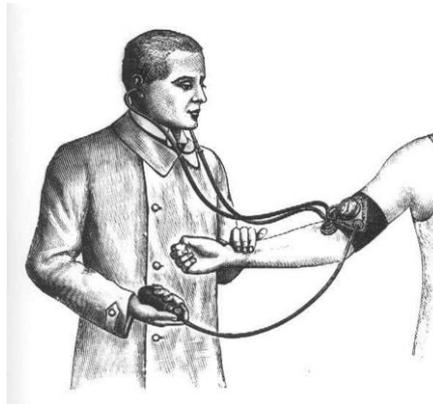


Apport du cardiologue dans la prise en charge de l'HTA



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16^{ème} Congrès CARDIORUN
18-20 septembre 2024



*L'auteur déclare n'avoir aucun lien d'intérêt concernant
les données de sa communication*

MG

Spécialistes
dont
cardiologue



Patient

Autres

Biologie
Imagerie

Paramédicaux

Cher Confrère,

Merci de recevoir en consulation.

Définitions et classification des valeurs de la PA

3.2 Classification of hypertension

The classification of office BP and definition of hypertension grades also remain the same from previous guidelines (Table 1).

TABLE 1. Classification of office BP and definitions of hypertension grades

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	<120	and	<80
Normal	120–129	and	80–84
High-normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension ^a	≥140	and	<90
Isolated diastolic hypertension ^a	<140	and	≥90

The BP category is defined by the highest level of BP, whether systolic or diastolic.

^aIsolated systolic or diastolic hypertension is graded 1, 2 or 3 according to SBP and DBP values in the ranges indicated. The same classification is used for adolescents ≥16 years old (see Section 15.1).



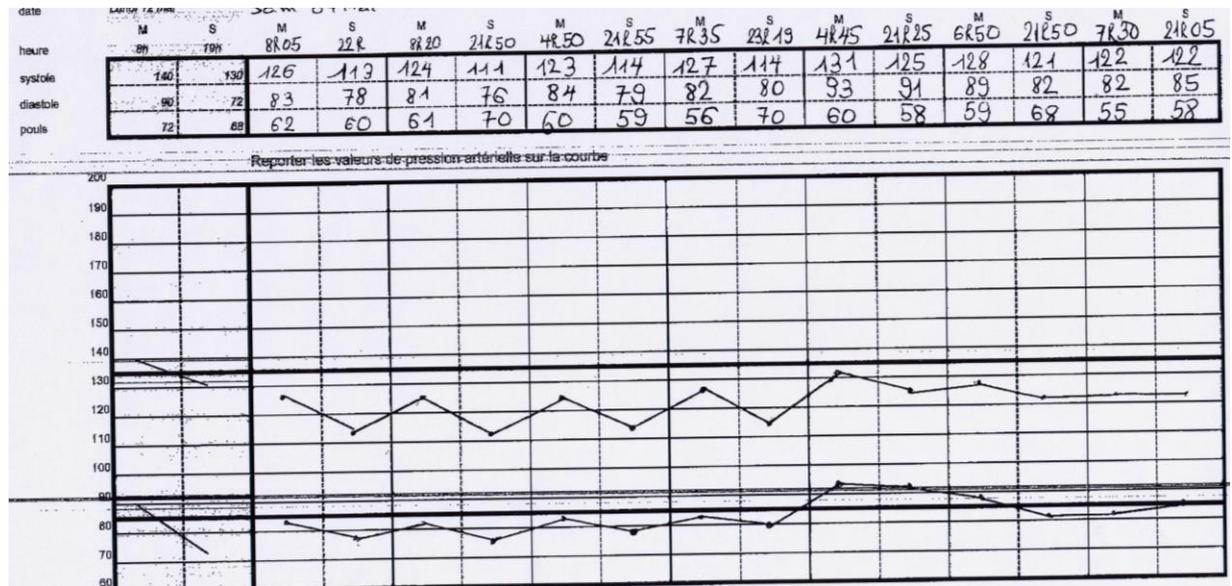
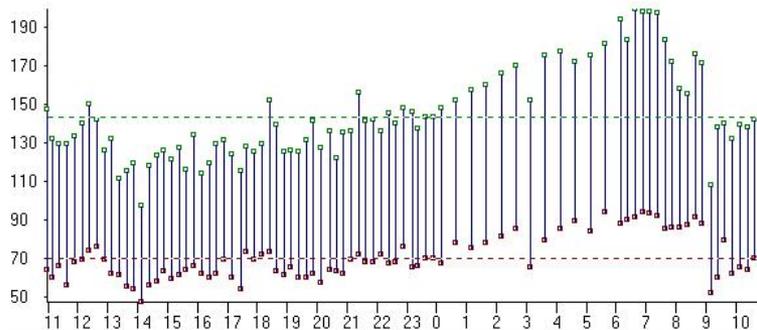




Tableau 1.

Indications de la mesure ambulatoire de la pression artérielle (PA).

- Avant de débiter un traitement antihypertenseur (éliminer une HTA blouse blanche)
- Affirmation du caractère résistant d'une HTA
- Mise en évidence d'une anomalie du cycle nyctéméral de la PA
- Dépistage d'une HTA paroxystique
- Diagnostic et surveillance d'une HTA gravidique
- Recherche d'une hypotension artérielle
- Recherche d'une hypertension artérielle masquée
- Détection d'anomalies tensionnelles au cours d'affections spécifiques
- Meilleure appréciation du niveau de PA en cas de grande variabilité tensionnelle
- Meilleure appréciation du niveau de PA en cas de discordance importante entre la mesure au cabinet et l'automesure
- Dépistage d'une HTA en cas de PA normale au cabinet mais présence d'une atteinte des organes cibles de l'HTA



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%
	2.5 to <7.5%	5 to <10%	7.5 to <15%
	≥7.5%	≥10%	≥15%

Complementary risk estimation in Stage 1 with SCORE2/SCORE2-OP



Quantification semi-automatique (Agatston) par TDM non injectée
Lésion $> 1 \text{ mm}^2$ avec densité Hounsfield $> 130 \text{ UH}$
Score calcique (CAC) = surface \times densité

CAC = 0 : pas de plaque calcifiée

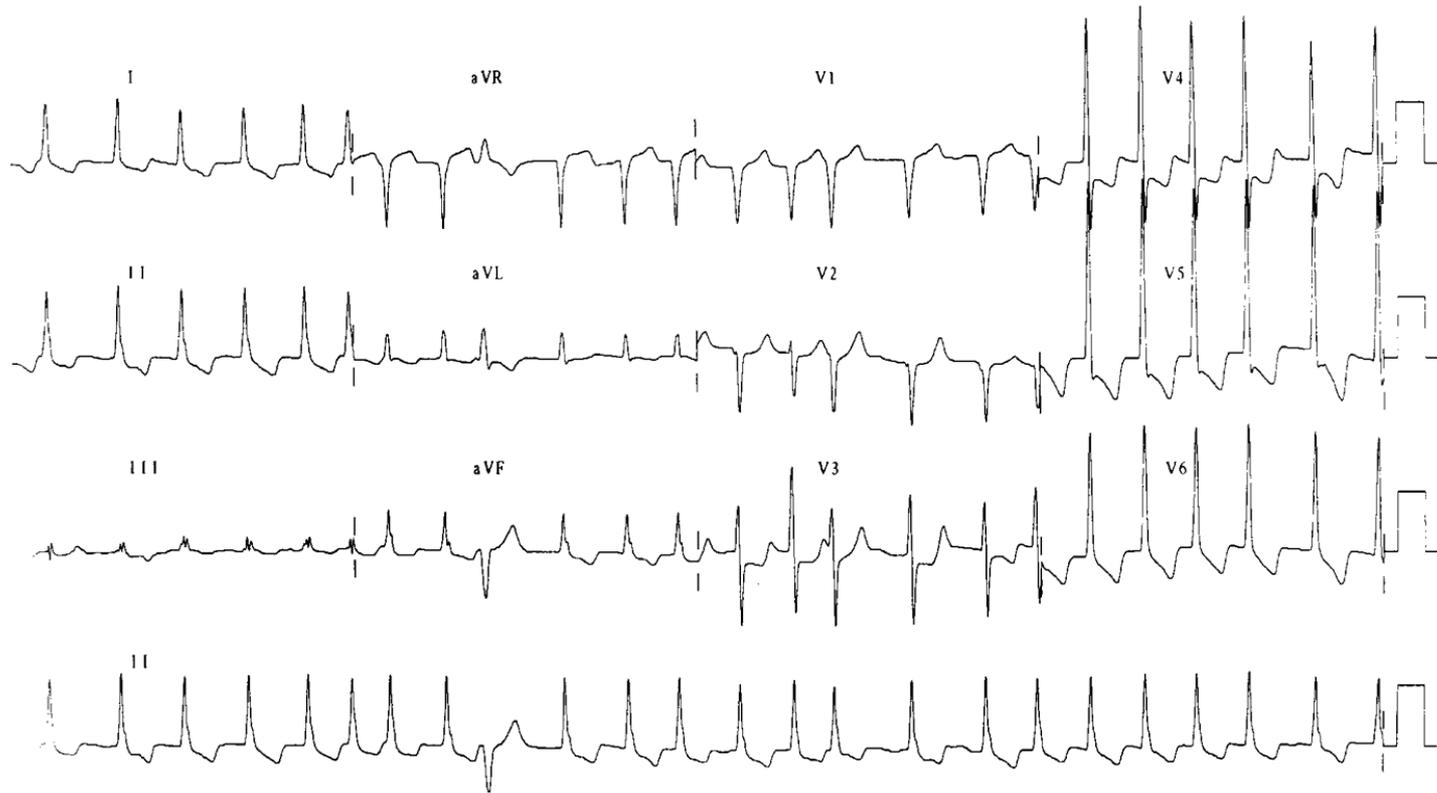
CAC = 1 à 10 : peu de plaque calcifiée

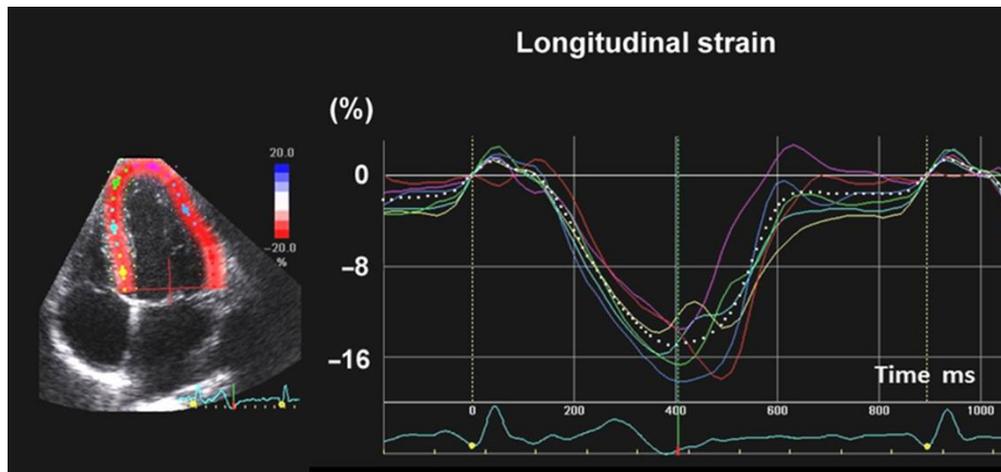
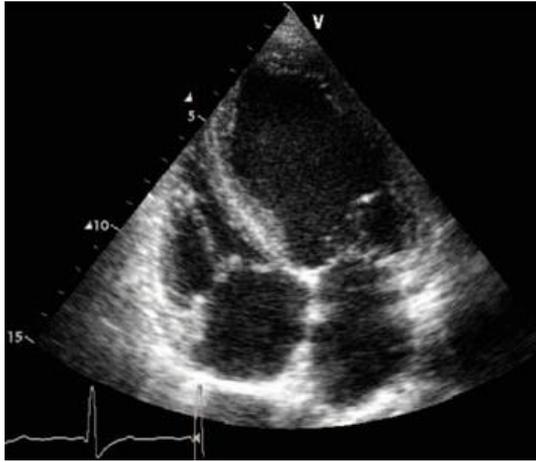
CAC = 10 à 100 : fardeau athéromateux calcifié léger

CAC = 100 à 400 : fardeau athéromateux calcifié modéré

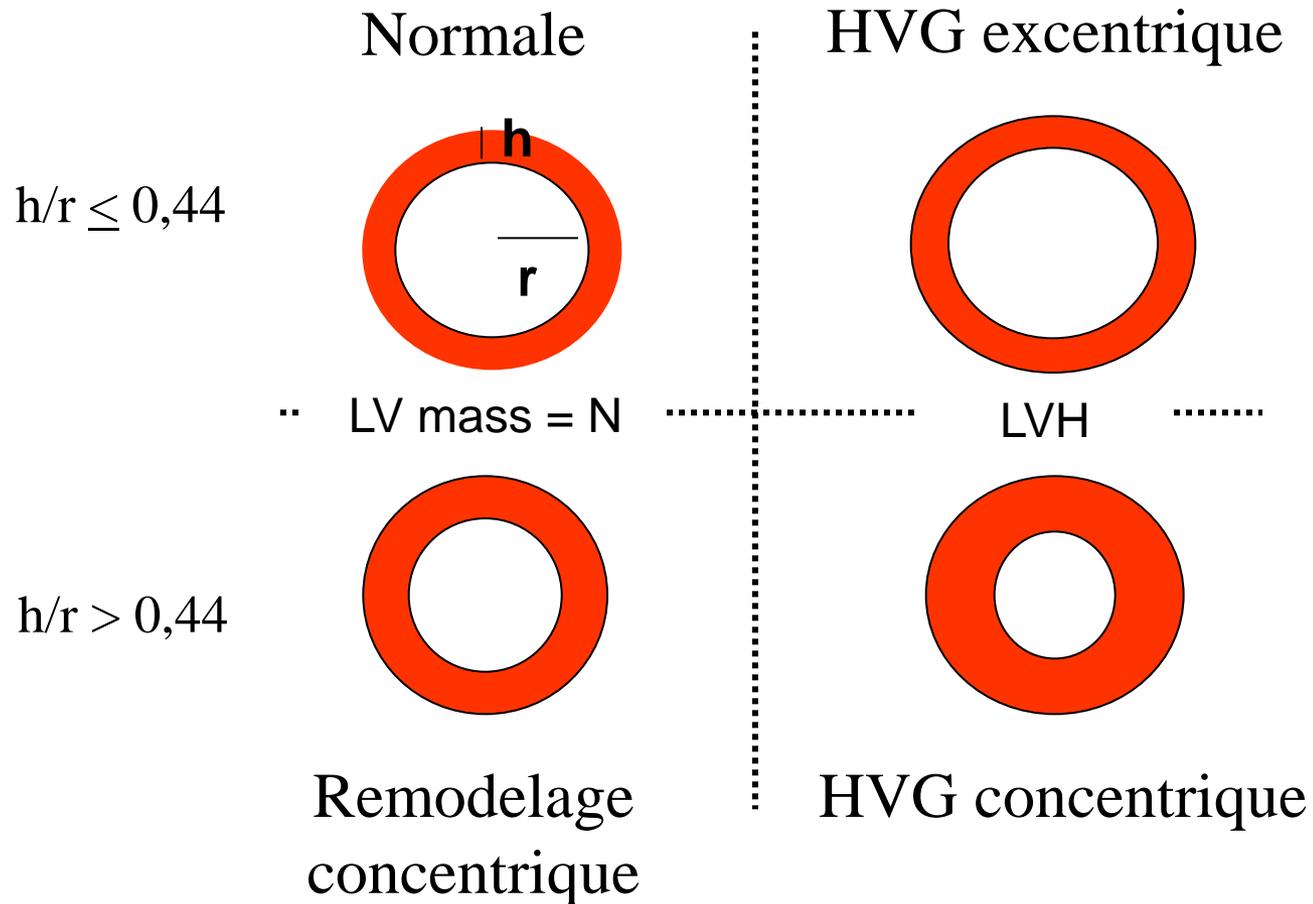
CAC > 400 : fardeau athéromateux calcifié important (évts coronariens $> 20\%$ à 10 ans chez asymptomatique en prévention laire) \rightarrow test d'ischémie

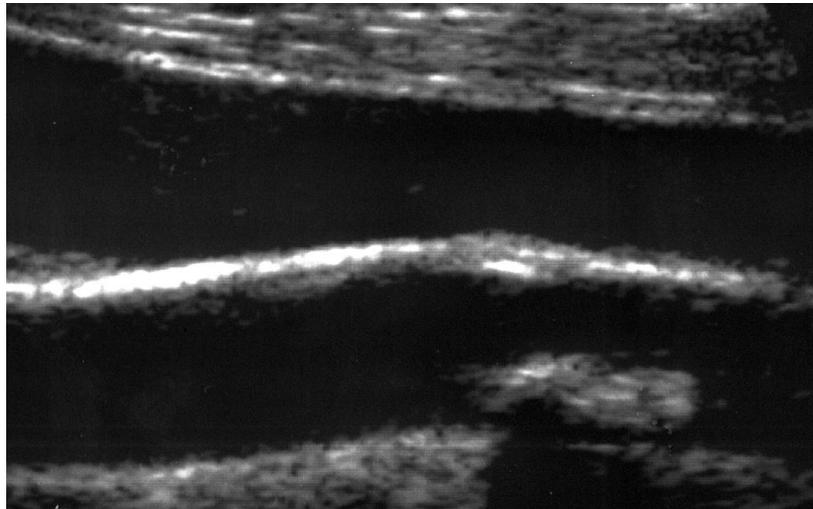
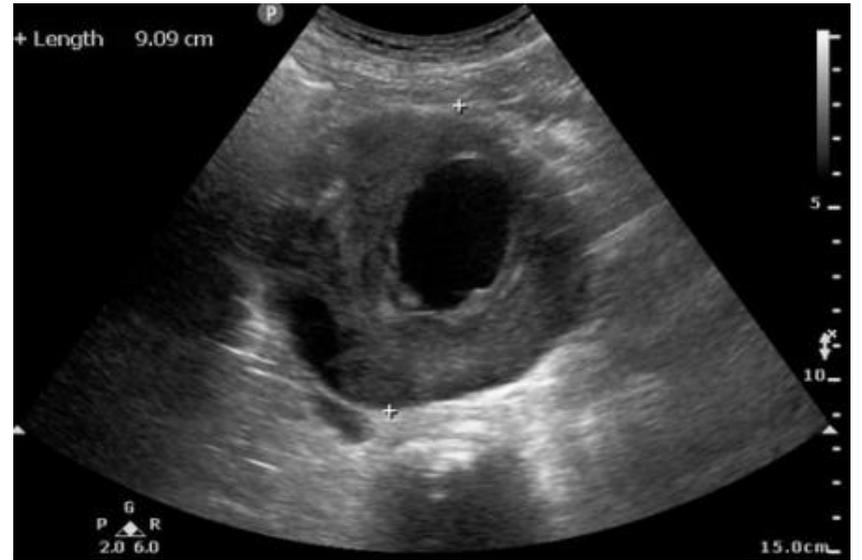
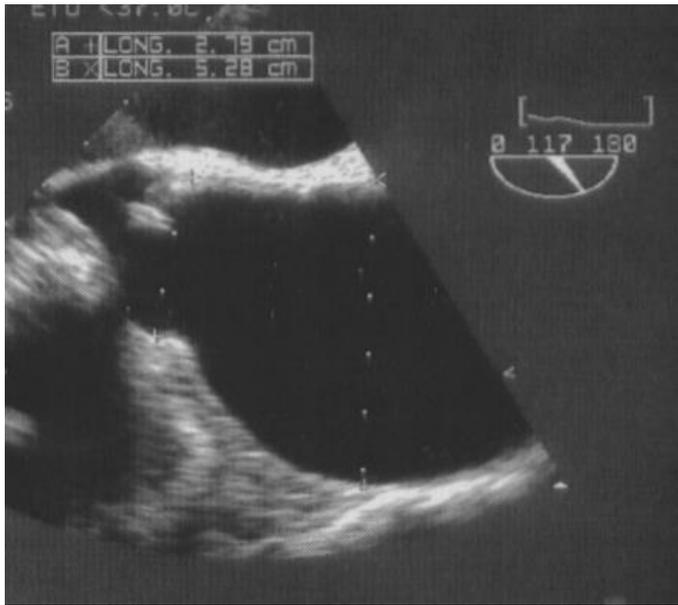
Abaques normalisées pour l'âge

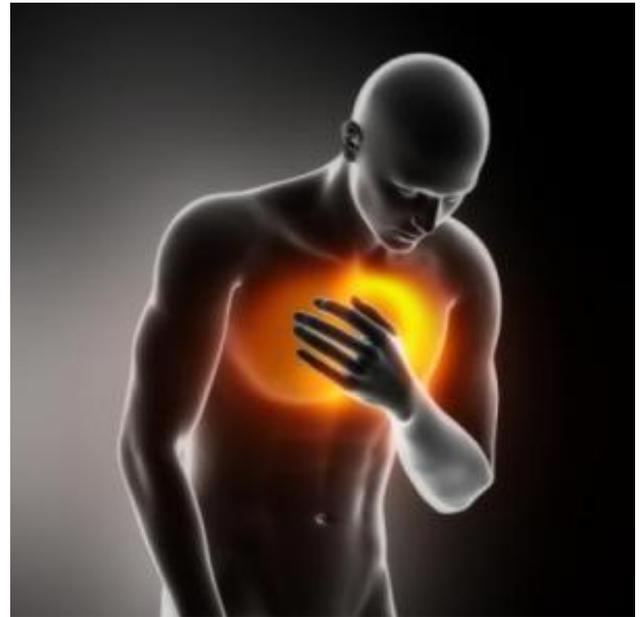


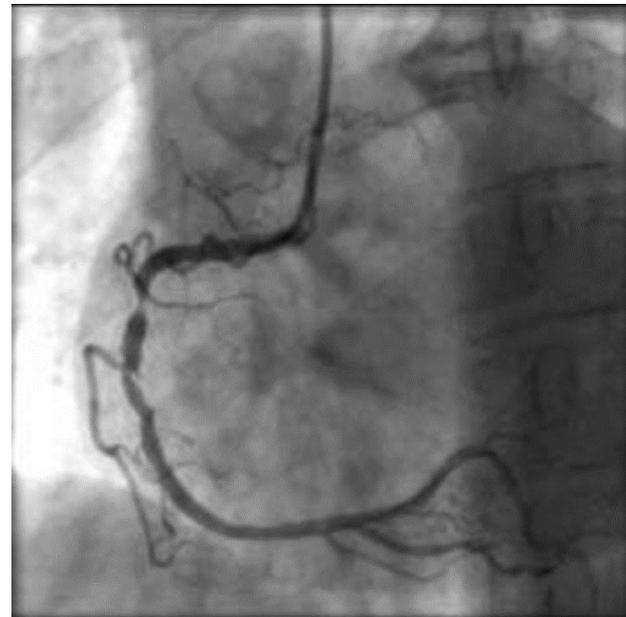
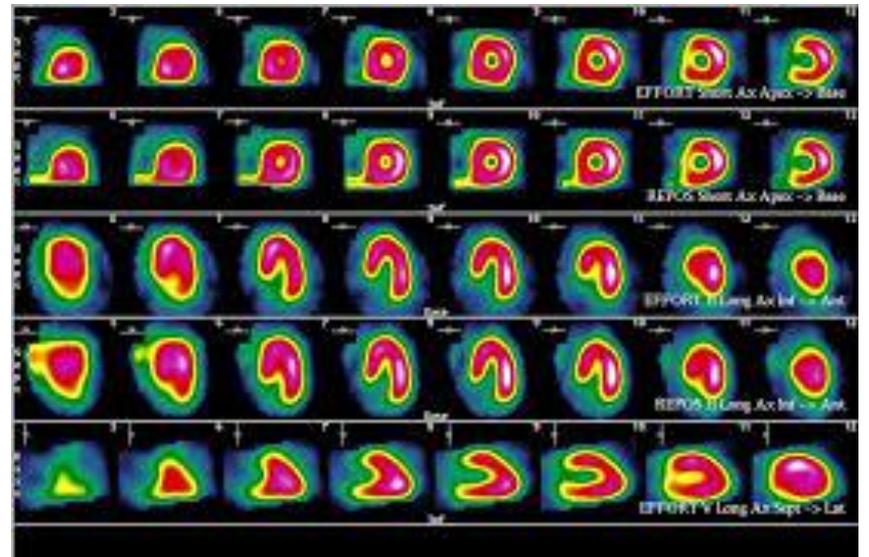


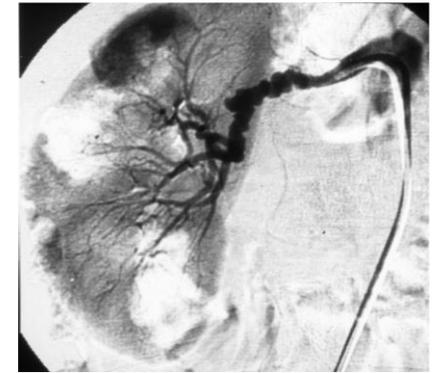
Géométrie du VG



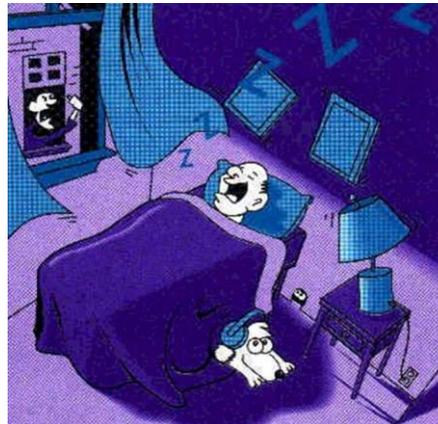








HTA secondaire



HTA secondaire

- Syndrome d'apnées (obstructives) du sommeil 
- Hyperaldostéronisme
 - Primaire (adénome de Conn, hyperplasie bilatérale des surrénales)
 - Secondaire (sténose artérielle rénale, tumeur à rénine)
- Néphropathies
- Phéochromocytome
- Hypercorticisme
- Dysthyroïdie
- Acromégalie
- Hyperparathyroïdie
- Coarctation aortique 
- Génétique

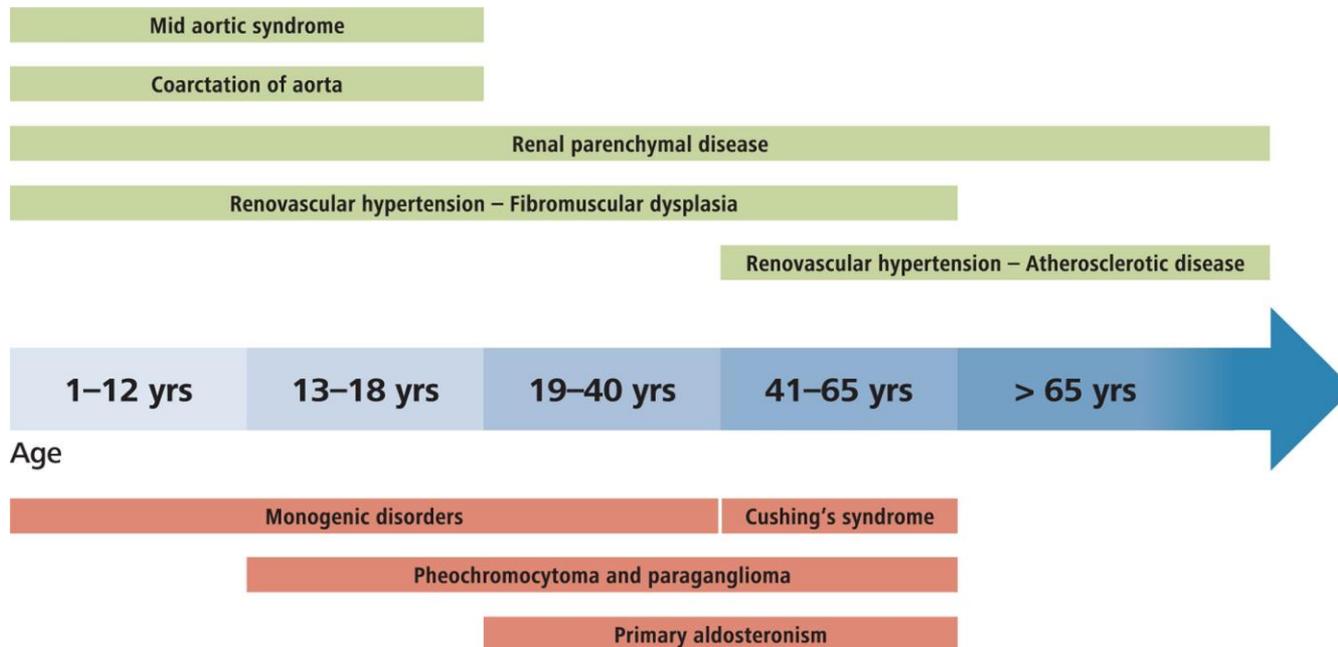
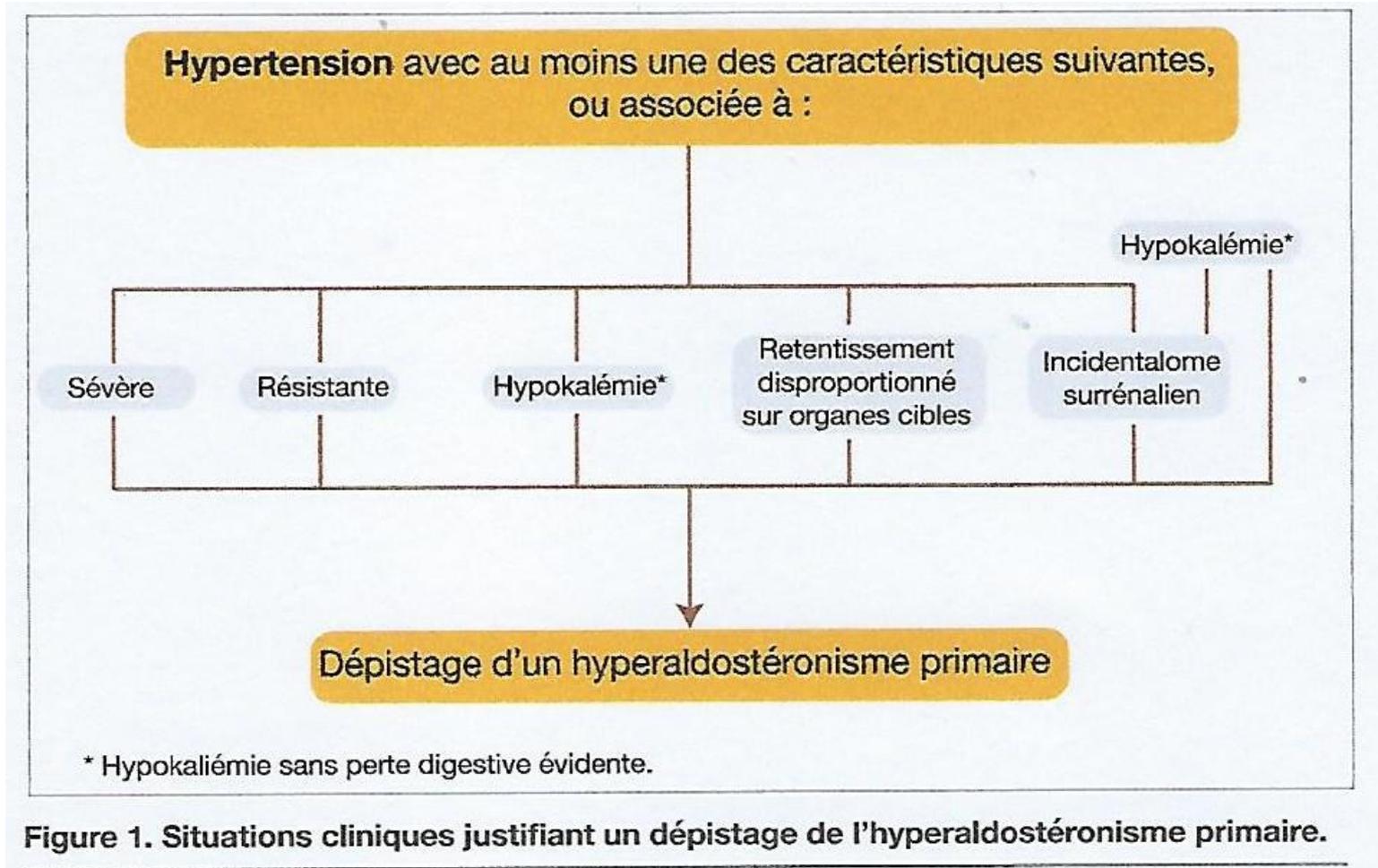


TABLE 13. Patient characteristics that should raise the suspicion of secondary hypertension

Younger patients (<40 years) with grade 2 or 3 hypertension or hypertension of any grade in childhood
Sudden onset of hypertension in individuals with previously documented normotension
Acute worsening of BP control in patients with previously well controlled by treatment
True resistant hypertension
Hypertensive emergency
Severe (grade 3) or malignant hypertension
Severe and/or extensive HMOD, particularly if disproportionate for the duration and severity of the BP elevation
Clinical or biochemical features suggestive of endocrine causes of hypertension
Clinical features suggestive of atherosclerotic renovascular disease or fibromuscular dysplasia
Clinical features suggestive of obstructive sleep apnea
Severe hypertension in pregnancy (>160/110 mmHg) or acute worsening of BP control in pregnant women with preexisting hypertension



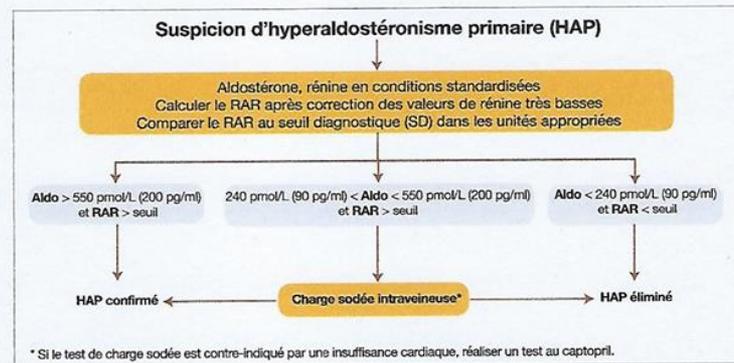


Figure 2. Diagnostic positif de l'hyperaldostérisme primaire.

Tableau 2A. Impact des traitements sur le système rénine-angiotensine-aldostérone et délai d'interruption du traitement avant exploration (RAR : rapport aldostérone sur rénine ; FN : faux négatif ; FP : faux positif)

Médications	Aldostérone	Rénine	RAR	Délai d'interruption (en semaines)
Diurétiques thiazidiques	→↑	↑↑	↓ (FN)	2
Diurétiques de l'anse	↑	↑↑	↓ (FN)	2
Antag. Rc minéralocortic.	↑	↑↑	↓(FN)	6
IEC et Sartan	↓	↑↑	↓ (FN)	2
Inhibiteur de la rénine	↓	↑ si RD ↓ si ARP	↑ (FN) ↑ (FP)	6
β-bloqueur	↓	↓↓	↑ (FP)	2
Agoniste alpha2 central (clonidine)	↓	↓↓	↑ (FP?)	2 (idéalement)
AINS	↓	↓↓	↑ (FP)	2 (idéalement)
IRS	↑	↑	↓ (FN)	?

Tableau 2B. Seuils diagnostiques minimaux du rapport aldostérone sur rénine (RAR) pour le diagnostic d'hyperaldostérisme primaire chez un patient exploré en conditions standardisées

	Rénine directe mU/L	Rénine directe pg/ml= CmlU/L	Activité rénine plasmatique ng/mL/h	Activité rénine plasmatique pmol/L/mn
Aldostérone pmol/L	64	64xC	830	70
Aldostérone pg/mL (=ng/L)	23	23xC	300	25



HTA résistante au traitement si

- Persistance d'une PA clinique $\geq 140/90$ mmHg
- Malgré RHD diététiques appropriées
- Traitement médicamenteux à doses optimales ou maximales tolérées
- ≥ 3 traitement : TZD (ou apparenté), bloqueur du SRAA et calcium-bloquant

L'HTA résistante : chez qui?

- 5 à 10 % des HTA
- ... mais $\geq 20\%$ des HTA dans les centres spécialisés
- Surtout si âge > 75 ans, sujet noir, (sexe féminin)

- Plus d'HTA sévère au moment du diagnostic
- Davantage de lésions des organes cibles
- HTA secondaire plus fréquente (10-36%)



COMITÉ FRANÇAIS DE LUTTE CONTRE L'HYPERTENSION ARTÉRIELLE

Comment dépister une mauvaise observance du traitement antihypertenseur ?

OUI NON

- Ce matin avez-vous oublié de prendre votre médicament ?
- Depuis la dernière consultation avez-vous été en panne de médicament ?
- Vous est-il arrivé de prendre votre traitement avec retard par rapport à l'heure habituelle ?
- Vous est-il arrivé de ne pas prendre votre traitement parce que certains jours, votre mémoire vous fait défaut ?
- Vous est-il arrivé de ne pas prendre votre traitement parce que certains jours, vous avez l'impression que votre traitement vous fait plus de mal que de bien ?
- Pensez-vous que vous avez trop de comprimés à prendre ?

Réalisation du test

Au cours d'une consultation pour le renouvellement de l'ordonnance du traitement antihypertenseur toutes les questions sont posées par le médecin à son patient.

Interprétation du test :

Total des OUI = 0

L'observance du traitement est probablement très satisfaisante.

Total des OUI = 1

Il y a un risque que l'observance du traitement ne soit pas satisfaisante.

Total des OUI = 2

L'observance du traitement n'est probablement pas satisfaisante, ce problème doit être abordé.

Total des OUI ≥ 3

Un défaut d'observance est très probable, des moyens doivent être mis en œuvre pour améliorer l'observance des traitements antihypertenseurs.

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

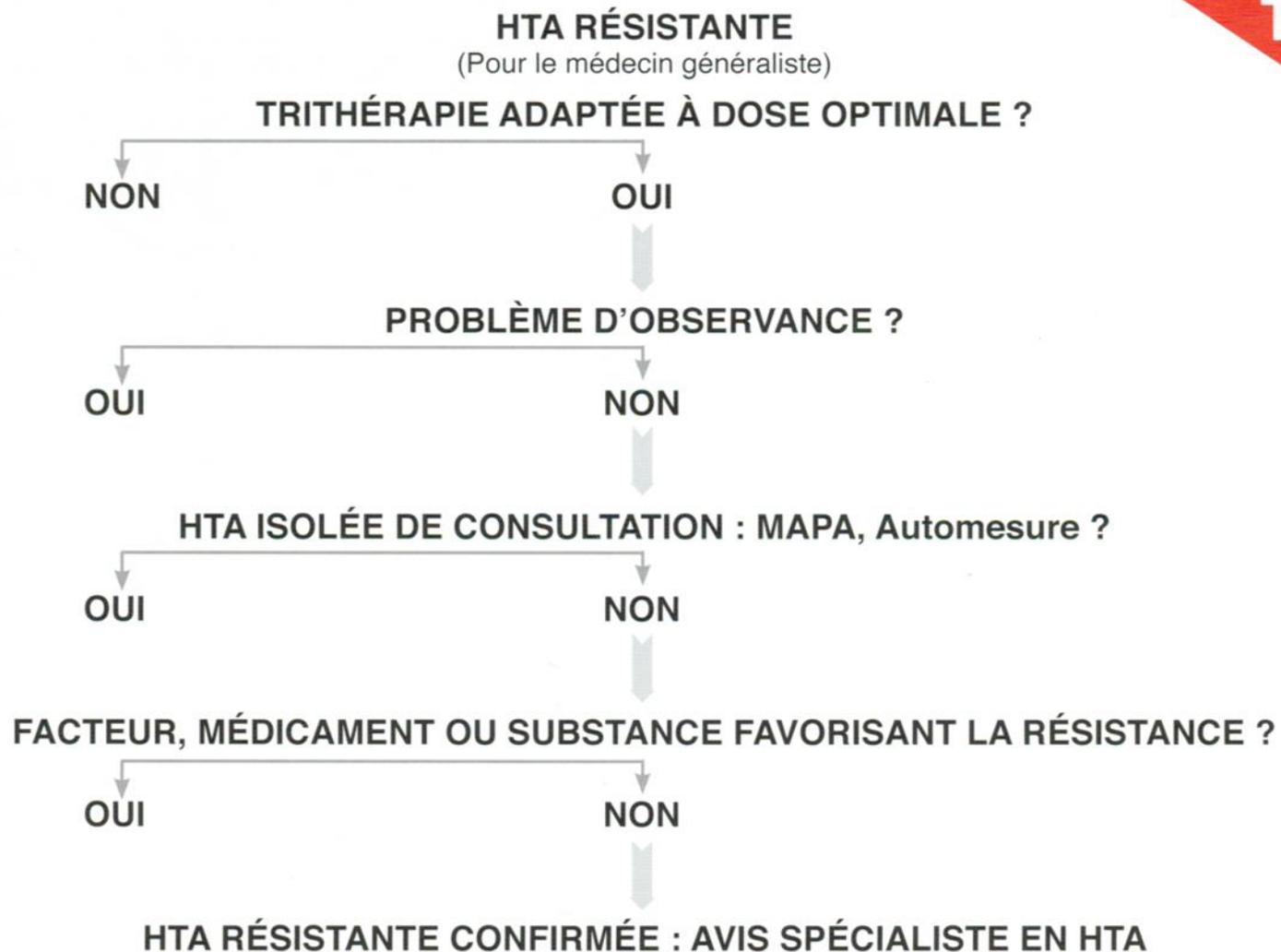


Tableau 1. Urgences hypertensives



- Syndrome coronaire aigu
- Syndrome aortique aigu : dissection, hématome ou fissuration d'un anévrisme aortique
- Insuffisance cardiaque gauche dont l'œdème aigu du poumon
- Encéphalopathie hypertensive
- Accident vasculaire cérébral ischémique (constitué ou transitoire) ou hémorragique
- Hémorragie sous-arachnoïdienne
- Hémorragie aiguë d'origine artérielle
- HTA post-opératoire
- Eclampsie
- Insuffisance rénale aiguë ou rapidement progressive
- Crise de phéochromocytome
- HTA liée à la prise de substances récréatives (amphétamines, LSD, cocaïne ou ecstasy)
- HTA maligne



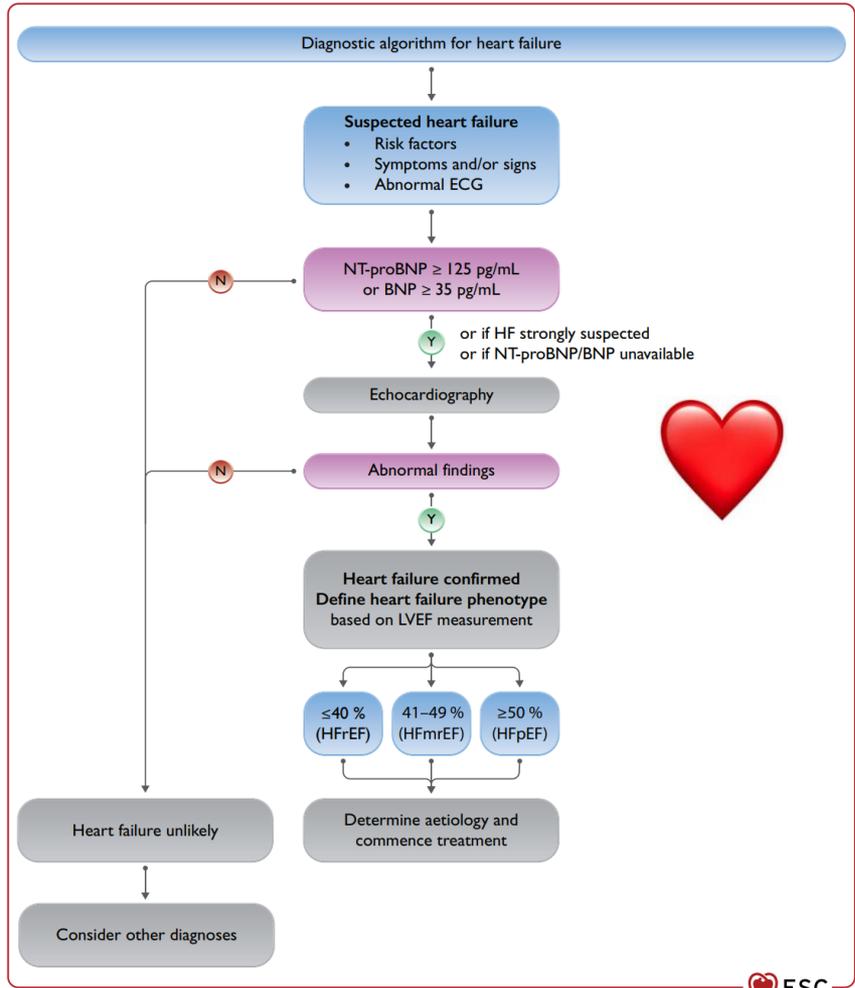
Facteurs favorisant une décompensation cardiaque

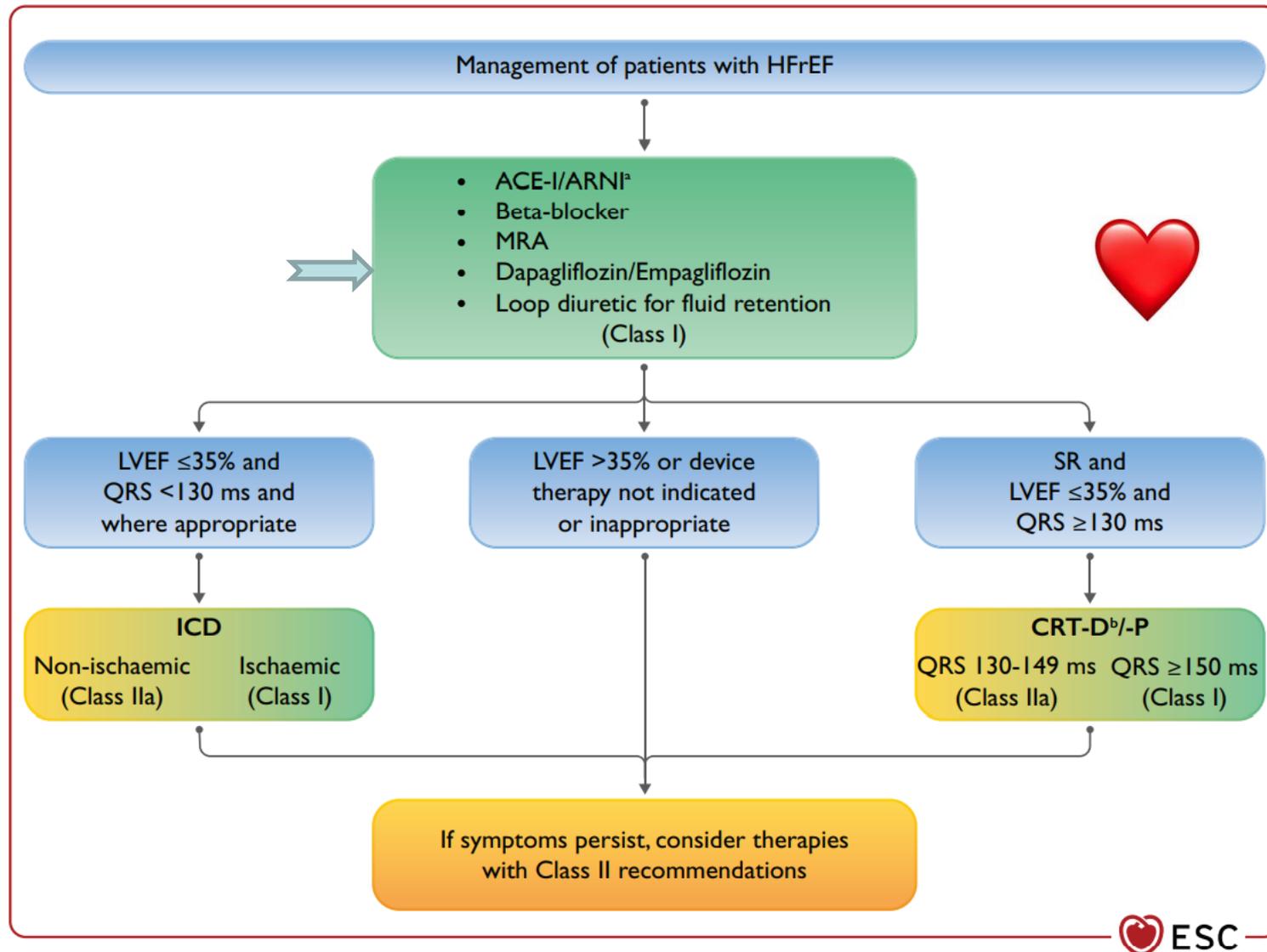


Acute coronary syndrome.
Tachyarrhythmia (e.g. atrial fibrillation, ventricular tachycardia).
Excessive rise in blood pressure.
Infection (e.g. pneumonia, infective endocarditis, sepsis).
Non-adherence with salt/fluid intake or medications.
Bradyarrhythmia.
Toxic substances (alcohol, recreational drugs).
Drugs (e.g. NSAIDs, corticosteroids, negative inotropic substances, cardiotoxic chemotherapeutics).
Exacerbation of chronic obstructive pulmonary disease.
Pulmonary embolism.
Surgery and perioperative complications.
Increased sympathetic drive, stress-related cardiomyopathy.
Metabolic/hormonal derangements (e.g. thyroid dysfunction, diabetic ketosis, adrenal dysfunction, pregnancy and peripartum related abnormalities).
Cerebrovascular insult.
Acute mechanical cause: myocardial rupture complicating ACS (free wall rupture, ventricular septal defect, acute mitral regurgitation), chest trauma or cardiac intervention, acute native or prosthetic valve incompetence secondary to endocarditis, aortic dissection or thrombosis.

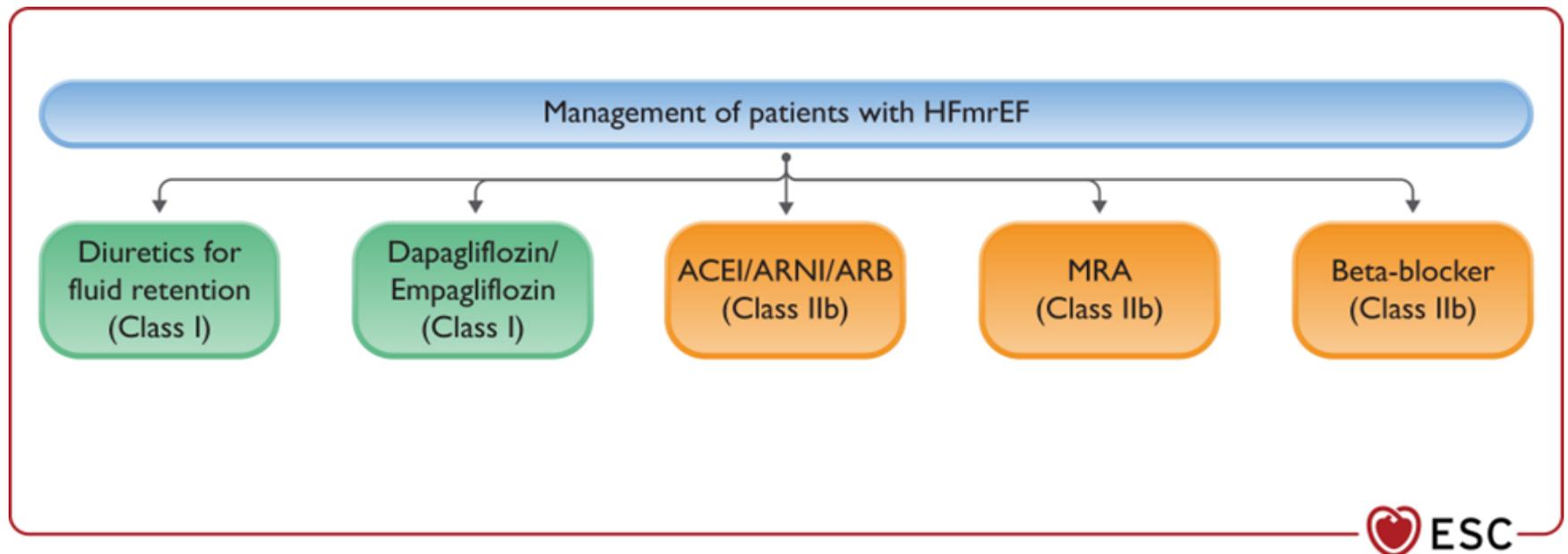
Type of HF	HFrEF	HFmrEF	HFpEF
CRITERIA			
1	Symptoms ± Signs ^a	Symptoms ± Signs ^a	Symptoms ± Signs ^a
2	LVEF ≤40%	LVEF 41–49% ^b	LVEF ≥50%
3	–	–	Objective evidence of cardiac structural and/or functional abnormalities consistent with the presence of LV diastolic dysfunction/raised LV filling pressures, including raised natriuretic peptides ^c

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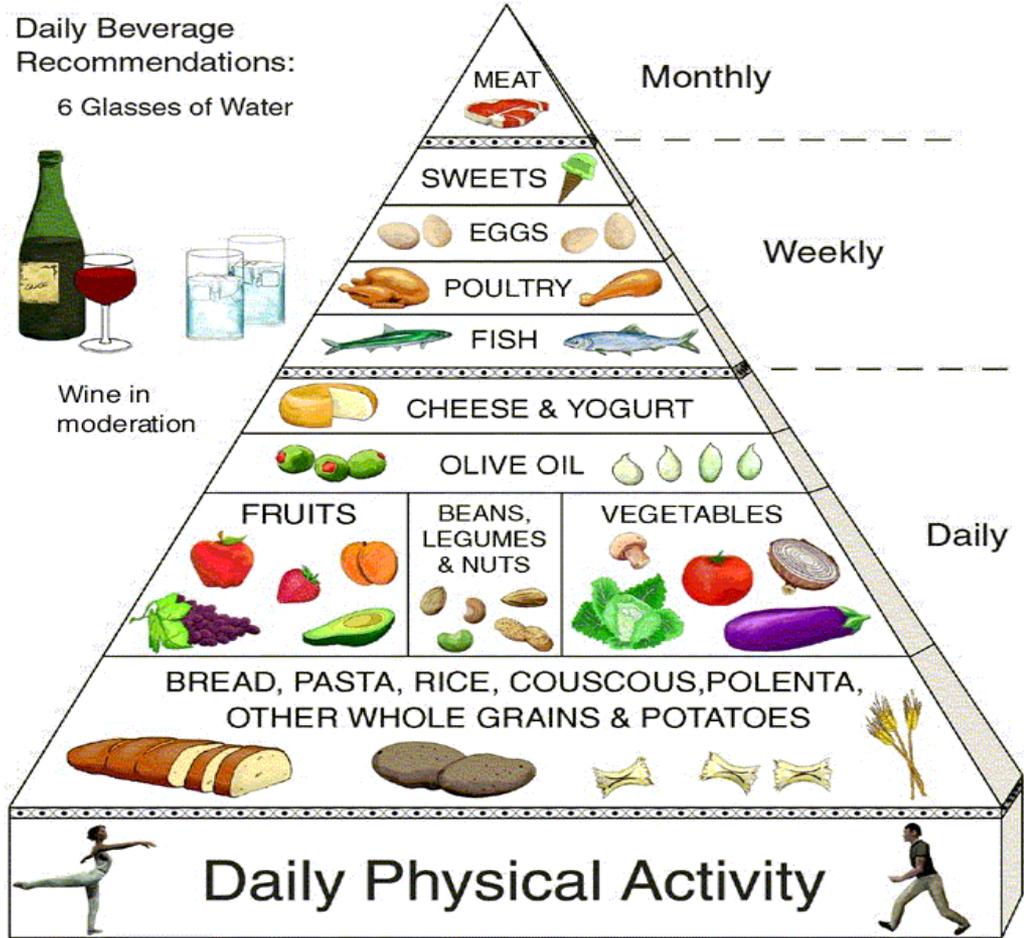




2023 Focused Update of the 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic HF



The Traditional Healthy Mediterranean Diet Pyramid





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**

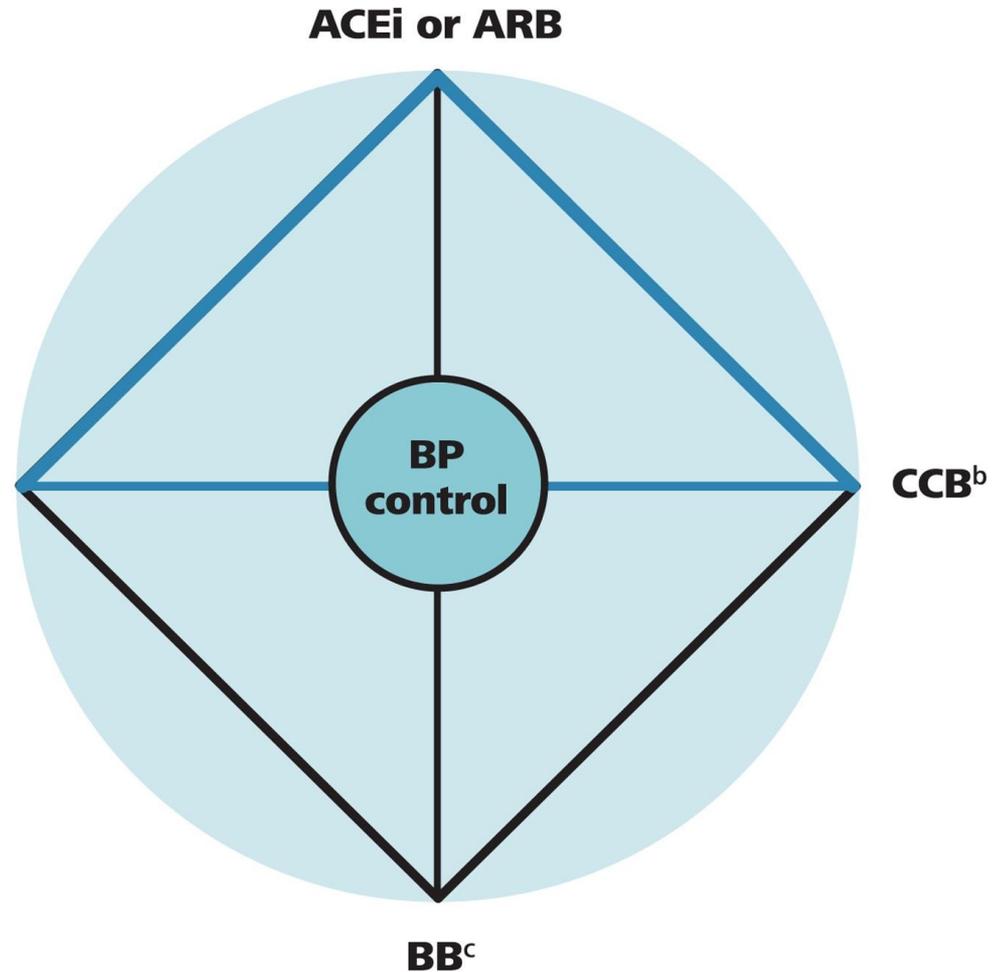
Additional drug classes

General antihypertensive therapy:

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

Special comorbidities:

- ARNi
- SGLT2i
- Non-Steroidal MRA



**Prefer SPCs
at any step**



Step 1

Dual combination

**Start with Dual Combination
Therapy in most patients**

Start with Monotherapy only in selected patients:

- Low risk hypertension and BP <150/95 mmHg
- or high-normal BP and very high CV risk
- or frail patients and/or advanced age

ACEi or ARB + CCB or T/TL Diuretic^a



Increase to full-dose if well tolerated

→ up to ~ 60% controlled^c

BB^b

Can be used
as monotherapy
or at any step
of combination
therapy

Step 2

Triple combination

ACEi or ARB + CCB + T/TL Diuretic



Increase to full-dose if well tolerated

→ up to ~ 90% controlled^c

Step 3

Add further drugs

True resistant Hypertension^d

→ up to ~ 5%

Consider to consult hypertension
specialist in patients who are still
not controlled



1831

Mai

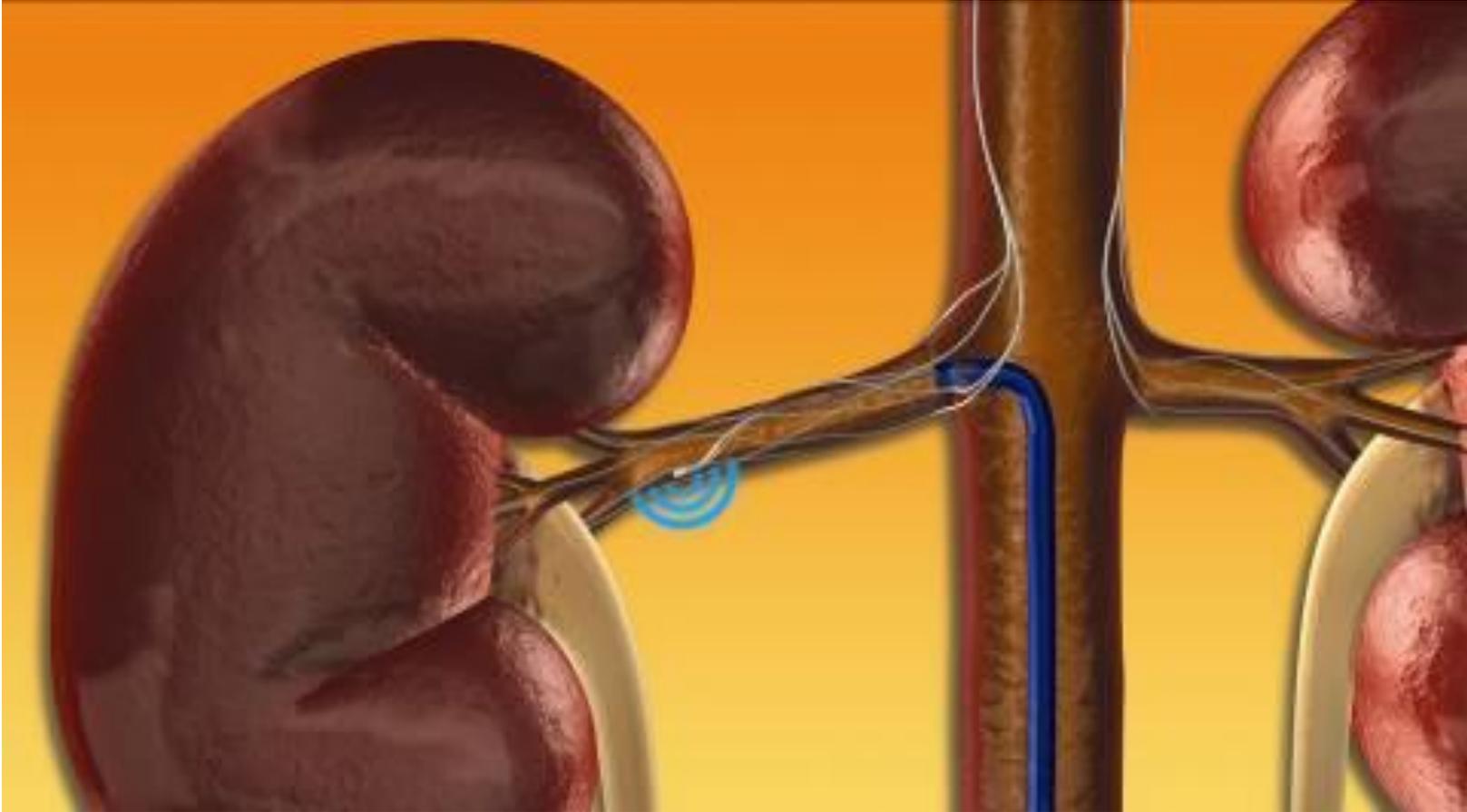
Medicaments fournis a Madame
De J. Meneuse beau regard par le sieur
Pabe pharmacien a Pagny

Savoir

- 10. une grande topette Decoction blanche de Sydenham
arseniatée a l'eau de fleur d'orange 60^c
- pour le soir la moitié de plus de la Decoction blanche
Comme d'usage. - 90^c
- 11. un pot de pomade adoucissante Composé sur le lait
de Galien & ougnet papuleux et laudanum liquide 40
- la Decoction blanche retarée 90
- 12. la Decoction blanche retarée avec addition de la teinture
de Camille 90
- 13. la Decoction blanche retarée 90
- le pot pomade adoucissante retarée 40
- quatre litres de probots blancs 80
- 14. deux litres de probots blancs 15^c
- un flote contenant un once huile de Camille 40
- 15. six onces de lin en poudre 15
- 16. deux gros laudanum liquide de Sydenham 30
- 17. une once huile de Camille 30
- 18. une once laudanum liquide de Sydenham 1^l 20
- un flote contenant un once prob. & tyrian de rubiquet 50

total 8^l 20^c







Recommendations and statements	CoR	LoE
In women with hypertensive disorders in pregnancy, initiation or intensification of drug treatment is recommended when SBP is ≥ 140 mmHg and/or DBP ≥ 90 mmHg.	I	C
In women with pre-existing hypertension (with or without superimposed pre-eclampsia), BP should be lowered to a target below 140/90 mmHg.	I	A
In women with gestational hypertension (with or without pre-eclampsia), BP should be lowered to a target below 140/90 mmHg.	I	C
In women with hypertensive disorders in pregnancy, too marked BP-lowering should be avoided. On-treatment DBP < 80 mmHg is not recommended.	III	C
Labetalol ^a and α -methyl-DOPA are the first choice BP-lowering agents for hypertensive disorders in pregnancy unless contraindicated.	I	B
Extended-release nifedipine is recommended as an alternative BP-lowering agent during pregnancy.	I	B
Up-titration of monotherapy may precede any combination drug treatment.	II	C
Combination drug treatment between labetalol, extended-release nifedipine, or α -methyldopa may be reasonable to achieve the desirable BP target after the failure of up-titrated monotherapy.	II	C
ACE inhibitors, ARBs, or direct renin inhibitors are not recommended during pregnancy.	III	C
Aspirin (100-150 mg, at bedtime, weeks 11-35) should be administered in pregnant women at high or moderate risk of pre-eclampsia.	I	A
Severe hypertension ($\geq 160/110$ mmHg) in a pregnant woman requires prompt hospital admission.	I	C
In pre-eclampsia with severe features, magnesium sulfate should be administered immediately.	I	C
HBPM can be a reasonable alternative to conventional office BP measurement to detect new-onset hypertension in women at risk for pre-eclampsia without pre-existing hypertension.	II	B
HBPM can be a reasonable alternative to conventional office BP measurement to achieve BP control in women with gestational or pre-existing hypertension.	II	B

Disciplines sportives : composante principale (adresse, puissance, mixte et endurance) et intensité de l'effort

	Skill 	Power 	Mixed 	Endurance 
LOW	Golf (buggy)	Shot putting (recreational)	Soccer (adapted)	Jogging
	Golf (18 holes walking)	Discus (recreational)	Basketball (adapted)	Long distance walking
	Table tennis (double)	Alpine skiing (recreational)	Handball (adapted)	Swimming (recreational)
	Table tennis (single)	Short distance running	Volleyball	Speed walking
MEDIUM	Shooting	Shot putting	Tennis (double)	Mid/long distance running
	Curling	Discus	Ice-Hockey	Style dancing
	Bowling	Alpine skiing	Hockey	Cycling (road)
	Sailing	Judo/karate	Rugby	Mid/long distance swimming
	Yachting	Weight lifting	Fencing	Long distance skating
HIGH	Equestrian	Wrestling	Tennis (single)	Pentathlon
		Boxing	Waterpolo	Rowing
			Soccer (competitive)	Canoeing
			Basketball (competitive)	X-country skiing
			Handball (competitive)	Biathlon
				Triathlon

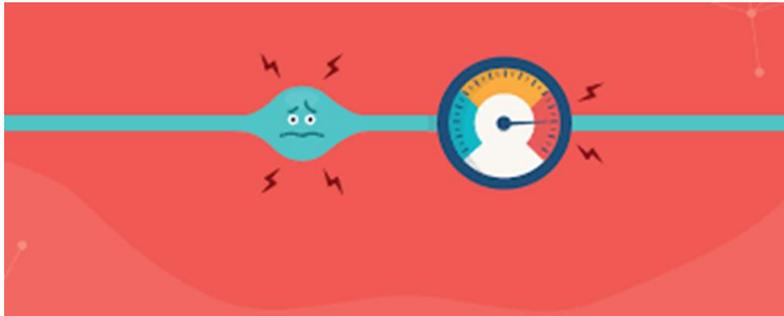


Recommendations and statements	CoR	LoE
The decision to initiate LDL-cholesterol lowering treatment, as well as treatment goals, should be based on an estimation of total CV risk, with priority given to high-risk patients.	I	A
Statin treatment is recommended in patients with hypertension and elevated CV risk.	I	A
Statin treatment at maximum tolerated dose is recommended as the first-line drug class to achieve LDL-cholesterol targets in patients with hypertension and high CV risk.	I	A
Ezetimibe can be added to maximum tolerated statin dose to attain LDL-cholesterol targets.	I	A
PCSK9-inhibitors and siRNA targeting PCSK9 may be considered in selected high-risk patients not attaining target LDL-cholesterol levels with statin/ezetimibe combination therapy.	II	A
Use of a polypill containing two BP lowering drugs and a statin for LDL-cholesterol lowering can be considered in hypertensive patients for primary prevention.	II	A

Recommendations and statements	CoR	LoE
Low-dose aspirin is not recommended for primary prevention in patients with hypertension.	III	A
Antiplatelet therapy is recommended for secondary prevention in hypertensive patients.	I	A
Use of a polypill containing low-dose aspirin can be considered in hypertensive patients for secondary prevention.	II	A

TABLE 12. When to refer a hypertensive patient to a specialist or to hospital

- 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)



2023 ESH Guidelines for the management of arterial hypertension

The Task Force for the management of arterial hypertension of the European Society of Hypertension

Endorsed by the International Society of Hypertension (ISH) and the European Renal Association (ERA)

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Apport du cardiologue dans l'HTA

- Métrologie (MAPA)
- Evaluation du risque CV
- Retentissement viscéral (cœur et artères)
- Recherche HTA secondaire
- Prise en charge de l'HTA résistante
- Prise en charge de l'urgence hypertensive CV
- Aide au traitement (médicaments, autres traitements)
- HTA et femme (CO et grossesse)
- HTA et activité sportive
- HTA et prévention I et II (statine, AAP)



Cher Confrère,

Merci de m' avoir permis de voir en consulation.

Merci!

