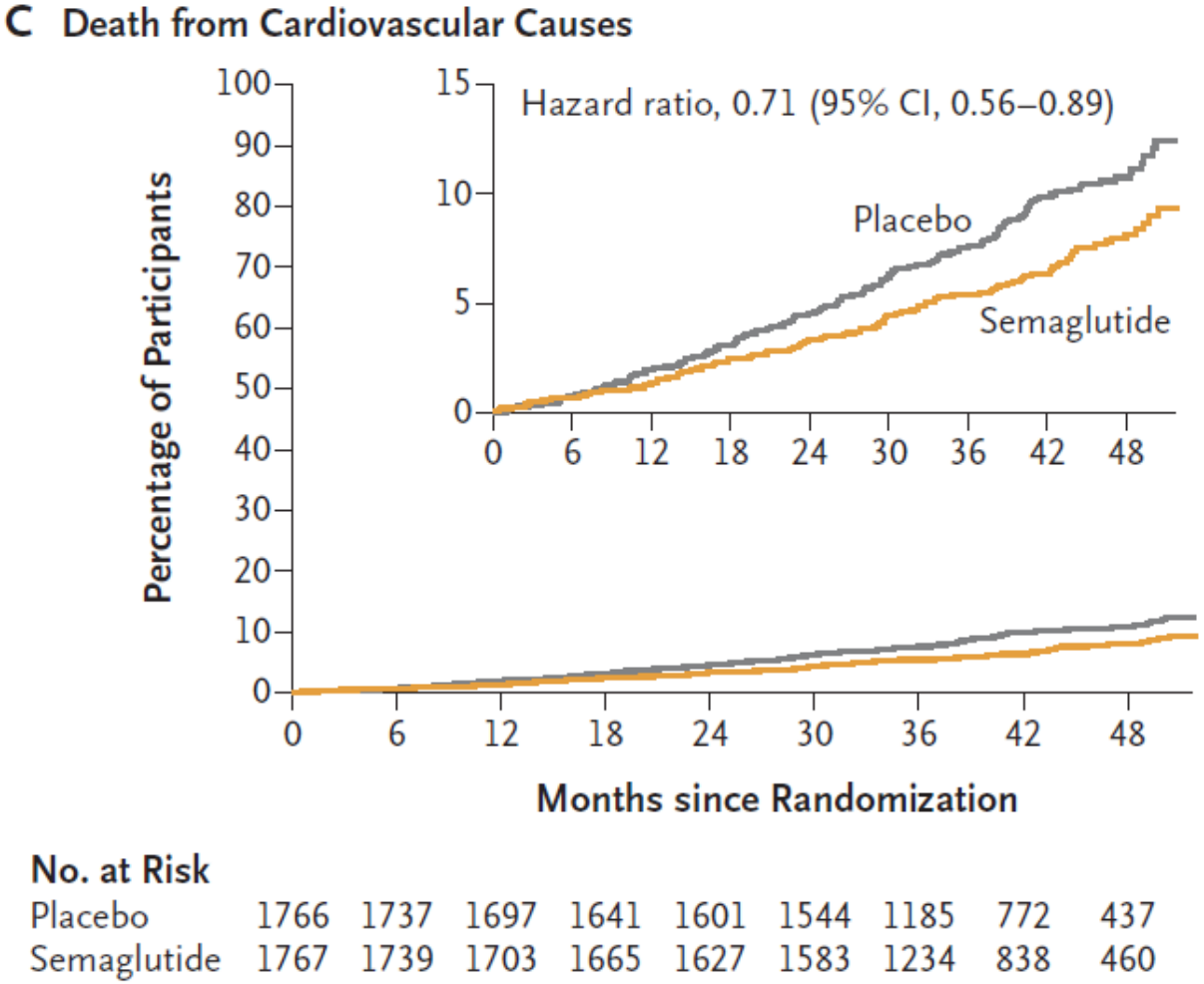
Semaglutid bei Patienten mit chronischer Nierenerkrankung und Diabetes Typ 2 (FLOW Studie)



Klinikum St.GEORG

Perkovic et al., N Engl J Med 2024;391:109-121

Semaglutid bei Patienten mit chronischer Nierenerkrankung und Diabetes Typ 2 (FLOW Studie)



- Semaglutid verringert das Risiko für klinisch relevante renale Endpunkte und kardiovaskulären Tod bei Patienten mit Typ-2-Diabetes und chronischer Nierenerkrankung.
- GLP-1R-A sind somit die vierte erwiesen nephroprotektive Therapiemodalität
- Zulassung für CKD bei T2D durch FDA rezent erfolgt

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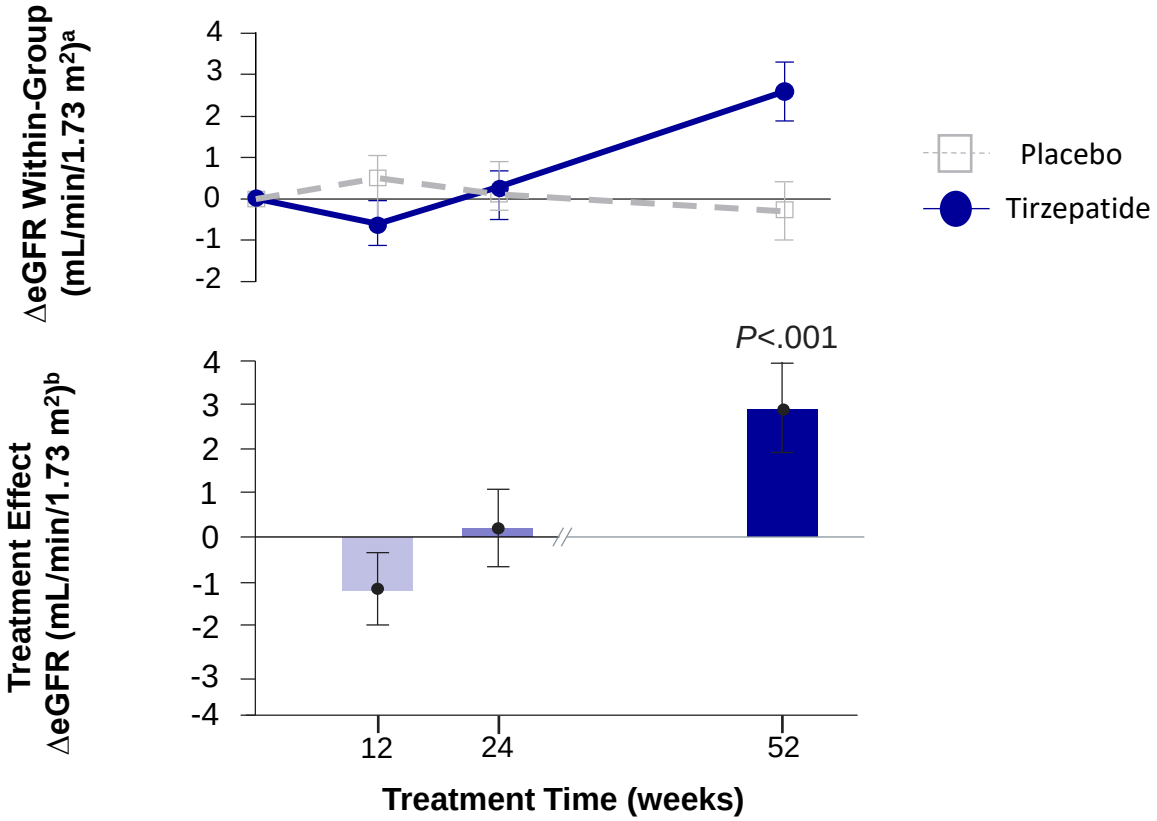
Perkovic et al., N Engl J Med 2024;391:109-121

Effects of Tirzepatide on Kidney Function



Number of participants			
Placebo	336	327	307
Tirzepatide	331	328	311

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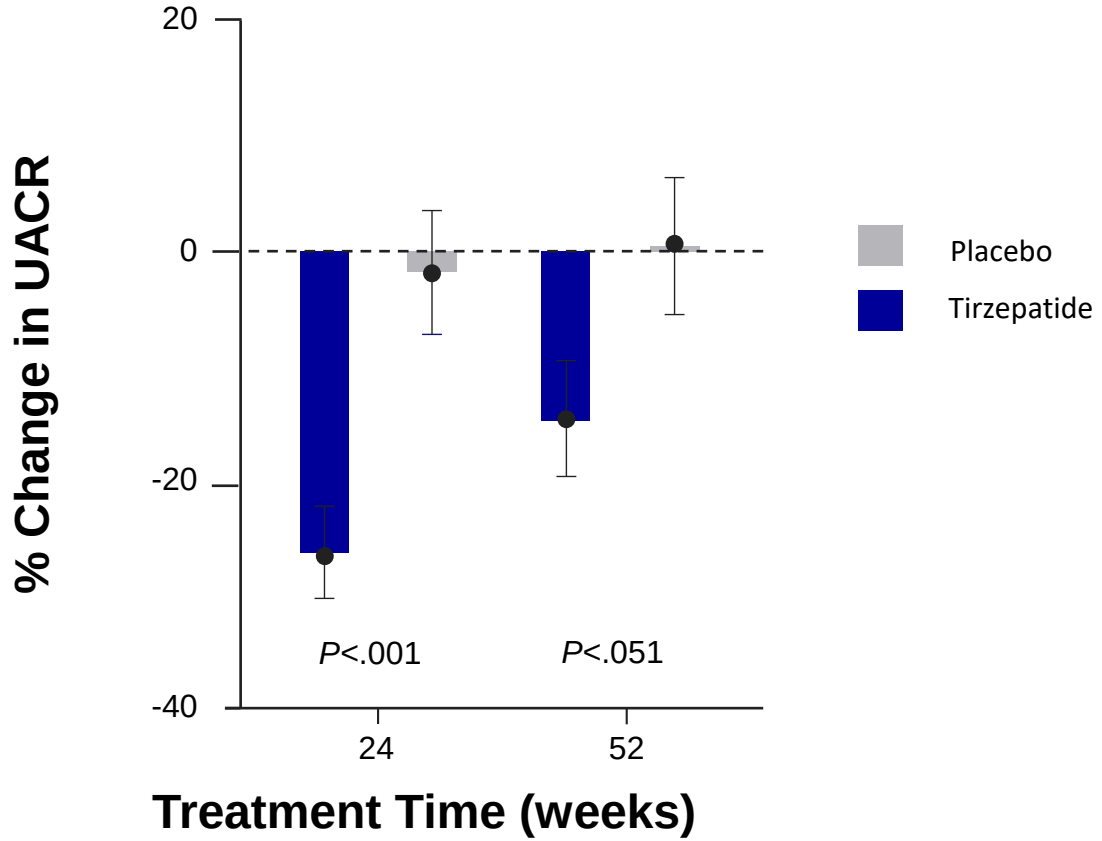
- [a]LSM changes from baseline in eGFR plotted as a function of duration of treatment in participants randomised to tirzepatide (blue circles) or placebo (grey squares). [b]The estimated mean treatment difference in the change in eGFR with tirzepatide vs. baseline compared with placebo plotted as a function of duration of treatment.
- eGFR=Estimated Glomerular Filtration Rate; LSM=Least Squares Mean; SEM=Standard Error of Mean.
- Borlaug BA, et al. *Nat Med*. 2024;doi:10.1038/s41591-024-03374-z (Ahead of print).

Effects of Tirzepatide on Albuminuria



Number of participants		
Placebo	325	314
Tirzepatide	326	323

- Data is represented as LSM ± SEM.
- LSM=Least Squares Mean; SE=Standard Error of Mean; UACR=Urinary Albumin-Creatinine Ratio.
- Borlaug BA, et al. *Nat Med*. 2024;doi:10.1038/s41591-024-03374-z (Ahead of print).

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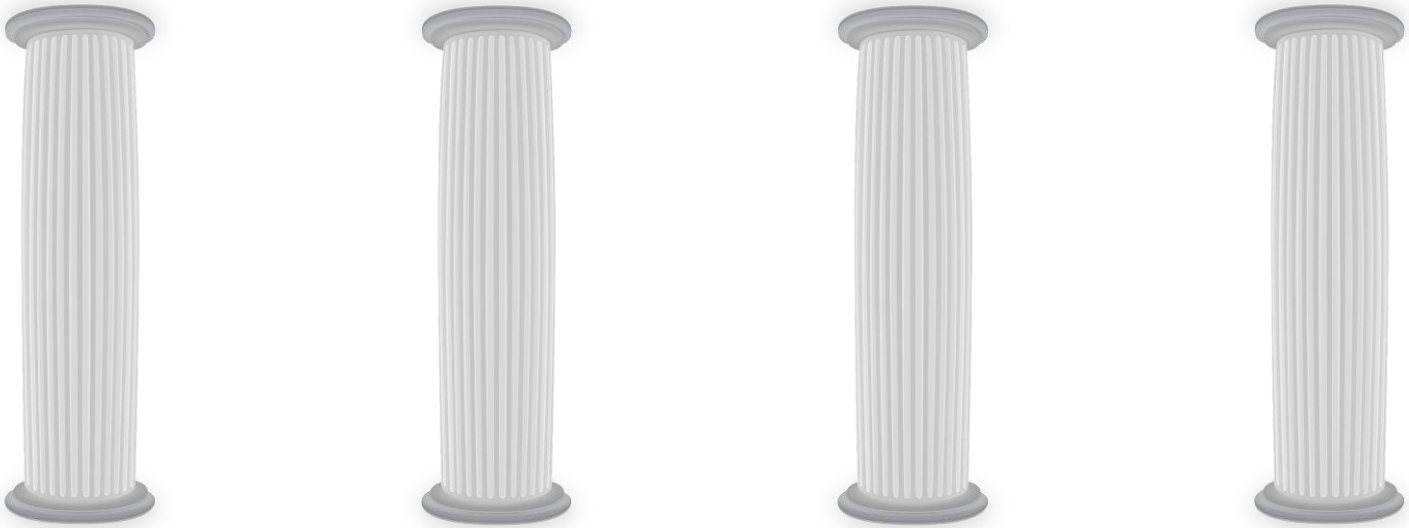
Die nephrologischen „fantastic Four“ in CKD (mit T2DM)

RASi **SGLT2i** **nsMRA** **GLP1-RA**



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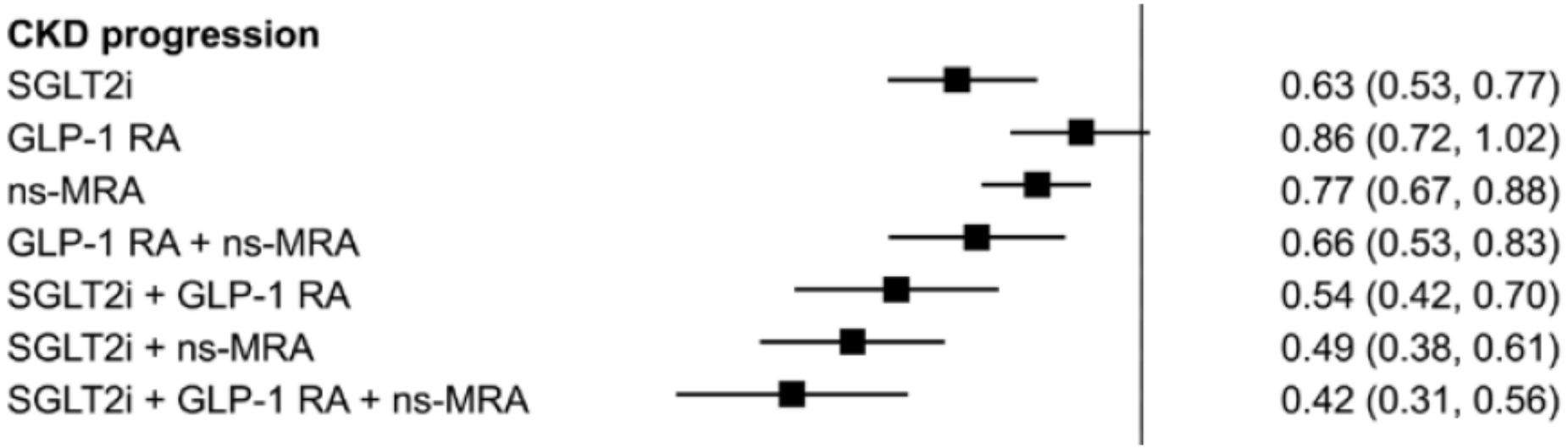
https://pixabay.com/de/vectors/s%C3%A4ule-architektur-griechisch-alt-576066/

Gibt es einen additiven nephroprotektiven Effekt unter SGLT2-I, nsMRAund GLP1-RA ?

Post-hoc analyses of 2 SGLT2i trials (CANVAS, CREDENCE), 2 ns-MRA trials (FIDELIO, FIGARO), 8 GLP-1 RA



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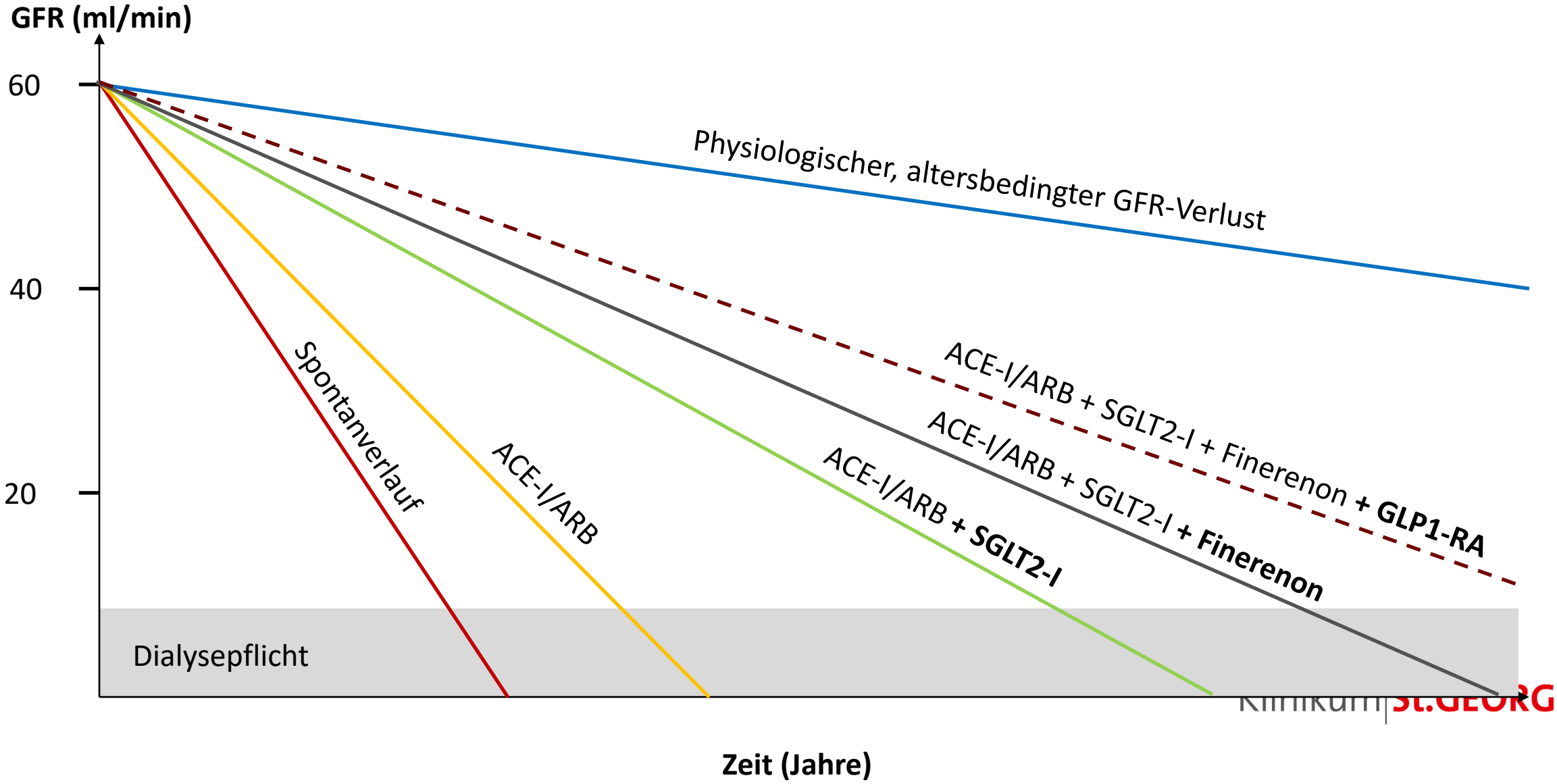
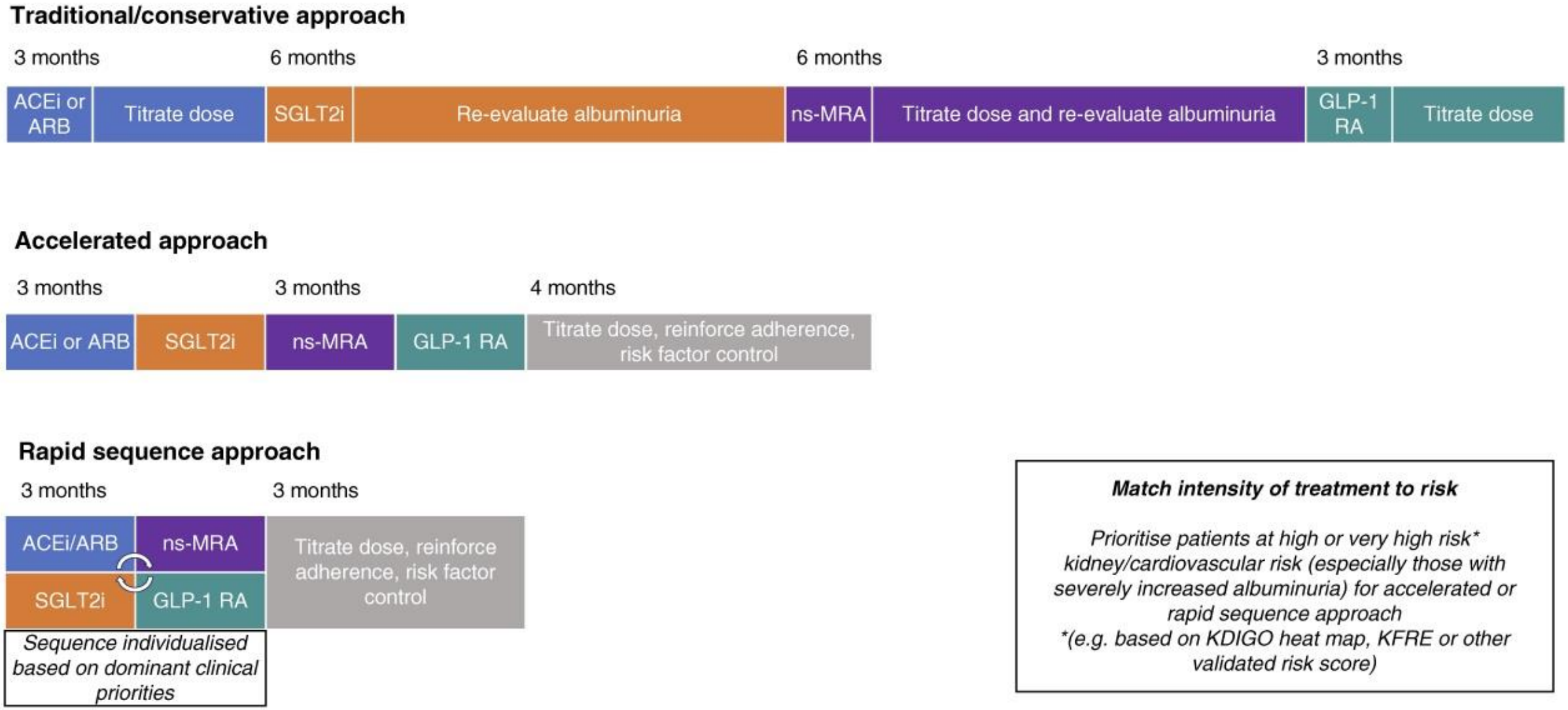
Neuen et al., Circulation 2024;149:450

GFR-Verlauf einer Nierenerkrankung mit und ohne progressionshemmende Maßnahmen



Implementierungsstrategien



It can take up to 12-18 months until guideline-directed medical therapy for type 2 diabetes and CKD is fully implemented

Neuen et al., CJASN 2024

Neue Therapieansätze gegen Adipositas und metabolisches Syndrom

Myostatin inhibitors

Belgian Blue cattle

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LIFE: THE SCIENCE OF BIOLOGY 11e, Figure 17.16
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Vielen Dank

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