

New game changer in heart failure

Üzeyir RƏHİMOV.
MD, PhD, FSCAI, FESC
Universal Hospital

Master Course in Heart Failure

25
BAKU



Baku Marriott Hotel Boulevard
30th May - 1st June

Scientific Coordination

Christine Lohmann, Zurich

Course Directors

Thomas F. Lüscher, MD, FRCP, FESC, London
Ulvi Mirzoyev, MD, PhD, MBA, MSc, FESC, Baku
Yasmin Rustamova, MD, FESC, Baku

In partnership with



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Event endorsed by



BMED Satellite Symposium With Unconditional Scientific Support



Uzeyir Rahimov,
Baku



New Game-changer in
Heart Failure

31 May

11:15 – 11:45

Baku Marriott
Hotel Boulevard

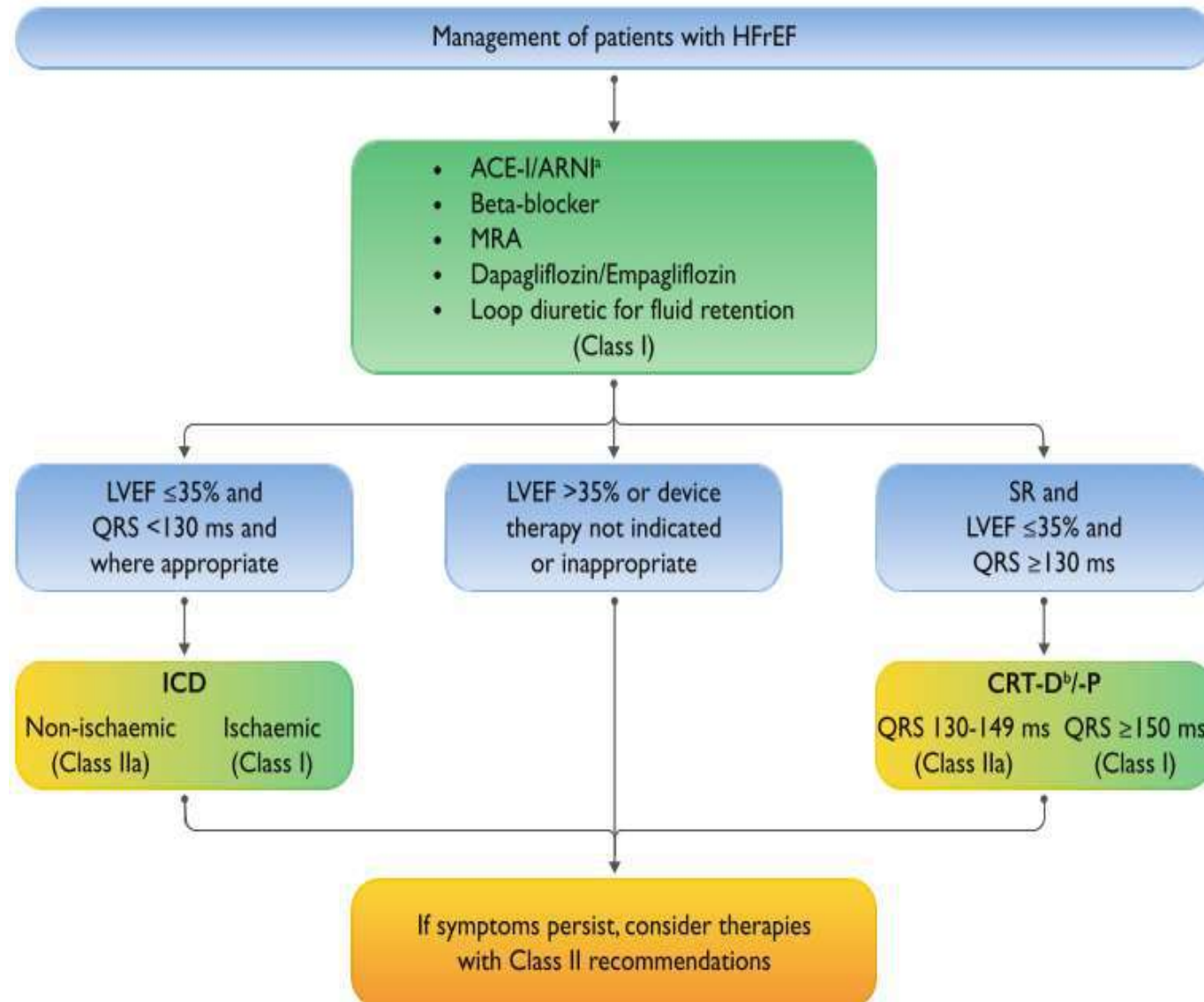
official website:

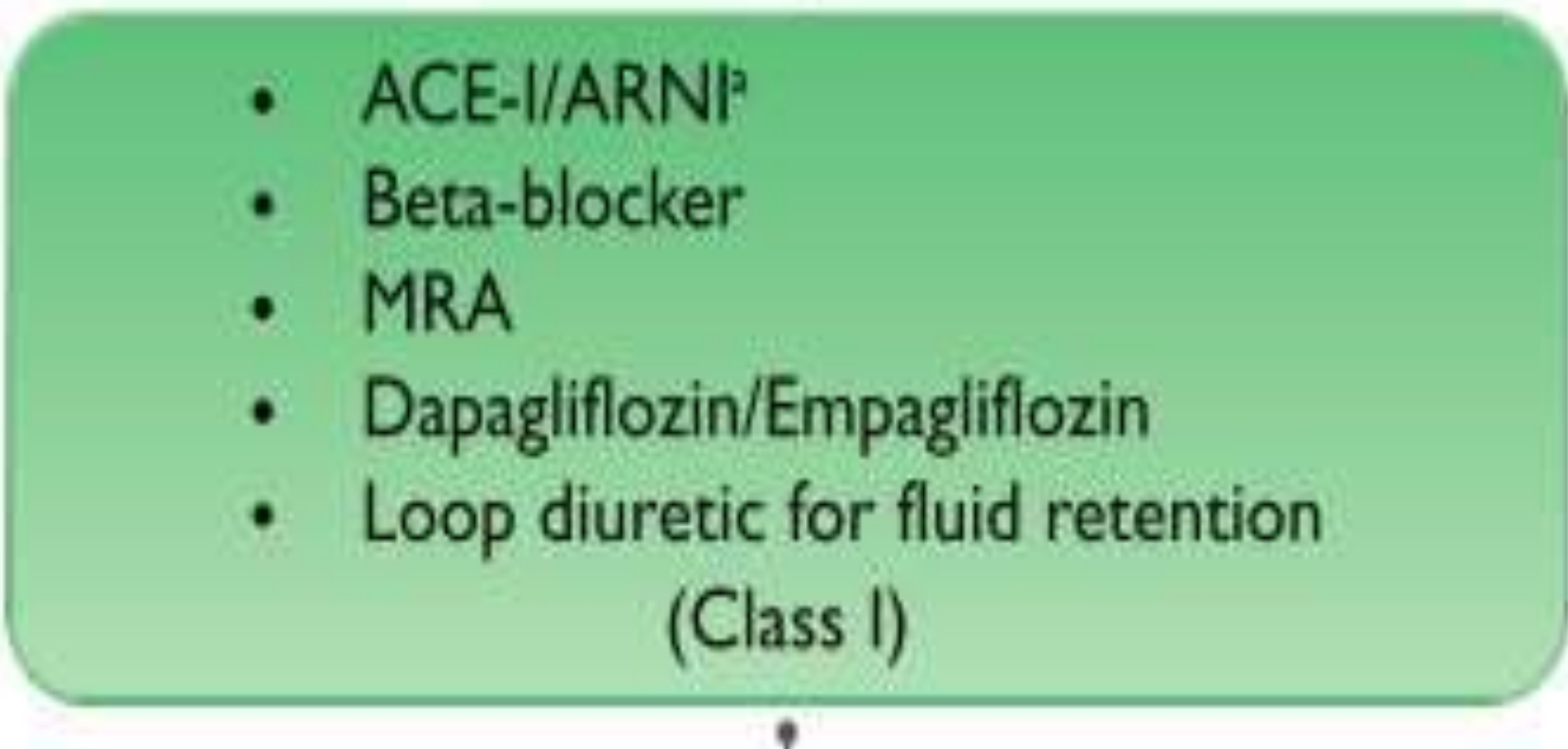
<http://conference.akc.az/en>

Professional Congress of Organizer:

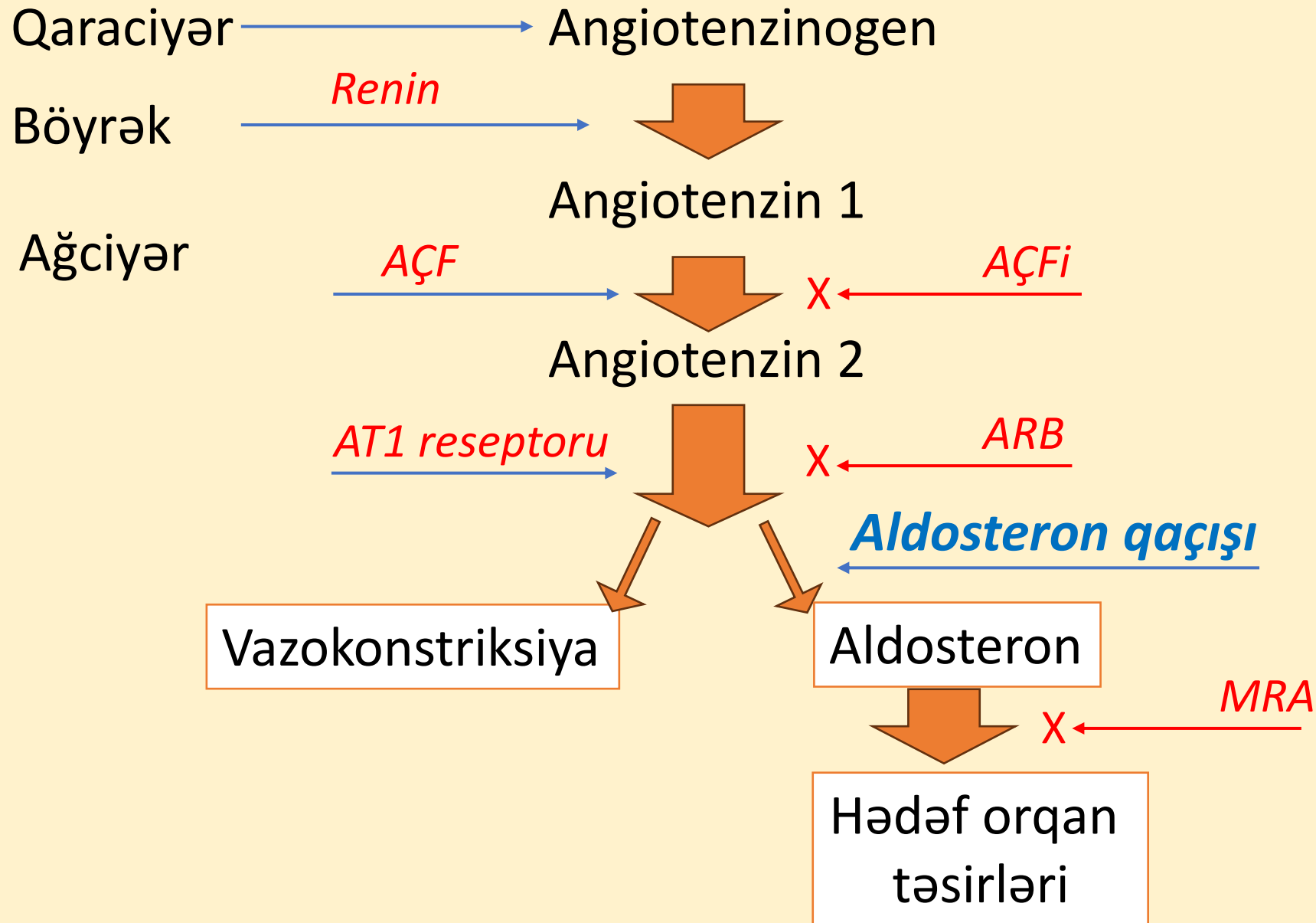


2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

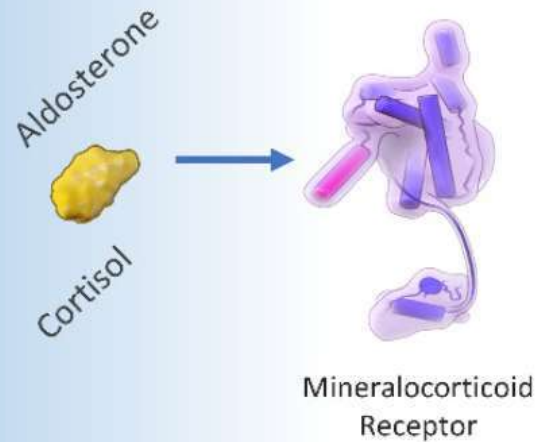


- 
- ACE-I/ARNI³
 - Beta-blocker
 - MRA
 - Dapagliflozin/Empagliflozin
 - Loop diuretic for fluid retention
- (Class I)

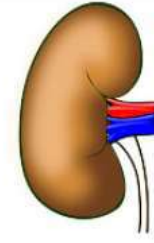
Mineralokortikoid
Reseptor
Antagonistləri (MRA)



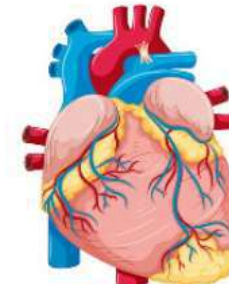
Negative effects of Aldosterone



- Endothelial dysfunction
- Oxidative stress, inflammation and Fibrosis
- Vascular remodelling and Stiffness



- Renal inflammation and Fibrosis
- $\text{Na}^+/\text{H}_2\text{O}$ retention and K^+ excretion
- Increase intravascular volume/blood pressure
- Glomerulosclerosis and Proteinuria



- Hypertrophy
- Remodelling
- Fibrosis & Inflammation

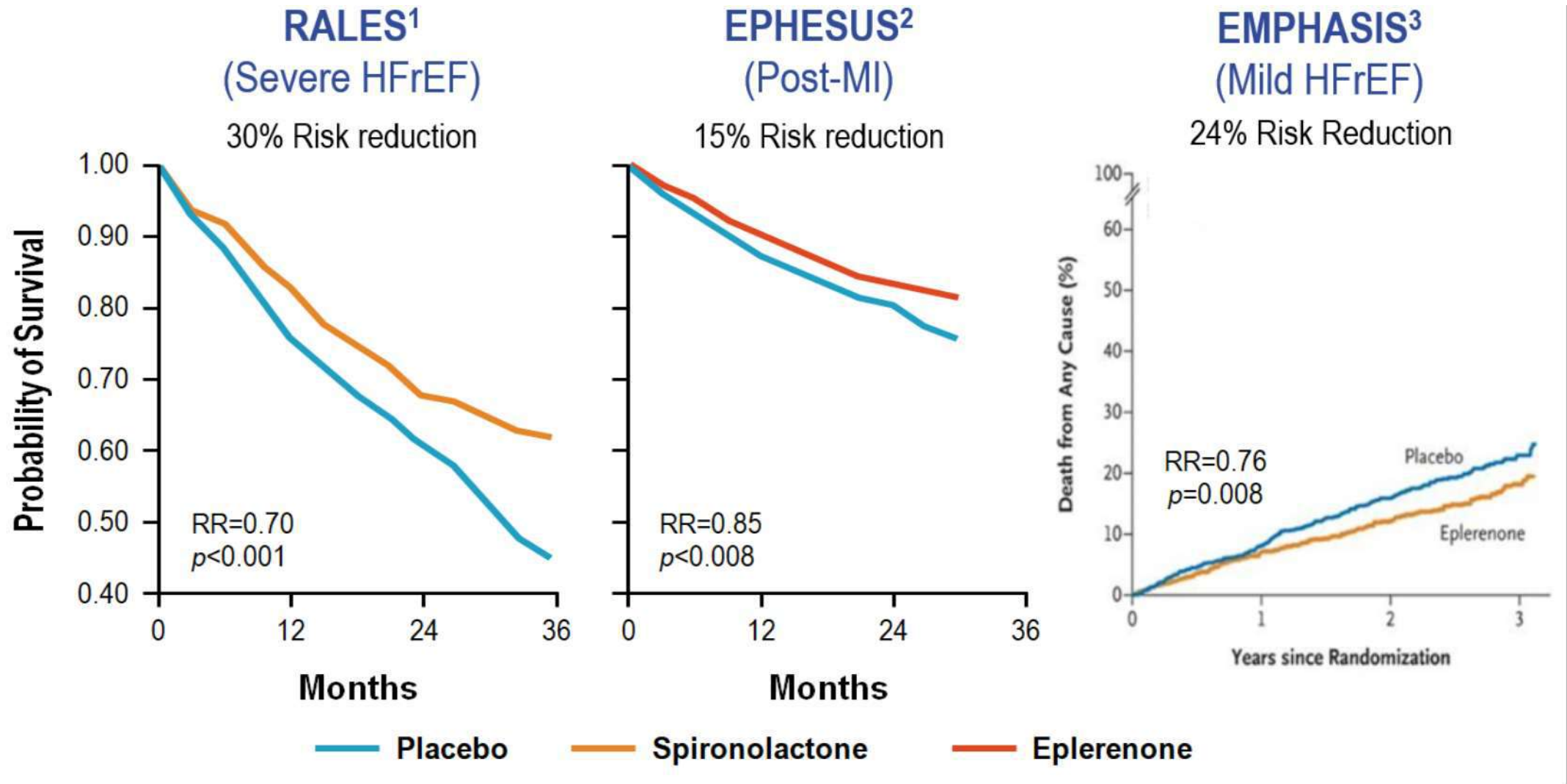


- M1>M2 macrophages
- Macrophage infiltration
- Pro-inflammatory mediators



- Na^+ retention

Impact of MRAs on Survival in HFrEF



1. Pitt B et al. *N Engl J Med*. 1999;341:709-717.

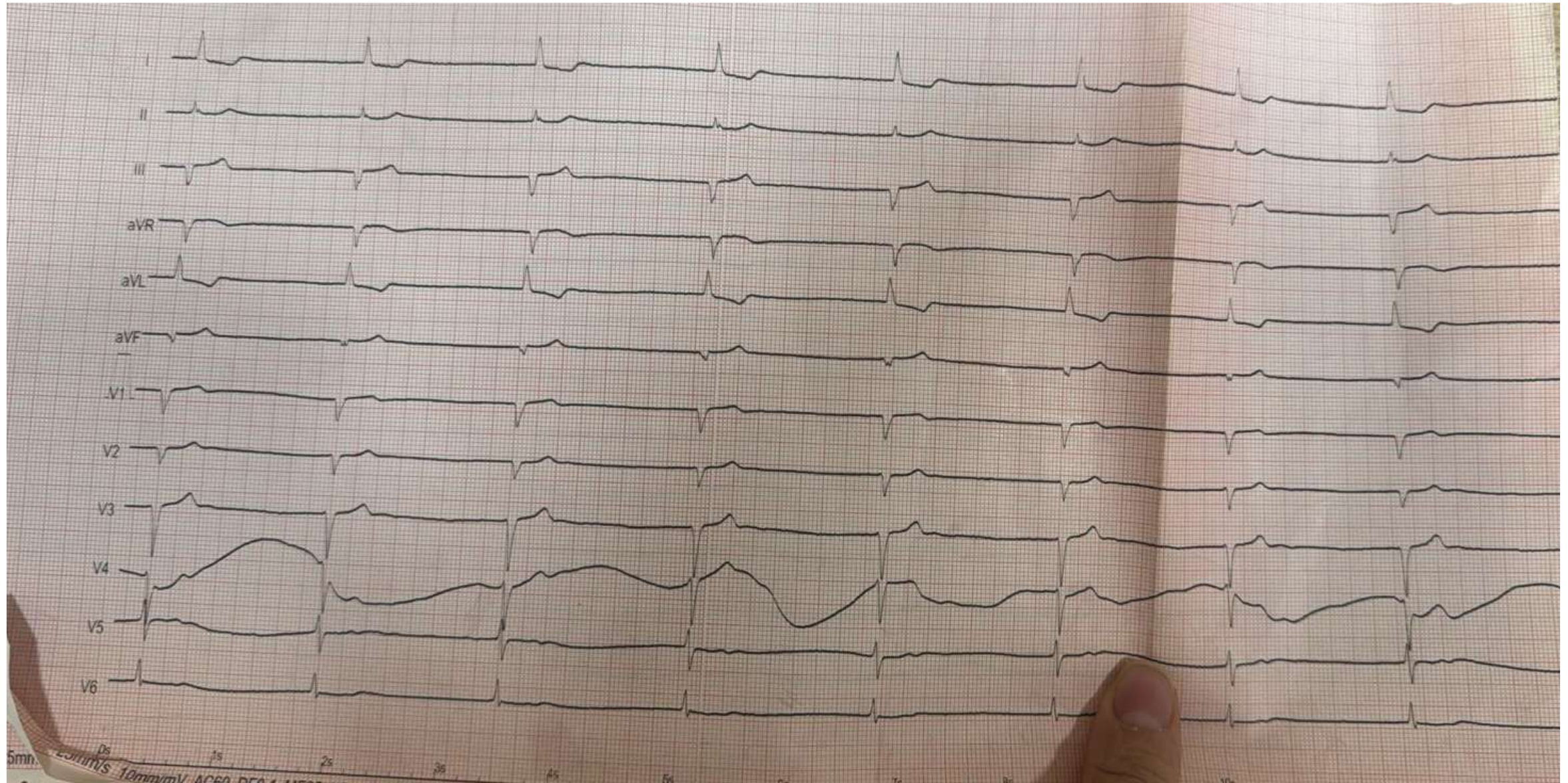
2. Pitt B et al. *N Engl J Med*. 2003;348:1309-1321.

3. Zannad F et al. *N Engl J Med*. 2011;364:11-21.

Case presentation

- Patient 63 yo male
- 2017 CABG, DM+, CKD+
- LVEF =35%
- Furosemid 40mq, Spironolactone 25mq, Empagliflozin 10mq, Bisoprolol 2.5mq, Rosuvastatin 40mq, ARNI 24/26mq.
- 2024 January - admitted to hospital via bradycardia.

Case presentation



Case presentation

Nov, 2023

Xəstənin İsmi	Həkim	: 461	Əvvəlki nəticə tarixi		
	Şöbə	: NEFROLOGİYA POLİKLİNİKASI	Təşkilat	:	40
			Yönləndirən həkim	:	0
Biokimya					
Analiz adı	Nəticə	Yazılış	Normal dəyərlər	Əvvəlki nəticə	Şərh
Kreatinin qanda	1.81	H	0.70 - 1.20	1.82	
C-reaktiv zülal (CRP)	0.4	N	0 - 0.5	0.5	
Zülal(Protein)/Kreatinin nisbəti	1.72	H	0 - 0.3	2.4	
Transferrin doyğunluğu	19.3	L	20 - 50		
Hormon					
Analiz adı	Nəticə	Yazılış	Normal dəyərlər	Əvvəlki nəticə	Şərh
PTH - parathormon	91	H	15 - 65	64.7	
Total PSA	1.2	N	0.0 - 4.1	1.29	

Case presentation

Jan, 2024

Cinsi : Kişi Yaşı : 63
Ata Adı : ORUC

Kart No
Diaqnozu

Biyokimya

Xidmət Adı	Nəticə	Vahid	Referans
Kreatinin (qan)	3,03	mg/dl	0,7 - 1,2
Kalium (qan)	6,804	mmol/L	3,46 - 5,54
Kalsium (qan)	9,25	mg/dl	8,8 - 10,6

Case presentation

- iv Ca
- Insuline + Glucosae
- MRA was stopped.

Case presentation

Jan, 2024 - discharge

Ata Adı		: ORUC		Diaqnozu	
Biyokimya					
Xidmət Adı	Nəticə	Vahid	Referans		
Kreatinin (qan)	3,48 2,94	mg/dl	0,7 - 1,2		
Kalium (qan)	4,588 4,778	mmol/L	3,46 - 5,54		

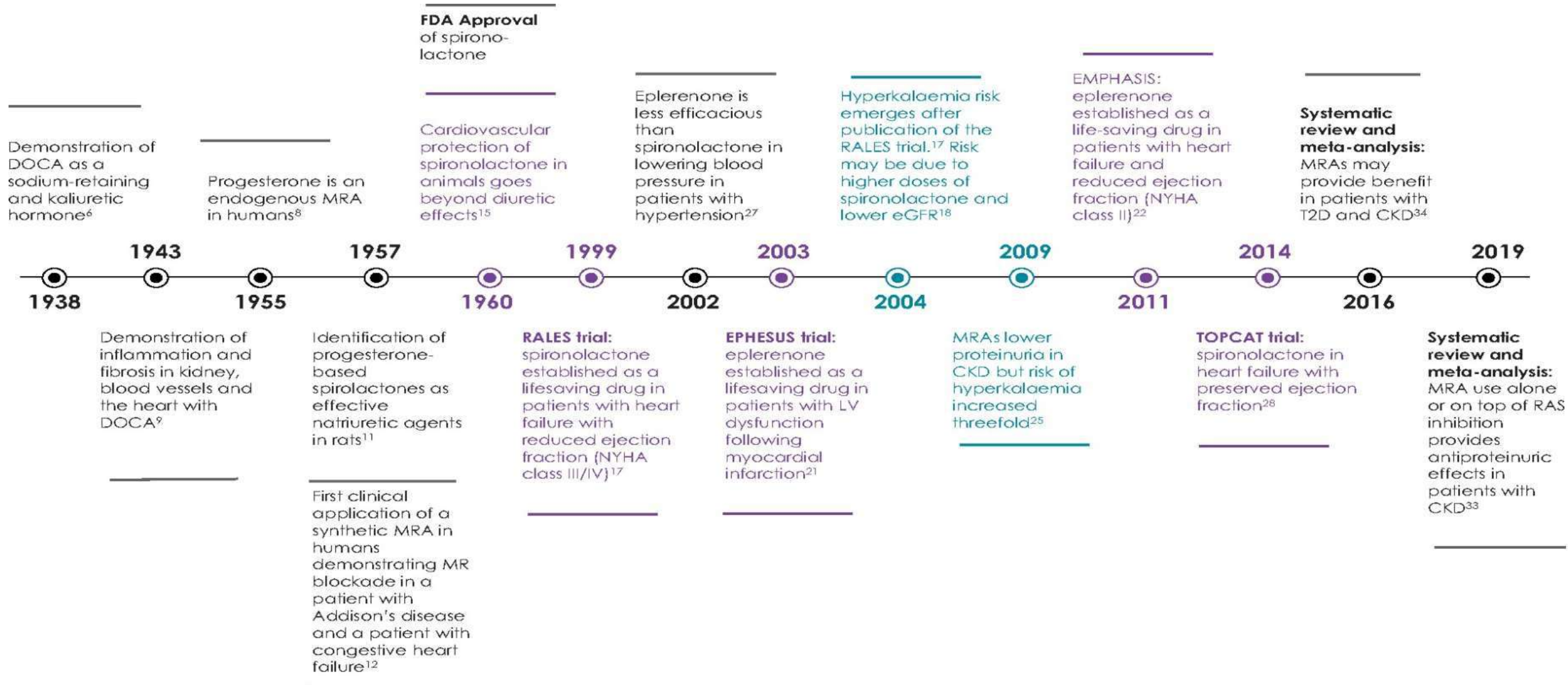
eGFR – 30ml/min

1 month later kreatin 1.6mg/dL, K - normal

Next step

1. I will not restart MRA
2. I will start the same MRA at half dose (12.5mg)
3. I will start MRA at full dose
4. Any other ideas?

Short history of MRA

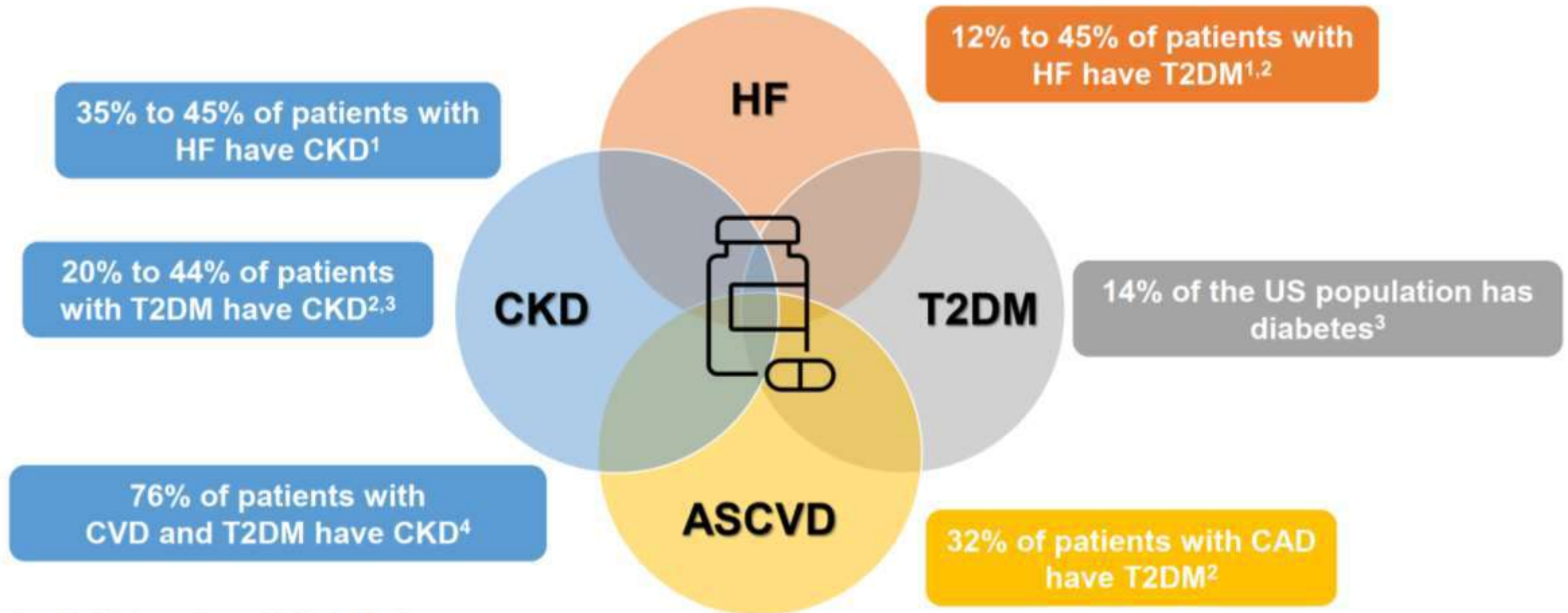


TEXT = Milestones

TEXT = Cardiac effects

TEXT = Risk of hyperkalaemia

Heart and kidney failure are associated



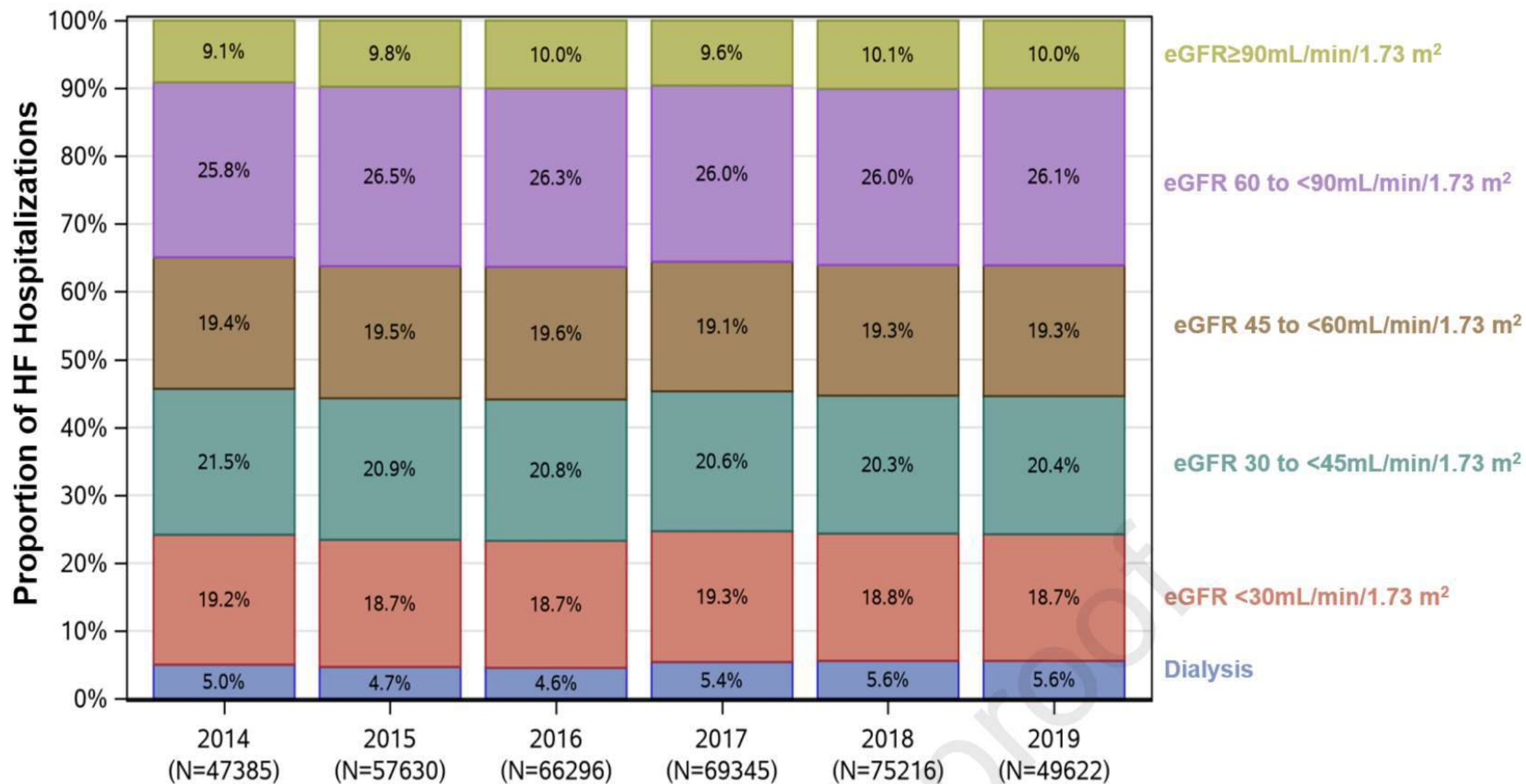
1. Packer M. *Diabetes Care*. 2018;41:11-13.

2. Wanner C. *Am J Cardiol*. 2017;120:S59-S67.

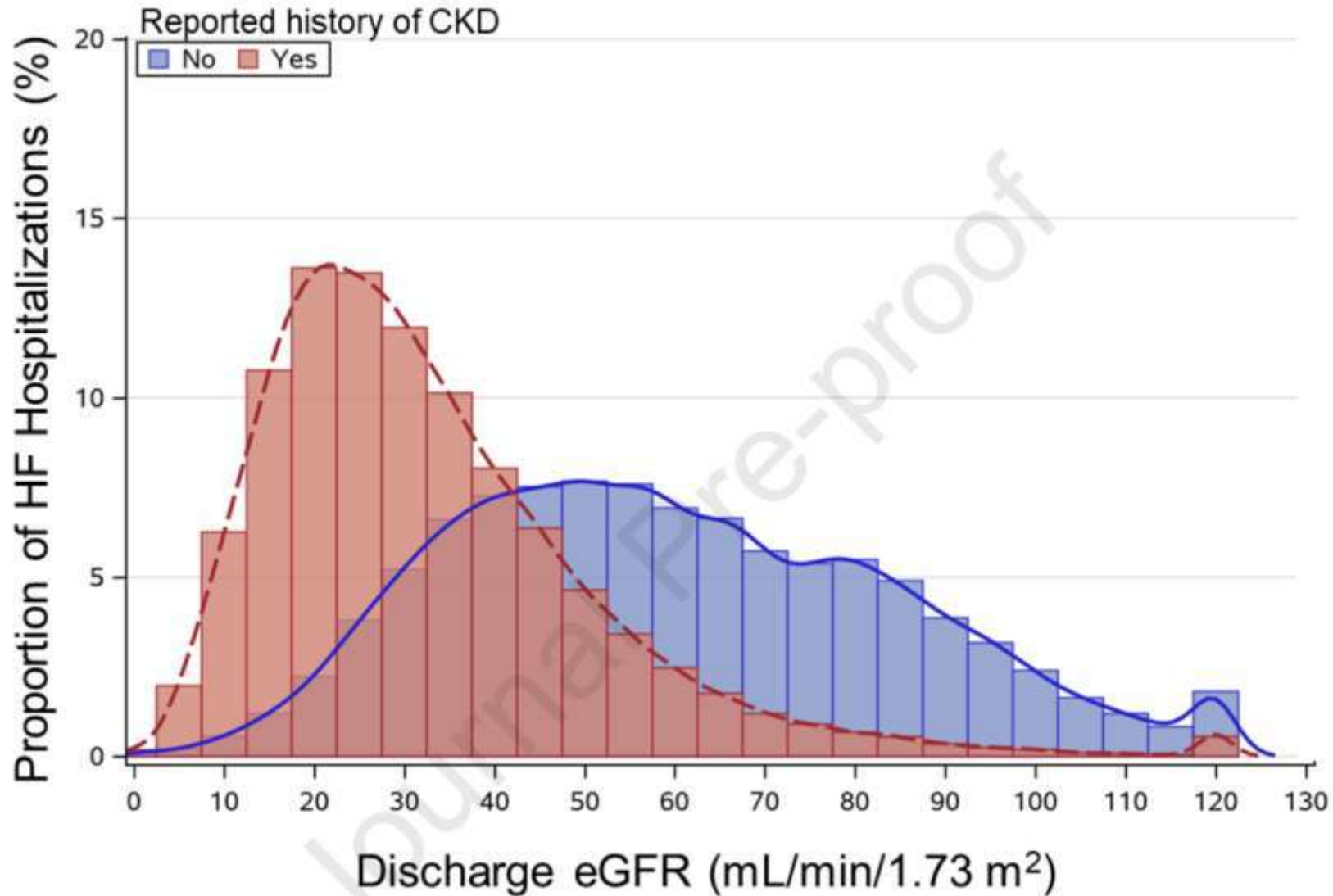
3. <https://www.cdc.gov/nchs/data/databriefs/db319.pdf>. Accessed November 7, 2019.

4. Wang T et al. *Diabetes Metab Syndr*. 2019;13:612-615.

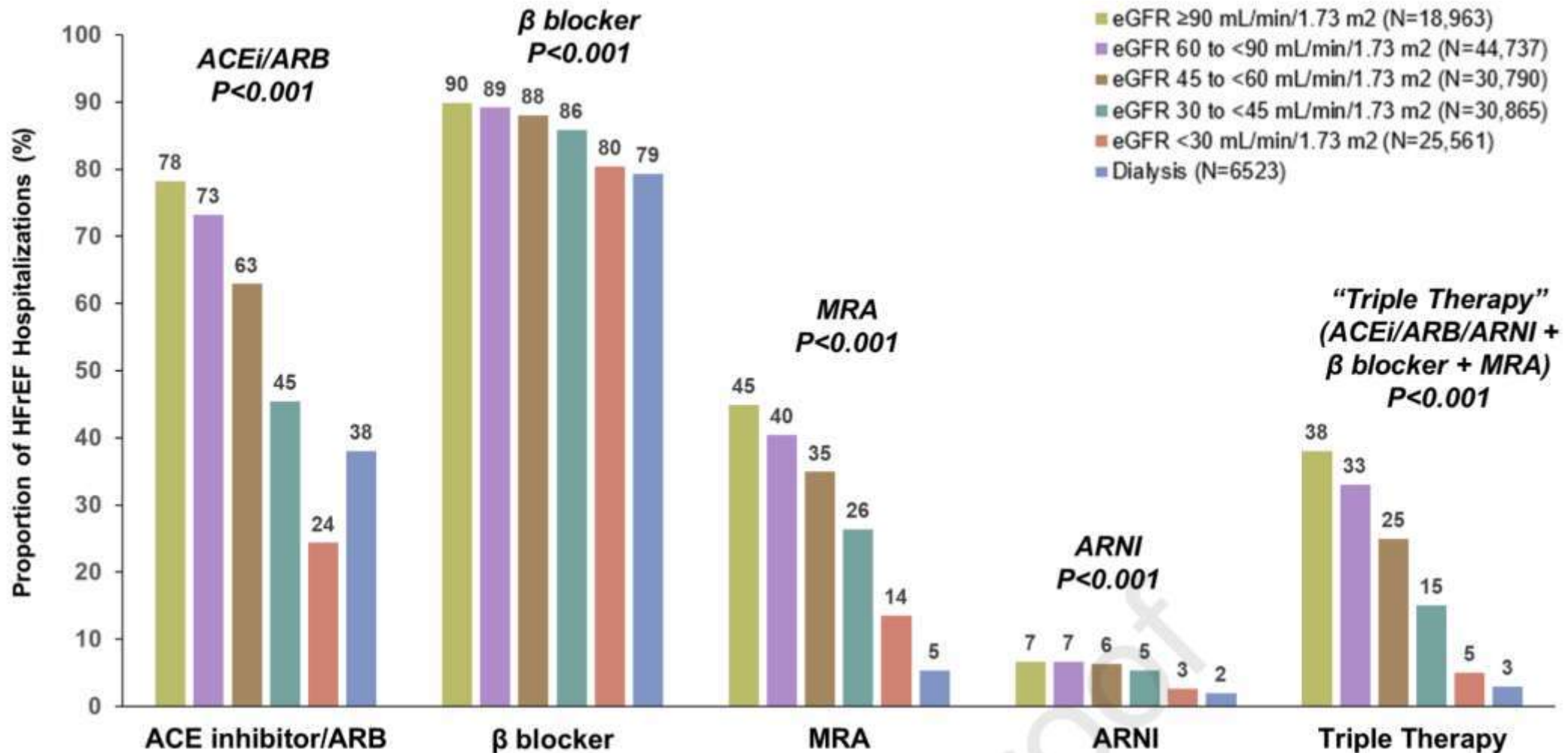
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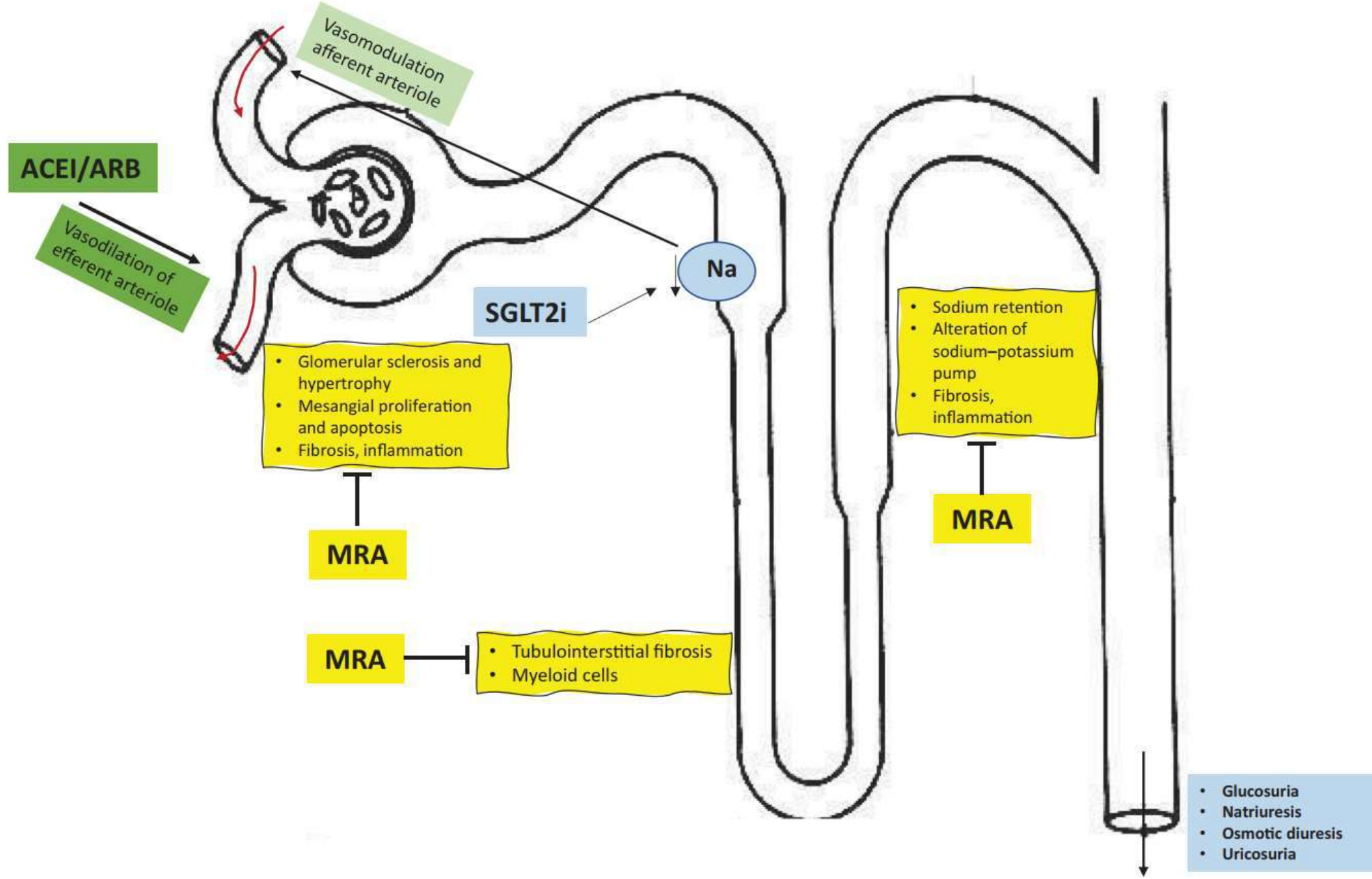
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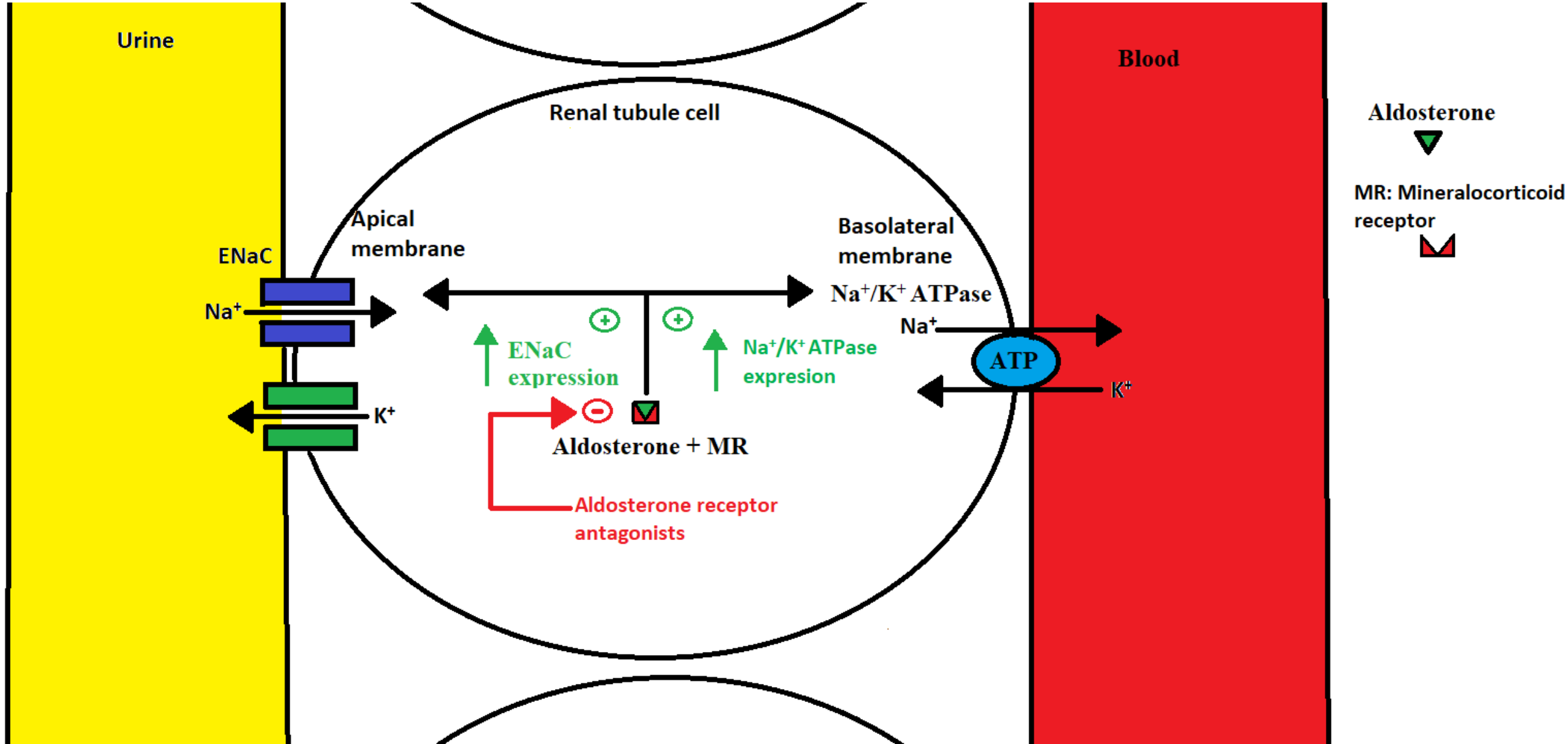
As eGFR falls, rejection of MRA use increases



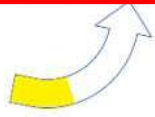
Why is Aldosterone harmful?



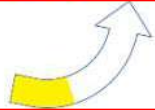
Aldosterone effect on K and Na



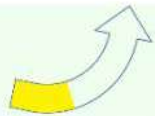
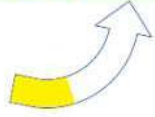
What do we have?

Characteristics	Spironolactone	Eplerenone	Finerenone
MR antagonist class	Steroidal		Non-steroidal
Structural prop.s	Flat	Flat	Bulky
Potency			
Selectivity			
MR IC ⁵⁰ (nM)	24	990	17.8
GR IC ⁵⁰ (nM)	2,410	≥ 21,980	≥ 10,000
AR rec. IC ⁵⁰ (nM)	77	≥ 21,240	≥ 10,000
PR EC ⁵⁰ (nM)	740	≥ 31,210	≥ 10,000
OR α & β IC ⁵⁰ (nM)	5,970 & 4,940	≥ 30,000 & ≥ 30,000	≥ 10,000 & ≥ 10,000
Metabolites	Multiple, active	No active	No active
Half-life	>20:0H	4-6:0H	2-3:0H
Tissue distribution in rodents	 1  >6	 1  ~3	 1  1
CNS penetration	+	+	-
Effect on BP	+++	++	+
Excretion (unchanged)	<1%	<3%	<1%

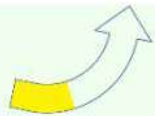
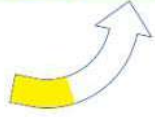
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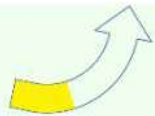
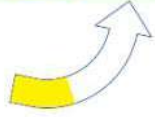
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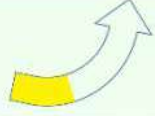
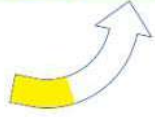
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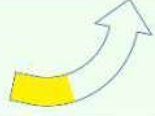
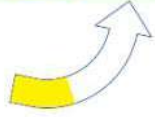
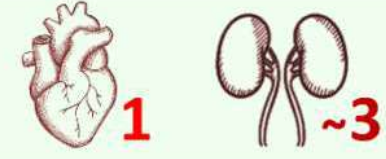
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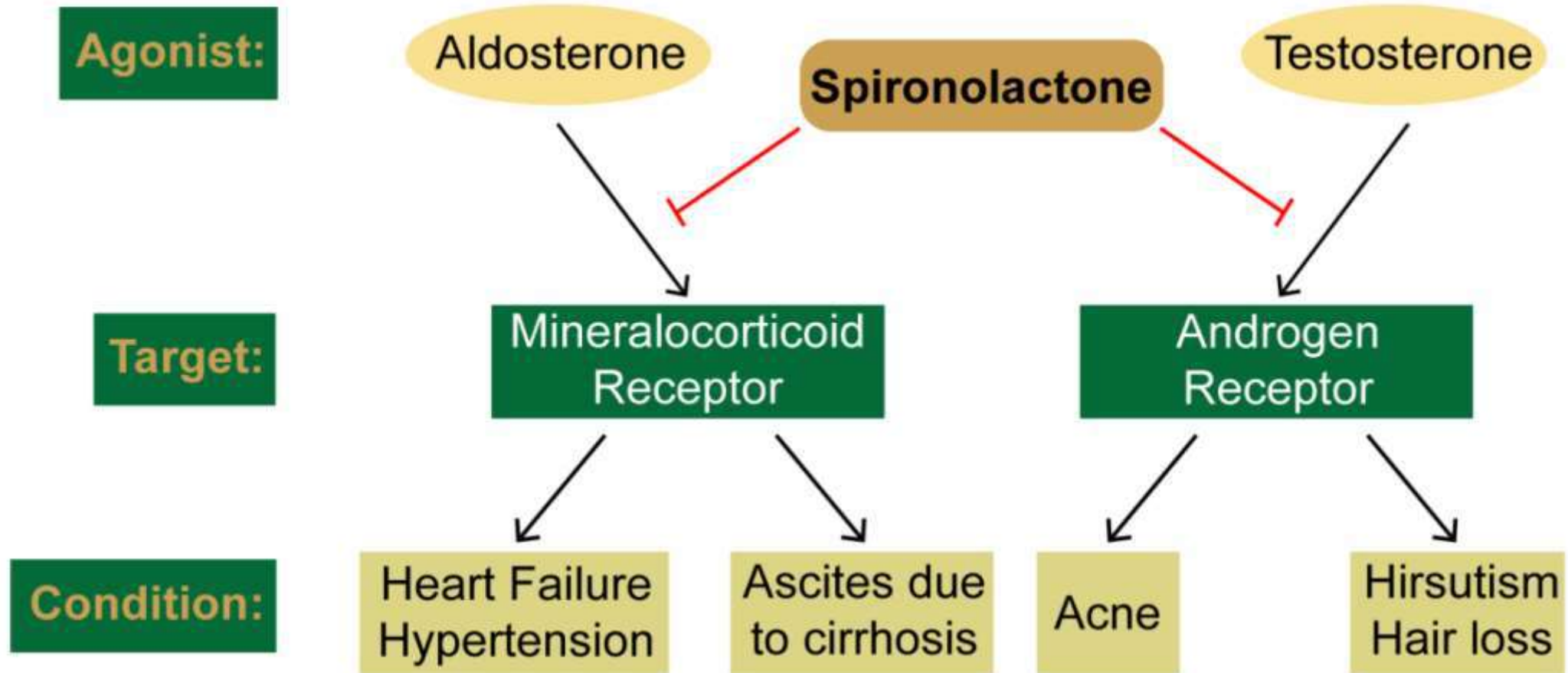
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Spironolaktone

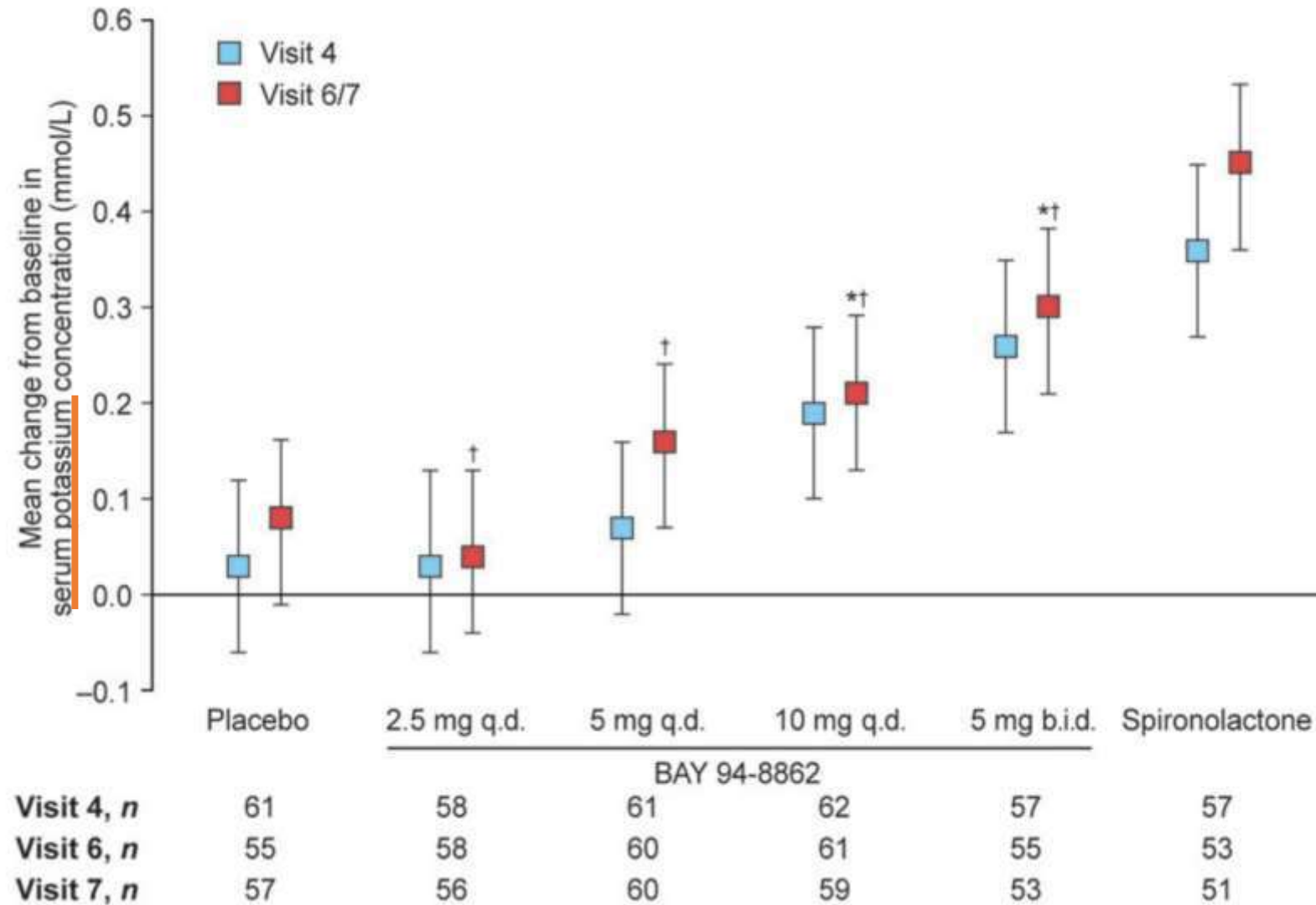




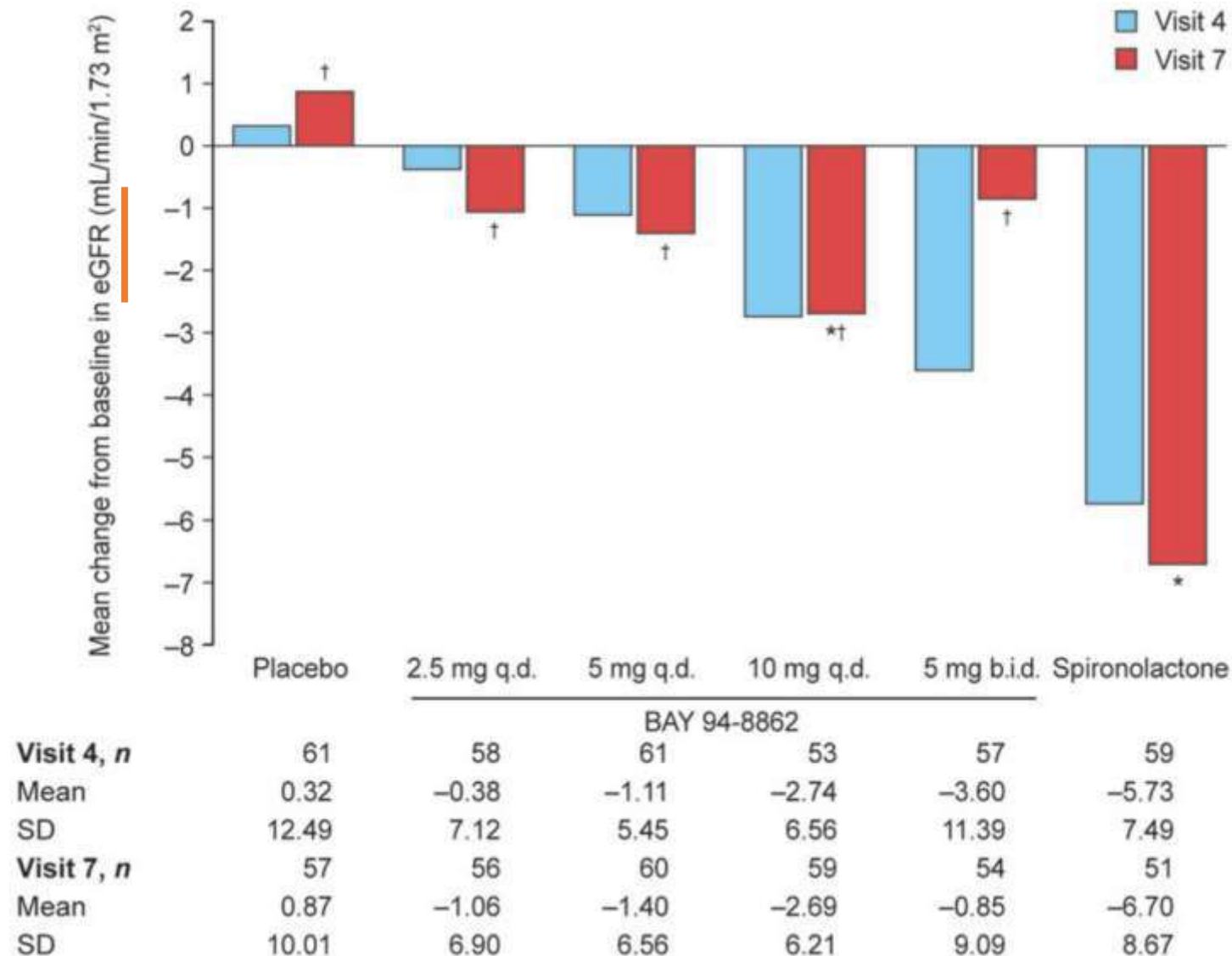
PRACTICAL

THEORETICAL

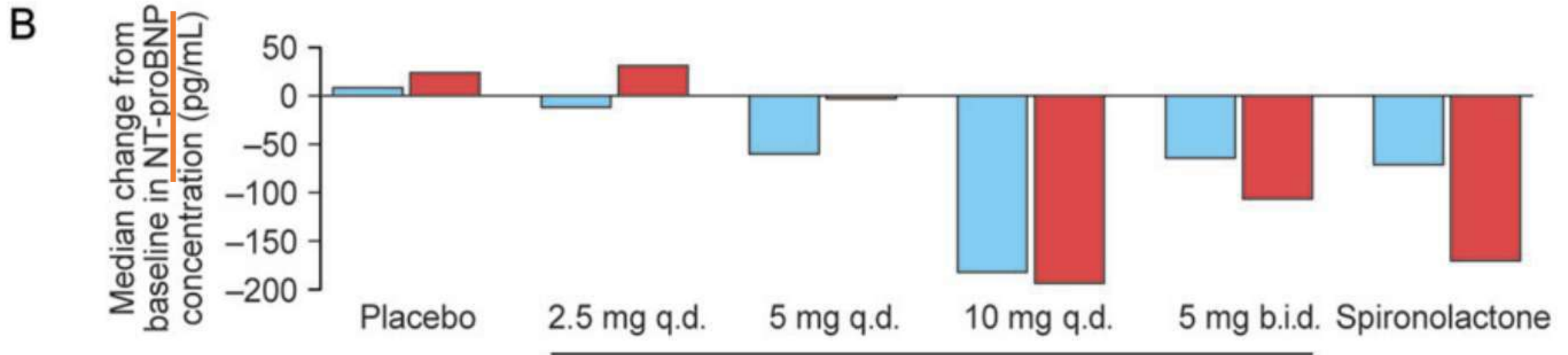
Finerenone was compared with spironolactone in the phase II ARTS study.



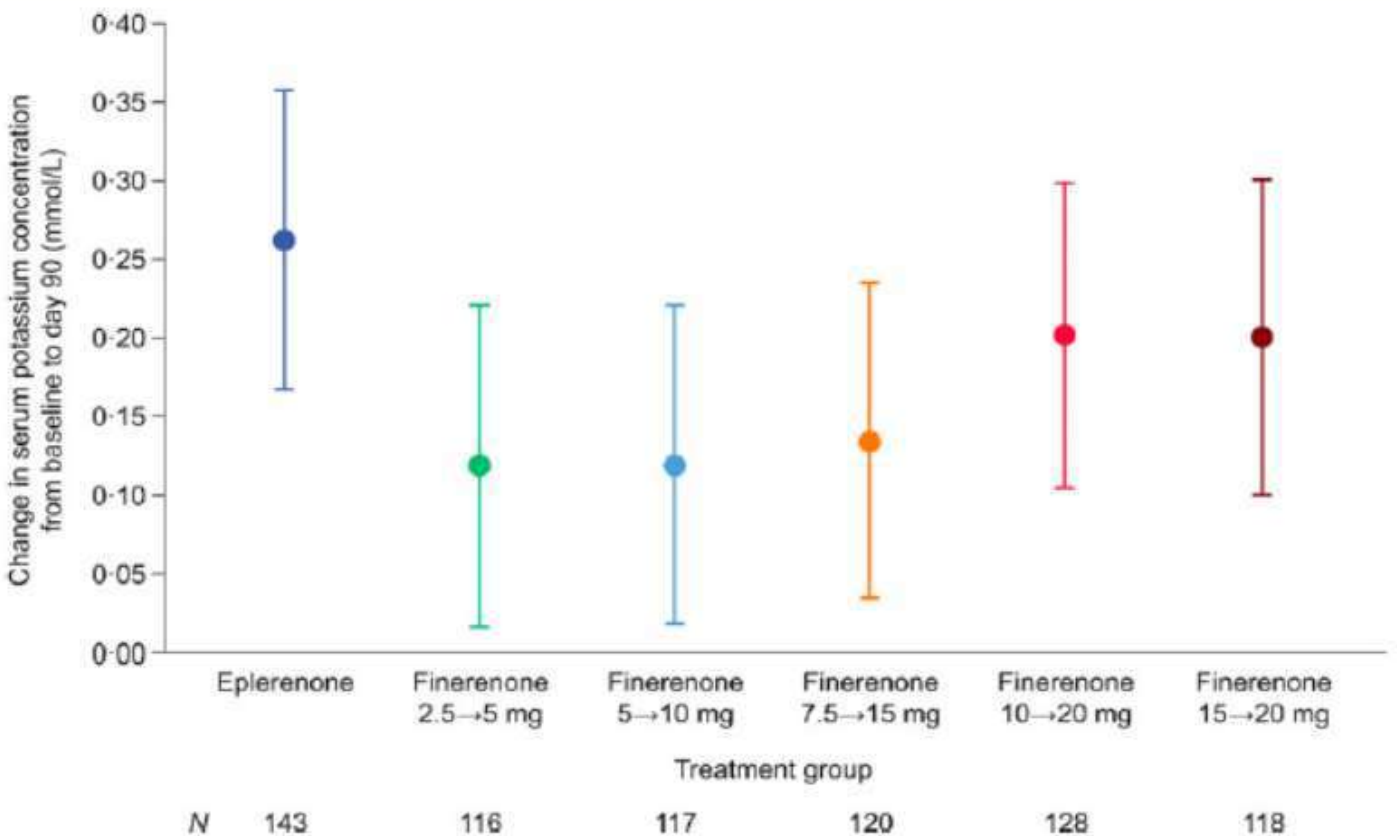
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Finerenone was compared with spironolactone in the phase II ARTS study.



A randomized controlled study of finerenone vs. eplerenone in patients with worsening chronic heart failure and diabetes mellitus and/or chronic kidney disease



ARTS-HF Trial

Figure 4 Mean change in serum potassium concentration from baseline to Day 90 in patients with worsening chronic heart failure with reduced ejection fraction receiving eplerenone or different doses of finerenone. Changes were assessed by analysis of covariance with the factors treatment group, comorbidities, mineralocorticoid receptor antagonist use at emergency presentation to hospital, region, and the baseline value as covariates.

A randomized controlled study of finerenone vs. eplerenone in patients with worsening chronic heart failure and diabetes mellitus and/or chronic kidney disease

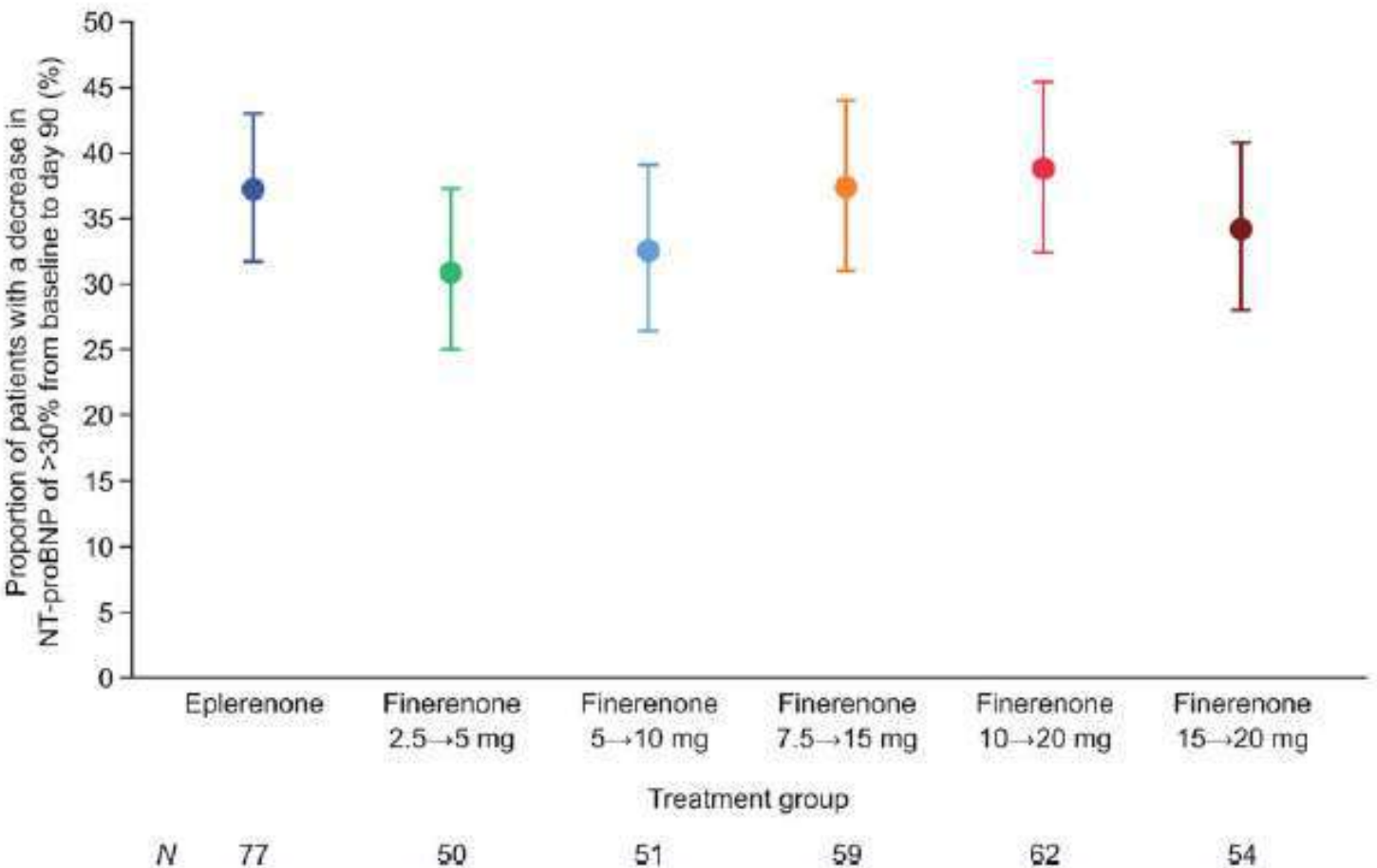


Figure 2 Proportion of patients with a decrease of >30% in plasma N-terminal pro-B-type natriuretic peptide concentration from baseline at Day 90 (full-analysis set). Patients who died prior to Day 90 or who experienced permanent (≥ 5 consecutive days) withdrawal of study drug after a cardiovascular hospitalization or emergency presentation for worsening chronic heart failure were counted as nonresponders for the primary efficacy analysis.

A randomized controlled study of finerenone vs. eplerenone in patients with worsening chronic heart failure and diabetes mellitus and/or chronic kidney disease

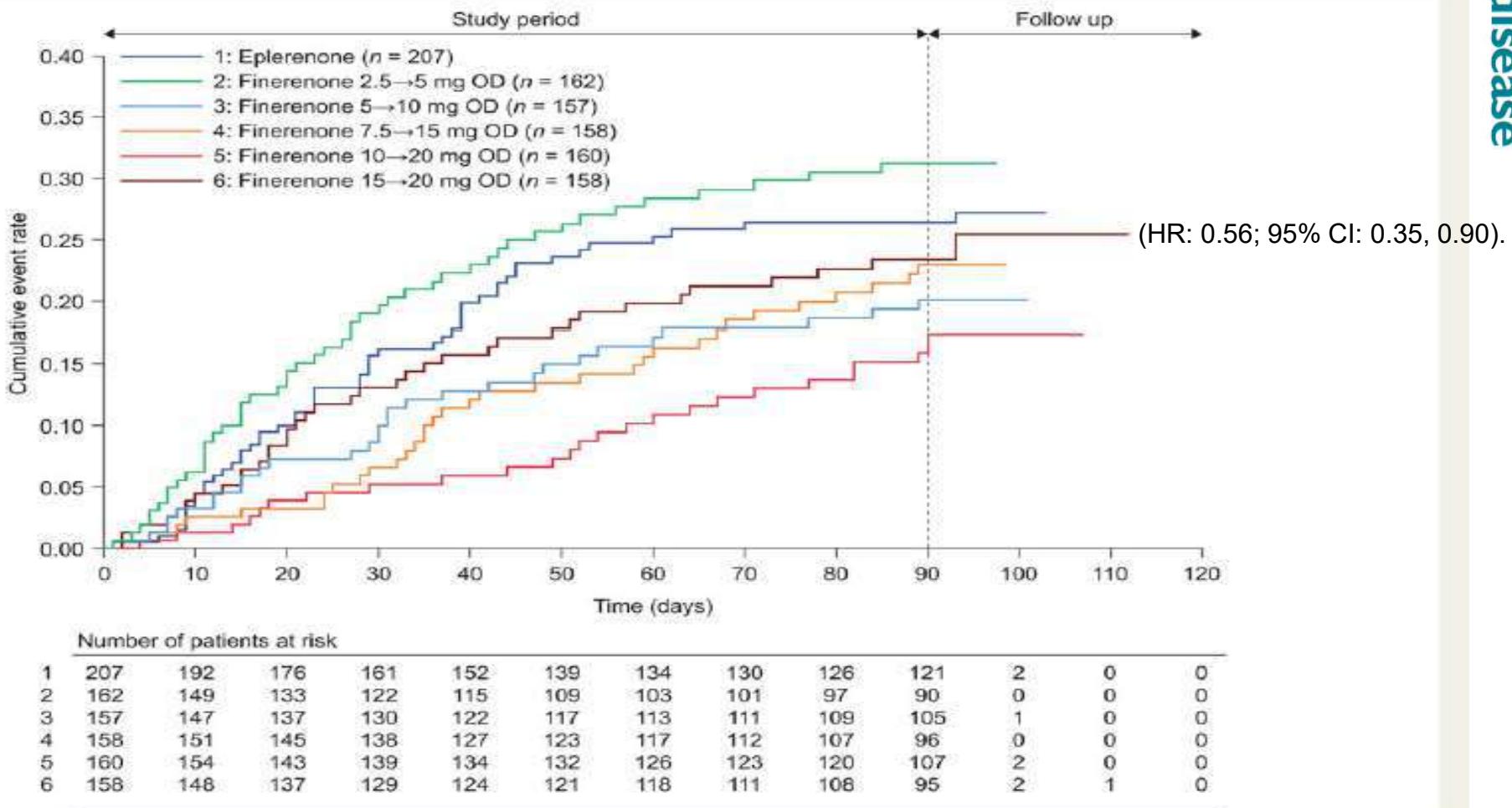


Figure 3 Mortality/morbidity outcomes in patients with worsening chronic heart failure with reduced ejection fraction receiving eplerenone or different doses of finerenone. Cumulative event rates of the composite endpoint of death from any cause, cardiovascular hospitalization, or emergency presentation for worsening chronic heart failure in the full-analysis set.

Next step

1. I will not restart MRA
2. I will start the same MRA at half dose (12.5mg)
3. I will start MRA at full dose
4. Any other ideas?

Case presentation

- Patient 63 yo male
- 2017 Bypass, ŞD+, XBÇ+
- LVEF =35%
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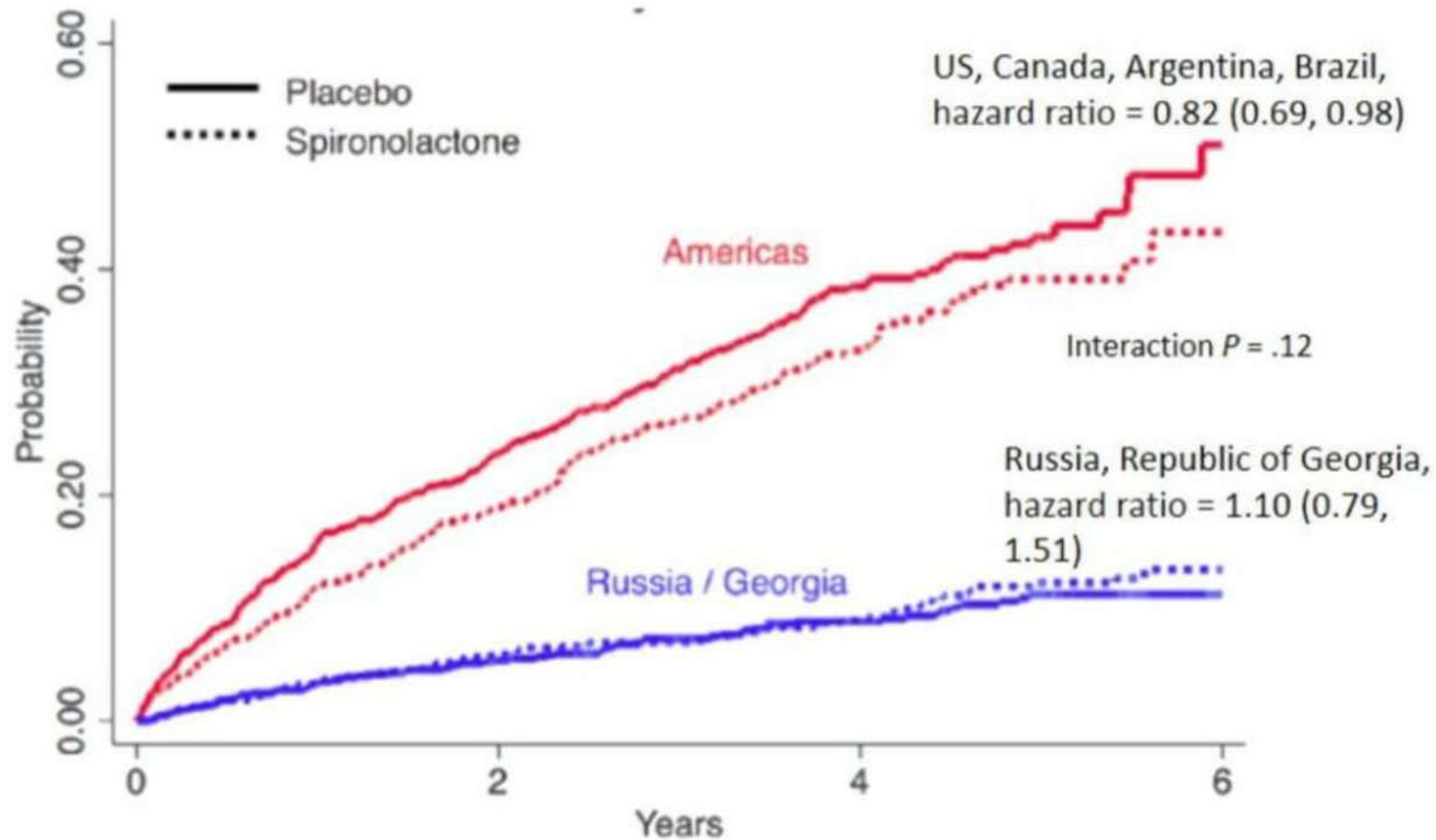
STOP SPIRONOLACTONE and START FINERENONE

Case presentation

IF

- Patient 63 yo male
- 2017 Bypass, ŞD+, XBÇ+
- LVEF =50% (HFpEF)
- Furosemid 40mq, Spironolactone 25mq, Empagliflozin 10mq, Bisoprolol 2.5mq, Rosuvastatin 40mq.
- 2024 January - admitted to hospital via bradycardia.

Impact of MRAs on Survival in HFpEF (TOPCAT)



Pfeffer MA, et al. *Circulation*. 2015;131:34-42.

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The NEW ENGLAND
JOURNAL of MEDICINE

ESTABLISHED IN 1812

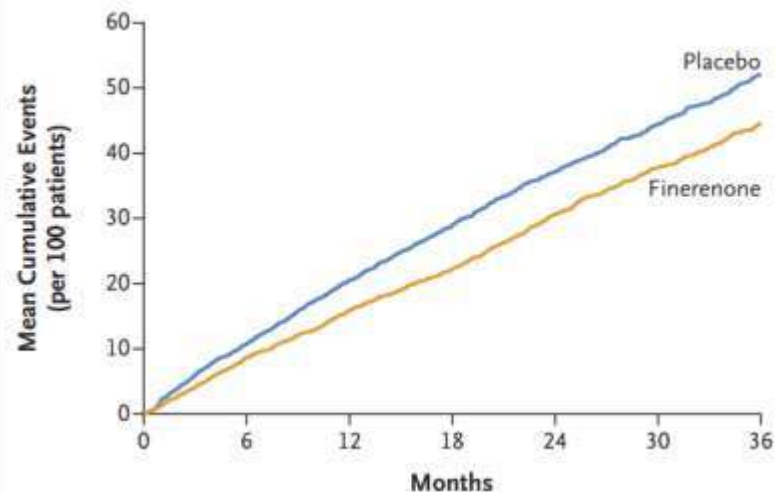
OCTOBER 24, 2024

VOL. 383 NO. 16

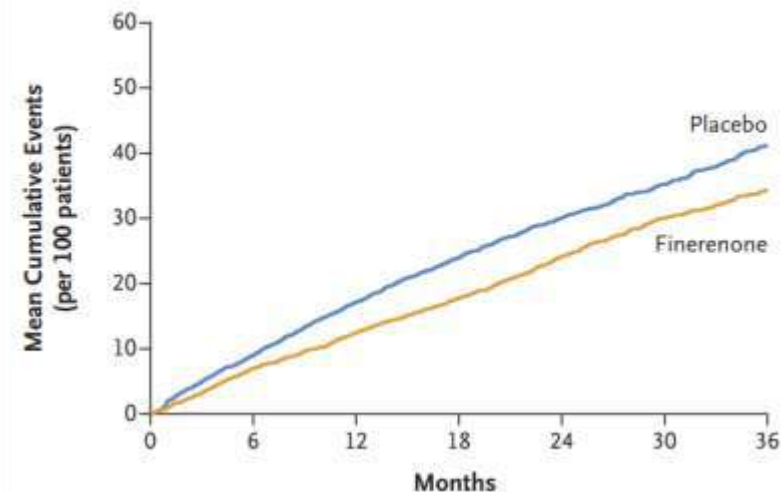
Finerenone in Heart Failure with Mildly Reduced
or Preserved Ejection Fraction

FINEARTS-HF Trial

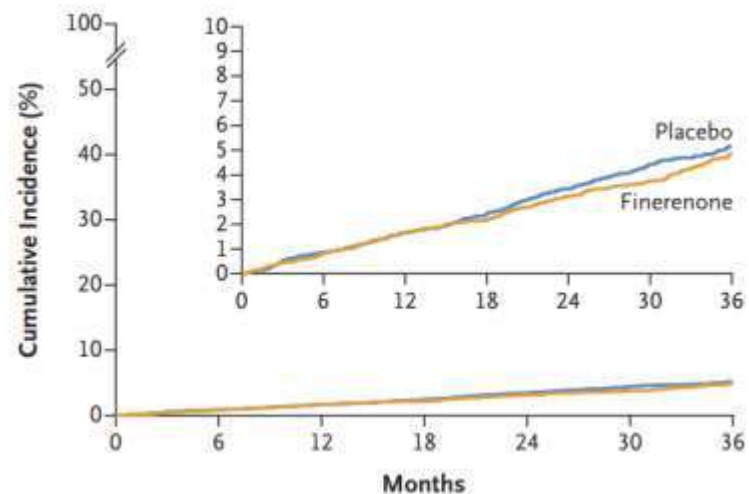
A Total Worsening Heart Failure Events and Death from Cardiovascular Causes



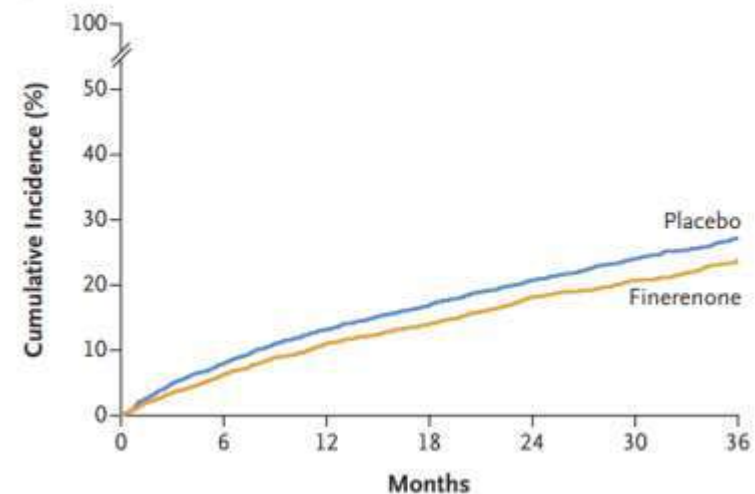
B Total Worsening Heart Failure Events



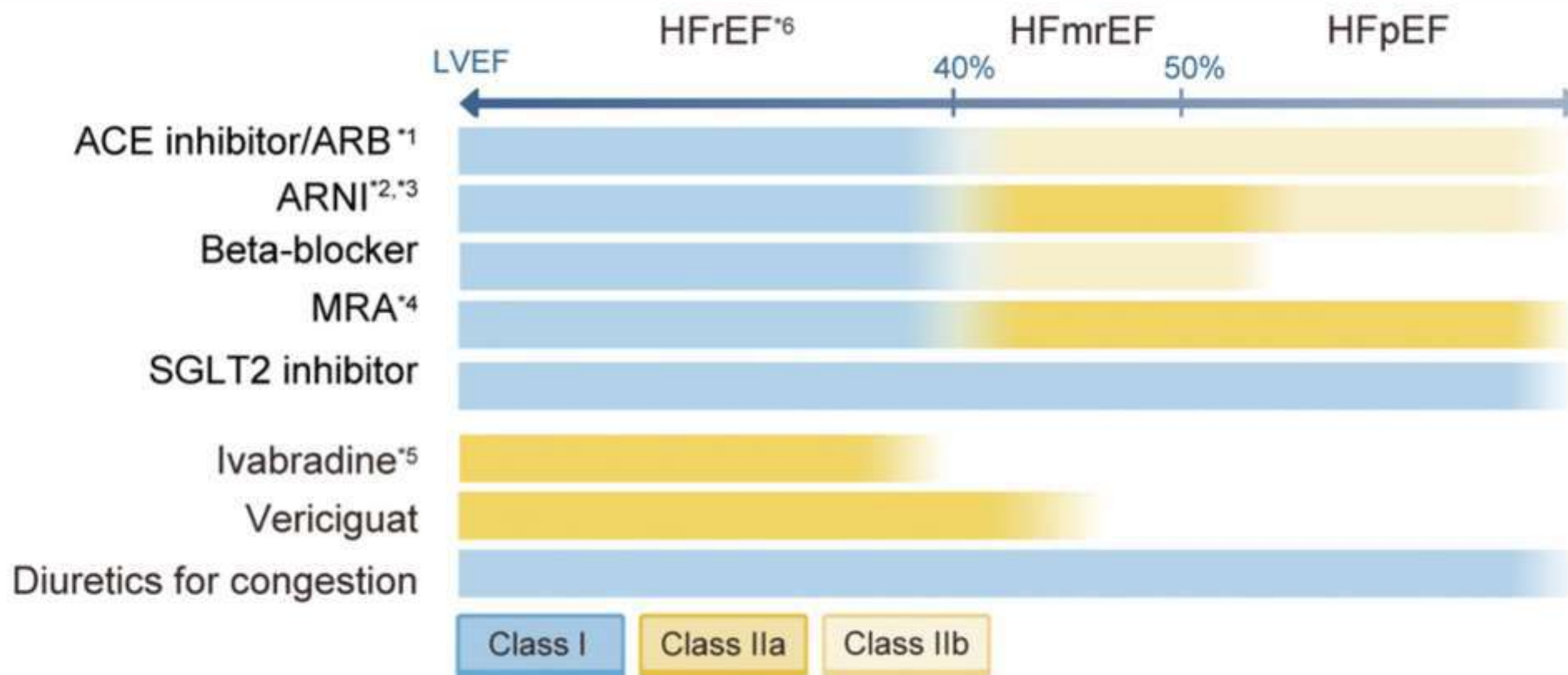
C Death from Cardiovascular Causes



D First Worsening Heart Failure Event or Death from Cardiovascular Causes



Pharmacological therapy



*4 In HFmrEF and HFpEF, finerenone is class Iia recommendation, and spironolactone and eplerenone are class IIb recommendation



Circulation Journal
doi: 10.1253/circj.CJ-25-0002

Advance Publication

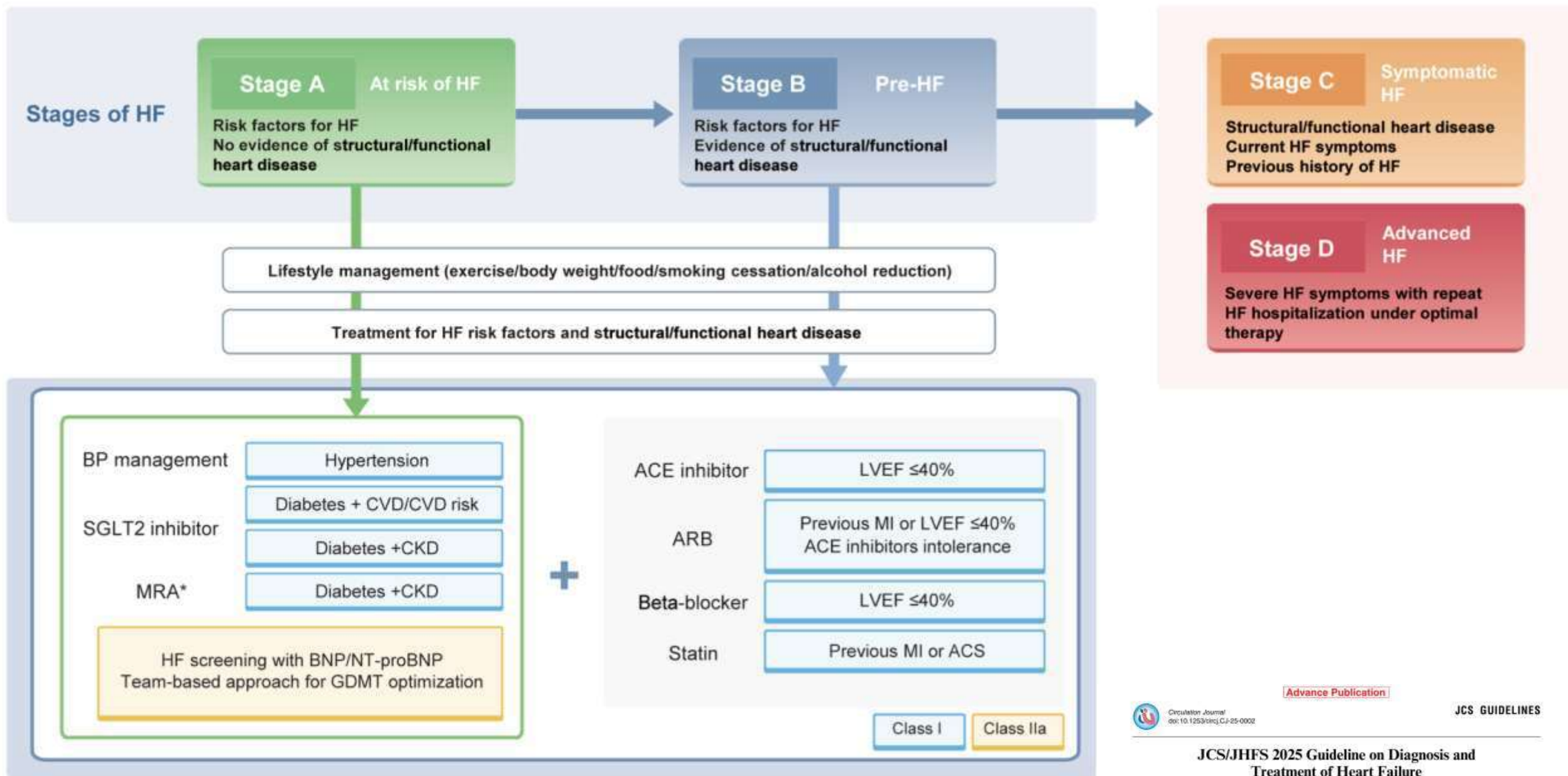
JCS GUIDELINES

JCS/JHFS 2025 Guideline on Diagnosis and Treatment of Heart Failure

Case presentation

IF

- Patient 63 yo male
- 2017 Bypass, ŞD+, XBC+
- LVEF =60% (No HF)
- Spironolactone 25mq, Empagliflozin 10mq, Bisoprolol 2.5mq, Rosuvastatin 40mq.
- 2024 January - admitted to hospital via bradycardia.



* Only indicated for finerenone



Circulation Journal
doi:10.1253/circj.CJ-25-0002

Advance Publication

JCS GUIDELINES

JCS/JHFS 2025 Guideline on Diagnosis and Treatment of Heart Failure



2015

2020

2025

2026

ARTS²

The Mineralocorticoid Receptor antagonist
Tolerability Study



FIDELIO-DKD⁵

Finerenone in reducing kidney failure
and disease progression in CKD



FINEARTS-HF⁸



FIND-CKD¹⁰



ARTS-DN³

Mineralocorticoid Receptor Antagonist
Study in Diabetic Nephropathy



FIGARO-DKD⁶

Finerenone in reducing cardiovascular
mortality and morbidity in CKD



CONFIDENCE⁹



FIONA¹¹



ARTS-HF⁴

Mineralocorticoid Receptor Antagonist
Study in Heart Failure



FIDELITY⁷

Finerenone in chronic kidney disease and type 2 diabetes
Common to FIDELIO-DKD and FIDELITY-CKD: The programme studies

2020



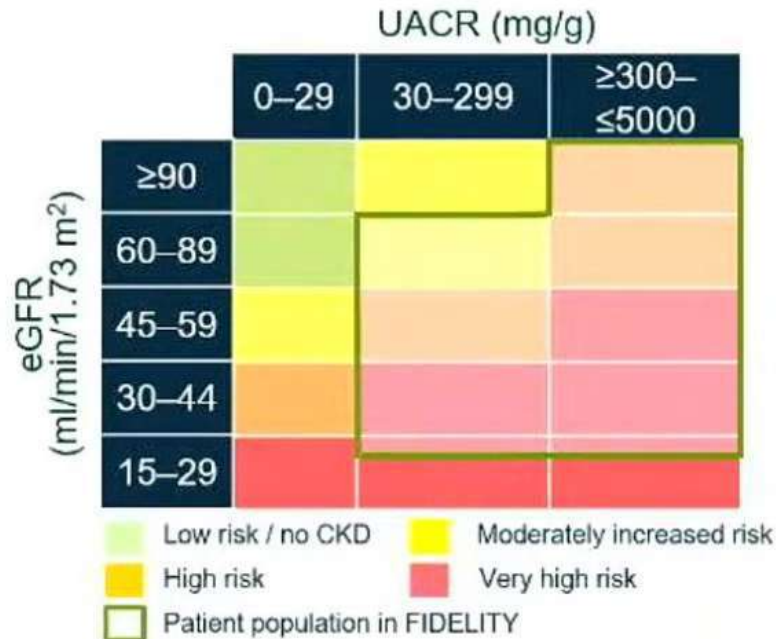
DM and CKD

FIDELITY geniş, öncədən təyin olunmuş, FIDELIO-DBX və FİGARO-DBX tədqiqatlarını özündə birləşdirən təhlildir

13,171 randomizə olunmuş XBX/ŞD2T xəstəsi

Əsas kriteriyalar

- ✓ ŞD2T
- ✓ XBX
- ✓ Maksimal mono RAASi
- ✓ Serum $[K^+] \leq 4.8$ mmol/l
- ✗ Simptomatik AFaÜÇ



Broad disease spectrum

Robust data in both early disease and late disease

CV Composite

Time to CV death, non-fatal MI, non-fatal stroke, or hospitalization for HF

57% eGFR kidney composite

Time to kidney failure, sustained $\geq 57\%$ decrease in eGFR from baseline, or renal death

DM and CKD

FINERON: KV hadisələr riskini azaltmasını sübut etdi

Standart müalicəyə əlavə olaraq

13% RRR

vs placebo

HR=0.87
(95% CI: 0.76-0.98)
P=0.026

2.1% ARR¹⁶
(95% CI: 0.4-3.8)

NNT: 47¹⁶
(95% CI: 26-266)

İlkin mürəkkəb son
nöqtənin qarşısını alınması

42 ay

FIGARO-DKD tədqiqatında erkən (1-2) mərhələli XBX xəstələrini yer aldı (eGFR ≥ 60 ml/dəq/1.73 m² + albuminuriya)

İlkin mürəkkəb son nöqtə: KV ölüm, qeyri-fatal MI, qeyri-fatal insult və ya ÜÇ hospitalizasiya

Müalicənin effekti əsasən ÜÇ-dən hospitalizasiya, həmçinin KV ölümə təsir ilə ölçüldü

Fineron qeyri-fatal insult riskinin azalması üçün nəzərdə tutulmamışdır



ÜÇ-dən Hospitalizasiya

29% RRR

HR=0.71 (95% CI: 0.56-0.90)



KV Ölüm

10% RRR

HR=0.90 (95% CI: 0.74-1.09)

DM and CKD

FİNERON: XBX-nin progressivləşməsinin azalmasını sübut etdi

Standart müalicəyə əlavə olaraq

18% RRR
vs placebo

HR=0.82
(95% CI: 0.73-0.93)
P=0.001

3.4% ARR⁴
(95% CI: 0.6-6.2)

NNT: 29⁴
(95% CI: 16-166)

İlkin mürəkkəb son
nöqtənin qarşısını alınması

36 ay

FİDELİO-DKD tədqiqatında son (3-4) mərhələli XBX xəstələrini
yer aldı (eGFR <60 ml/dəq/1.73 m² + albuminuriya)

İlkin mürəkkəb son nöqtə: böyrək çatışmazlığı, eGFR-in ≥40%
davamlı azalması və ya böyrək ölümü

Tədqiqat zamanı çox az sayda böyrək ölümü rastlandı

FİGARO-DKD –dən RENAL NƏTİCƏLƏR

İkincili mürəkkəb son nöqtə olan böyrək çatışmazlığı, eGFR-in ≥40% davamlı azalması və ya böyrək ölümü
Fineron qəbul edən 350 xəstədə və 395 plasebo alan xəstədə əhəmiyyətli dərəcədə fərq olmamışdır

DM and CKD

FİNERON plasebo ilə müqayisədə XBX-nin geniş diapazonunda UACR-ni aşağı saldı



*Remained stable for the duration of the trials.¹³

Finerenone and new-onset diabetes in heart failure: a prespecified analysis of the FINEARTS-HF trial

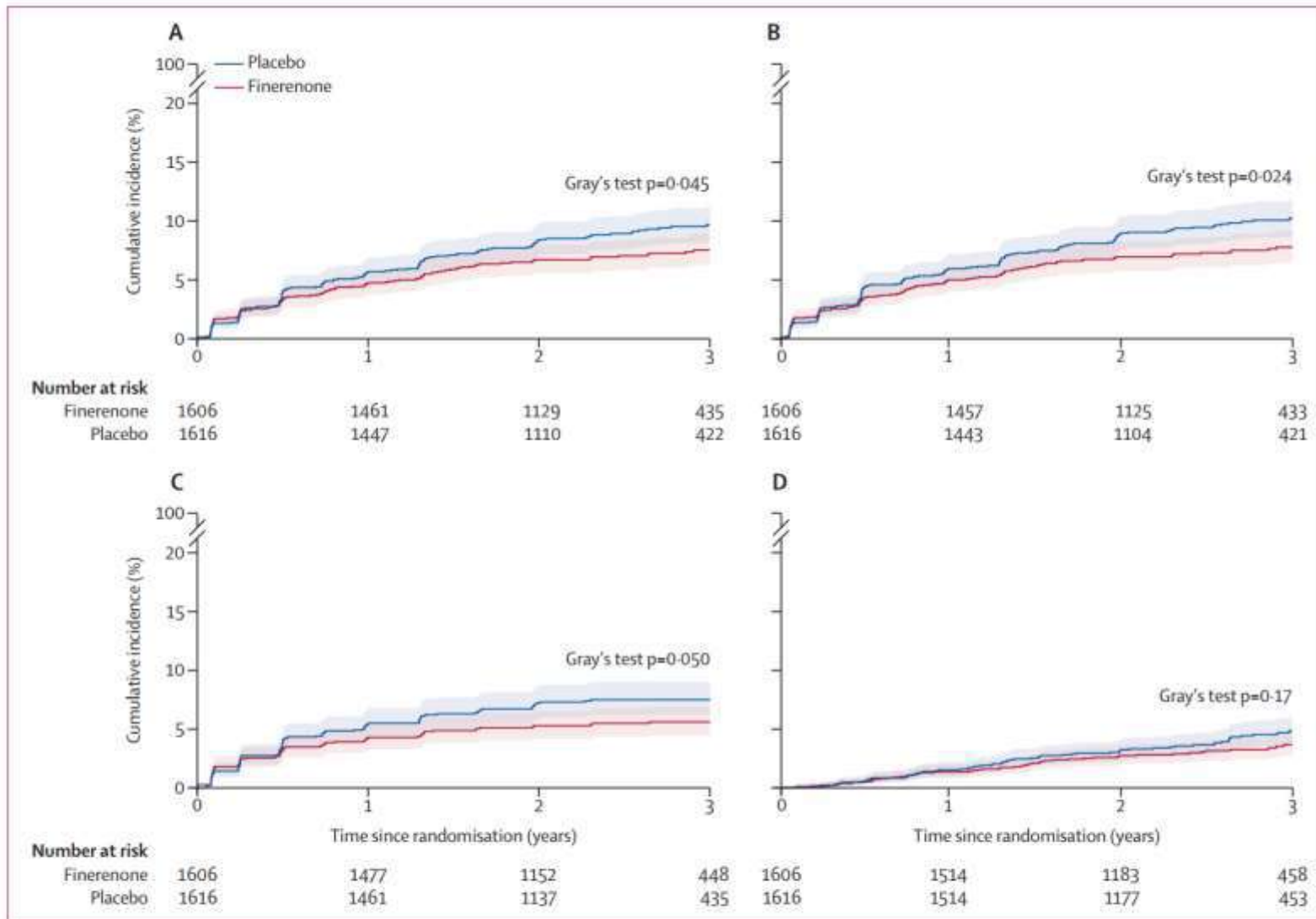
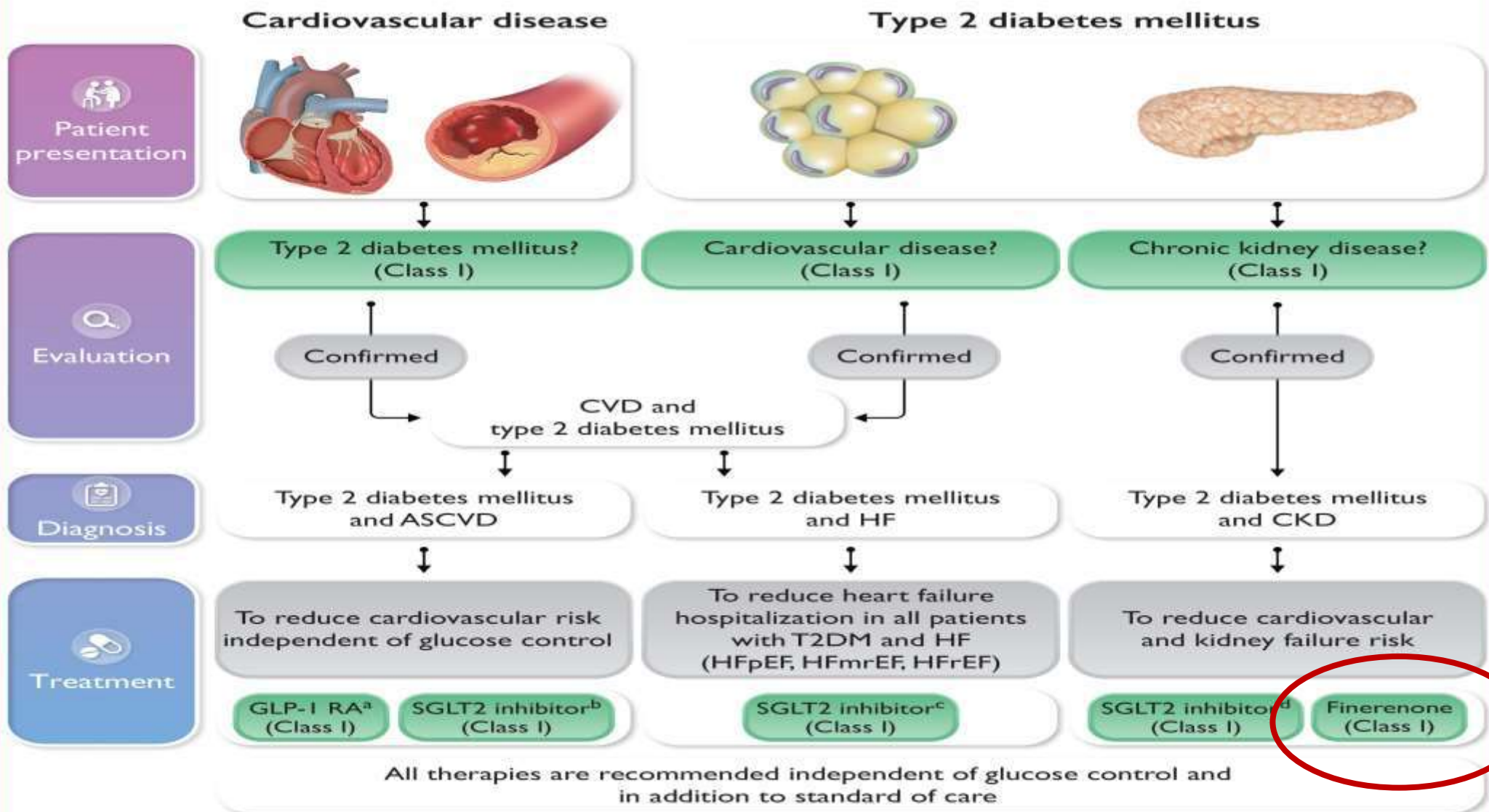


Figure 2: Effect of finerenone compared with placebo on new-onset diabetes in participants without diabetes at baseline

HbA_{1c} measurements or initiation of glucose-lowering drugs excluding (A) and including (B) SGLT2 inhibitors, HbA_{1c} measurements only (C), and initiation of glucose-lowering drugs excluding SGLT2 inhibitors (D). Shaded area represents 95% CI.



Finerenon dosing

1 INITIATE

Measure serum potassium

Do not initiate Finerenon if serum potassium >5.0 mEq/L.

If >4.8 to 5.0 mEq/L, initiation may be considered with additional potassium monitoring within the first 4 weeks based on clinical judgment and serum potassium levels.



Measure eGFR to determine recommended starting dose

10 mg

eGFR ≥ 25 to < 60 mL/min/1.73 m²

20 mg

eGFR ≥ 60 mL/min/1.73 m²

Not recommended

eGFR < 25 mL/min/1.73 m²

2 CHECK LABS

After initiation,
restart, or
dose adjustment



In 4 weeks,
check serum
potassium

3 ADJUST: Target daily dose of Finerenon is 20 mg daily

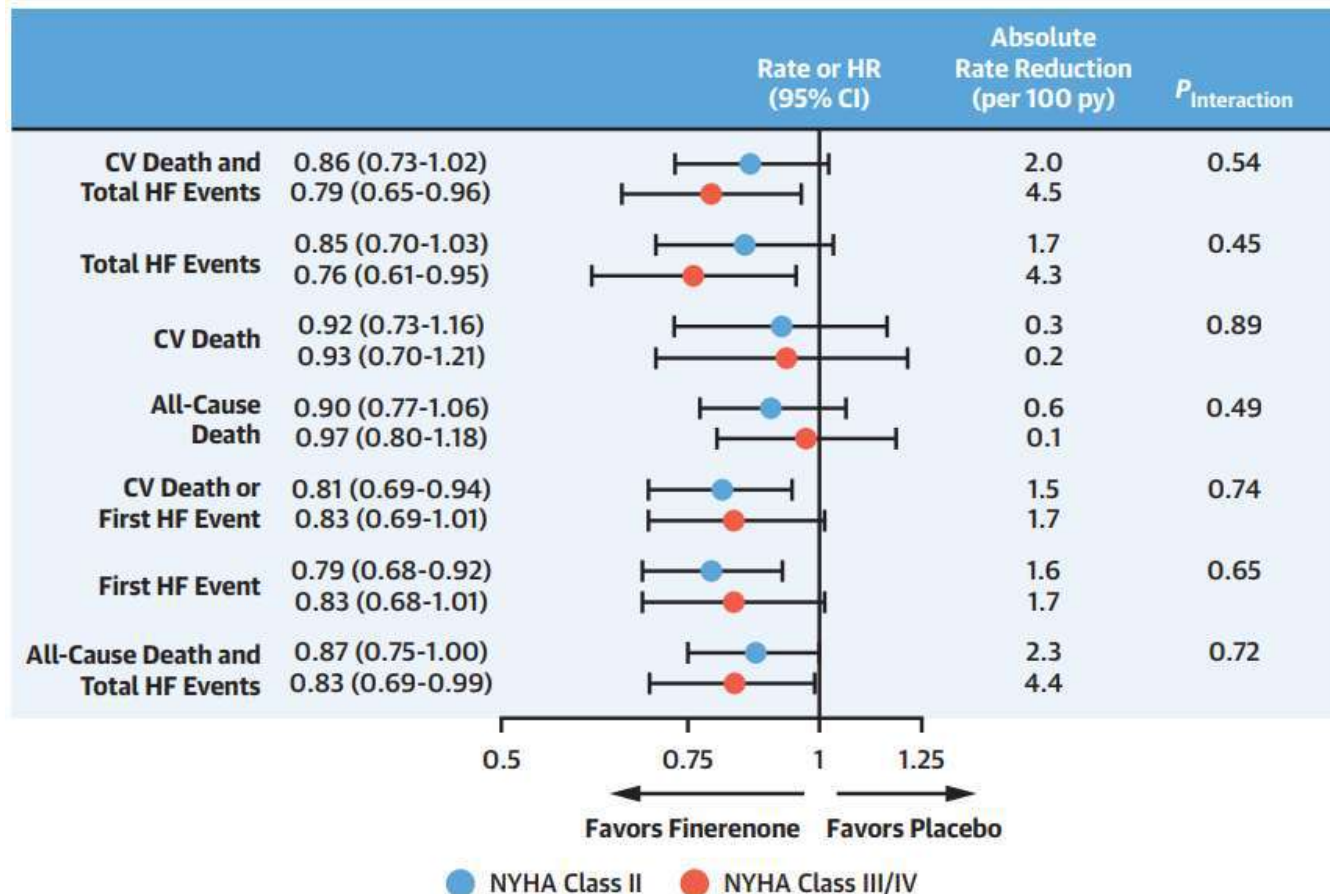
Current serum potassium (mEq/L)	Current dose 10 mg once daily	Current dose 20 mg once daily
≤ 4.8	Increase the dose to 20 mg once daily*	Maintain 20 mg once daily
> 4.8 to 5.5	Maintain 10 mg once daily	Maintain 20 mg once daily
> 5.5	Withhold Finerenon Consider restarting at 10 mg once daily when serum potassium ≤ 5.0 mEq/L	Withhold Finerenon Restart at 10 mg once daily when serum potassium ≤ 5.0 mEq/L

*if eGFR has decreased by more than 30% compared to previous measurement, maintain 10 mg dose.

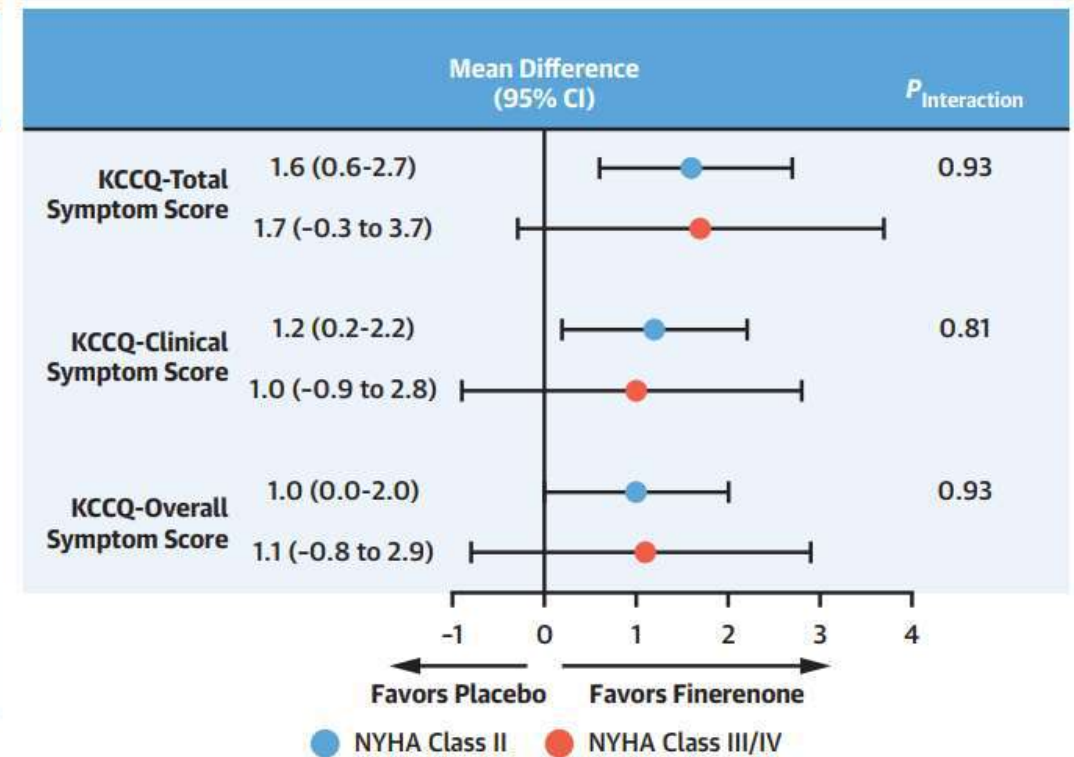
Finerenone and NYHA classes

Finerenone and NYHA Functional Class in Heart Failure: The FINEARTS-HF Trial

Finerenone Reduced Cardiovascular Death and Total HF Events Irrespective of NYHA Functional Class, With Greater Absolute Benefits in Participants with Worse NYHA Functional Class



Treatment Benefits of Finerenone on Patient-Reported HF-Related Health Status Were Consistent Irrespective of NYHA Functional Class



Finerenone outcomes by age

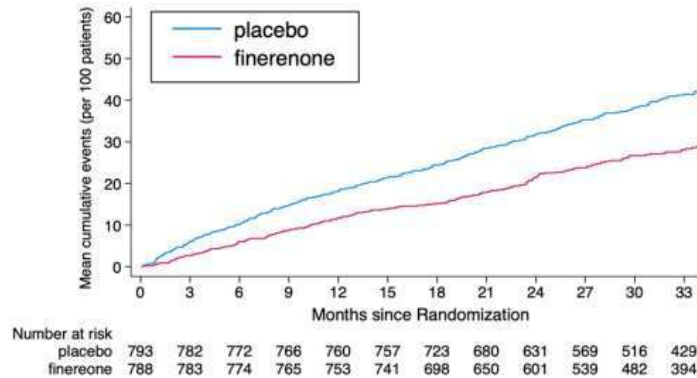
Circulation: Heart Failure

ORIGINAL ARTICLE

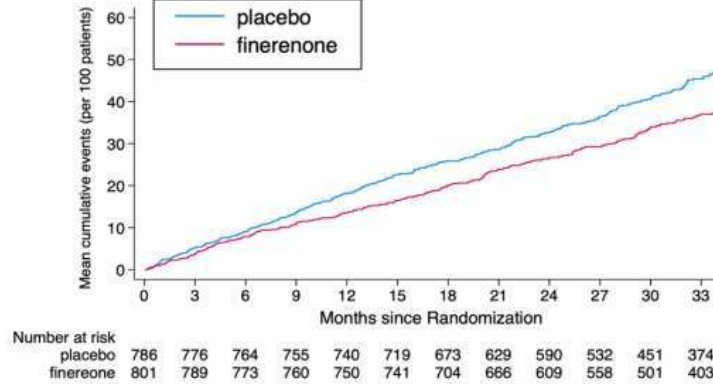
Finerenone Improves Outcomes in Patients With Heart Failure With Mildly Reduced or Preserved Ejection Fraction Irrespective of Age: A Prespecified Analysis of FINEARTS-HF



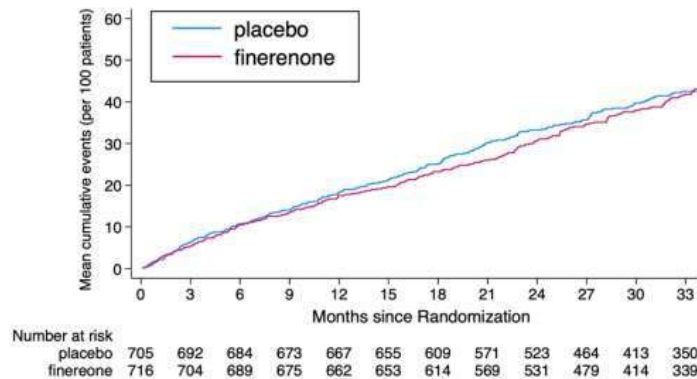
A 40-66 years



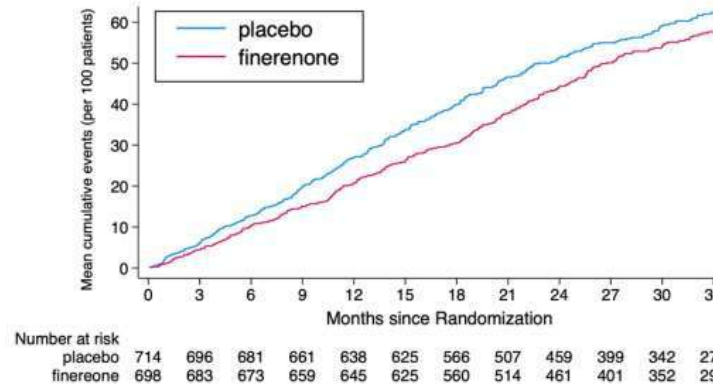
B 67-73 years



C 74-79 years



D ≥ 80 years



P value for interaction between age and treatment effect : 0.27

Figure 2. Effect of finerenone on the primary composite outcome according to age category (quartiles) in FINEARTS-HF (Finerenone Trial to Investigate Efficacy and Safety Superior to Placebo in Patients With Heart Failure).

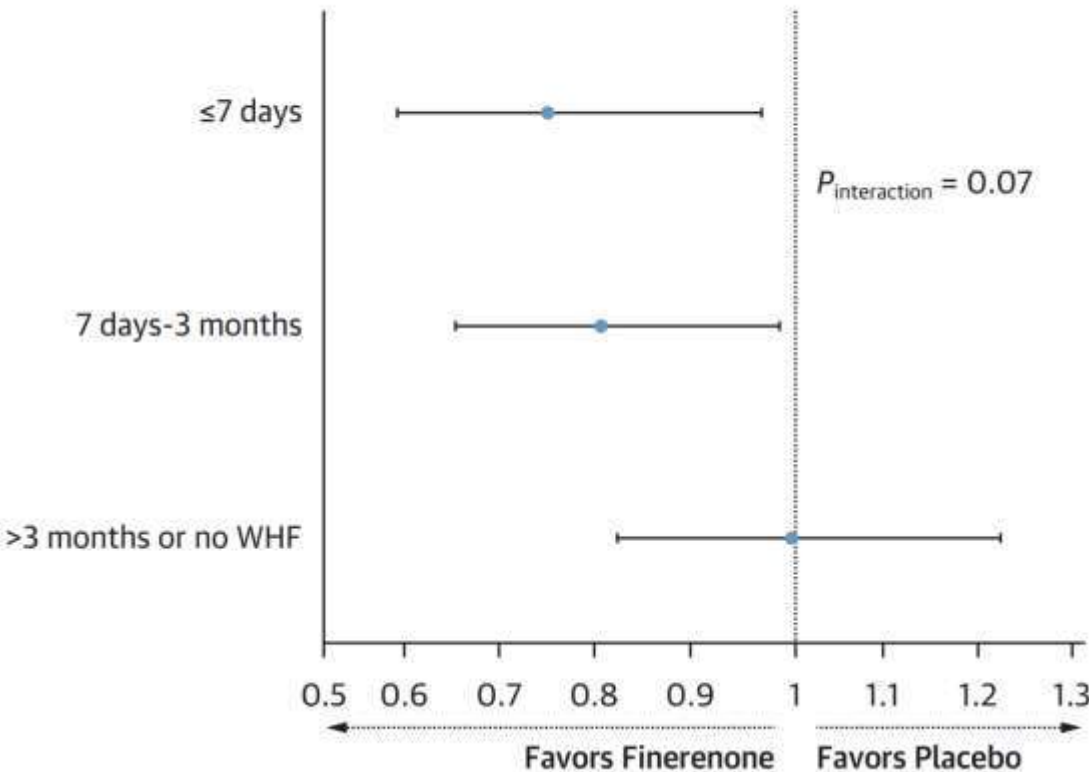
The figures show the Nelson-Aalen estimate of the cumulative hazard for the primary composite end point according to age categorized by quartile: 40 to 66 years (A), 67 to 73 years (B), 74 to 79 years (C), and ≥ 80 years (D). The blue solid lines indicate the placebo group, and the red solid lines indicate the finerenone group.

Finerenone in Patients With a Recent Worsening Heart Failure Event

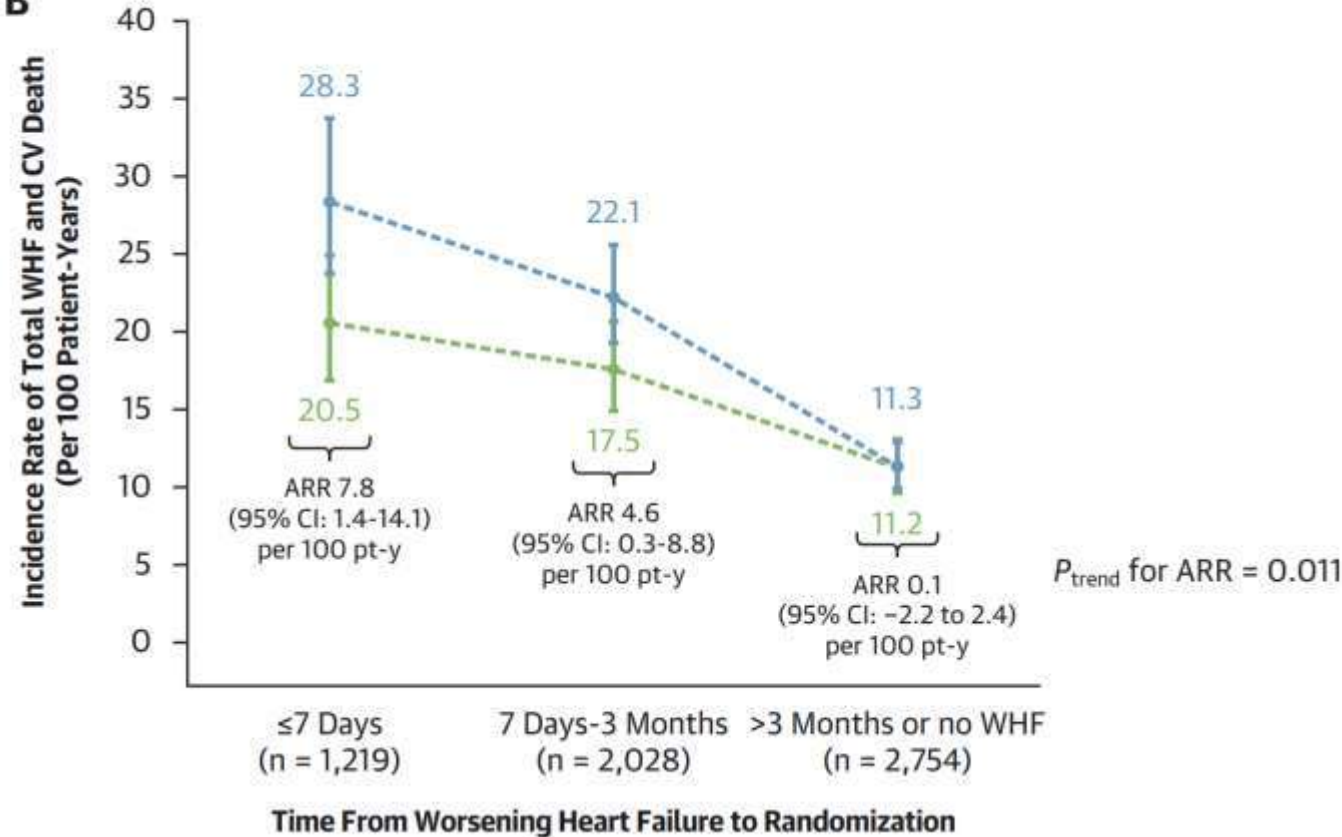
The FINEARTS-HF Trial

Akshay S. Desai, MD, MPH,^a Muthiah Vaduganathan, MD, MPH,^a Brian L. Claggett, PhD,^a Ian J. Kulac, MS,^a

A



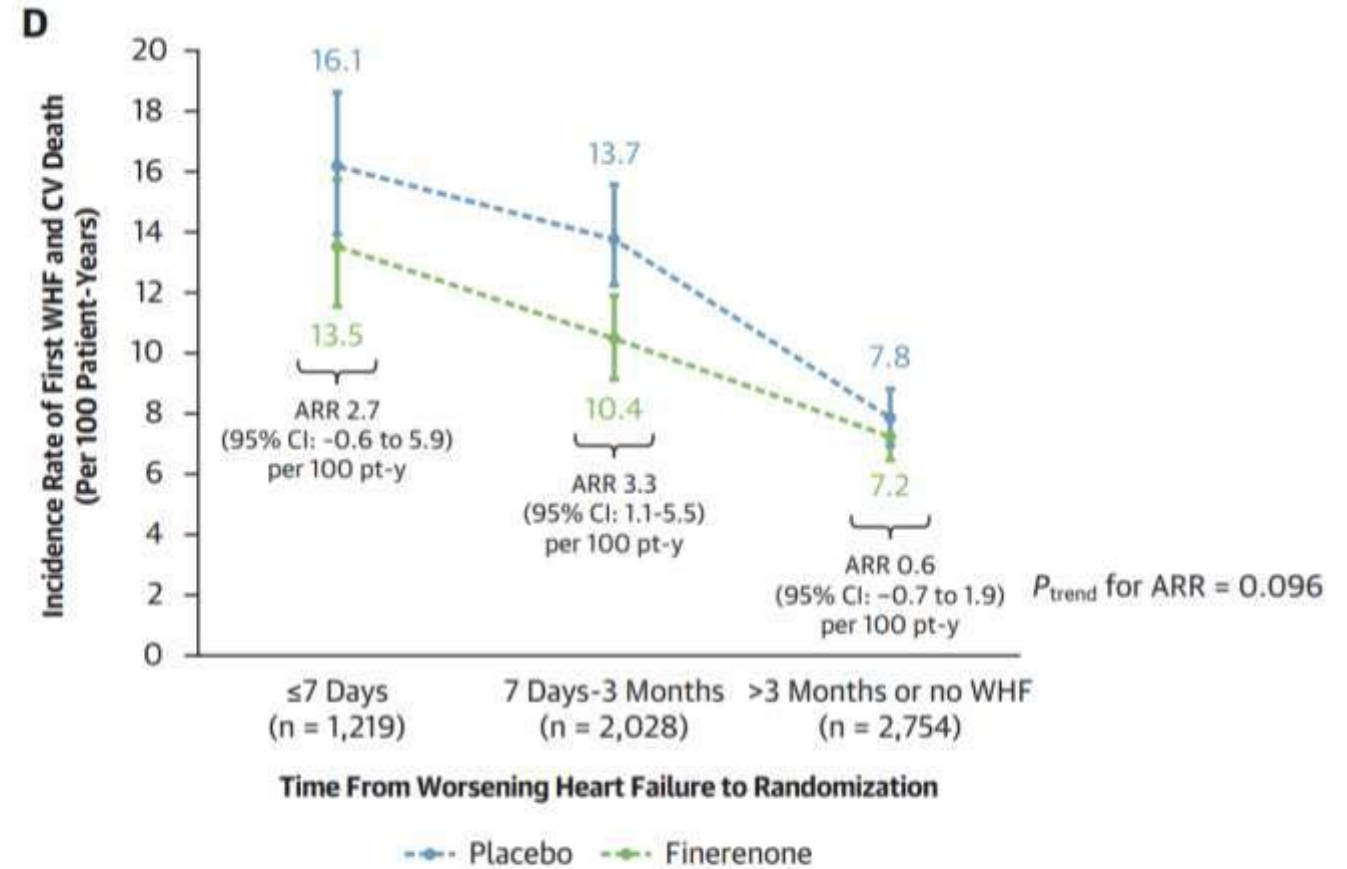
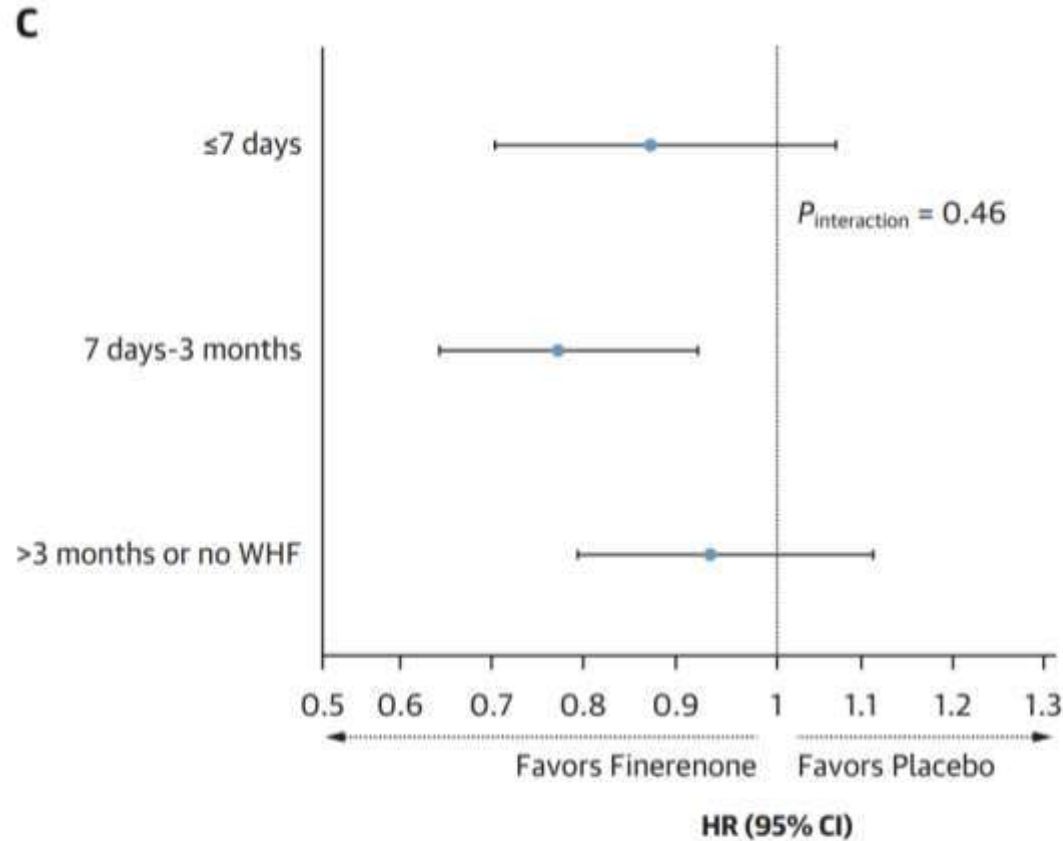
B



Finerenone in Patients With a Recent Worsening Heart Failure Event

The FINEARTS-HF Trial

Akshay S. Desai, MD, MPH,^a Muthiah Vaduganathan, MD, MPH,^a Brian L. Claggett, PhD,^a Ian J. Kulac, MS,^a





Blinded Withdrawal of Finerenone after Long-Term Treatment in FINEARTS-HF

Muthiah Vaduganathan, MD MPH
Brigham and Women's Hospital
Harvard Medical School
Boston, Massachusetts, USA

On Behalf of Co-Investigators: Brian L. Claggett; Jacob A. Udell; Akshay S. Desai; Pardeep S. Jhund; Alasdair D Henderson; James Lay-Flurrie; Flaviana Amarante; Andrea Glasauer; Carolyn SP Lam; Michele Senni; Sanjiv J Shah; Adriaan A. Voors; Faiez Zannad; Bertram Pitt; John JV McMurray; Scott D. Solomon

X @mvaduganathan



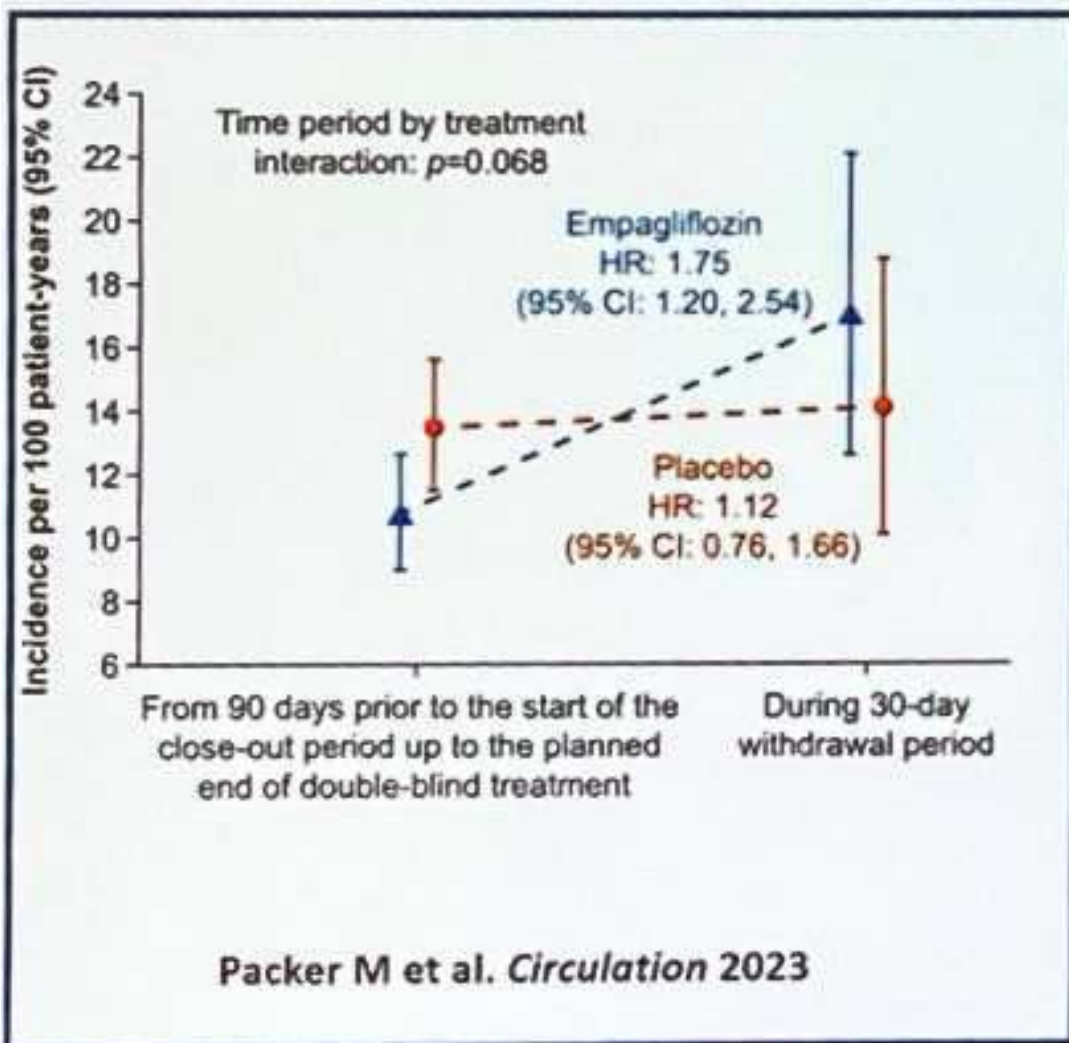
Disclosures: American Regent, Amgen, AstraZeneca, Bayer AG, Baxter Healthcare, BMS, Boehringer Ingelheim, Chiesi, Cytokinetics, Fresenius Medical Care, Galmed, Idorsia Pharmaceuticals, Impulse Dynamics, Lexicon Pharmaceuticals, Merck, Milestone Pharmaceuticals, Novartis, Novo Nordisk, Occlutech, Pharmacosmos, Relypsa, Roche Diagnostics, Sanofi, and Tricog Health



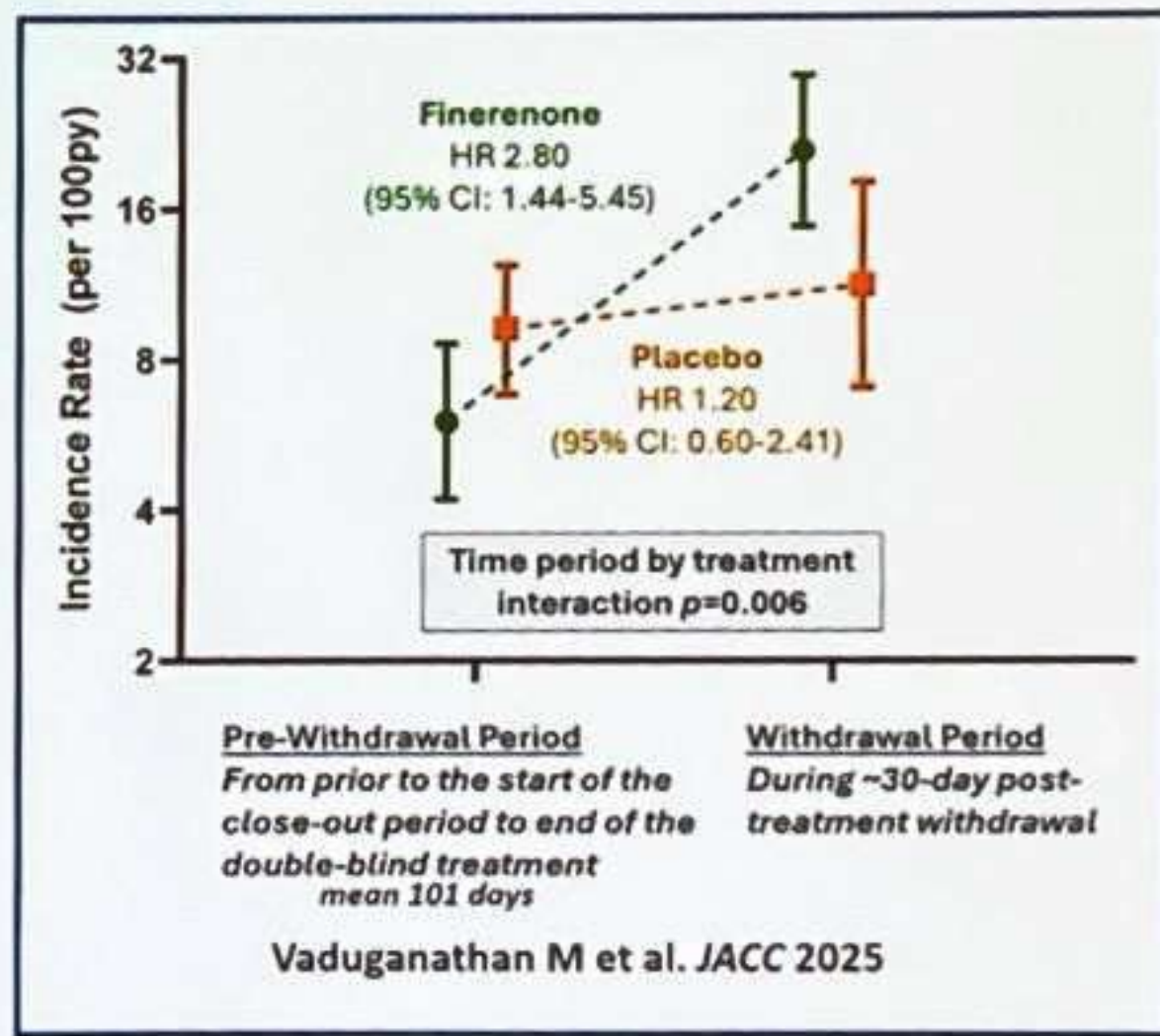
Muthiah Vaduganathan
USA



EMPEROR: Withdrawal of SGLT2i



FINEARTS-HF: Withdrawal of nsMRA





Cost-effectiveness of finerenone in chronic kidney disease associated with type 2 diabetes in The Netherlands

Sara W. Quist^{1,2*}, Alexander V. van Schoonhoven^{1,2}, Stephan J. L. Bakker³, Michał Pochopień⁴, Maarten J. Postma^{1,5}, Jeanni M. T. van Loon⁶ and Jeroen H. J. Paulissen^{1,2}

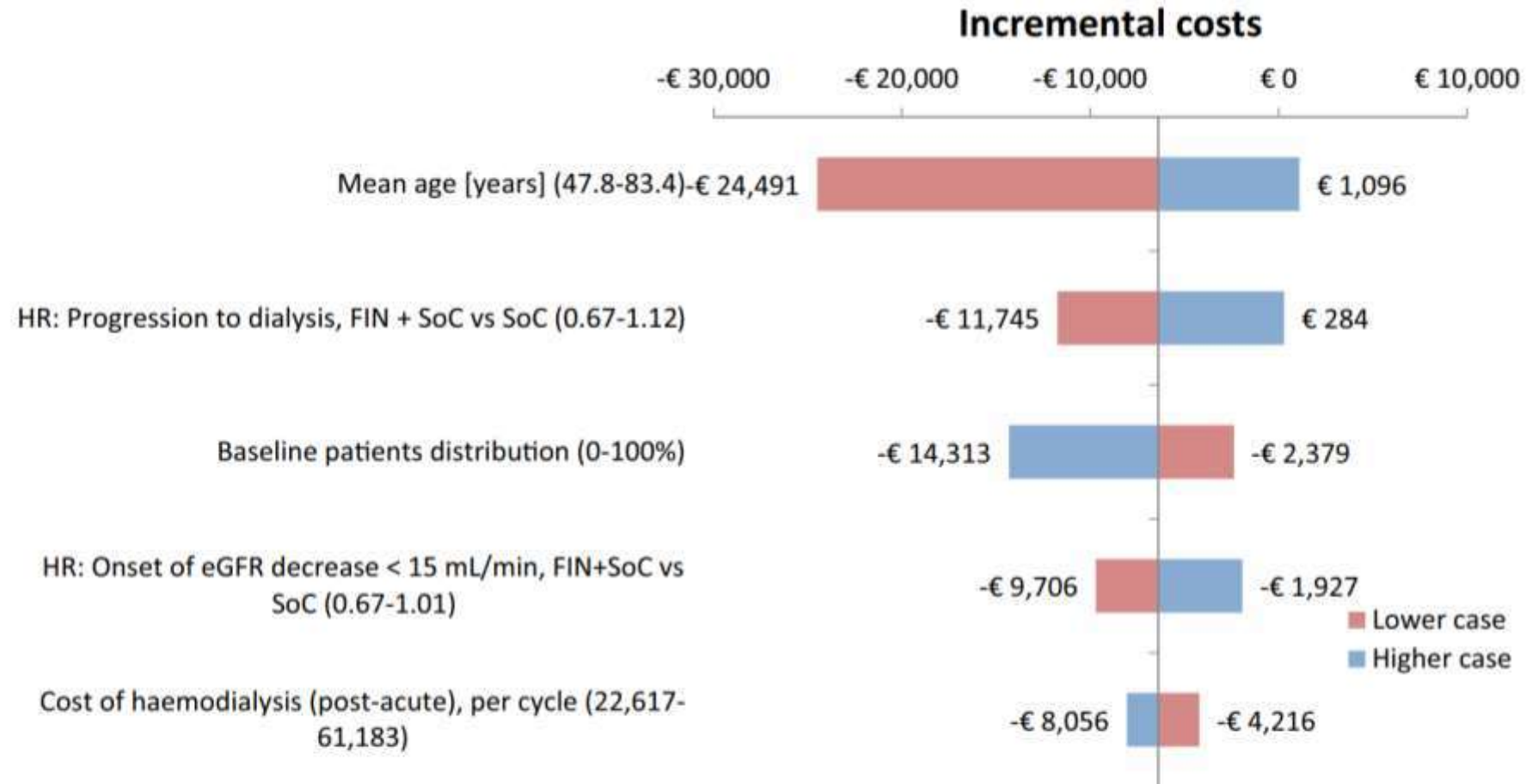


Fig. 3 Tornado diagram presenting parameters with most influence on incremental QALYs and costs. Key: The lower case presents the outcome for the 2.5% CI of the distribution. The higher case presents the outcome of the 97.5% CI of the distribution. CKD chronic kidney disease, CV cardiovascular event; FIN finerenone; HR hazard ratio, SoC standard of care

Dərmanın qiyməti deyil pasientin həyatı önəmlidir



תודה

Dankie Gracias

Спасибо

شكراً

Merci

Takk

Köszönjük

Terima kasih

Grazie

Dziękujemy

Dèkojame

Ďakujeme

Vielen Dank

Paldies

Kiitos

Täname teid

谢谢

Təşəkkür edirəm

Tak

感謝您

Obrigado

Teşekkür Ederiz

감사합니다

Σας ευχαριστούμε

ඔබටතෑකුණ

Bedankt

Děkujeme vám

ありがとうございます

Tack