Blutdruck, Herz und Niere – News

Felix Mahfoud

University Hospital Basel, Switzerland

Conflicts of Interest

Research: (until May 31):

Deutsche Forschungsgemeinschaft, Deutsche Gesellschaft für Kardiologie, Deutsche Herzstiftung, Ablative Solutions, Medtronic, Recor.

Advisory activity, speaker‘s bureau (until May 31):

Ablative Solutions, Amgen, AstraZeneca, Bayer, Boehringer Ingelheim, Inari, Medtronic, Merck, Recor, Servier, Terumo.

Heart & Kidney

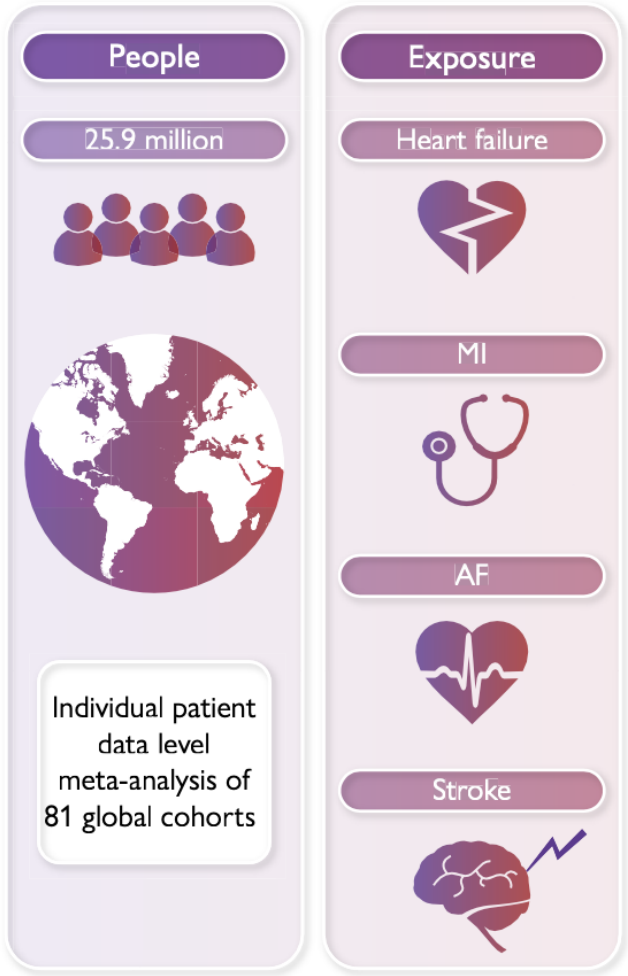
- Cardio renal interaction -

Cardio-Renal-Interaction

53 years, eGFR 89 m/min, 15% Diabetes

Mark PB et al. Eur Heart J. 2023;44:1157-1166

Cardio-Renal-Interaction



712.556 HF

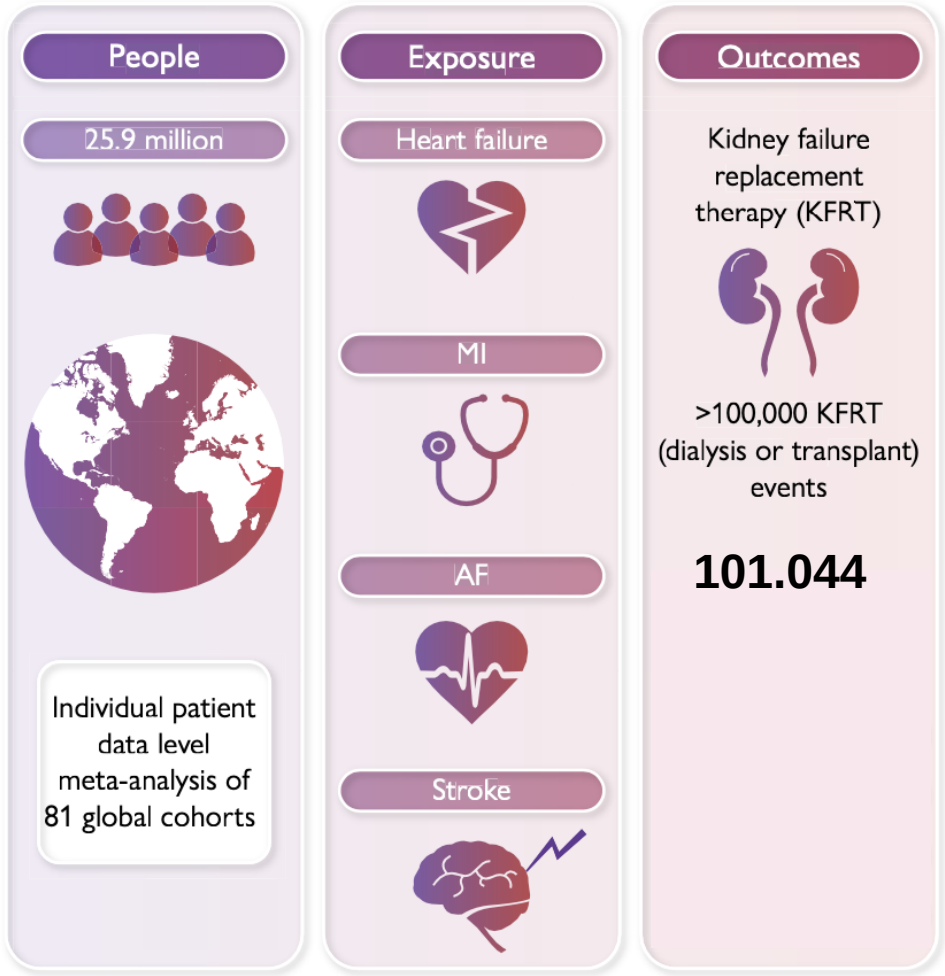
269.142 MI

605.596 AF

311.021 Stroke

Mark PB et al. Eur Heart J. 2023;44:1157-1166

Cardio-Renal-Interaction



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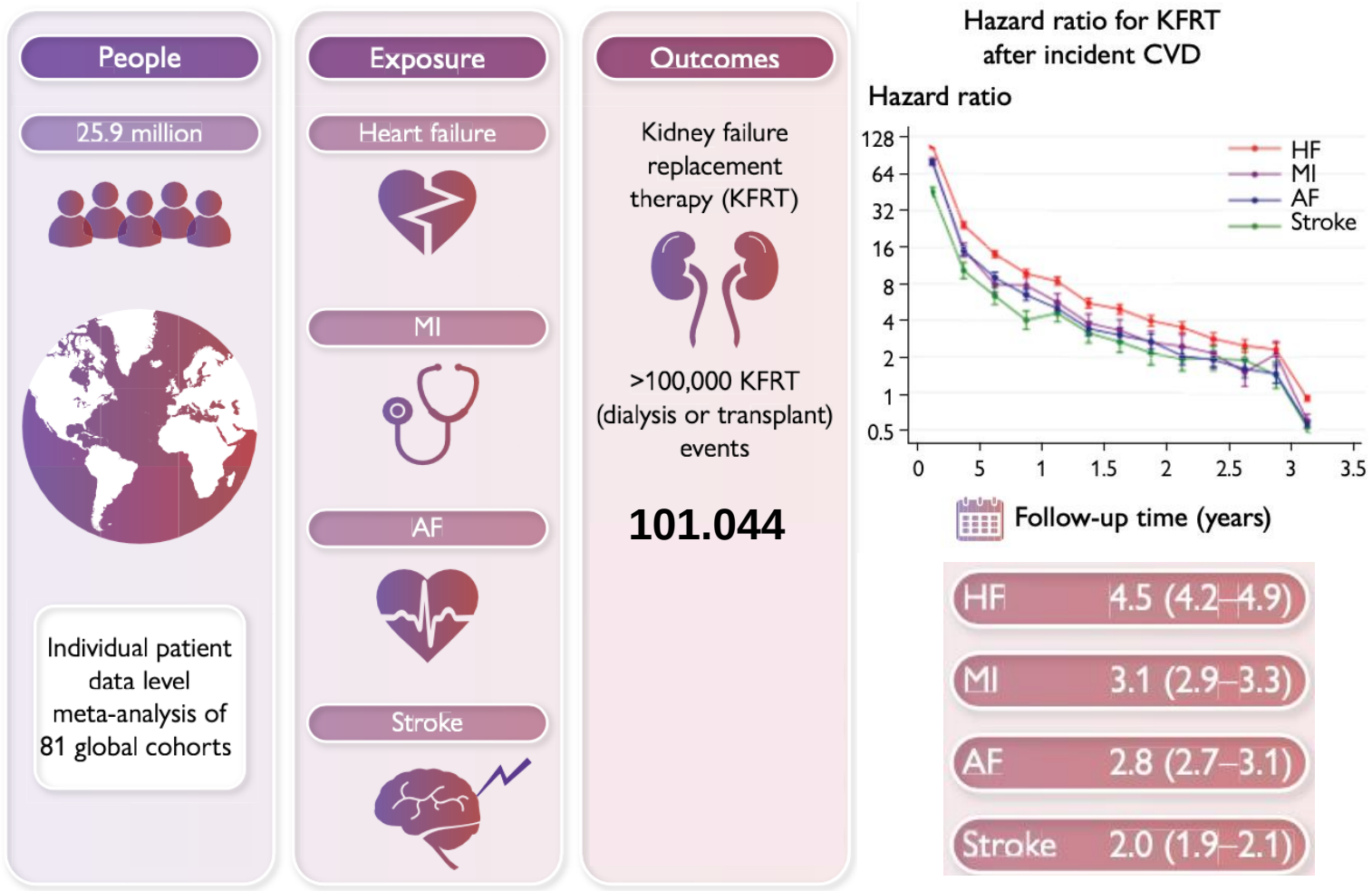
Cardio-Renal-Interaction



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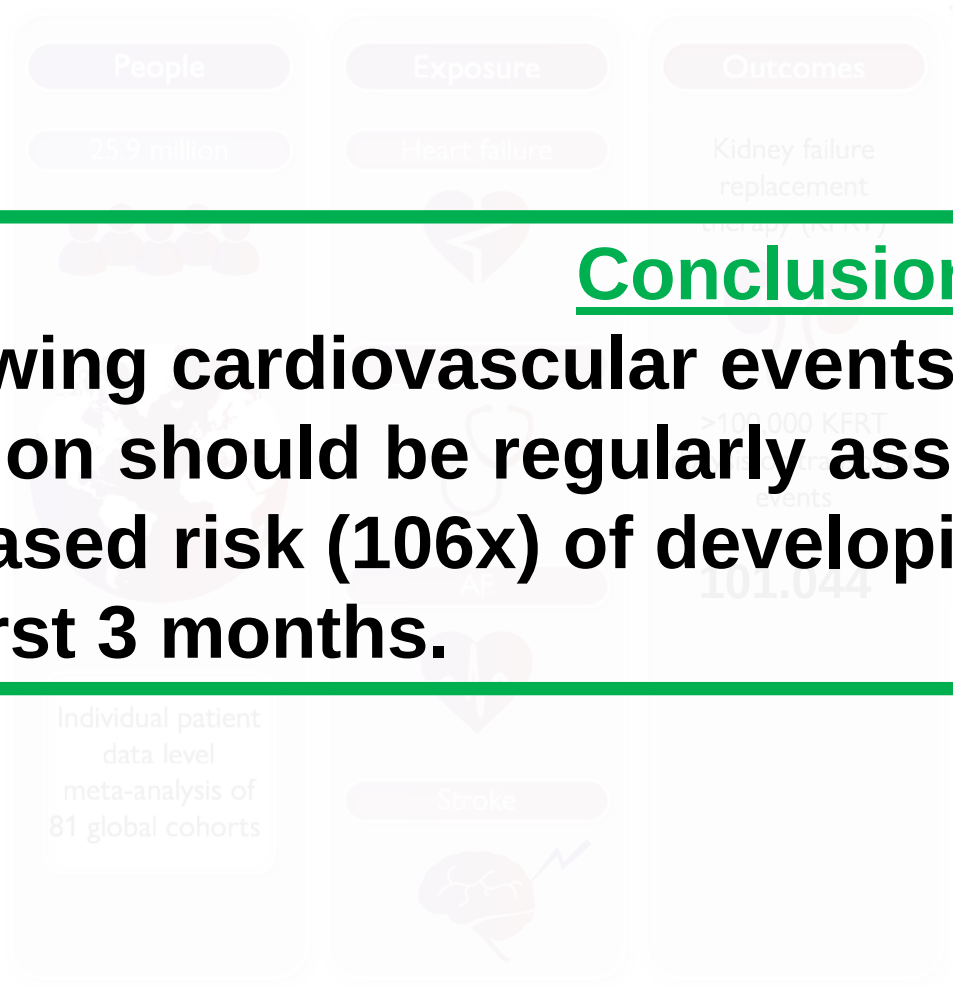
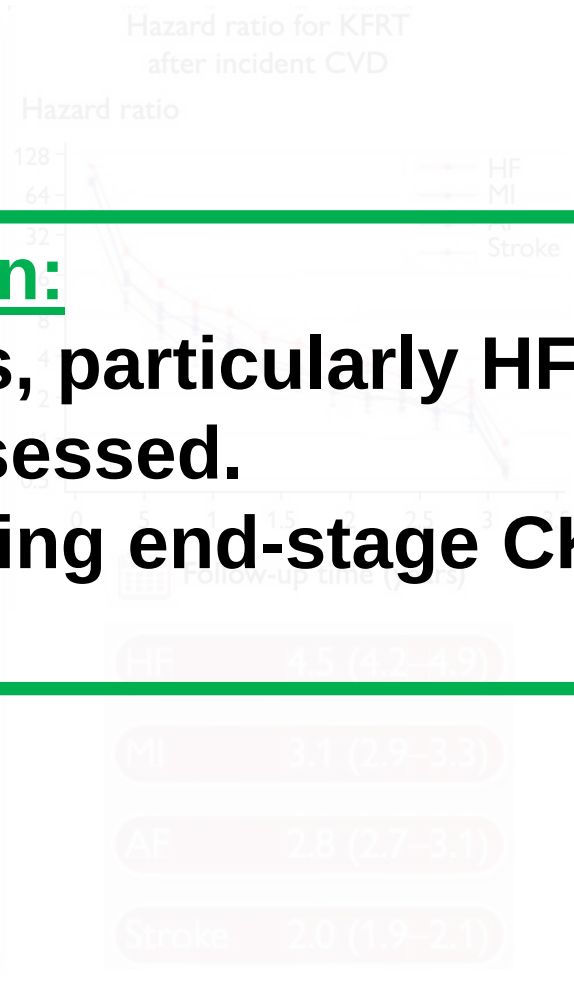
Cardio-Renal-Interaction





Conclusion:

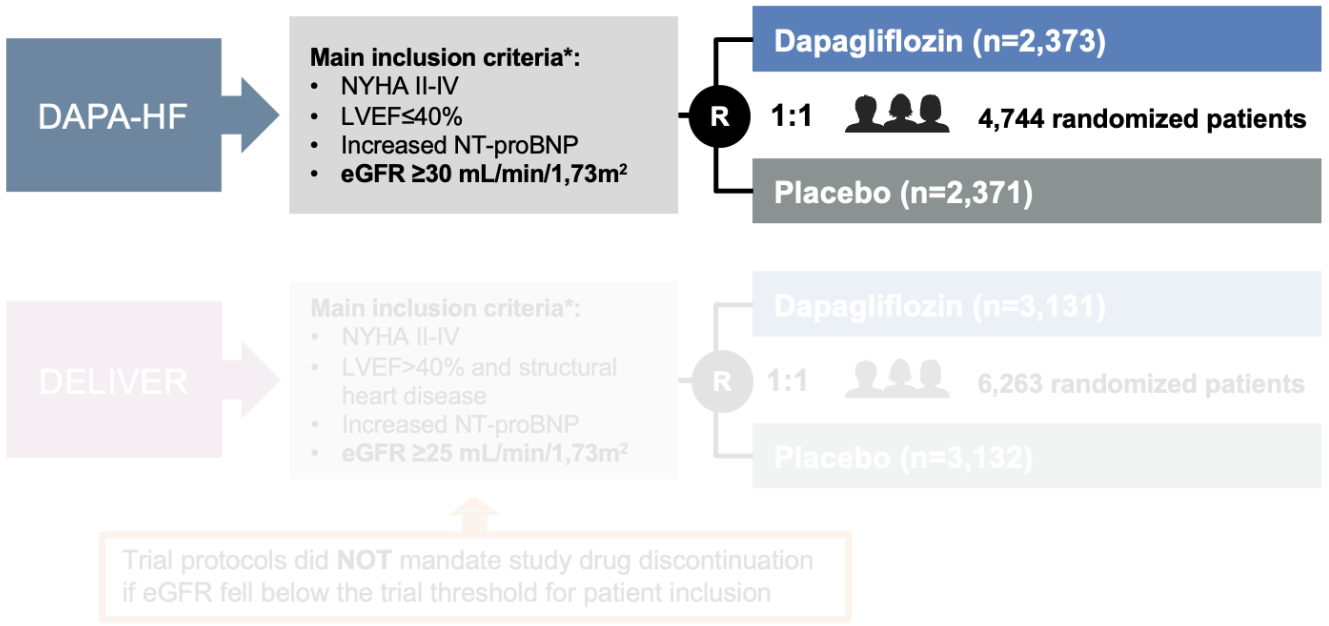
- **Following cardiovascular events, particularly HF, renal function should be regularly assessed.**
- **Increased risk (106x) of developing end-stage CKD within the first 3 months.**

Mark PB et al. Eur Heart J. 2023;44:1157-1166

Heart & Kidney

- SGLT2-i in end-stage CKD -

Dapagliflozin in endstage CKD

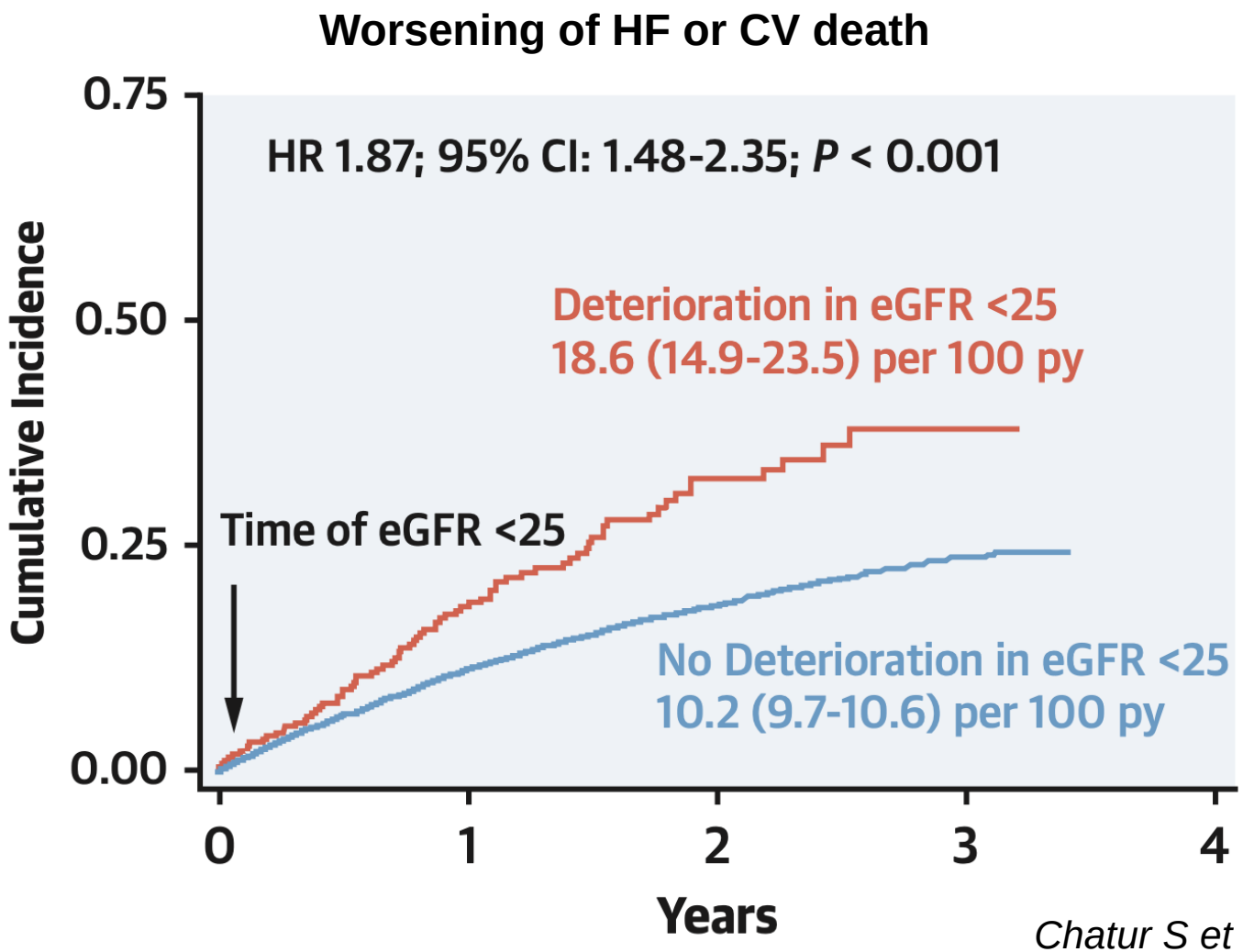


347 patients (3.2%) with eGFR decrease (<25 ml/min)

75% with Dapaglilfozin
74% with placebo

Chatur S et al, JACC. 2023;82:1854-1863

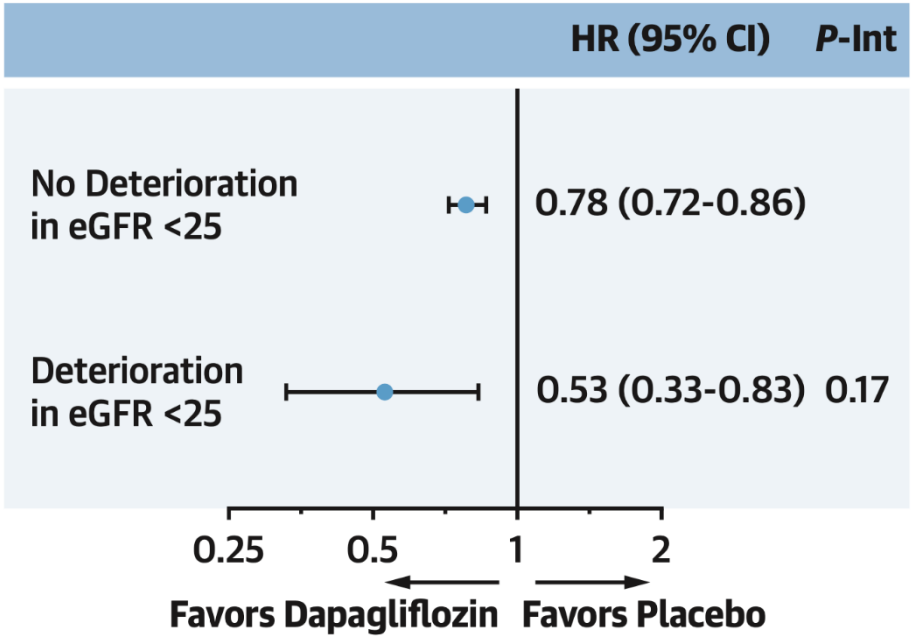
Dapagliflozin in endstage CKD



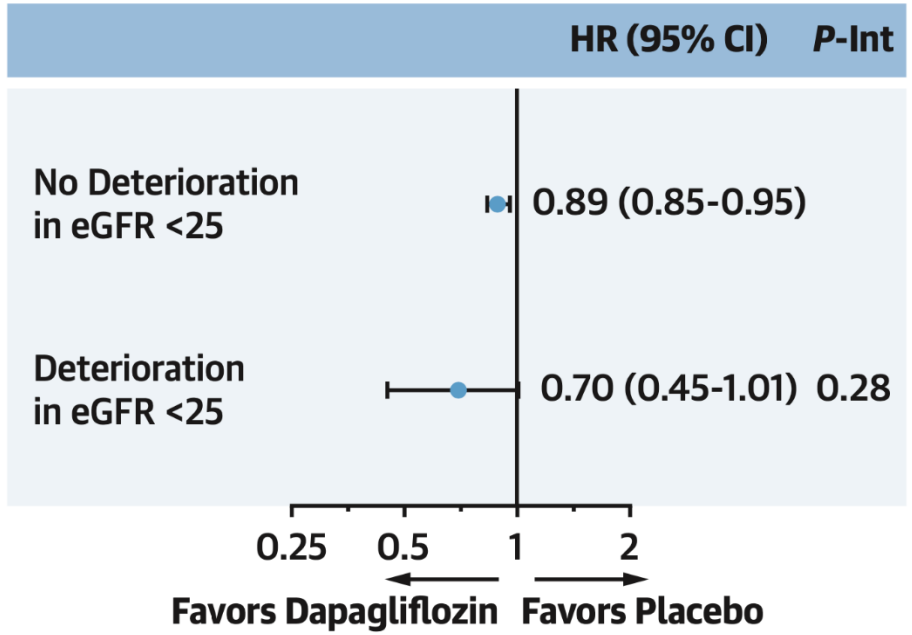
Chatur S et al, JACC. 2023;82:1854-1863

Dapagliflozin in endstage CKD

Dapagliflozin reduces CV death/worsening HF despite eGFR decrease



No increased risk of adverse events



Conclusion: Continuation of dapagliflozin in eGFR <25 ml/min is beneficial and appears safe.

Chatur S et al, JACC. 2023;82:1854-1863

Heart & Kidney

- Prevention of contrast-induced acute kidney injury -

Prevention of contrast-induced acute kidney injury

RCT, 1.002 patients with CKD (eGFR 15-60 ml/min);
69 years, kreatinine 1.6 mg/dl, eGFR 46 ml/min

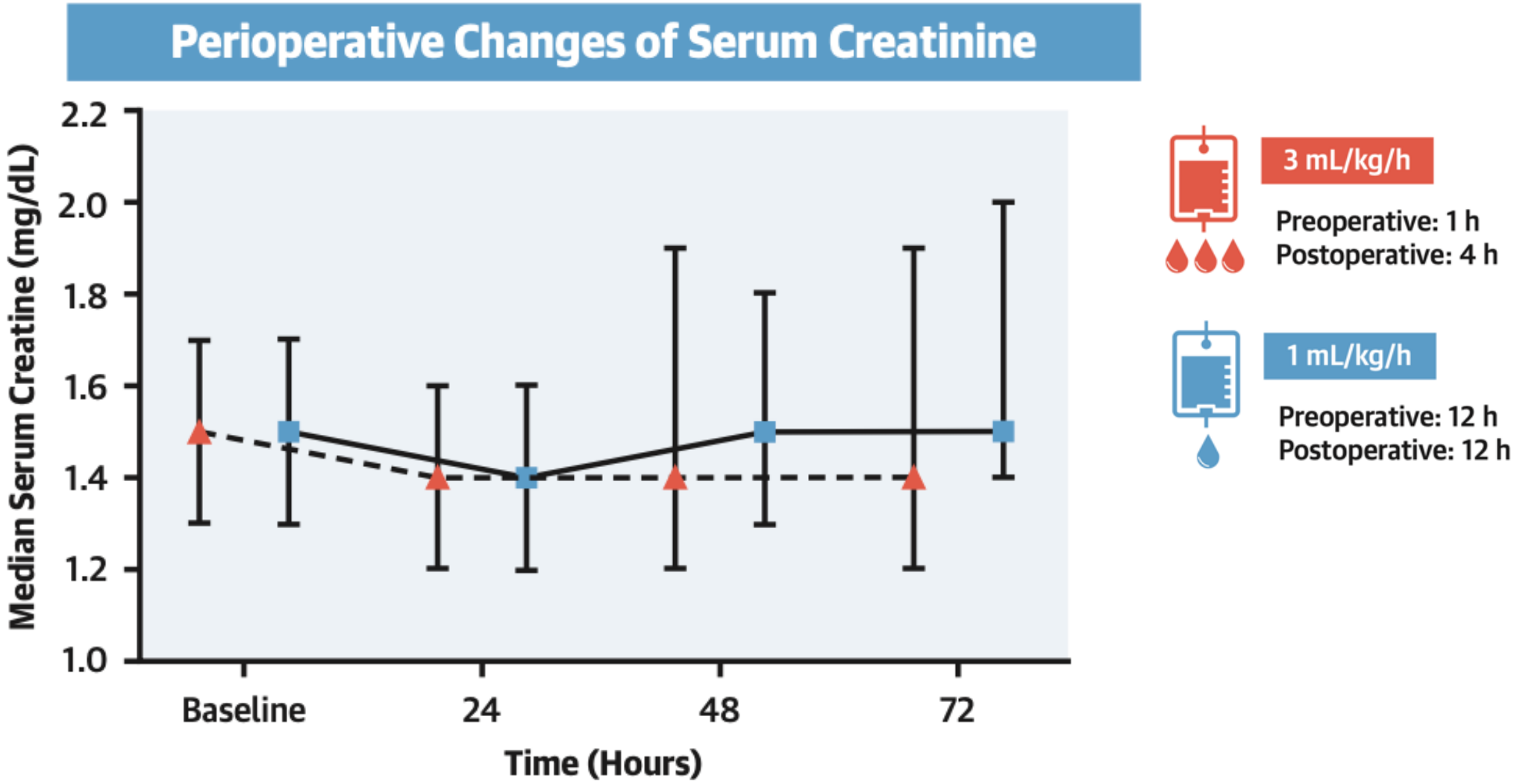
simplified hydration (SH): NaCl 1-4 h before contrast injection, 3 ml/kg/h
versus
standard hydration (Control): NaCl 12 h before and 12 h after contrast injection, 1 ml/kg/h

Primary endpoint: creatinine increase >25% or 0.5 mg/dl within 48-72 h

Intravenous Hydration Volume (ml)			Contrast Volume (ml)		
1,000 (750-1,500) SH group	vs	1,500 (1,000-1,932) Control	114 ± 75 SH group	vs	118 ± 67 Control
($P < 0.001$)			($P = 0.345$)		

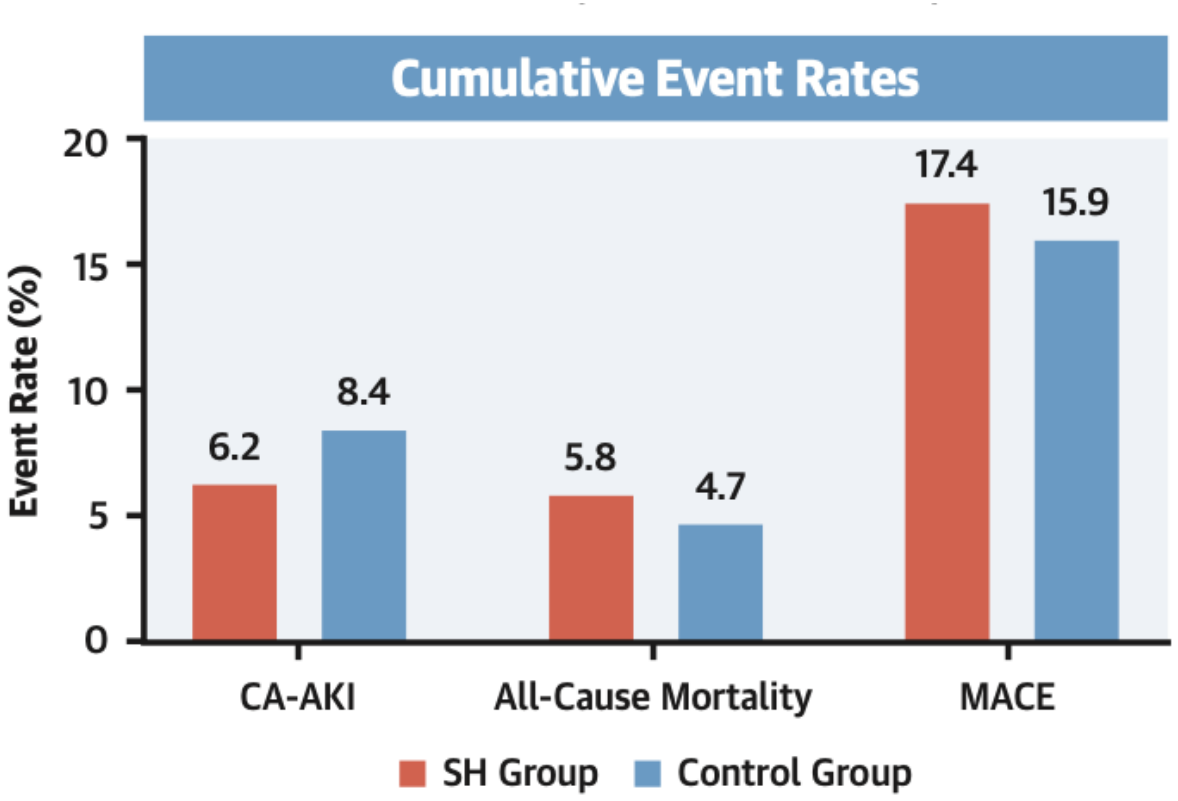
Liu Y et al. JACC CI. 2023;16:1503-1513

Prevention of contrast-induced acute kidney injury



Liu Y et al. JACC CI. 2023;16:1503-1513

Prevention of contrast-induced acute kidney injury



No differences across subgroups:

- **Age**
- **PCI**
- **Contrast volume (>100 ml)**
- **eGFR (<30 ml/min)**
- **Heart failure**
- **...**

Liu Y et al. JACC CI. 2023;16:1503-1513

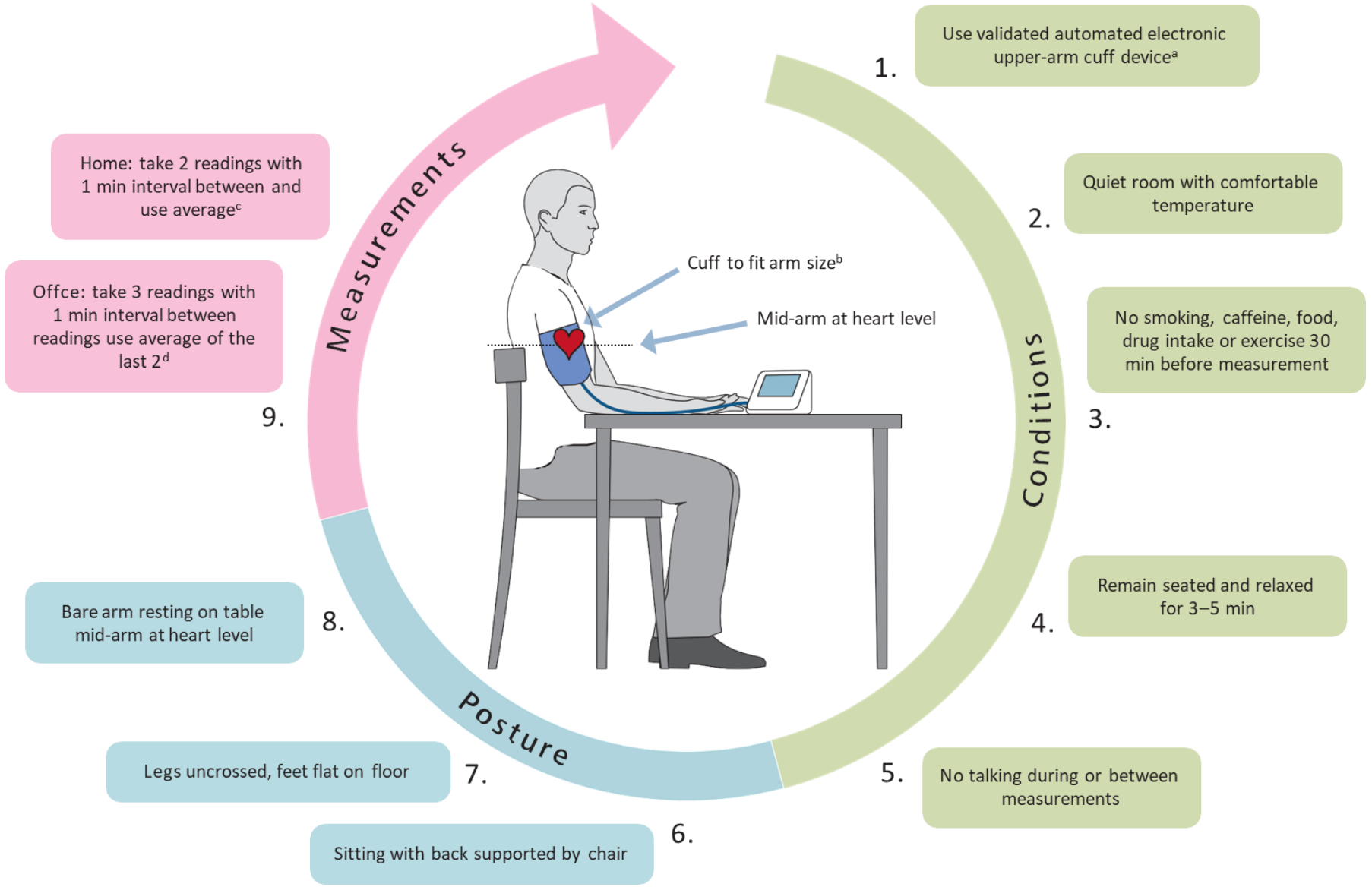
Take Home Message

- Close association between cardiovascular events and end-stage CKD. Assessing renal function after HF events is important.
- Continuation of dapagliflozin in HF with an eGFR-decrease <25 ml/min shown to be beneficial.
- Prevention of contrast-media induced acute kidney injury through simplified hydration.

Hypertension

- Diagnostics -

Blood pressure measurement recommendations



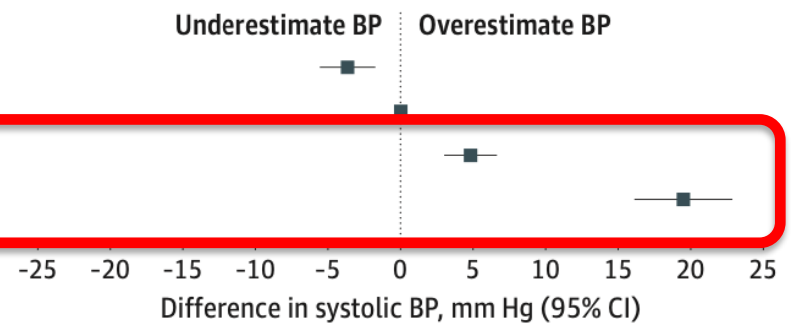
Mancia G et al. J Hypertens. 2023;41:1874-2071

Impact of cuff size on blood pressure

195 adults, 54 years, BMI 29 kg/m^2; 3 blood pressure readings;
Randomization: appropriate, too small, too large

Systolische BP-Differenz

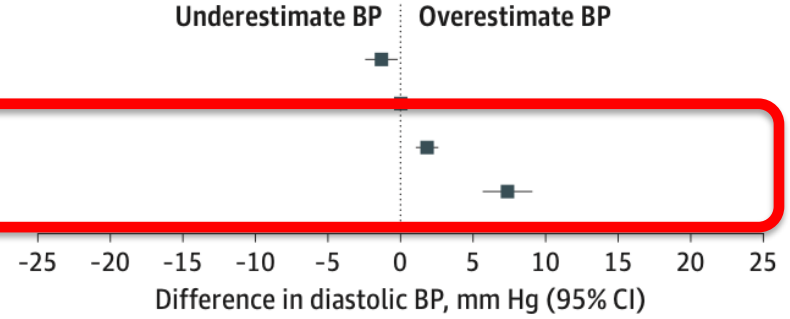
BP cuff	Difference in systolic BP, mm Hg (95% CI)
Regular cuff 1 size too large	-3.6 (-5.6 to -1.7)
Regular cuff appropriately sized	0 [Reference]
Regular cuff 1 size too small	4.8 (3.0 to 6.6)
Regular cuff 2 sizes too small	19.5 (16.1 to 22.9)



+20 mmHg

Diastolische BP-Differenz

BP cuff	Difference in diastolic BP, mm Hg (95% CI)
Regular cuff 1 size too large	-1.3 (-2.4 to -0.2)
Regular cuff appropriately sized	0 [Reference]
Regular cuff 1 size too small	1.8 (1.1 to 2.6)
Regular cuff 2 sizes too small	7.4 (5.7 to 9.1)

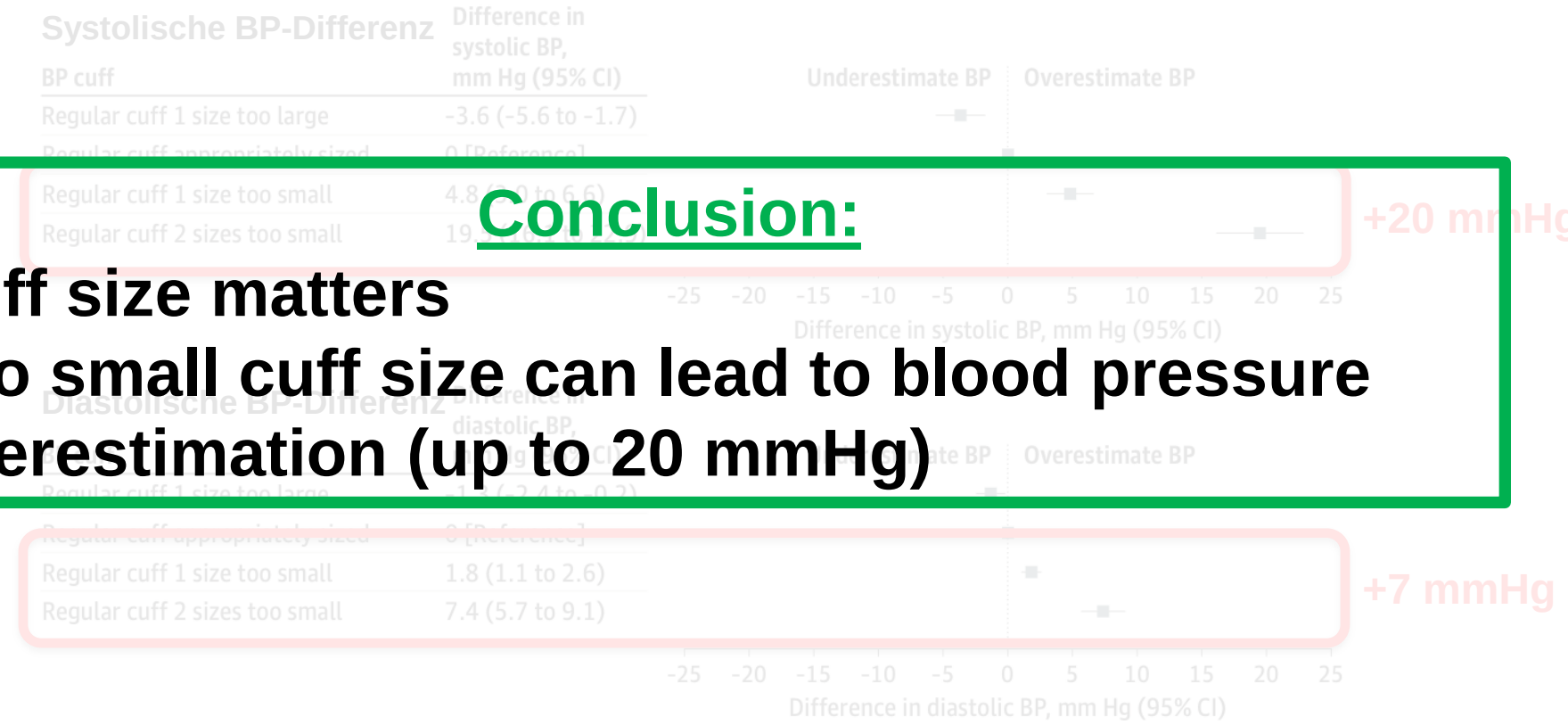


+7 mmHg

Ishigami J et al. JAMA Intern Med. 2023;183:1061-1068

Impact of cuff size on blood pressure

195 adults, 54 years, BMI 29 kg/m^2; 3 blood pressure readings;
Randomization: appropriate, too small, too large



Conclusion:

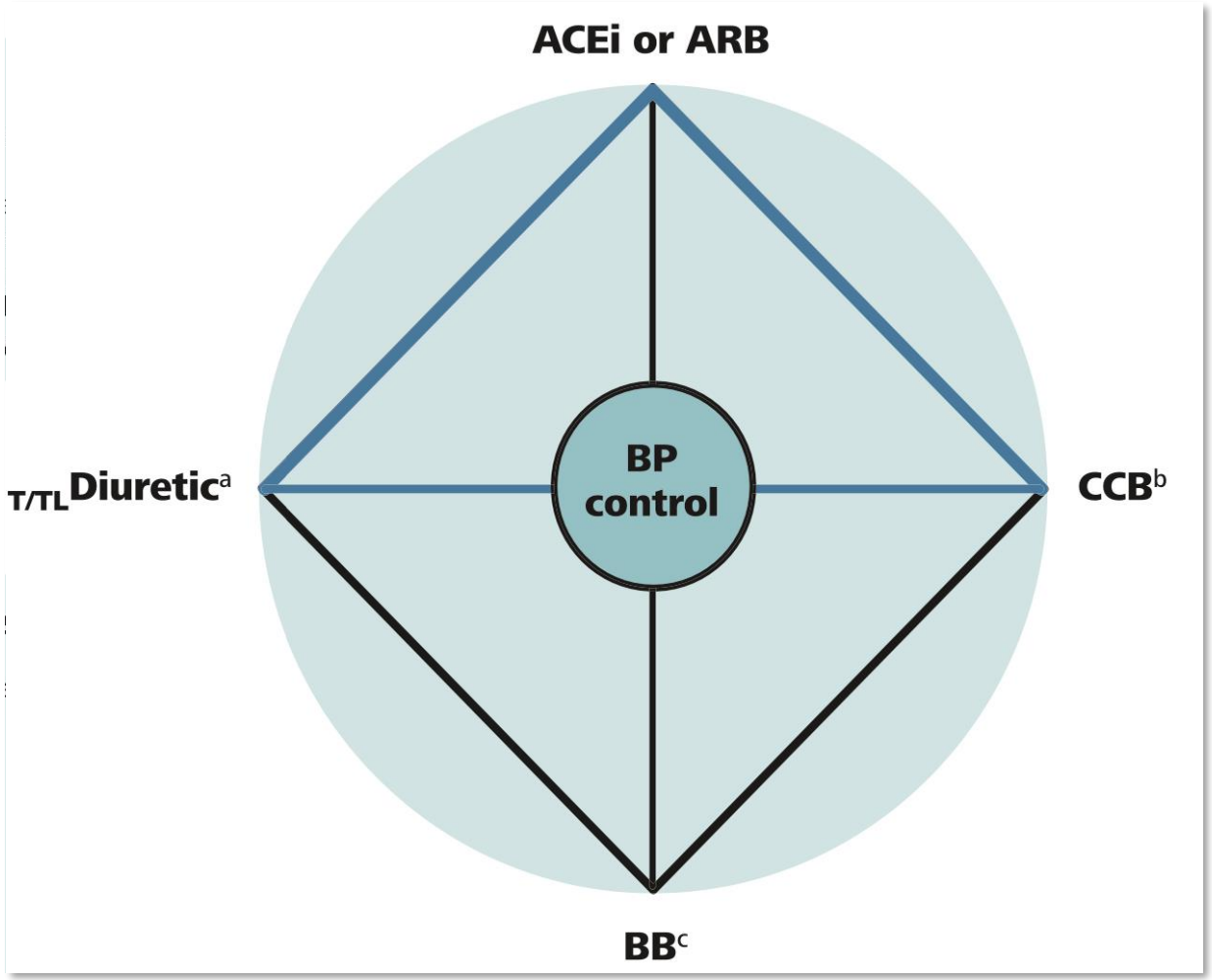
- **Cuff size matters**
- **Too small cuff size can lead to blood pressure overestimation (up to 20 mmHg)**

Ishigami J et al. JAMA Intern Med. 2023;183:1061-1068

Hypertension

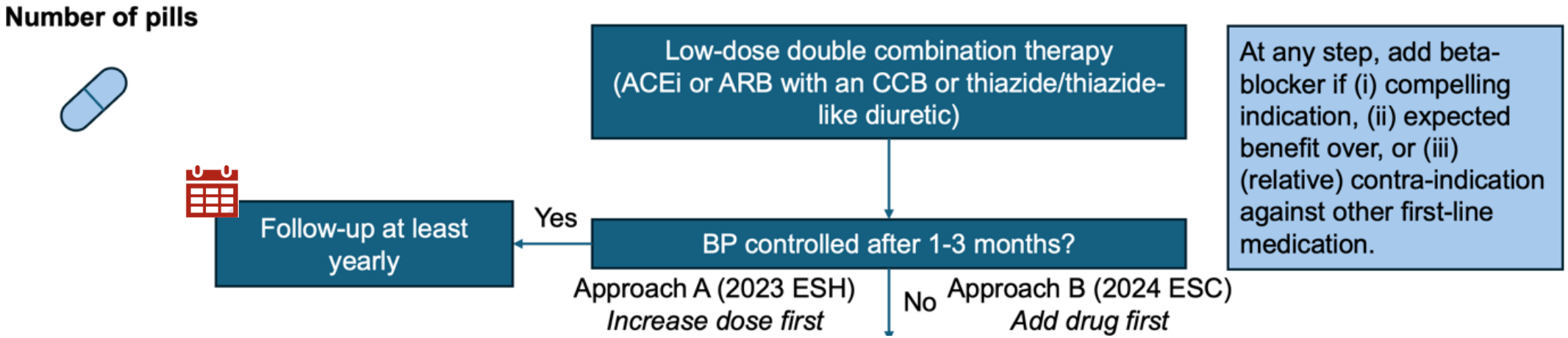
- Drugs -

2023 ESH-Guidelines: drug therapy

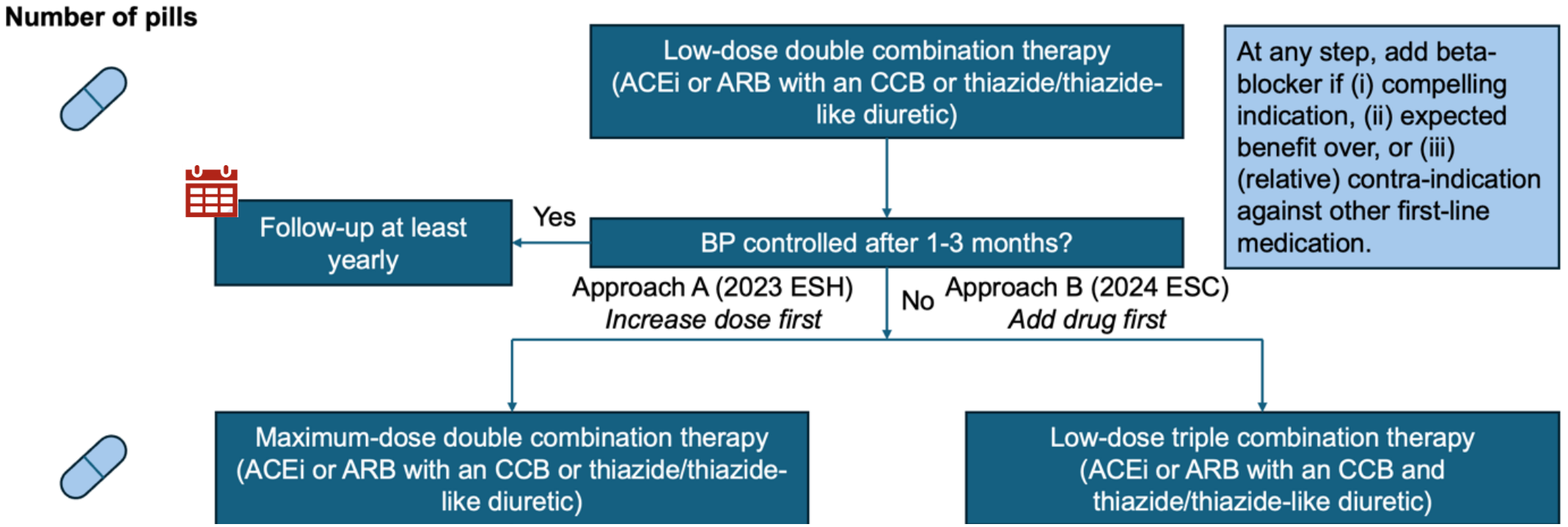


Mancia G et al. J Hypertens. 2023;41:1874-2071

Algorithm for treatment of hypertension: ESC vs. ESH



Algorithm for treatment of hypertension: ESC vs. ESH



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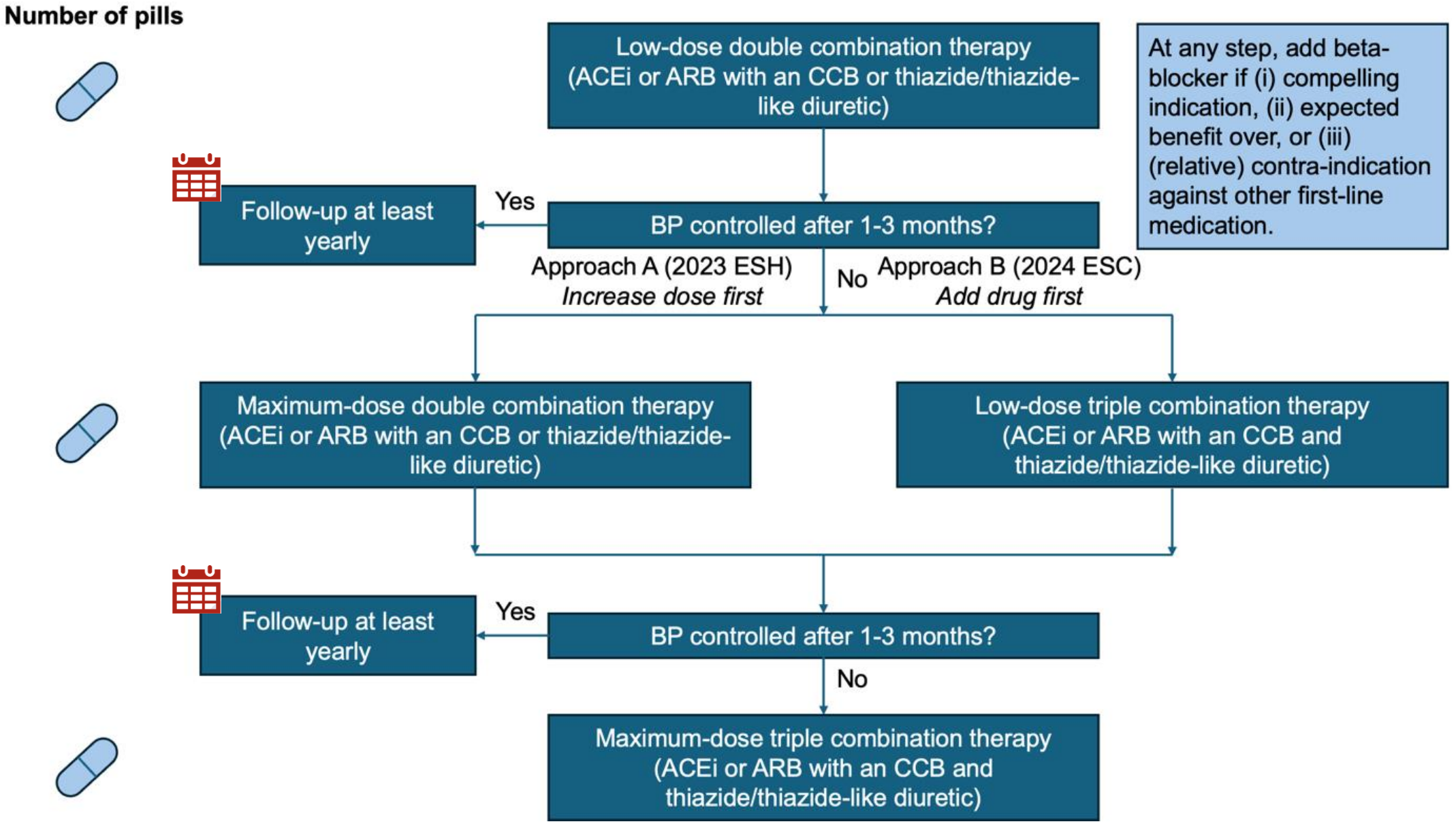


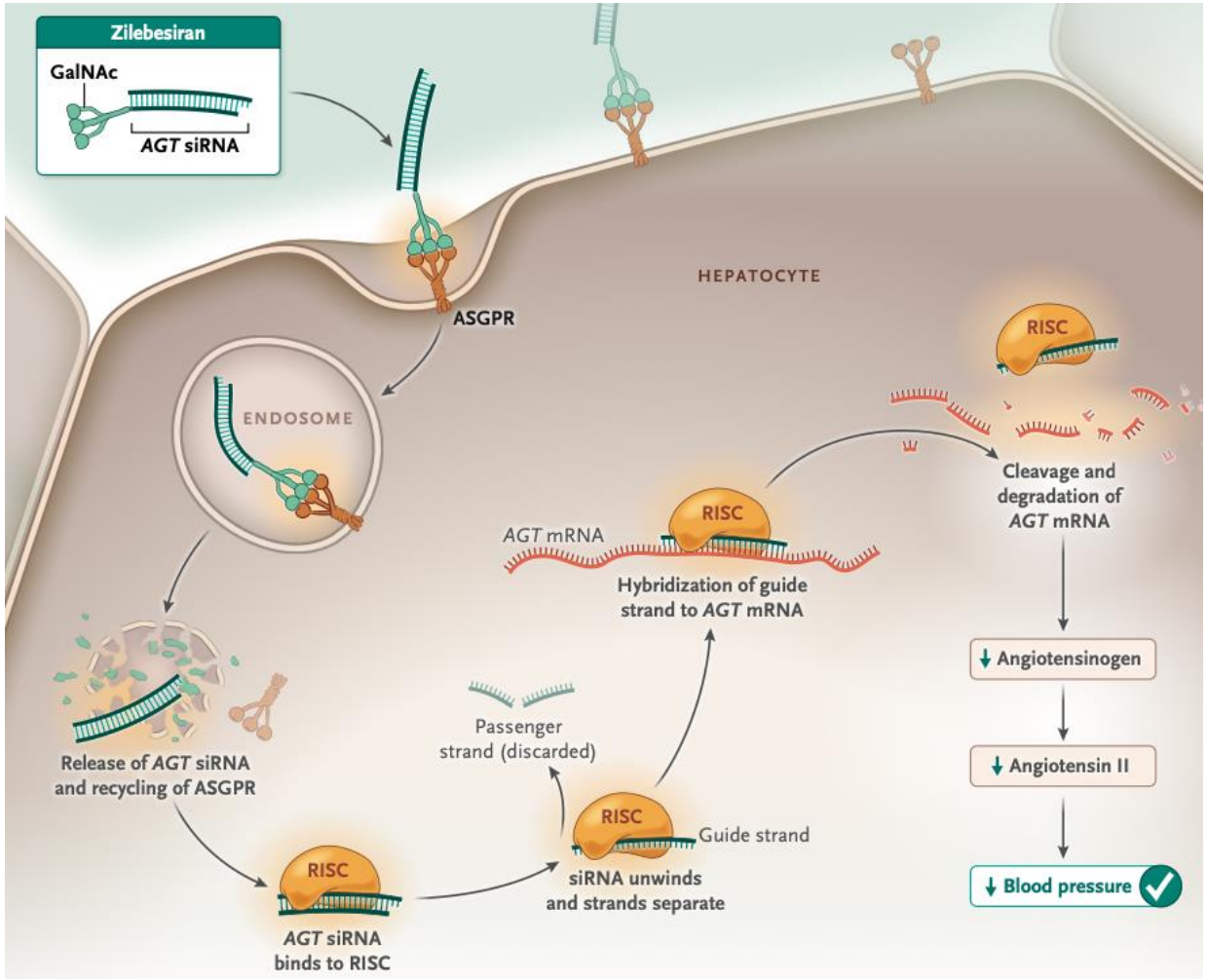
Hypertension

- New approaches -

Zilebesiran: RNA-interference in hypertension

N-acetylgalactosamine

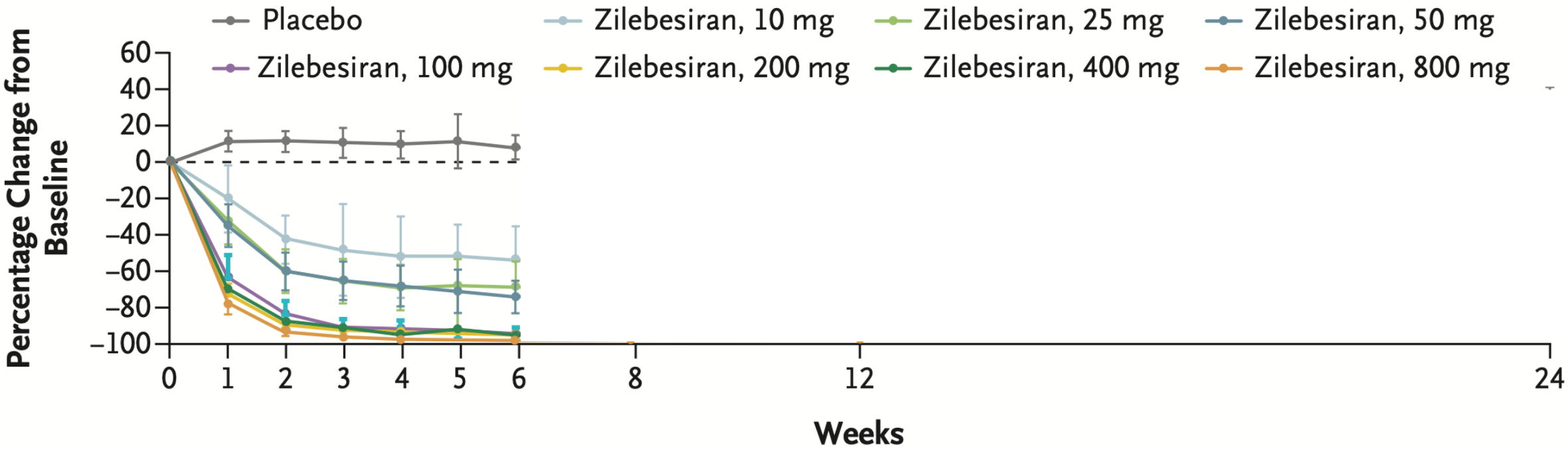
RNA interference-induced silencing complex



Touyz RM et al. New Engl J Med. 2023;389(3):278-281.

Zilebesiran: RNA-interference in hypertension

Uncontrolled hypertension, 52 years, 144/85 mmHg
1x injection of zilebesiran (every 6 months)



Change in SBP correlated with change with in angiotensinogen concentration (r=0.52; 95% CI, 0.42 to 0.61)

Desai AS et al. New Engl J Med. 2023;389(3):228-238.

Zilebesiran: RNA-interference in hypertension

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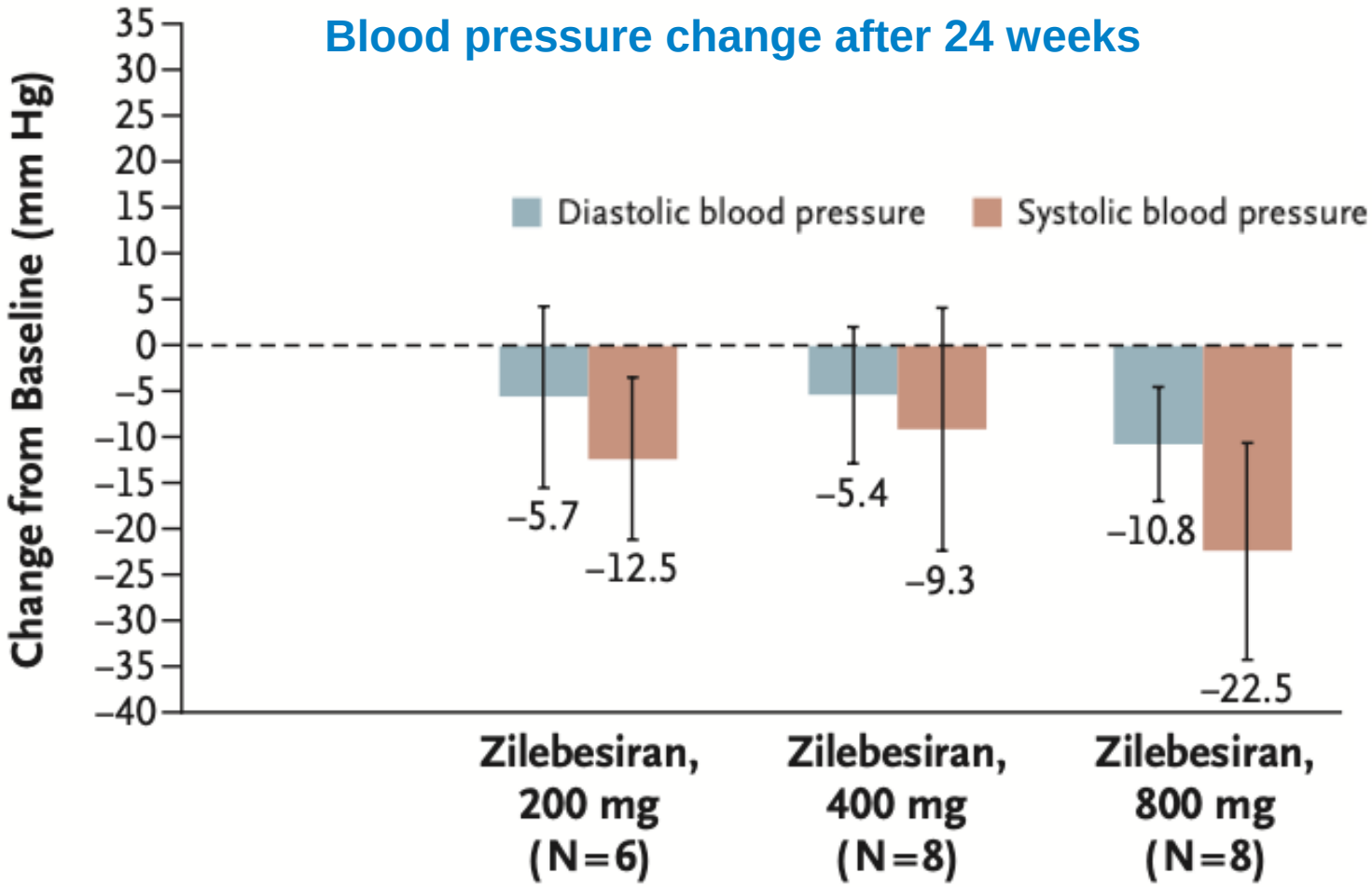
1x injection of zilebesiran (every 6 months)



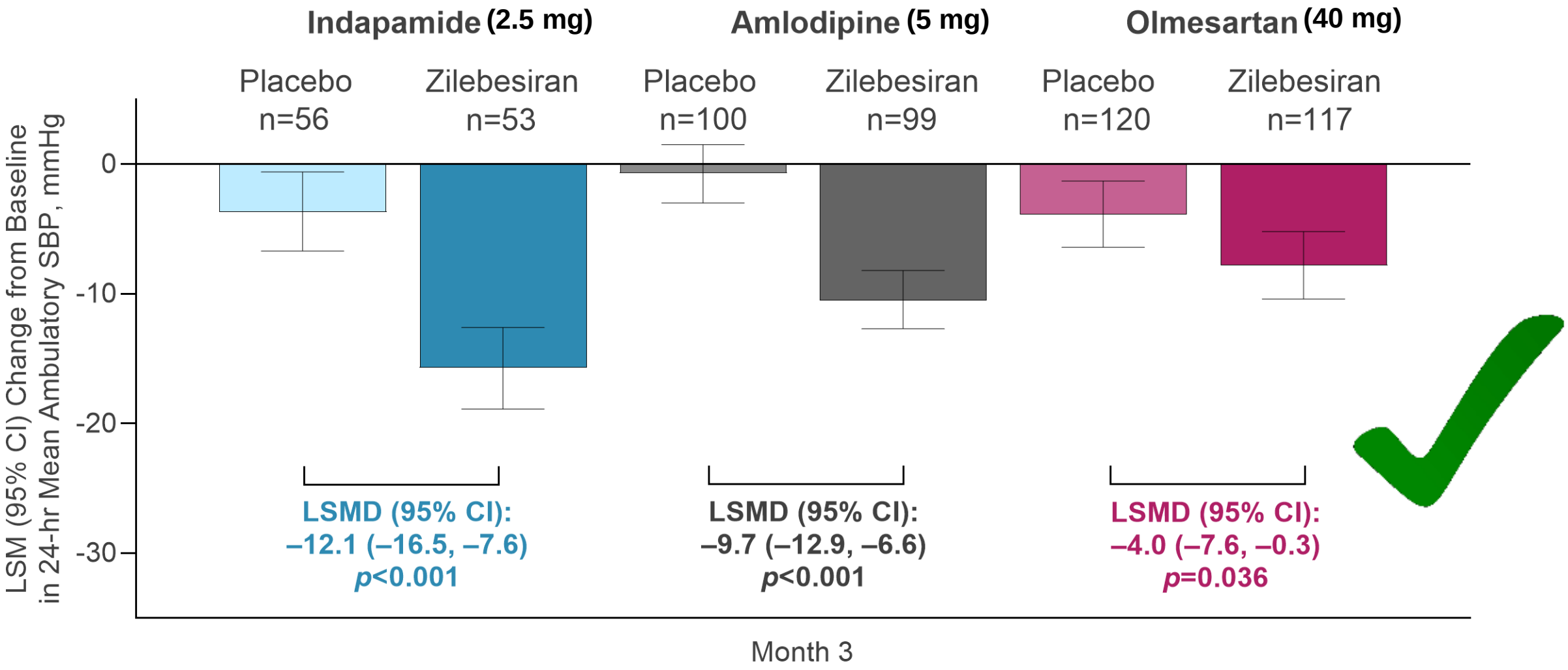
Desai AS et al. New Engl J Med. 2023;389(3):228-238.

Zilebesiran: RNA-interference in hypertension

	Placebo (N=28)	All Zilebesiran (N=56)
Adverse event	24 (86)	42 (75)
Any serious adverse event‡	1 (4)	1 (2)
Any severe adverse event§	1 (4)	1 (2)
Any adverse event leading to withdrawal	0	0
Death	0	0
Adverse events occurring in ≥5% of patients		
Headache	13 (46)	10 (18)
Injection-site reaction	0	5 (9)
Upper respiratory tract infection	3 (11)	4 (7)
Adverse events of interest¶		
Hypotension	0	0
Hyperkalemia	0	0
Renal adverse event	0	0
Hepatic adverse event	0	1 (2)

Desai AS et al. New Engl J Med. 2023;389(3):228-238.

Zilebesiran: RNA-interference in hypertension



Desai AS, LBCT@ACC 2024

Zilebesiran: RNA-interference in hypertension

Conclusion:

- **BP reduction through 24 weeks, day and night**
- **No hyperkalemia or renal impairment**
- **Consequences in situations requiring acute activation of the RAAS (shock, bleeding, etc.) remain unclear**
- **Potential for interaction with other drugs**

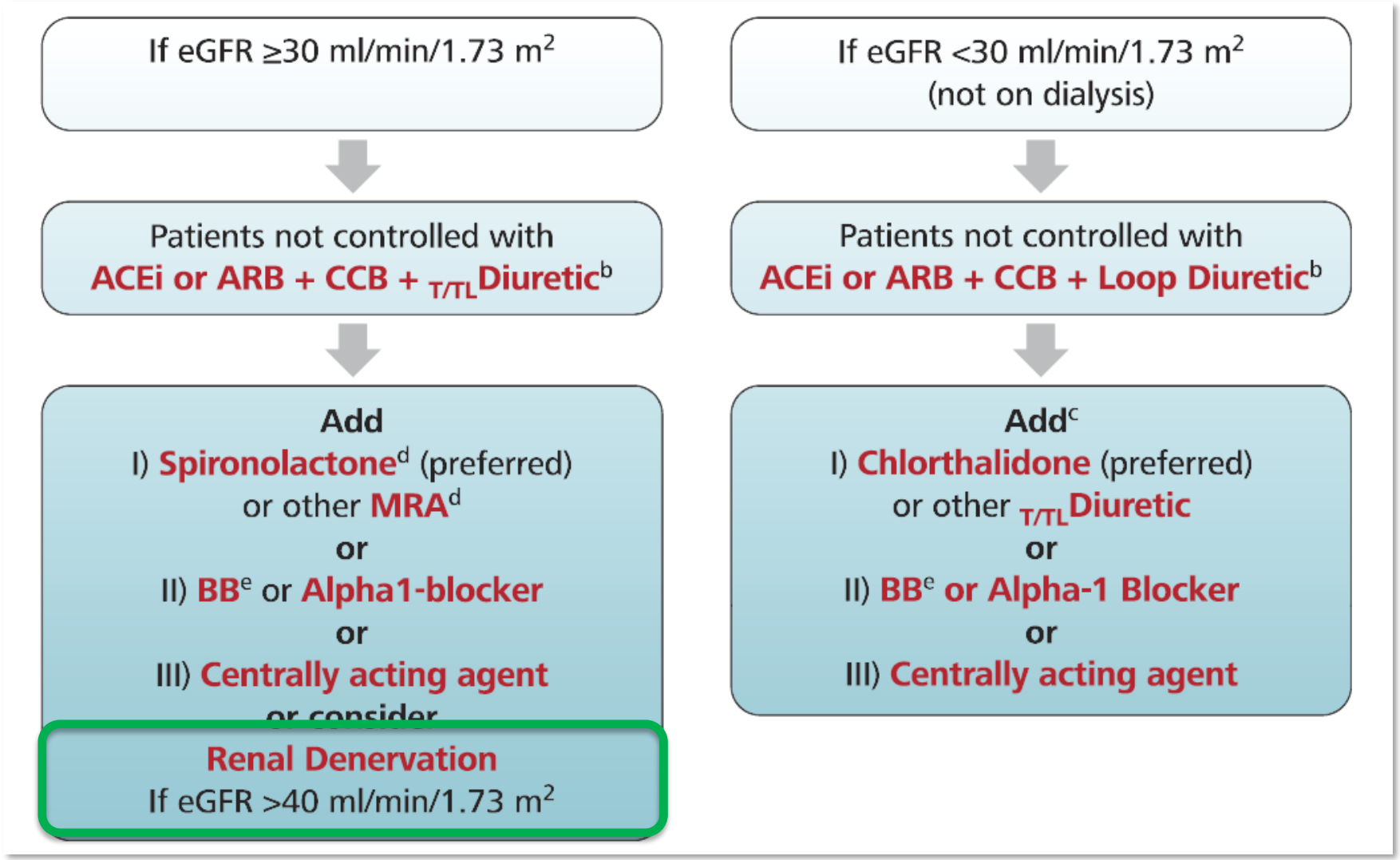
Desai AS et al. New Engl J Med. 2023;389(3):228-238.

Devices investigated in sham-controlled trials

	Catheter	Design	Access site	Ablation sites	Efficacy confirmed in sham-controlled trial?	
	Radiofrequency					
	Symplicity Spyral (Medtronic)	Multielectrode (4 monopolar gold electrodes), helical design, rapid exchange monorail catheter, 60 seconds per ablation cycle	F (6 Fr)	Main and accessory arteries, including branches (diameter 3-8 mm)	Yes, multiple trials	FDA
	Netrod (Shanghai Golden Leaf Medtec)	Multielectrode (6 electrodes), basket-shaped tip, 120 seconds per ablation cycle	F (8 Fr)	Main and accessory arteries, including branches (diameter 3-12 mm)	Yes, single study (EuroPCR 2023, publication pending)	
	Iberis 2nd-generation (AngioCare and Terumo)	Multielectrode (4 monopolar electrodes), helical design, over-the-wire catheter, 60 seconds per ablation cycle, 90 cm catheter length for transfemoral and 160 cm for transradial RDN	F/R (6 Fr)	Main and accessory arteries, including branches (diameter 3-8 mm)	Yes, single study (CIT Congress 2023, publication pending)	
	SyMapCath I	Steerable monoelectrode stimulation and ablation catheter, stimulation time 20-120 seconds, 120 seconds per ablation cycle	F (6-7 Fr)	Main renal arteries	Yes, single study	
	Ultrasound					
	TIVUS (SoniVie)	Unidirectional steerable or multidirectional, over-the-wire, 30 seconds per emission	F (6 Fr)	Main and accessory arteries (diameter ≥4 mm)	No	
	Paradise (ReCor Medical)	Piezoelectric ceramic transducer within a fluid-cooled, low-pressure balloon, over-the-wire, 7 seconds per emission	F (7 Fr)	Main and accessory arteries (different catheter sizes for diameters of 3-8 mm)	Yes, multiple studies	FDA
	Neurolysis					
	Peregrine (Ablative Solutions)	3 extendable microneedles	F (7 Fr)	Main and accessory arteries (4-7 mm)	No, TARGET-BP I ongoing	

Lauder L, EuroIntervention 2024 Apr 15;20(8):e467-e478.

Resistant hypertension: ESH-Guidelines



Mancia G et al. J Hypertens. 2023;41:1874-2071

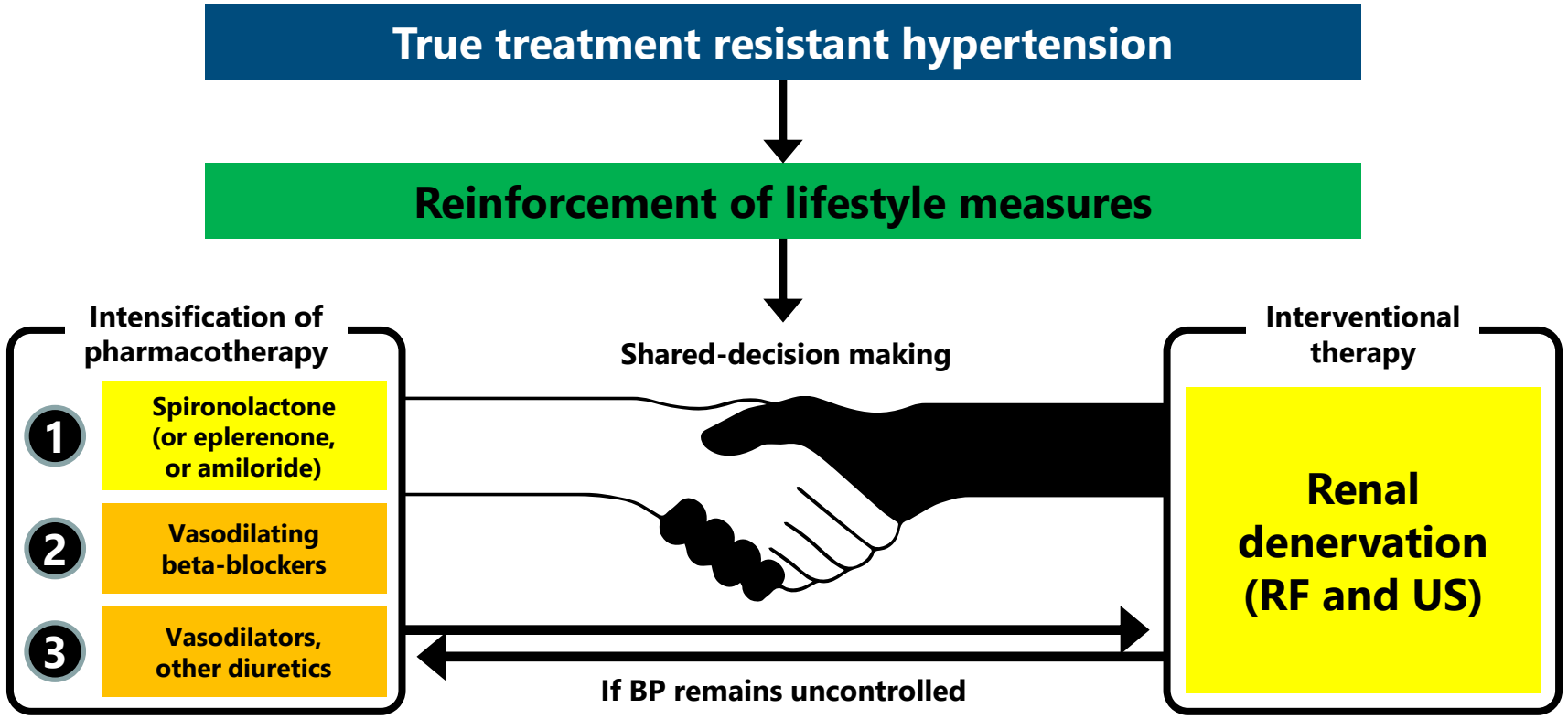
Patient selection for renal denervation

RDN may be used in adult patients with uncontrolled resistant hypertension:

- *office BP ≥140/≥90 mmHg*
- *24-hour ambulatory systolic BP ≥130 mmHg or*
- *daytime systolic BP ≥135 mmHg*
- *treated with ≥3 antihypertensive drugs*
- *eGFR ≥40 ml/min/1.73 m^2*

Barbato E, Eur Heart J 2023 Oct 12;44(38):3720-3826
Barbato E, Eurointervention 2023 Aug 21;19(6):464-481

Management of resistant hypertension



Lauder L, Annu Rev Med. 2024 Jan 29;75:443-457.

Take Home Message

- Appropriate cuff sizing is important; too small cuff sizes can overestimate blood pressure.
- Use of dual-combination therapy in most patients (ACEi/ARB, CCB, D, or BB)
- RNA-interference (zilebesiran) as a novel approach to lower blood pressure.
- Renal denervation is back in hypertension guidelines (in resistant hypertension).

Thank you

Universität Basel

Prof. Dr. Felix Mahfoud, M.A.
Department for Cardiology
University Heart Center Basel
University Hospital Basel, Switzerland
felix.mahfoud@usb.ch

Universitätsspital Basel