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Quoi de neuf dans les recommandations 2023 de l'ESH ?

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Class of recommendation (CoR) and level of evidence (LoE)

Class of Recommendation		Level of Evidence		
	Definition		Definition	Interpretation
I	Evidence or general agreement that a treatment/test/procedure is beneficial, useful or effective AND that potential benefits clearly outweigh potential risk	A	<ul style="list-style-type: none"> - RCT or meta-analysis of RCTs with CVD outcomes - Single trial enough if sufficient power and without important limitations^a 	Strong evidence. Evidence of high certainty. Unlikely that future studies will change the effect estimate substantially
II	Conflicting evidence or opinion about the benefit, usefulness and effectiveness of a treatment/test/procedure OR uncertainty about benefit-risk balance	B	<ul style="list-style-type: none"> - RCT with surrogate measures (BP, HMOD) - Observational studies with CVD outcomes and no major limitations^a - Meta-analyses including the above study types 	Moderate evidence. Evidence with some uncertainty. Future studies may modify, at least the magnitude of, the effect estimate
III	Evidence or general agreement that a treatment/test/procedure is not beneficial, useful or effective OR that potential risks outweigh the potential benefit	C	<ul style="list-style-type: none"> - Observational studies of surrogate measures - Any study type may be downgraded to level C due to limitations^a - Expert opinion (EO) 	Weak evidence. Evidence of low certainty. Future studies may change the effect estimate substantially.

^aLimitations affecting the level of evidence include (but may not be limited to) high risk of bias, inability to account for important confounding factors in observational studies, questionable external validity and uncertain effect estimates (confidence intervals including negligible effect).

Cardiovascular risk according to grade and stage of hypertension

Hypertension disease staging	Other risk factors, HMOD, CVD or CKD	BP (mmHg) grading			
		High-normal SBP 130–139 DBP 85–89	Grade 1 SBP 140–159 DBP 90–99	Grade 2 SBP 160–179 DBP 100–109	Grade 3 SBP ≥ 180 DBP ≥ 110
Stage 1	No other risk factors ^a	Low risk	Low risk	Moderate risk	High risk
	1 or 2 risk factors	Low risk	Moderate risk	Moderate to high risk	High risk
	≥3 risk factors	Low to moderate risk	Moderate to high risk	High risk	High risk
Stage 2	HMOD, CKD grade 3, or diabetes mellitus	Moderate to high risk	High risk	High risk	Very high risk
Stage 3	Established CVD or CKD grade ≥4	Very high risk	Very high risk	Very high risk	Very high risk

	<50 years	60–69 years	≥70 years	
	<2.5%	<5%	<7.5%	Complementary risk estimation in Stage 1 with SCORE2/SCOR2-OP
	2.5 to <7.5%	5 to <10%	7.5 to <15%	
	≥7.5%	≥10%	≥15%	

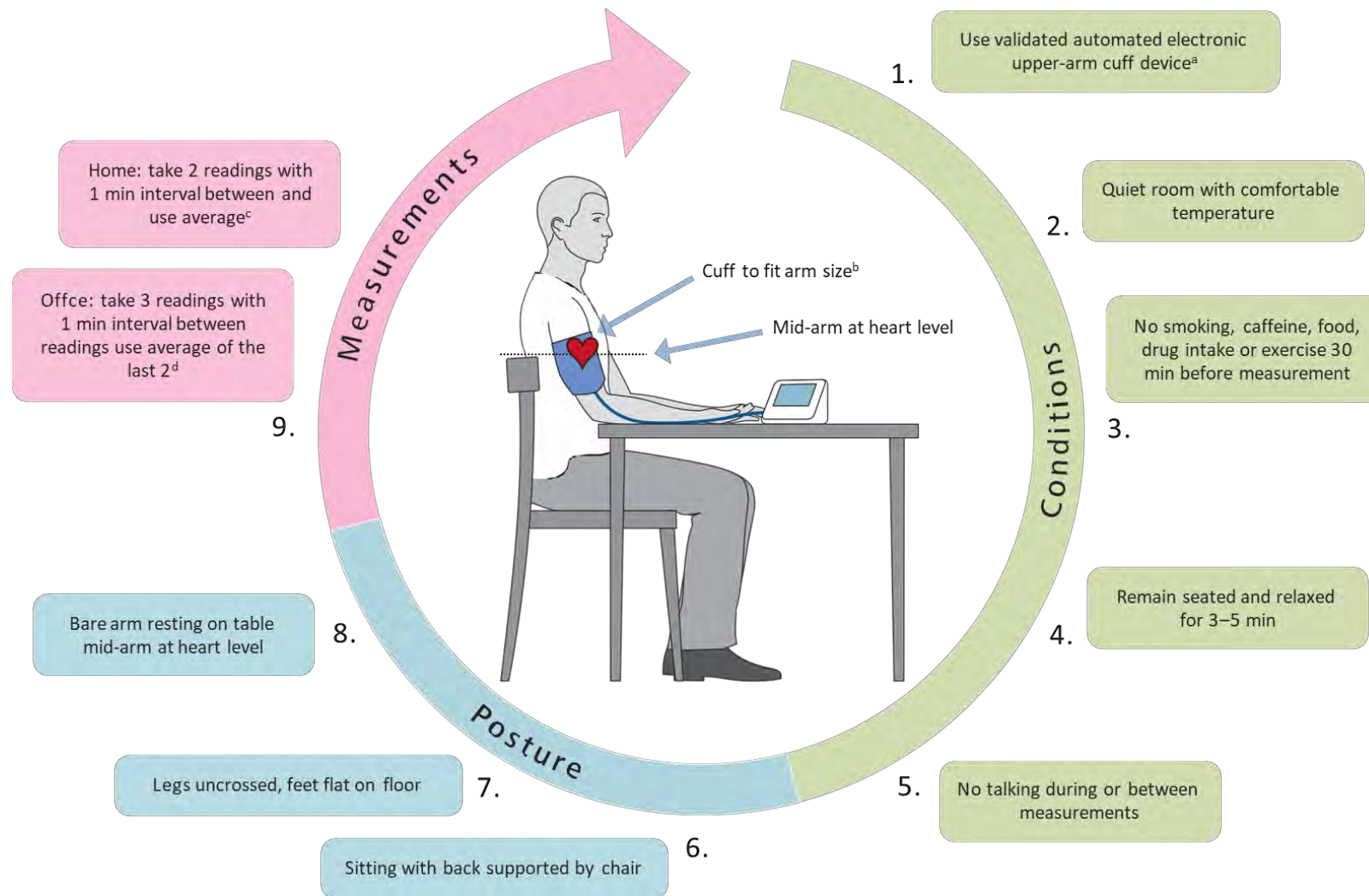
Dépistage de l'hypertension

Recommendations and statements	CoR	LoE
Case finding or opportunistic screening for hypertension is recommended in all adults.	I	C
Regular BP measurements are recommended in adults from the age of 40 years or earlier in patients at high-risk.	I	C
In individuals without hypertension, intervals for repeated BP measurement should be scheduled depending on the BP level, the risk of hypertension and CV risk. In patients with high risk, annual follow-up is recommended.	I	C

Comment mesurer la pression artérielle ?

Recommendations and statements	CoR	LoE
Automatic electronic, upper-arm cuff devices are recommended for office and out-of-office BP measurement (home and ambulatory).	I	B
Hybrid manual auscultatory devices with LCD or LED display, or digital countdown, or shock-resistant aneroid devices can be used for office BP measurement if automated devices are not available.	I	B
Only properly validated devices should be used. www.stridebp.org	I	B
Cuffless BP devices should not be used for the evaluation or management of hypertension in clinical practice.	III	C

Recommandations pour la mesure de la pression au cabinet ou à la maison



Suivi de la pression à domicile (HBPM)

Recommendations and statements	CoR	LoE
HBPM can be considered in addition to OBPM to improve CV risk prediction due to better reproducibility and prognostic value than OBPM	II	B
HBPM is recommended to identify white-coat hypertension or masked hypertension.	I	B
HBPM is recommended for long-term follow-up of treated hypertension because it improves BP control, especially when combined with education and counselling.	I	B
HBPM should be performed using automated upper arm-cuff BP monitors validated according to an established protocol. www.stridebp.org	I	C
Home BP should be monitored for 7 (not fewer than 3) days with duplicate morning (with 1 minute between them) and evening measurements before office visits. Average home BP should be calculated after discarding readings of the first day.	I	C



Mesure de la pression ambulatoire de 24h (ABPM)

Recommendations and statements	CoR	LoE
ABPM can be considered in addition to OBPM to improve CV risk prediction due to better reproducibility and prognostic value than OBPM	II	B
ABPM is recommended to identify white-coat hypertension, masked hypertension and nocturnal BP phenotypes. Repeated ABPM may be necessary because these phenotypes have a limited reproducibility.	I	B
ABPM should be used to diagnose true resistant hypertension.	I	B
ABPM should be measured using upper arm-cuff automated BP monitors validated according to an established protocol. www.stridebp.org	I	C
The recommended time interval between measurements should be 20 minutes during day and night to minimize the risk of missing day or night periods.	I	C



Pression artérielle nocturne et hypertension

Recommendations and statements	CoR	LoE
It is recommended to assess night-time BP using ABPM because it is more predictive for outcomes than daytime BP, and because nocturnal hypertension, non-dipping and reverse dipping are associated with increased CV risk	I	B
For the identification of night-time BP phenotypes, repeating ABPM is necessary, because of poor reproducibility.	I	B
In isolated nocturnal hypertension, antihypertensive drugs may lower BP and may thus be considered.	II	C
In the general hypertensive population morning dosing or bedtime dosing results in similar outcome.	I	B

Recherche des atteintes d'organes cibles de l'HTA

Basic screening tests for HMOD recommended for all hypertensive patients	Aim
12 lead ECG	Measure HR and AV conduction, detect cardiac arrhythmias, myocardial ischemia and infarction, screen for LVH
Urine albumin : creatinine ratio (UACR)	Detect and classify CKD
Serum creatinine and eGFR	Detect and classify CKD
Extended screening for HMOD	
Echocardiography	Evaluate structure and function of the ventricles and left atrium, detect valvular disease, aortic root diameter and ascending aortic aneurysm
cfPWV or baPWV	Evaluate aortic/large artery stiffness
Carotid artery ultrasound	Determine carotid intima-media thickness, plaque and stenosis
Coronary artery calcium scan	Determine the presence and extent of coronary calcium to predict CAD events
Abdominal aorta ultrasound	Screen for aortic aneurysm
Kidney ultrasound	Evaluate size and structure of kidney, detect renovascular disease, determine RRI (by spectral doppler ultrasonography)
Spectral doppler ultrasonography	Diagnosis of renovascular disease and determination of RRI
ABI	Screen for LEAD
Retina microvasculature	Detect microvascular changes
Cognitive function testing (MMSE, MoCA)	Screen for early stages of dementia
Brain imaging (CT, MRI)	Detect structural brain damage

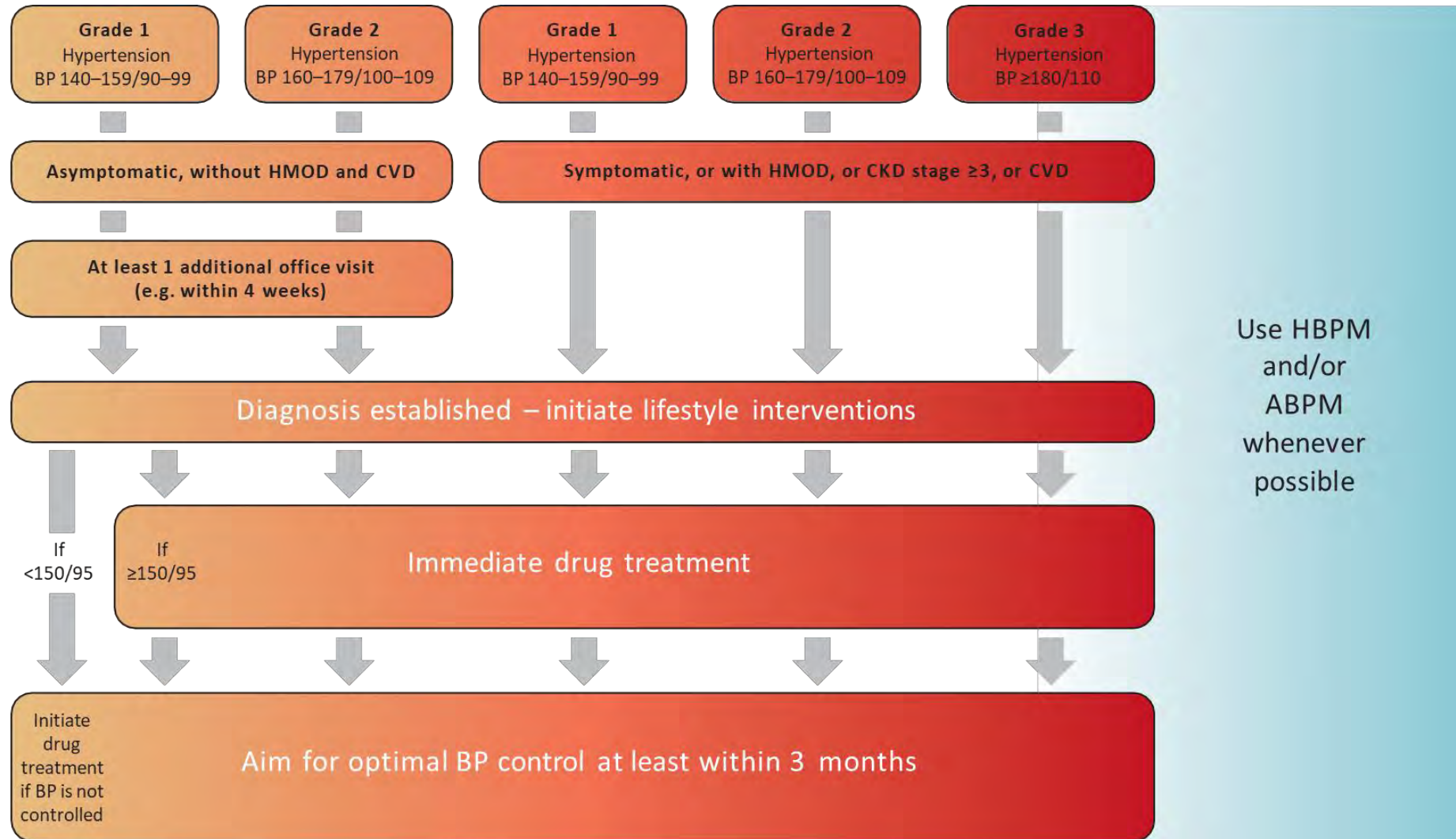
^aCan be adapted according to the clinical circumstance.

Interventions non-pharmacologiques (cont.)

Recommendations and statements	CoR	LoE
Adult men and women with elevated BP or hypertension who currently consume alcohol (≥ 3 drinks ^a /day) should be advised that reduction of alcohol intake close to abstinence will lower their BP.	I	B
Alcohol should not be recommended for CVD prevention, as previous studies linking moderate consumption to lower CV risk are likely confounded.	III	B
It is recommended to avoid excessive (binge) drinking to reduce BP, and the risks particularly for haemorrhagic stroke and premature death.	III	B
Smoking cessation, supportive care and referral to smoking cessation programs are recommended for all smokers to avoid ambulatory BP increases, reduce the risk of masked hypertension, and improve CV health outcome.	I	B
Reduced stress via controlled breathing exercises, mindfulness-based exercise and meditation may be considered.	II	C

^aThere are varying definitions for drinks used in the literature; a drink may relate to about 350 ml of regular beer containing 5% alcohol by volume or 150 ml of wine containing 12% alcohol by volume.

Diagnostic selon la TA au cabinet et prise en charge de l'hypertension



TA au cabinet à partir desquelles une prise en charge est nécessaire

Recommendations and statements	CoR	LoE
In patients 18 to 79 years, the recommended office threshold for initiation of drug treatment is 140 mmHg for SBP and/or 90 mmHg for DBP.	I	A
In patients ≥ 80 years, the recommended office SBP threshold for initiation of drug treatment is 160 mmHg.	I	B
However, in patients ≥ 80 years a lower SBP threshold in the range 140 – 159 mmHg may be considered.	II	C
The office SBP and DBP thresholds for initiation of drug treatment in frail patients should be individualized.	I	C
In adult patients with a history of CVD, predominantly CAD, drug treatment should be initiated in the high-normal BP range (SBP ≥ 130 or DBP ≥ 80 mmHg).	I	A

Cibles de TA pour le traitement de l'hypertension

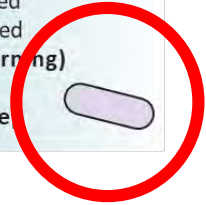
Recommendations and statements	CoR	LoE
Patients 18 to 64 years old		
The goal is to lower office BP to <130/80mmHg.	I	A
Patients 65 to 79 years old		
The primary goal of treatment is to lower BP to <140/80mmHg.	I	A
However, lowering BP to below 130/80mmHg can be considered if treatment is well tolerated.	II	B
Patients 65 to 79 years old with ISH		
The primary goal of treatment is to lower SBP in the 140 to 150 mmHg range.	I	A
However, a reduction of office SBP in the 130 to 139 mmHg range should be considered if well tolerated, albeit cautiously if DBP is already below 70 mmHg.	I	B

Cibles de TA pour le traitement de l'hypertension (cont.)

Recommendations and statements	CoR	LoE
Patients ≥80 years old		
Office SBP should be lowered to a SBP in the 140 to 150 mmHg range.	I	A
However, reduction of office SBP between 130 to 139 mmHg may be considered if well tolerated, albeit cautiously if DBP is already below 70 mmHg.	II	B
Additional safety recommendations		
In frail patients, the treatment target for office SBP and DBP should be individualized.	I	C
Do not aim to target office SBP below 120 mmHg or DBP below 70 mmHg during drug treatment.	III	C
However, in patients with low office DBP, i.e. below 70 mmHg, SBP should be still lowered, albeit cautiously, if on-treatment SBP is still well above target values.	II	C
Reduction of treatment can be consider in patient aged 80 years or older with a low SBP (< 120 mmHg) or in the presence of severe orthostatic hypotension or a high frailty level.	II	C

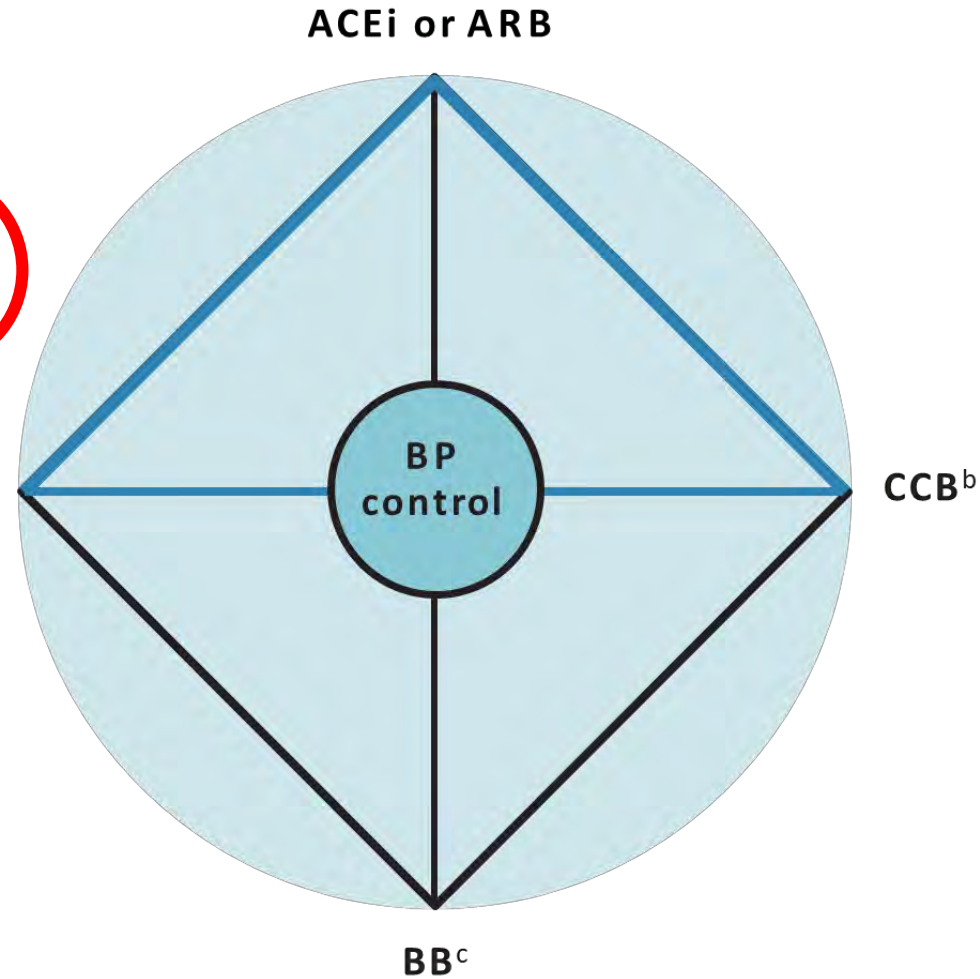
Classes de médicaments pour baisser la pression artérielle

- Prescribing patterns:**
- Start with dual combination therapy in most patients
 - Uptitrate to maximum well tolerated doses and to triple therapy if needed
 - **Once daily (preferred in the morning)**
 - **Add further drugs if needed**
 - Preferred use of SPCs at any step



T/TL Diuretic^a

- Additional drug classes**
- General antihypertensive therapy:**
- Steroidal MRA
 - Loop Diuretic
 - Alpha-1 Blocker
 - Centrally acting agent
 - Vasodilator
- Special comorbidities:**
- ARNi
 - SGLT2i
 - Non-Steroidal MRA



Why are beta-blockers back in guidelines ?

1. **BBs reduce office systolic blood pressure (SBP) and diastolic blood pressure (DBP) as effectively as the other major antihypertensive drugs.**
2. **BBs are protective in placebo-controlled BP-lowering randomized controlled trials (RCTs).**
3. **BBs are protective in RCTs in comparison to other BP-lowering drugs**
4. **BBs are protective in combination therapy with other BP-lowering drugs.**
5. **BBs reduce the risk of stroke**

Kreutz et al, J Hypertension, 2024, in press

Classes de médicaments pour baisser la pression artérielle

Prescribing patterns:

- Start with dual combination therapy in most patients
- Uptitrate to maximum well tolerated doses and to triple therapy if needed
- **Once daily (preferred in the morning)**
- **Add further drugs if needed**
- **Preferred use of SPCs at any step**



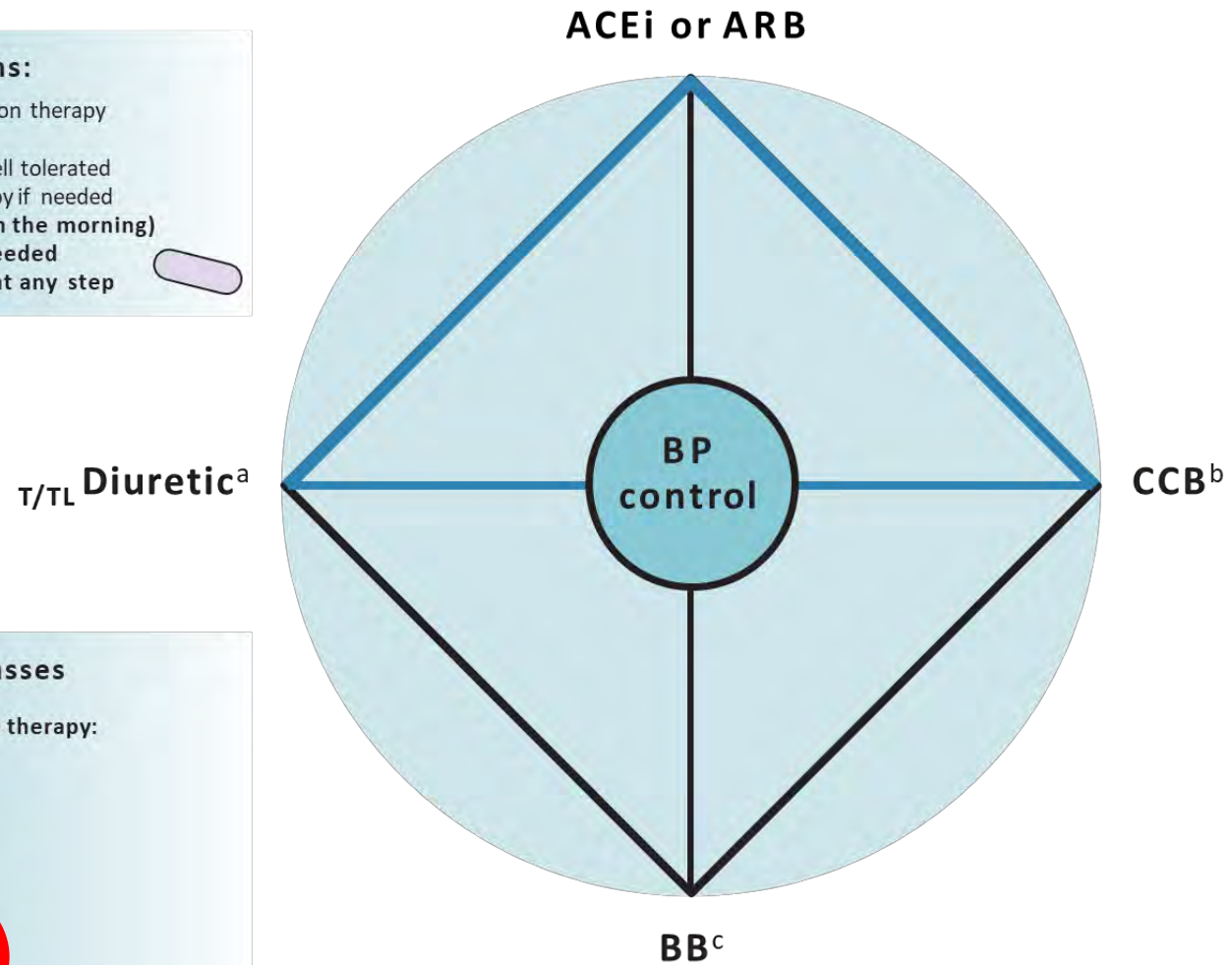
Additional drug classes

General antihypertensive therapy:

- Steroidal MRA
- Loop Diuretic
- Alpha-1 Blocker
- Centrally acting agent
- Vasodilator

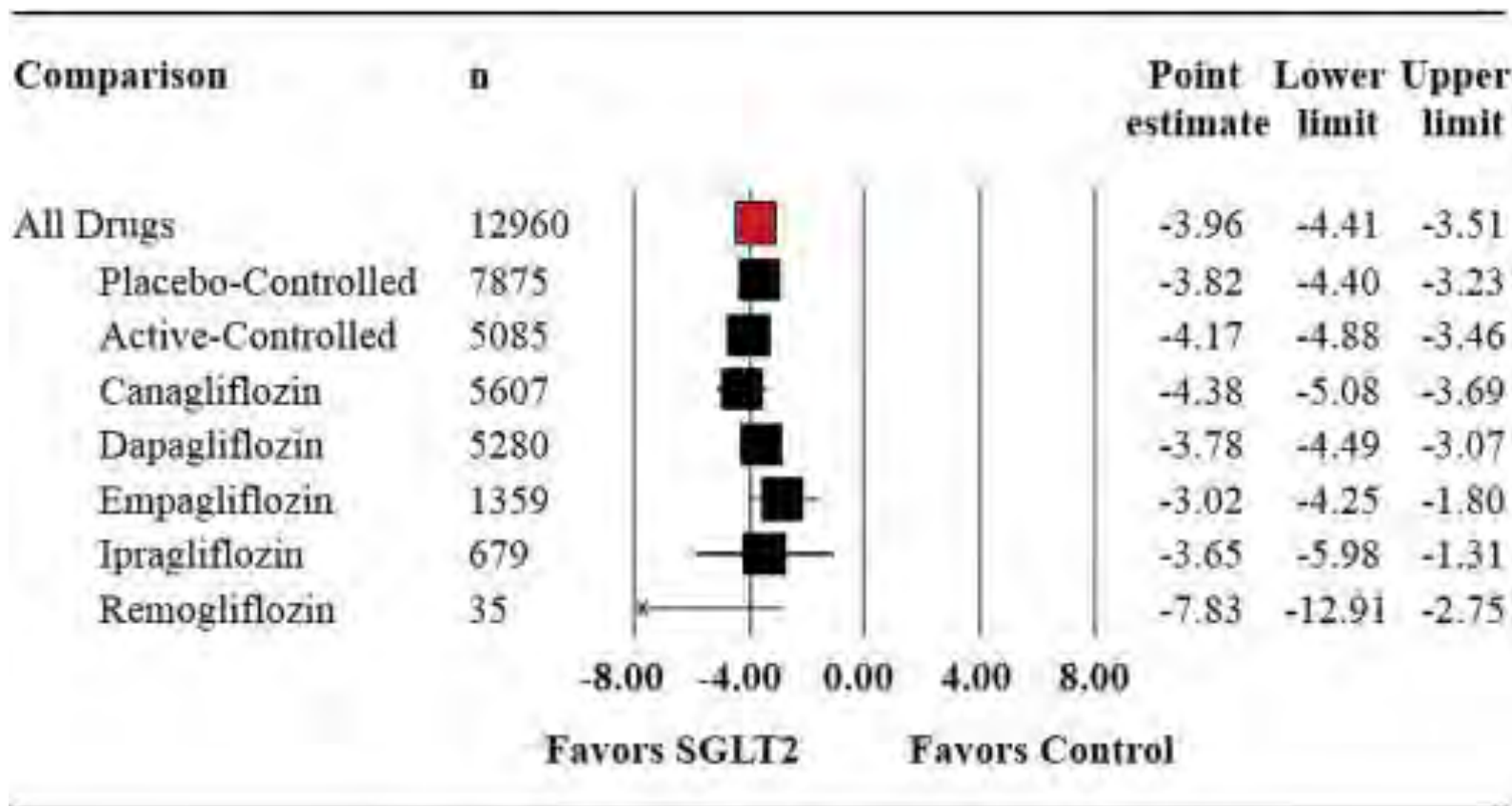
Special comorbidities:

- ARNi
- SGLT2i
- Non-Steroidal MRA



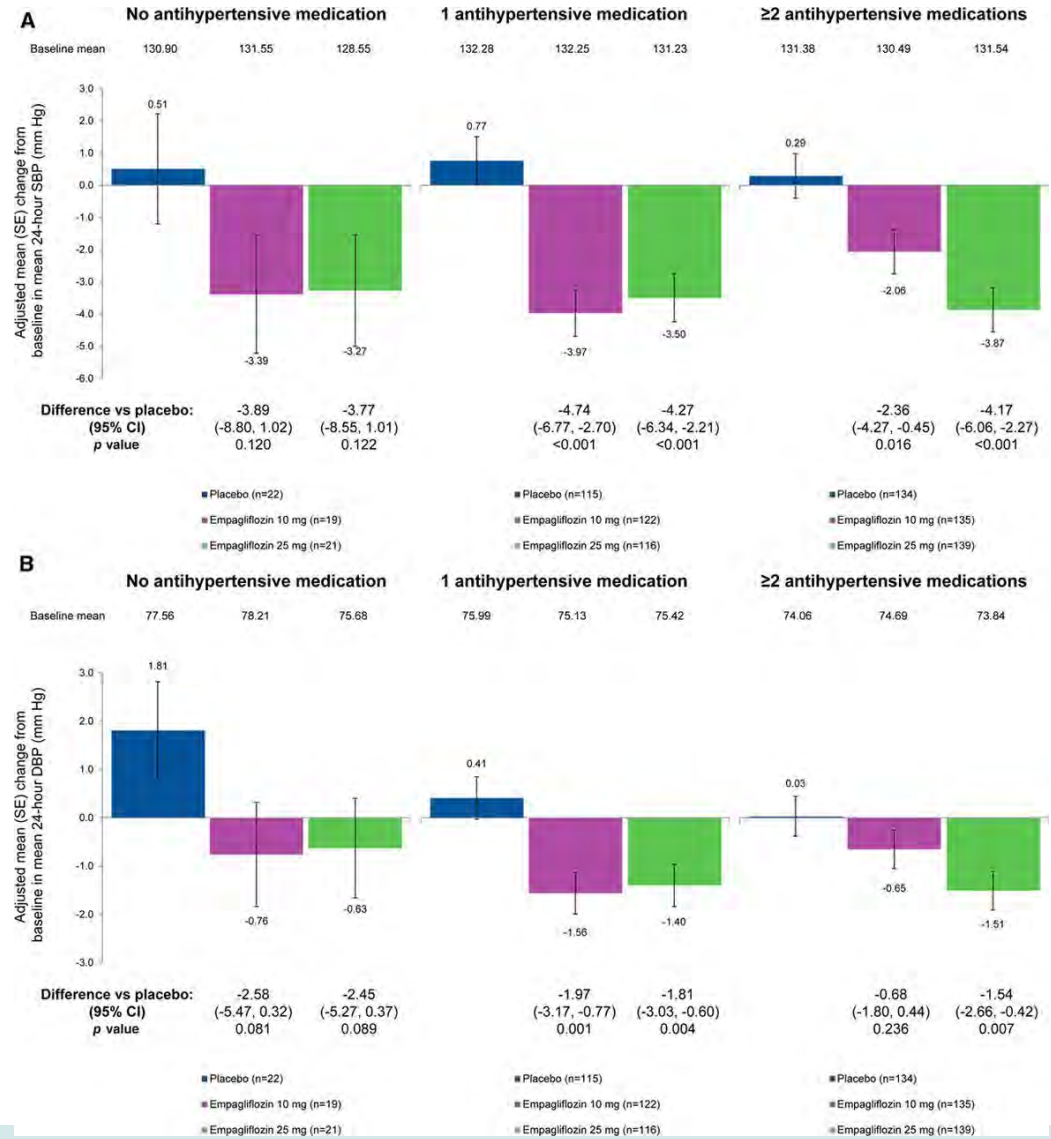
Effects of sodium-glucose co-transporter 2 inhibitors on blood pressure: A systematic review and meta-analysis

Impact of SGLT2 inhibitors on systolic blood pressure.



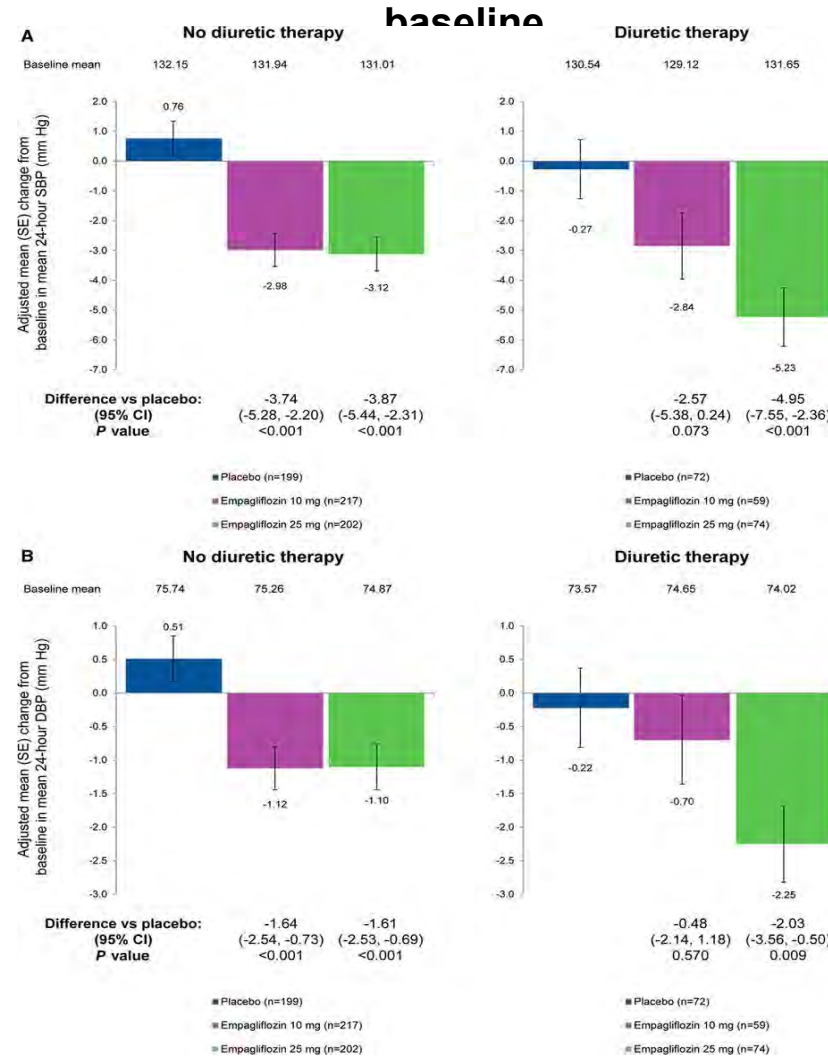
William L. Baker et al, J Am Soc Hypertens, 2014; 8(4): 262-275

Change from baseline in mean 24-hour SBP at week 12 by number of antihypertensive medications at baseline



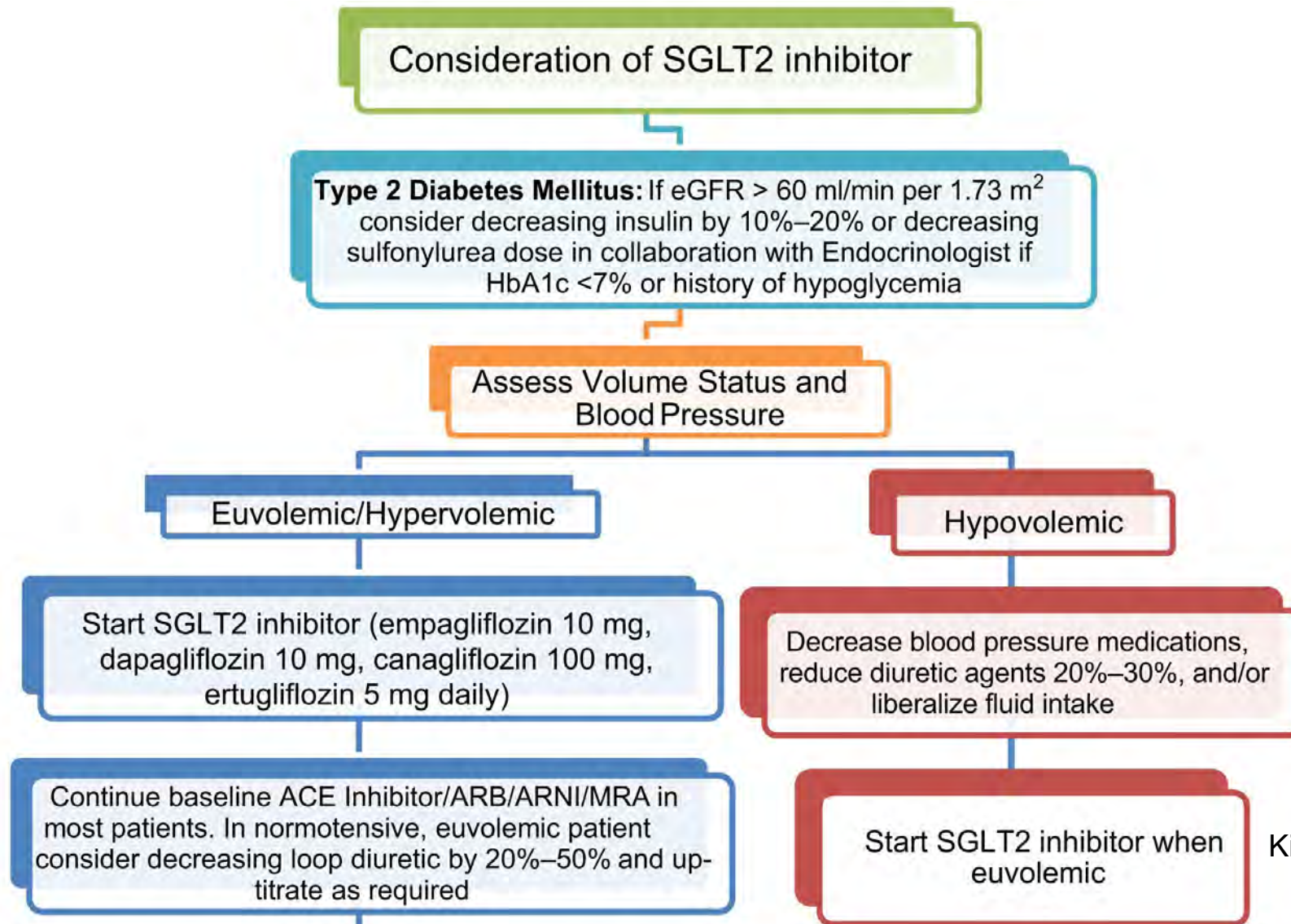
Giuseppe Mancia et al. Hypertension. 2016;68:1355-1364

A, Change from baseline in mean 24-hour SBP at week 12 by use of diuretics at baseline (ANCOVA, FAS, LOCF); P=0.380 for interaction between SBP reduction and use of diuretics at



Giuseppe Mancia et al. Hypertension. 2016;68:1355-1364

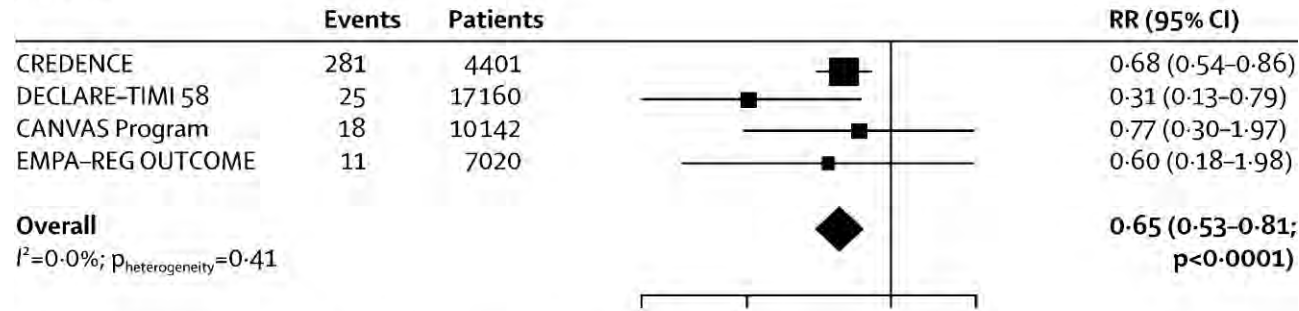
Aspects pratiques de la prescription des inhibiteurs de SGLT2



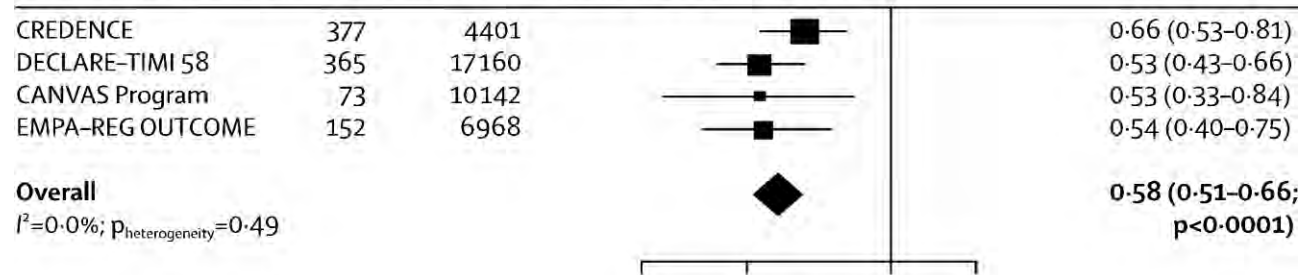
Kidney Int Rep (2022) 7, 1463–1476

Effect des inhibiteurs de SGLT2 sur la progression de l'insuffisance rénale chronique et la mortalité cardiovasculaire ou rénale

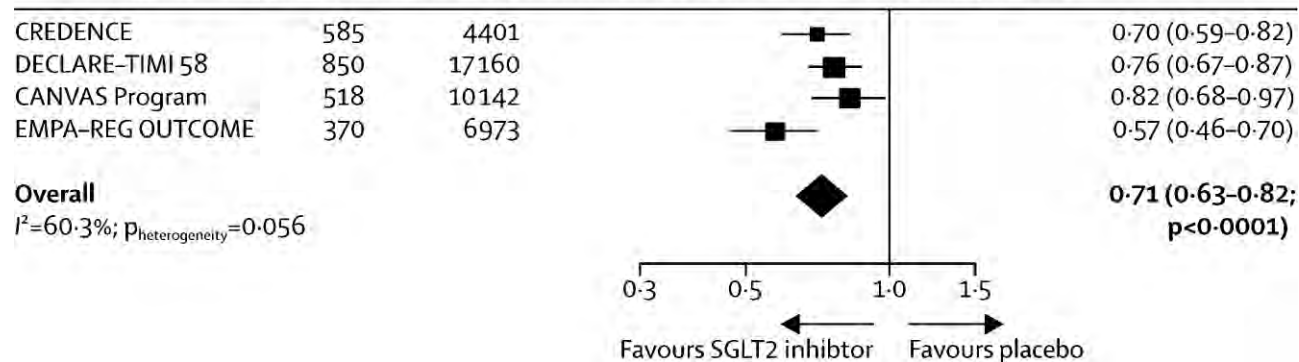
A ESKD



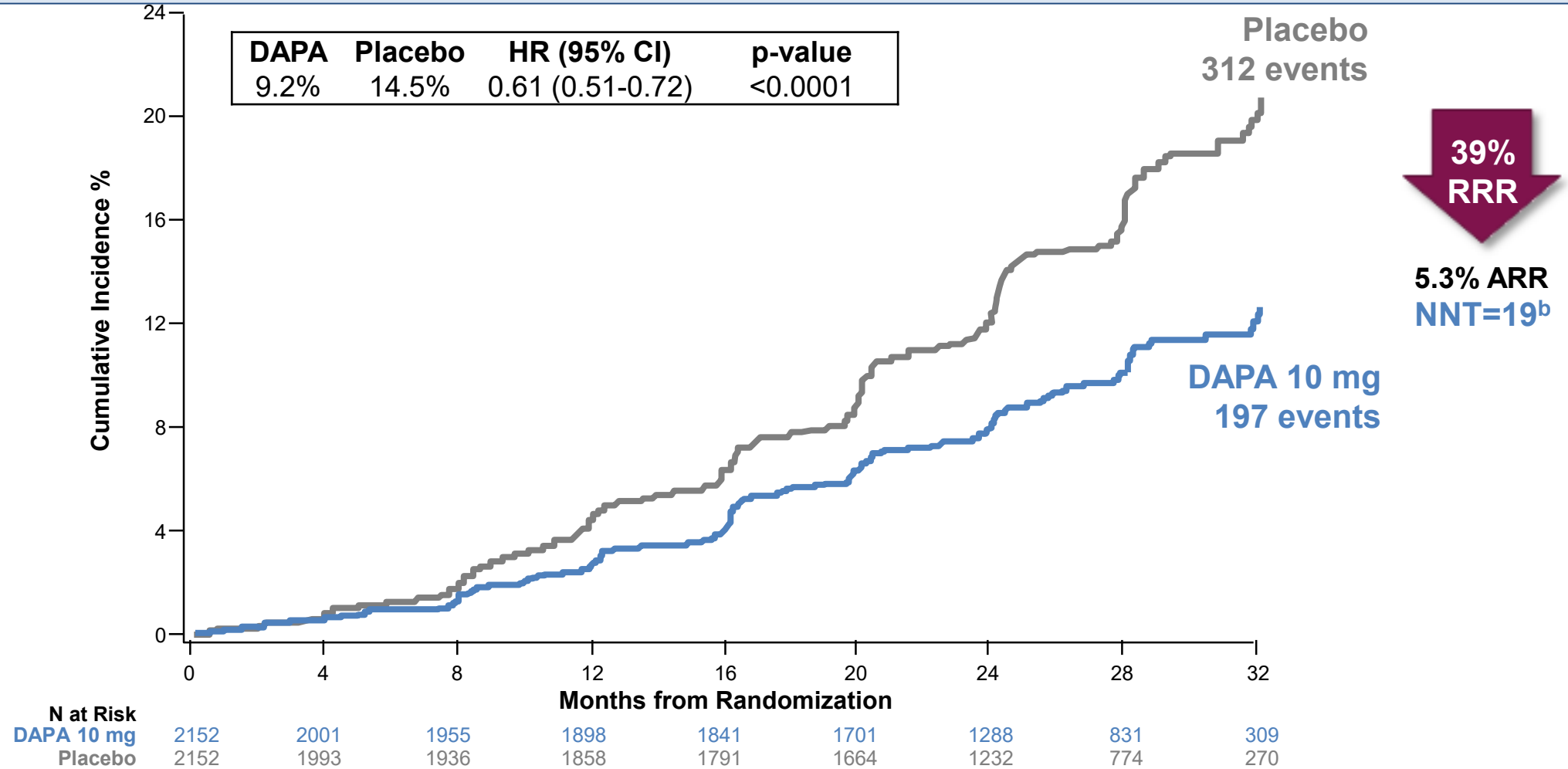
B Substantial loss of kidney function, ESKD, or death due to kidney disease



C Substantial loss of kidney function, ESKD, or death due to cardiovascular or kidney disease



Objectif primaire: Diminution de eGFR $\geq 50\%$, IRC terminale, mortalité rénale et cardiovasculaire



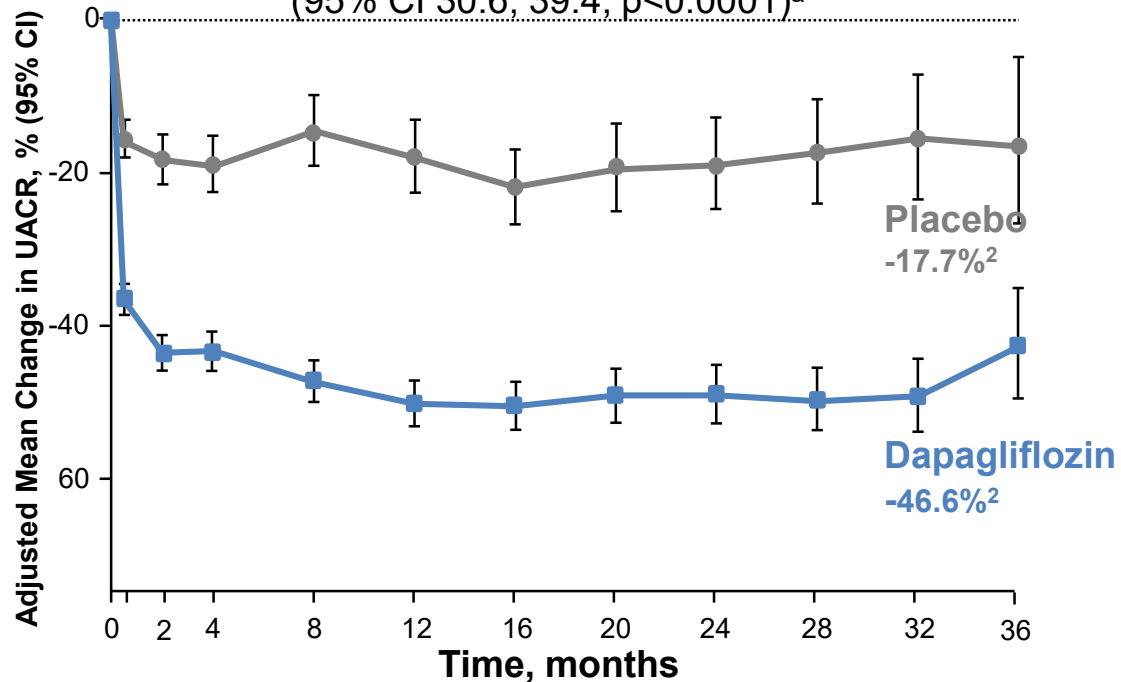
ARR = absolute risk reduction; CV = cardiovascular; DAPA = dapagliflozin; eGFR = estimated glomerular filtration rate; ESKD = end-stage kidney disease; HR = hazard ratio; ; NNT = number needed to treat; RRR = relative risk reduction.

1. Heerspink HJL et al. *N Engl J Med.* 2020; 383:1436-1446 2. Heerspink HJL et al. *Nephrol Dial Transplant.* 2020;35:274–282.

Effet sur l'albuminurie en fonction du diabète

Patients with T2D

35.1% mean reduction in UACR (dapagliflozin vs. placebo)
(95% CI 30.6, 39.4; p<0.0001)^a

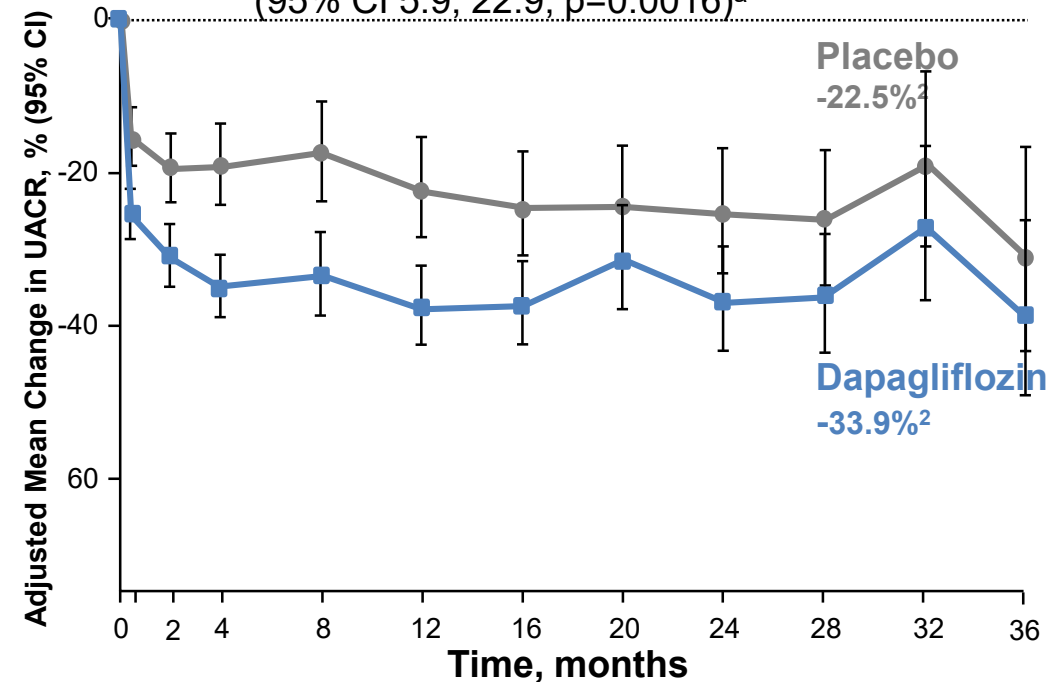


Dapagliflozin	455	141	113	138	1398	1339	1288	1262	1206	1127	826	482	159
Placebo	145	114	151	138	1368	1297	1258	1237	1182	1088	791	446	158

Median baseline UACR
1017 mg/g

Patients without T2D

14.8% mean reduction in UACR (dapagliflozin vs. placebo)
(95% CI 5.9, 22.9; p=0.0016)^a



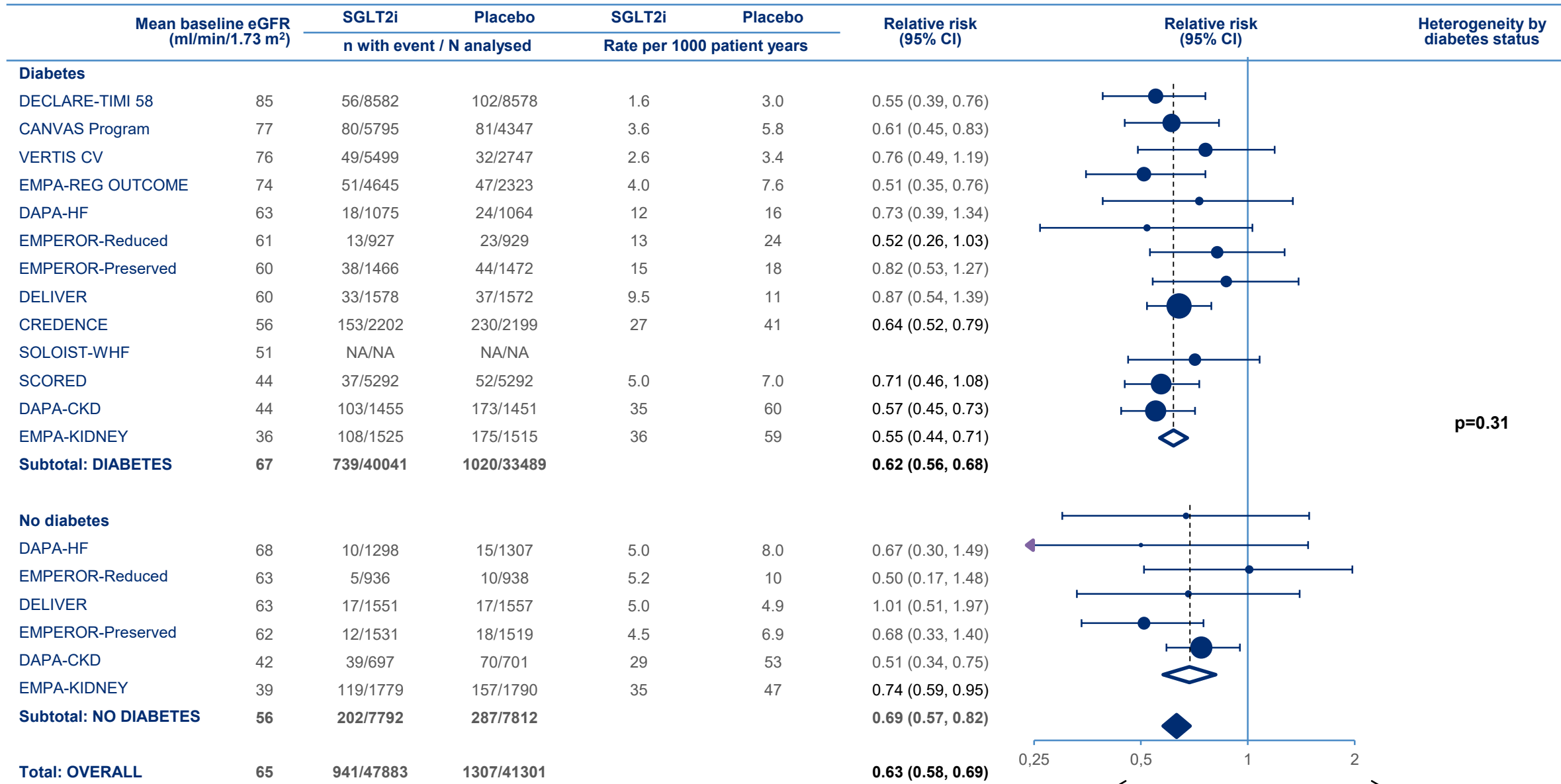
Dapagliflozin	697	674	660	650	604	596	581	572	504	346	210	74
Placebo	701	675	671	665	612	596	581	566	493	344	194	71

Median baseline UACR
861 mg/g

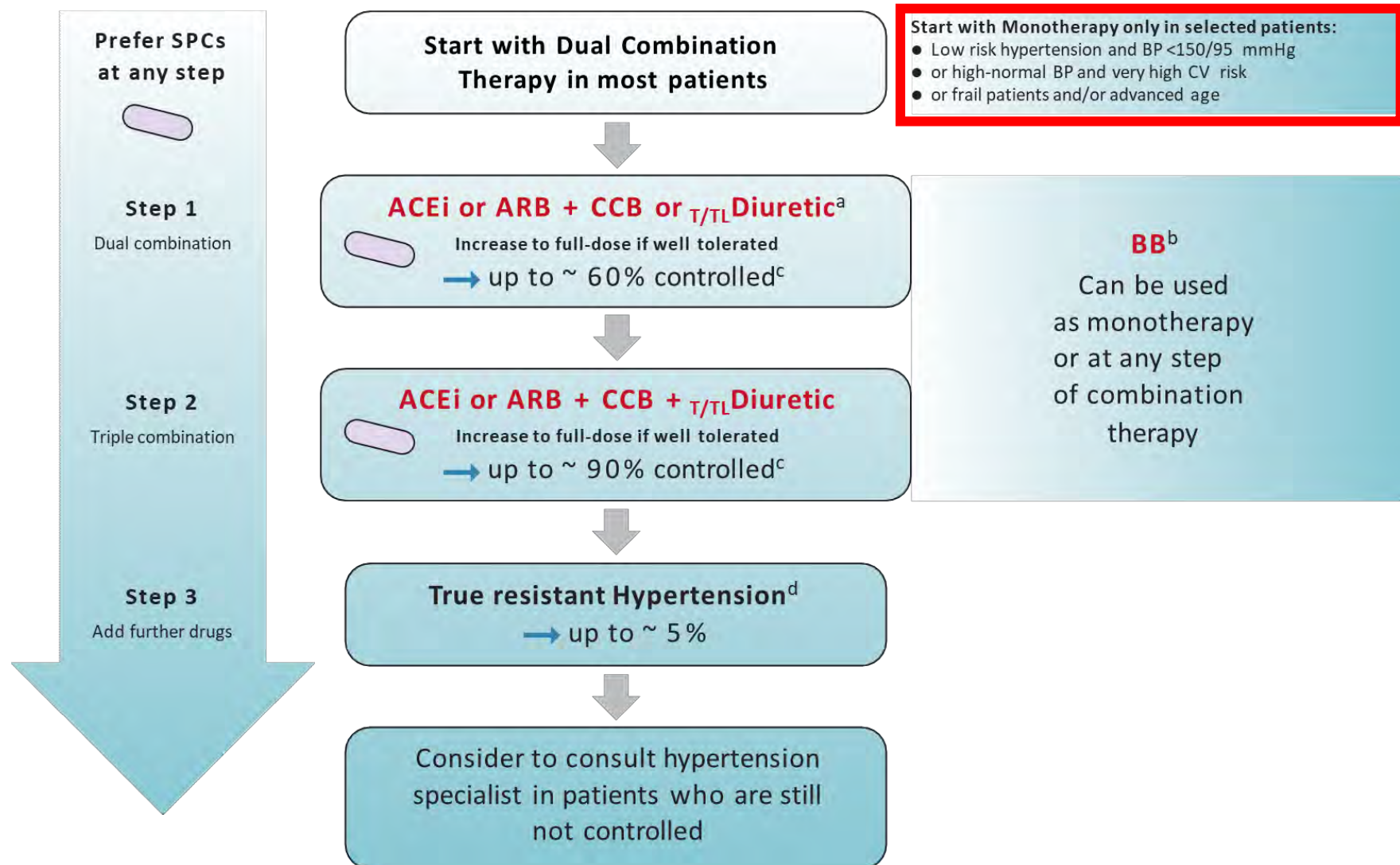
CI = confidence interval; T2D = type 2 diabetes; UACR = urinary albumin-to-creatinine ratio

1. Jongs N et al. Published online ahead of print. *Lancet Diabetes Endocrinol.* 2021. doi:10.1016/S2213-8587(21)00243-6;

Kidney disease progression in adults with or without diabetes



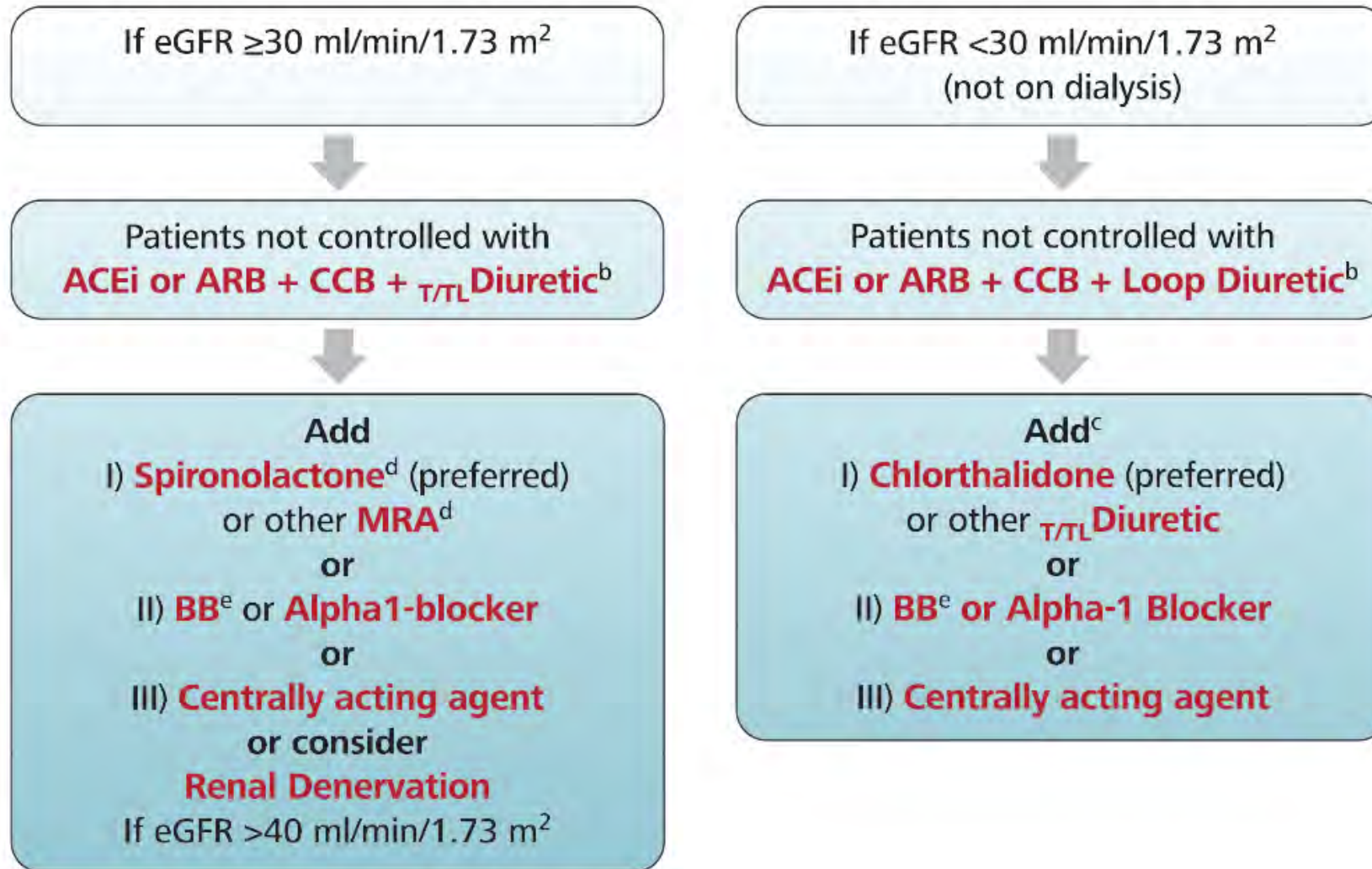
Stratégie générale pour le traitement des patients hypertendus



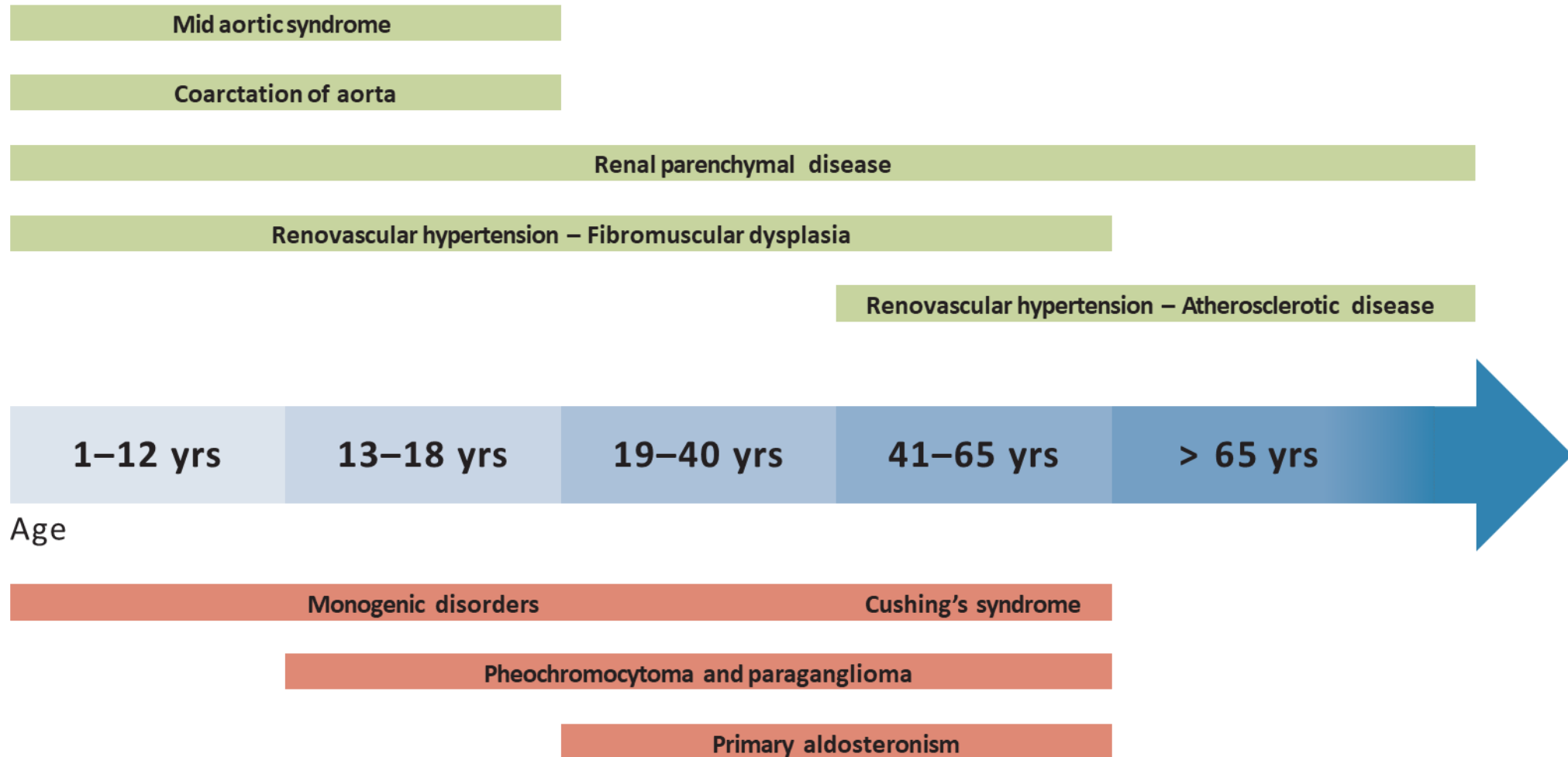
Select Therapy: Older patients (>80 years)

	Fit	Slowed but autonomous	Severely dependent
BP for treatment initiation	<ol style="list-style-type: none">1. Office SBP \geq160 mmHg2. But in most cases, SBP in the range of 140-159 mmHg	<ol style="list-style-type: none">1. Office SBP \geq160 mmHg2. But in most cases, SBP in the range of 140-159 mmHg	<ol style="list-style-type: none">1. According to comorbidities and polypharmacy2. Consider treatment if office SBP > 160 mmHg
Target BP	<ol style="list-style-type: none">3. Office SBP in the range of 140 to 150 mmHg4. A range of 130-139 mmHg may be considered if well tolerated5. Be cautious if DBP already below 70 mmHg	<ol style="list-style-type: none">3. Office SBP in the range of 140 to 150 mmHg4. A range of 130-139 mmHg may be considered if well tolerated5. Be cautious if DBP already below 70 mmHg	<ol style="list-style-type: none">3. Office SBP in the range of 140 to 150 mmHg
Therapy	<ol style="list-style-type: none">6. Consider starting with a monotherapy	<ol style="list-style-type: none">6. Consider starting with a monotherapy7. Uptitrate cautiously8. Reduce treatment if SBP <120 or orthostatic hypotension9. Make a detailed functional status (frailty, depression...)	<ol style="list-style-type: none">4. Start treatment cautiously5. Reduce treatment if office SBP <120 mmHg and in patients with orthostatic hypotension6. Correct other factors and medications lowering BP

Stratégie de prise en charge en cas d'hypertension résistante avérée



Incidence of selected forms of secondary hypertension according to age



Atherosclerotic renovascular disease (ARVD)

Prevalence:
6–14%^a

Suggestive symptoms, signs and findings

Resistant hypertension
Flash pulmonary edema
Rapidly declining kidney function
Acute renal function degradation on ACEI or ARB
Generalized atherosclerosis^b

1st choice screening test

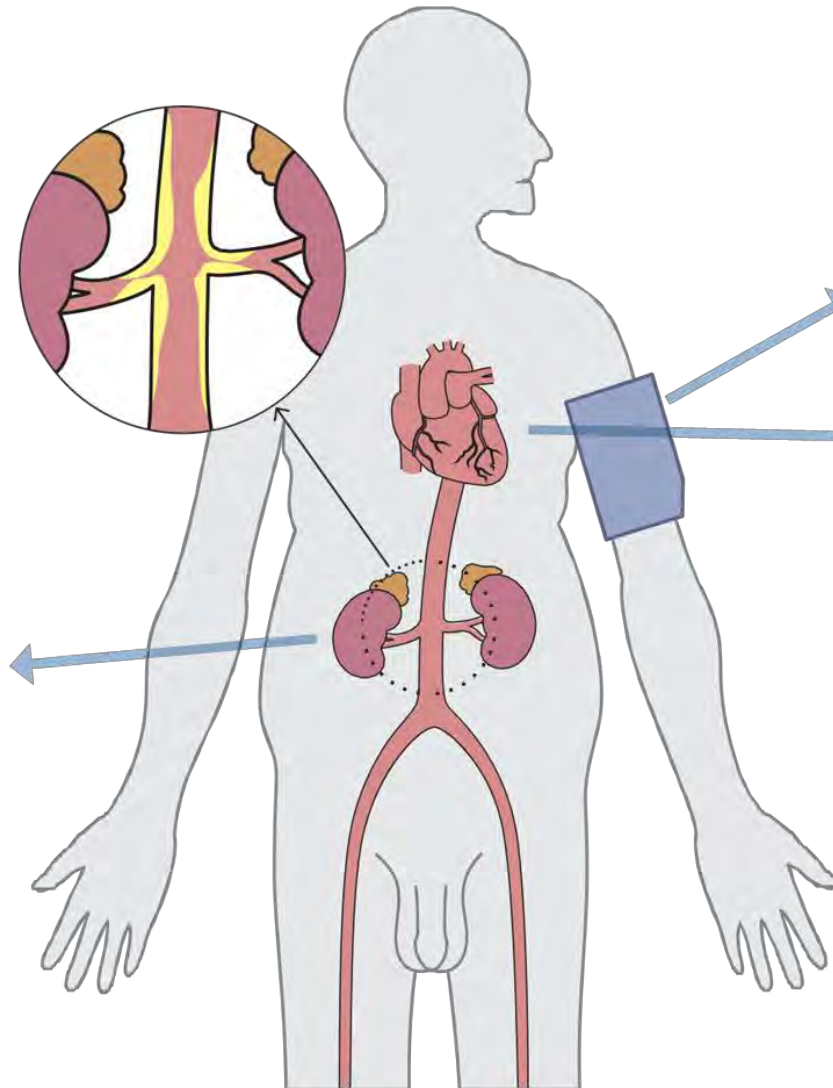
Renal artery duplex ultrasound;
otherwise CT or MR-angiography

Further work-up

Angio-CT or angio-MR
Invasive catheter angiography

Treatment^{c,d}

Antihypertensive treatment
Strict control of CV risk factors
Revascularization (selected cases)



Cardiovascular phenotype

24h ABPM – resistant hypertension, frequent non-reverse dipping

- LVH
- Decreased diastolic function
- Decreased systolic function

Increased CV Risk and mortality

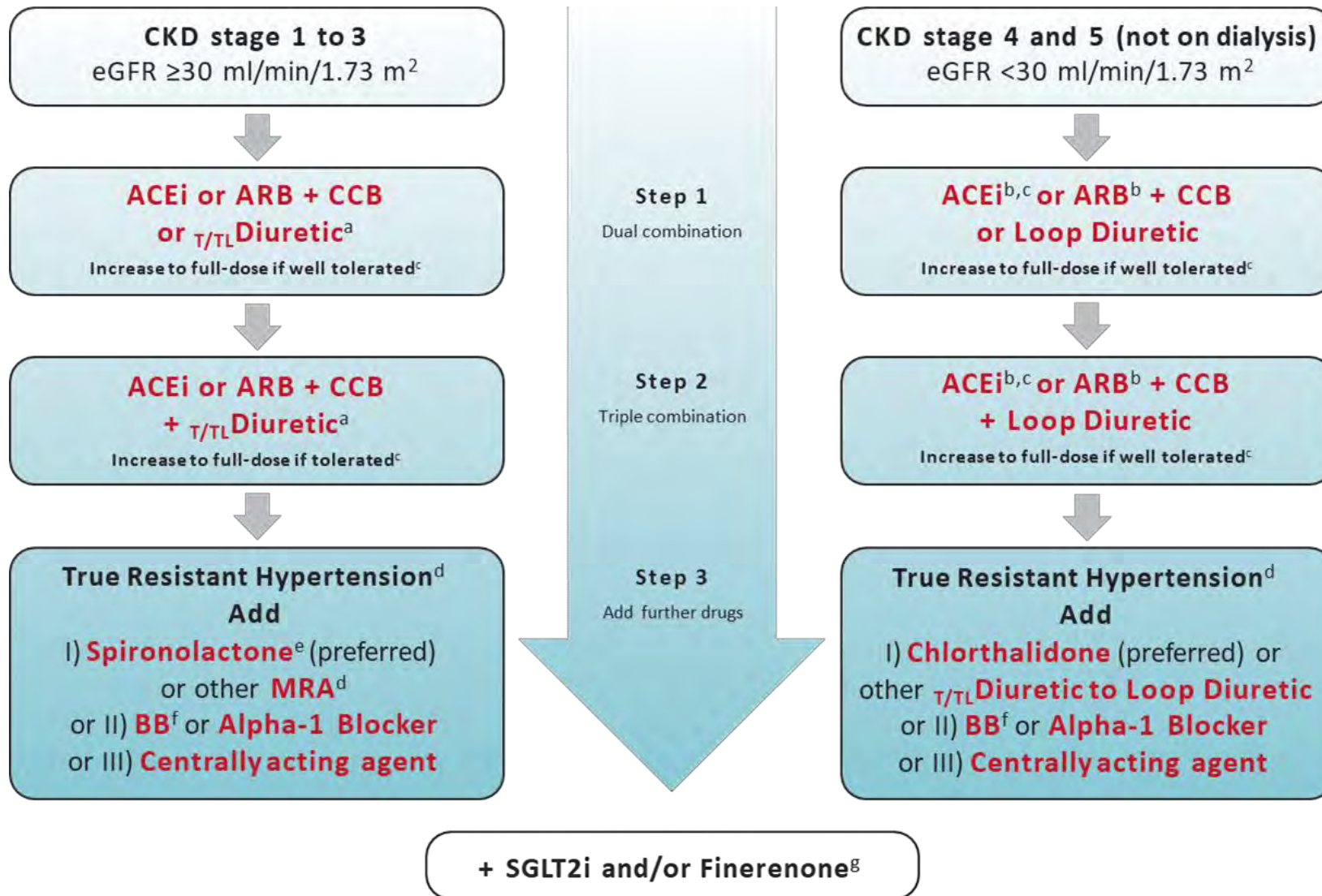
Recommendations and statements	CoR	LoE
BP should be monitored at all stages of CKD, because hypertension is the most important risk factor for end-stage kidney disease (ESKD).	I	A
Non-dipping or elevated night-time BP are frequent in CKD patients and should be monitored by ABPM or HBPM.	I	B
In both diabetic and non-diabetic CKD with hypertension, BP-lowering treatment slows the decline of kidney function and reduces the risk of ESKD and CV outcomes.	I	A
Immediate lifestyle interventions and antihypertensive drug treatment are recommended in most patients with CKD independently of the CKD stage if SBP \geq 140mmHg or DBP \geq 90mmHg.	I	C
In all patients with CKD the primary goal is to lower office BP to <140 mmHg systolic and <90 mmHg diastolic.	I	A
In most CKD patients (young patients, patients with an albumin/creatinine ratio \geq 300 mg/g, high CV risk patients) office BP may be lowered to <130/80 mmHg if tolerated.	II	B
In kidney transplant patients with hypertension, office BP may be lowered to <130 mmHg systolic and <80 mmHg diastolic.	II	B
In patients with CKD, a BP target of less than 120/70 mmHg is not recommended.	III	C
An ACEi or an ARB, titrated to the maximum tolerated doses is recommended for patients with CKD and moderate (UACR 30 to 300 mg/g) or severe (UACR > 300 mg/g) albuminuria.	I	A

CKD patients

Dual combination of an ACEi with an ARB is not recommended.	III	A
SGLT2is inhibitors are recommended for patients with diabetic and non-diabetic nephropathies CKD if eGFR is at least 20 ml/min/1.73 ² . ^a	I	A
The non-steroidal MRA finerenone is recommended in patients with CKD and albuminuria associated with type 2 diabetes mellitus if eGFR is at least 25 ml/min/1.73 ² and serum potassium <5.0 mmol/L.	I	A
In CKD patients with hyperkalemia a potassium binder can be used to maintain normal or near normal serum potassium levels (<5.5 mmol/L) in order to allow optimal treatment with a RAS-blocker or a MRA to continue.	II	B

^aAdditional eGFR and albuminuria criteria apply for initiation of treatment with different SGLT2is according to their respective approval.

BP-lowering in patients with hypertension and chronic kidney disease



Stratégies de traitement de l'HTA dans le diabète

Recommendations and statements	CoR	LoE
BP should be monitored to detect hypertension in all patients with diabetes, because it is a frequent comorbidity associated with an increase CV risk and risk for kidney events.	I	A
Non-dipping or elevated night-time BP are frequent in type 2 diabetes and should be monitored by ABPM or HBPM.	I	B
Antihypertensive treatment in type 2 diabetes is recommended to protect against macrovascular and microvascular complications.	I	A
Immediate lifestyle interventions and antihypertensive drug treatment are recommended for people with type 2 diabetes when office SBP is ≥ 140 mmHg and DBP is ≥ 90 mmHg.	I	A
Drug treatment strategies in patients with type 2 diabetes should be the same as for patients without diabetes and the primary aim is to lower BP below $<130/80$ mmHg.	I	A
SGLT2is are recommended to reduce cardiac and kidney events in type 2 diabetes.	I	A
The non-steroidal MRA finerenone can be used, because of its nephroprotective and cardioprotective properties in patients with diabetic CKD and moderate to severe albuminuria.	I	A
There are only limited data on the potential benefits of combining SGLT2is and finerenone.	II	C

Prise en charge de l'hypertension dans l'obésité

Recommendations and statements	CoR	LoE
In adults with elevated BP who are overweight or obese, weight reduction is recommended to reduce BP and improve CV outcomes.	I	A
Thiazide/Thiazide-like Diuretics and BBs have some unfavorable metabolic effects. However, since optimal BP control is the primary goal of antihypertensive treatment, combination therapy with these drug classes is frequently necessary and recommended.	I	A
Dual GIP/GLP-1 RA or GLP-1 RA should not be prescribed for BP control in patients with obesity.	III	C
Obese patients should not be referred to bariatric surgery for BP control.	III	C
Dual GIP/GLP-1 RA or GLP-1 RA or bariatric surgery lower BP indirectly in parallel with body weight reduction and can contribute to BP control in obese patients.	II	B
In obese patients with diabetes and hypertension, treatment with anti-diabetic drugs that reduce both body weight and BP may be preferred.	II	B

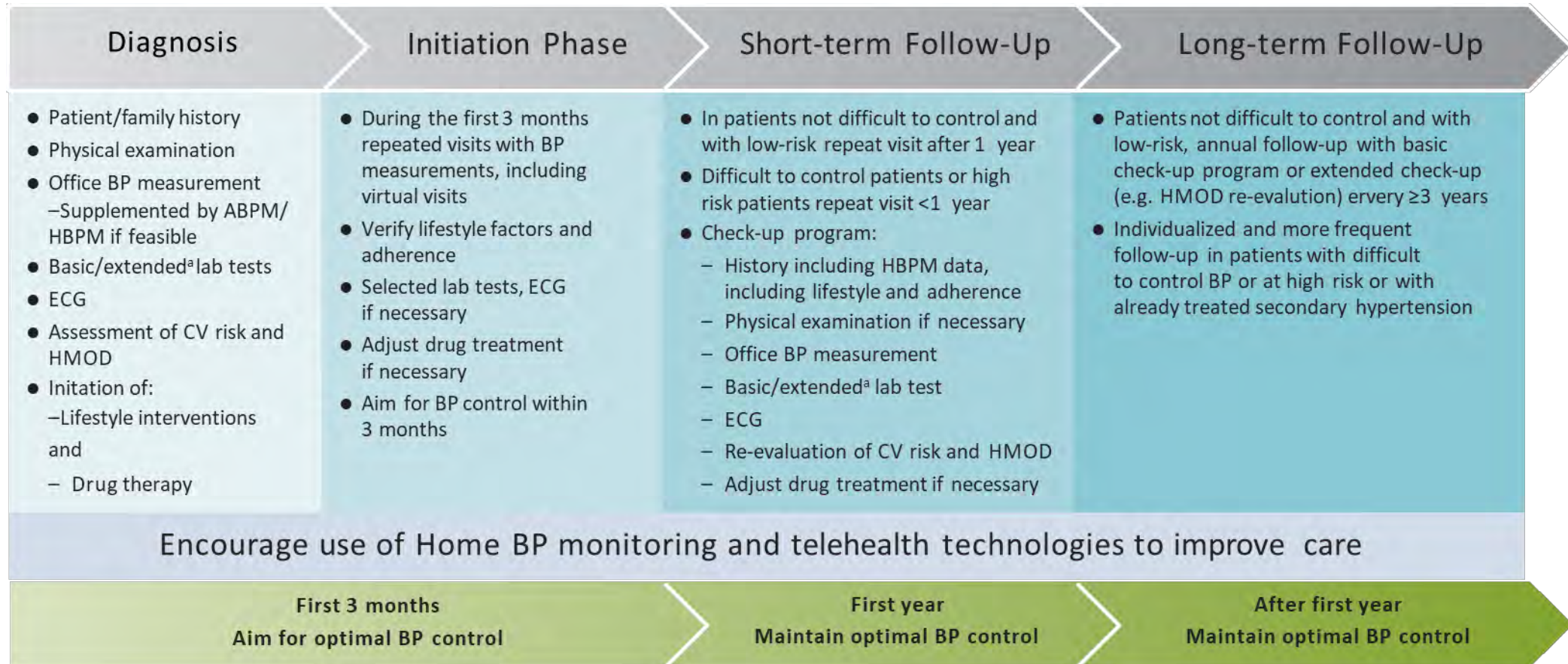
Suivi de l'adhérence dans la prise en charge de l'hypertension

Recommendations and statements	CoR	LoE
Screening for non-adherence to treatment is recommended in all patients with apparent resistant hypertension.	I	B
Consider screening for non-adherence in patients who are on combination treatment (i.e. at least 2 drugs) and have an inadequate BP response to this treatment.	II	C
Check adherence prior to screening for secondary hypertension.	I	C
Physicians should collect information on adherence mindful that all methods have limitations.	I	C
Use of single pill combinations to improve adherence and persistence to antihypertensive treatment is generally recommended.	I	B
Several strategies can be considered to improve adherence and a multidimensional team-based care approach is recommended.	I	C

Quand référer un patient au spécialiste ?

- Patients in whom secondary hypertension is suspected
 - Young patients (<40 years) with grade 2 or 3 hypertension in whom secondary hypertension should be excluded
 - Patients with sudden onset or aggravation of hypertension when BP was previously normal
 - Patients with treatment-resistant hypertension
 - Need of more detailed assessment of HMOD, which might influence treatment decision
 - Requirement of more in-depth specialist evaluation from the referring doctor
 - Hypertensive emergencies (inpatient care will usually be needed)
-

Follow-up of patients with hypertension



^aCan be adapted according to the clinical status