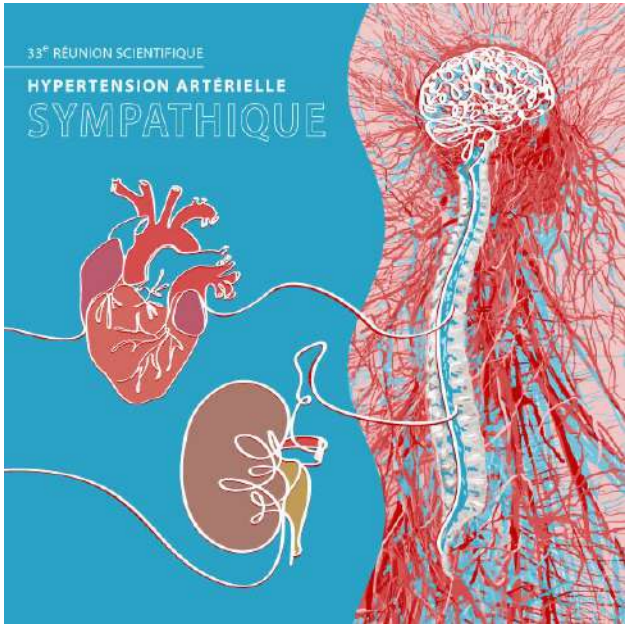
COUPS DE CŒUR 2024
RECHERCHE CLINIQUE



Alain Milot MD, MSc, FRCPC, FSVM
Professeur titulaire
Médecine interne et vasculaire
Centre des maladies vasculaires
Hôpital Saint-François d'Assise
CHU de Québec – Université Laval

UNIVERSITÉ LAVAL Faculté de médecine
CHU de Québec
Centre d'excellence des maladies vasculaires
CENTRE DE RECHERCHE CHU de Québec Université Laval
AXE SANTÉ DES POPULATIONS ET PRATIQUES OPTIMALES EN SANTÉ

Alain Milot

Aucun conflit d’interêt potentiel pour cette présentation

Objectif

Explorer les nouvelles données cliniques marquantes de l'année 2024

- diagnostic
- traitement non pharmacologique
- traitement pharmacologique
- cibles de traitement

Diagnostic

- Arm Position and Blood Pressure Readings The ARMS Crossover Randomized Clinical Trial

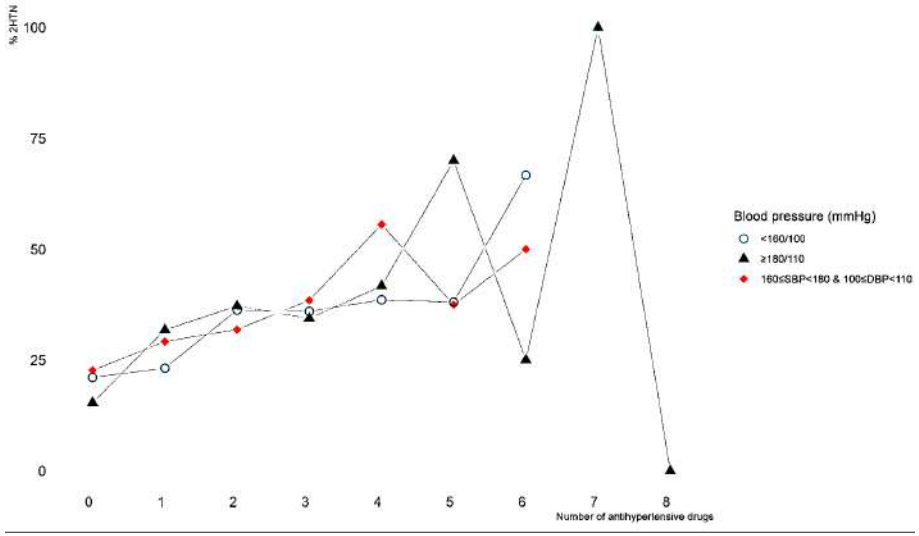
  JAMA Internal Medicine 2024;184(12):1436-1442 October

- Prevalence and Risk Factors for Secondary Hypertension in Young Adults

  Hypertension. 2024;81:2340–2349 November

Prevalence and Risk Factors for Secondary Hypertension in Young Adults HT

- 2 090 jeunes adultes âgés de 18 à 40 ans investigués dans deux *centres de référence* en France
- la prévalence d'HTA secondaire était de 30 %
- les patients âgés de 30 à 40 ans étaient plus susceptibles que ceux âgés de 18 à 30 ans
- l'HTA secondaire était plus fréquente chez
  - les femmes
  - les patients ayant un IMC ≤ 25 kg/m^2
  - les pts sans antécédant familial
  - les diabétiques
  - en présence d'hypokaliémie
  - en présence de ≥ 2 antihypertenseurs
- les causes identifiées
  - hyperaldostéronisme primaire 55%
  - hypertension rénovasculaire 18%
  - maladie rénale primaire 13%
  - phéochromocytome et paragangliome 6%
  - médicaments et drogues 5%

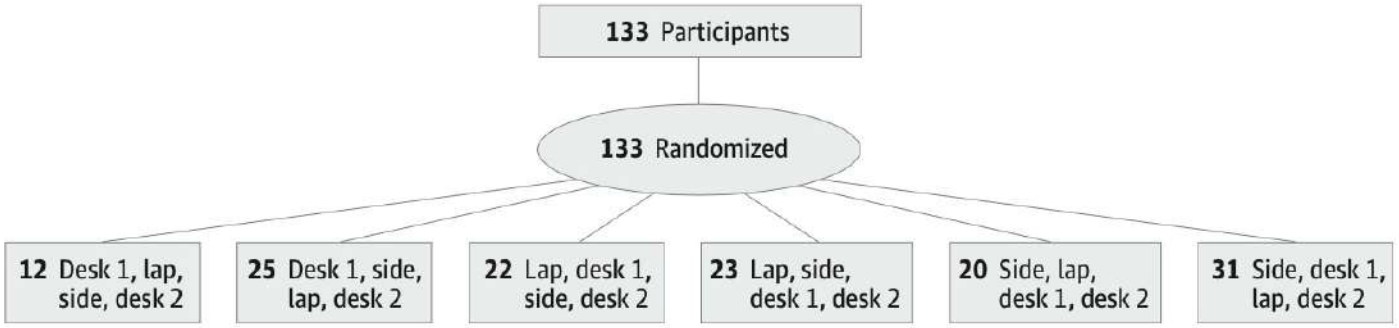


Hypertension. 2024;81:2340–2349.

Arm Position and Blood Pressure Readings The ARMS Crossover Randomized Clinical Trial

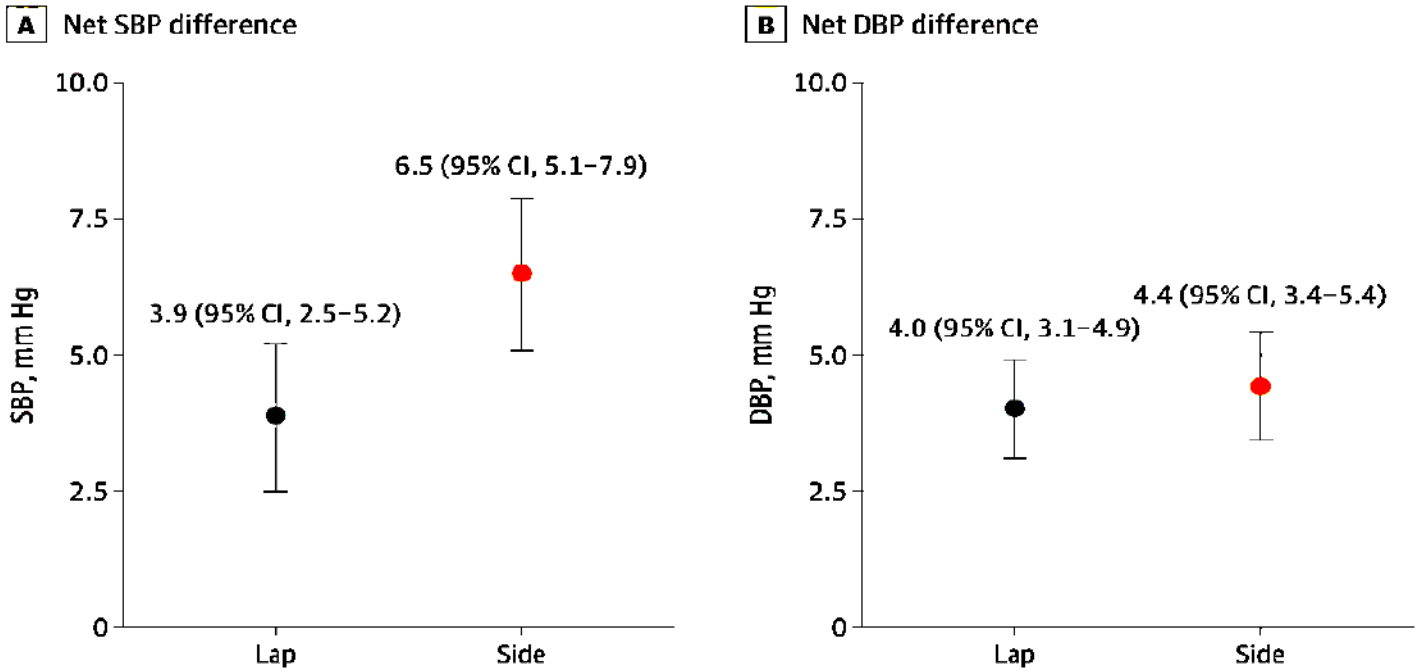
- 133 participants âge moyen de 57 ± 17 ans; 53% de femmes
- mesures de la pression artérielle au cabinet dans trois positions différentes
  - bras appuyé sur un bureau, avec le brassard au niveau du cœur (position de référence)
  - main appuyée sur les genoux
  - bras pendant sur le côté (non soutenu)

  selon les lignes directrices standard pour les mesures de la pression artérielle en cabinet



JAMA Intern Med. 2024;184(12):1436-1442

ARMS Crossover Randomized Clinical Trial



Les résultats demeuraient cohérents lorsque les patients étaient classés par pression artérielle (<130 vs ≥ 130 mmHg), IMC (<30 vs ≥ 30) et délai depuis la dernière visite médicale (<365 vs ≥ 365 jours)

JAMA Intern Med. 2024;184(12):1436-1442

Traitement non-pharmacologique

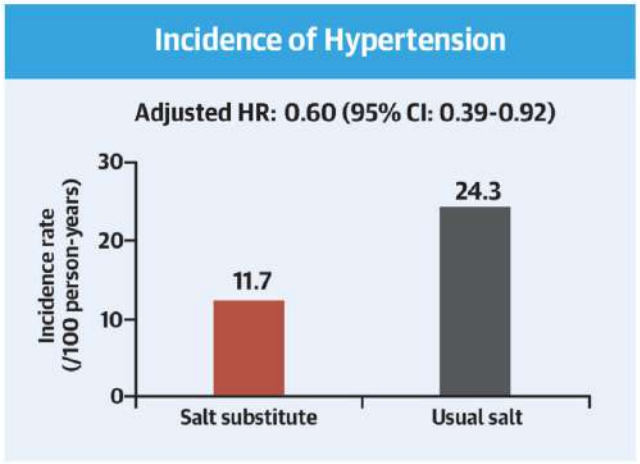
- Effect of a Salt Substitute on Incidence of Hypertension and Hypotension Among Normotensive Adults DECIDE-salt

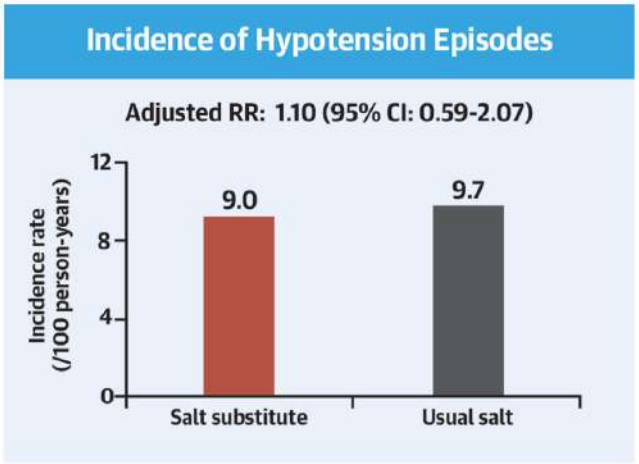
  J Am Coll Cardiol. 2024;83(7):711–722 February

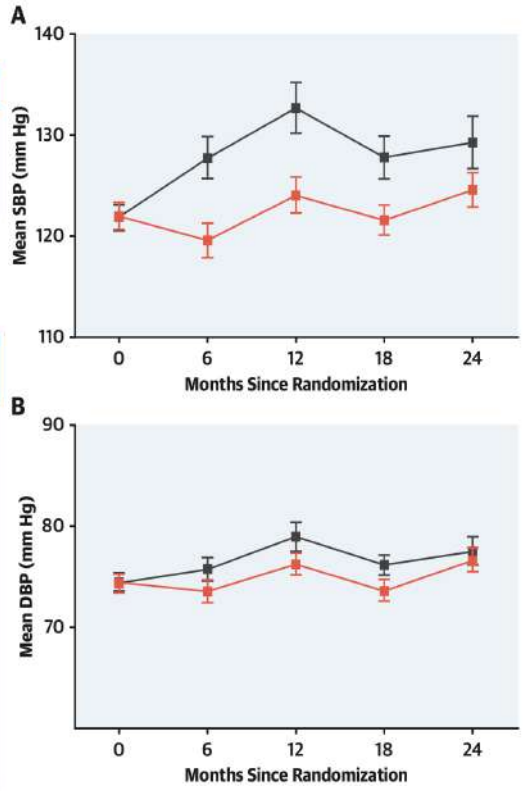
- Habitual coffee consumption and office, home, and ambulatory blood pressure: results of a 10-year prospective study « PAMELA coffee » study

  Journal of Hypertension 2024, 42:1094–1100 June

Effect of a Salt Substitute on Incidence of Hypertension and Hypotension Among Normotensive Adults DECIDE-salt





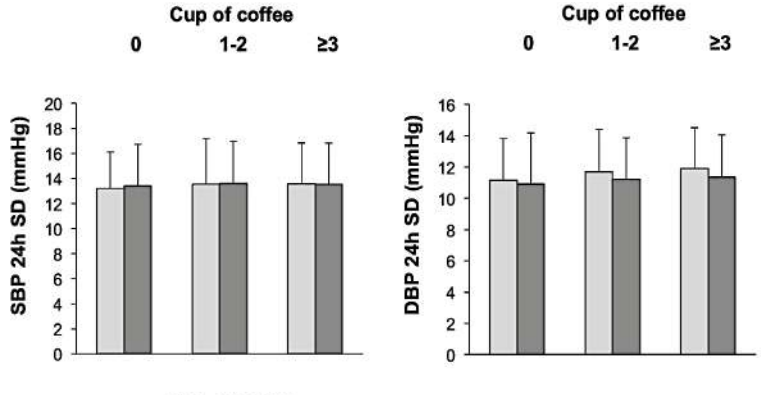


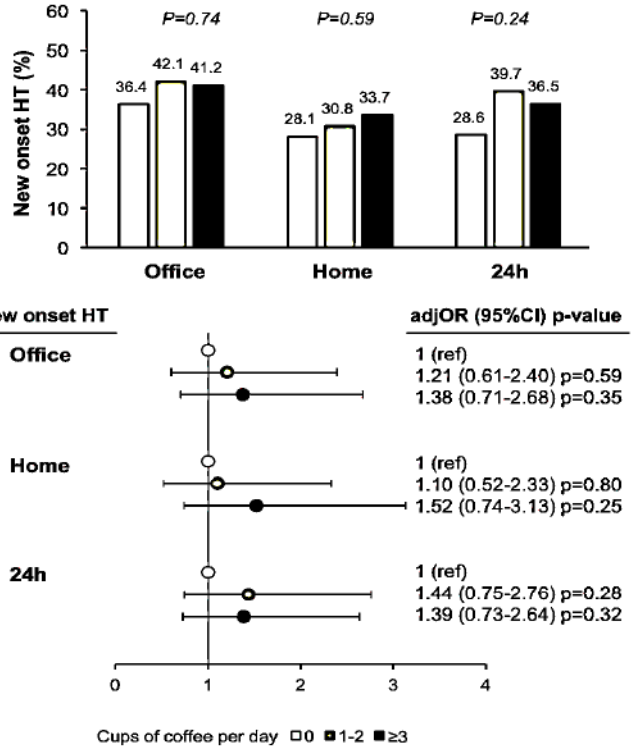
Le remplacement du sel habituel par un substitut peut réduire l'incidence de l'HTA sans augmenter les épisodes d'hypotension

J Am Coll Cardiol. 2024;83(7):711–722

Habitual coffee consumption and office, home, and ambulatory blood pressure: results of a 10-year prospective study PAMELA coffee

- 1 408 sujets recrutés dans l'étude italienne PAMELA et suivis pendant 10 ans
- catégorisés comme consommateurs de café et non-consommateurs de café auto-déclarés
- PA au bureau, à la maison et ambulatoire de 24 heures et nouveaux cas d'HTA





La consommation habituelle de café est associée à des effets neutres
sur la PA au cabinet et hors du cabinet
sur la survenue d'une HTA

Journal of Hypertension 2024, 42:1094–1100

Dénervation

09h00 à 09h30

Système nerveux autonome et dénervation rénale

Rémi Goupil – Néphrologue – Hôpital du Sacré-Coeur de Montréal

- identifier les principes physiopathologiques soutenant le traitement de l'hypertension artérielle par la dénervation rénale
- revoir les données probantes supportant la dénervation rénale
- discuter des patients chez qui la dénervation rénale pourrait être indiquée

Traitement pharmacologique
Single pill combination trio … bonanza

- Low-Dose Triple-Pill vs Standard-Care Protocols for Hypertension Treatment in Nigeria

  JAMA. 2024;332(13):1070-1079 October

- Efficacy and safety of a novel low-dose triple single-pill combination of telmisartan, amlodipine and indapamide, compared with dual combinations for treatment of hypertension GMRx2

  Lancet 2024; 404: 1536–46 October

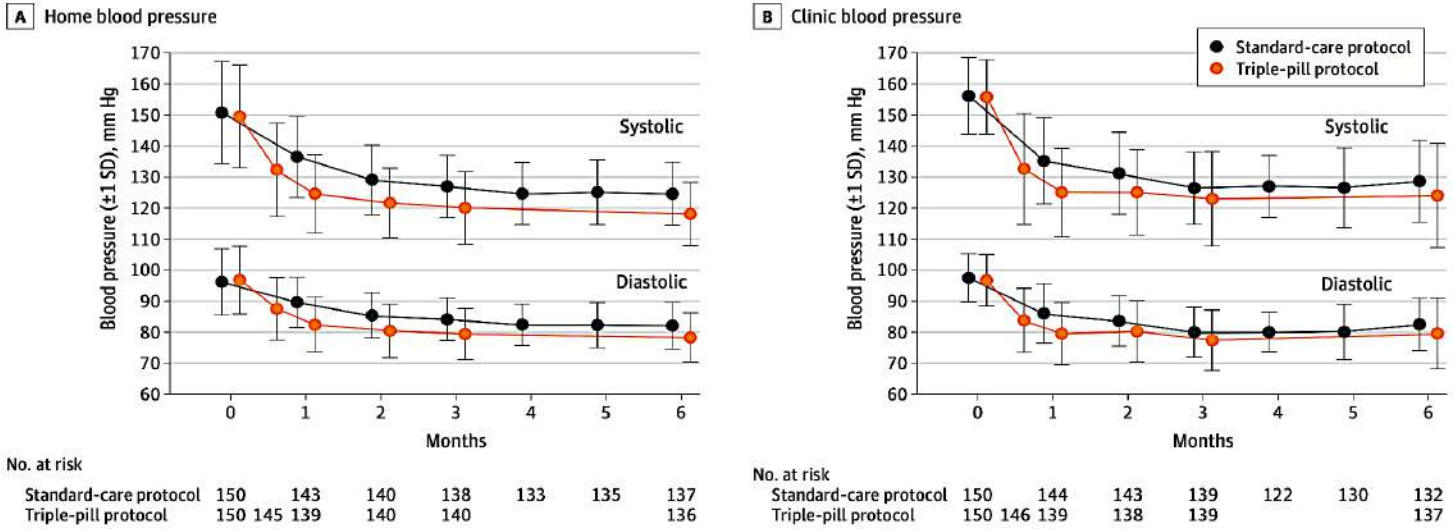
- Efficacy and Safety of a Novel Low-Dose Triple Single-Pill Combination Compared With Placebo for Initial Treatment of Hypertension GRMx2

  JACC. 2024;84(24):2393–2403 December

Low-Dose Triple-Pill vs Standard-Care Protocols for Hypertension Treatment in *Nigeria*

300 participants nigériens âgés en moyenne de 52 ans (54% de femmes) randomisés

- à un comprimé triple-pilule telmisartan, amlodipine, et indapamide à faibles doses 10/1.25/0.625 mg avec titration accélérée 20/2.5/1.25 mg puis 40/5/2.5 mg ou
- à un protocole de soins standard



JAMA. 2024;332(13):1070-1079

Low-Dose Triple-Pill vs Standard-Care Protocols for Hypertension Treatment in Nigeria

Après 6 mois de visites mensuelles …

la PAS à domicile était en moyenne 31 mm Hg inférieure dans le groupe de triple-pilule et 26 mm Hg plus basse dans le groupe de soins standard pour une différence ajustée − 5,8 mm Hg

les participants du groupe triple pilule par rapport au groupe de soins standard ont atteint une maîtrise

- de la PA clinique 82% vs 72% des cas
- de la PA à domicile (<130/80 mm Hg) 62% vs 28%

Aucun des participants n'a interrompu le traitement à l'essai en raison d'événements indésirables.

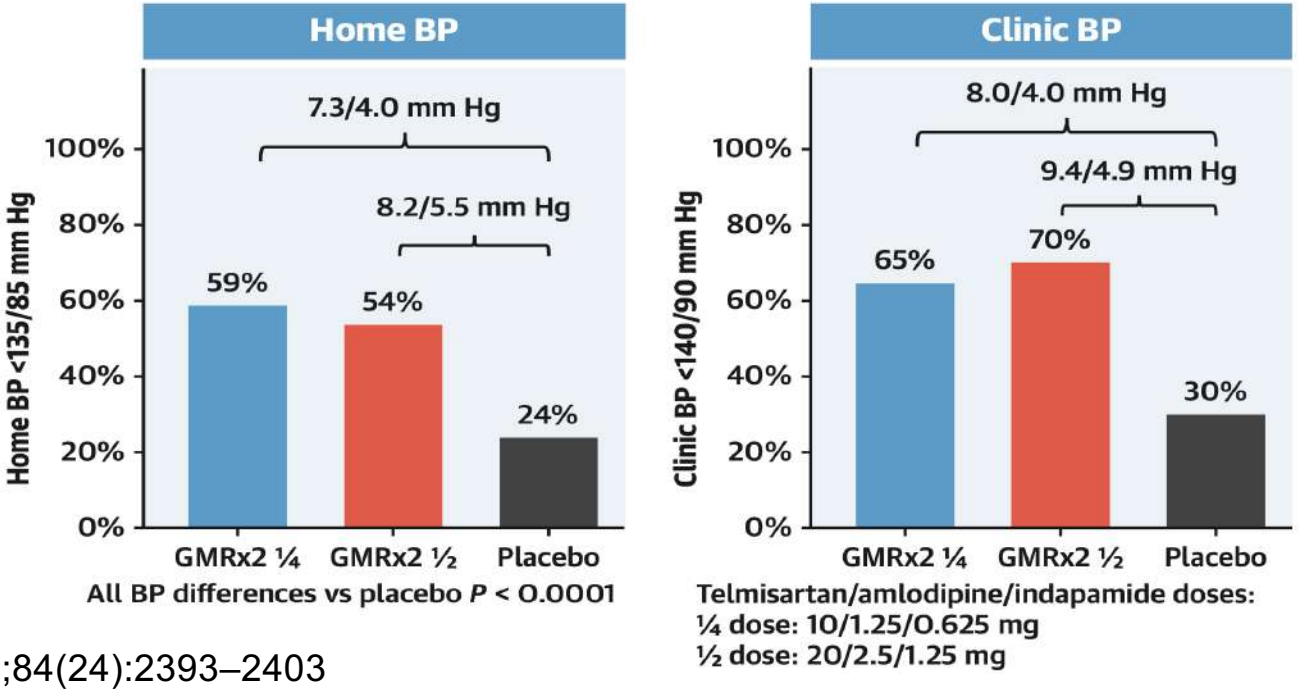
Chez les adultes noirs africains souffrant d'hypertension non maîtrisée, un protocole de triple pilule à faibles doses a permis d'obtenir une meilleure diminution et une meilleure maîtrise de la pression artérielle avec une bonne tolérance par rapport au protocole de soins standard … dans un contexte de suivi intensif

JAMA. 2024;332(13):1070-1079

Efficacy and Safety of a Novel Low-Dose Triple Single-Pill Combination Compared With Placebo for Initial Treatment of Hypertension

- essai *international*, randomisé, à double insu, contrôlé par placebo en groupes parallèles
- triple single-pill GMRx2 combination (telmisartan amlodipine indapamide) ou placebo
- 295 participants randomisés dans un ratio de 2:2:1 à GMRx2 1/4 dose, GMRx2 1/2 dose ou placebo

Baseline mean home BP 139/86 clinic BP 138/86 after placebo run-in



JACC. 2024;84(24):2393–2403

Efficacy and Safety of a Novel Low-Dose Triple Single-Pill Combination Compared With Placebo for Initial Treatment of Hypertension

TABLE 3 Treatment Discontinuation due to AEs, ARSIs, and SAE, Baseline to Week 4

	GMRx2 1/4 (n = 113)	GMRx2 1/2 (n = 119)	Placebo (n = 63)
Treatment discontinuation due to AEs	0 (0)	6 (5.1)	1 (1.6)
AESIs	14 (12.4)	21 (17.8)	6 (9.7)
Symptomatic hypotension	4 (3.5)	6 (5.1)	0 (0)
Abnormal laboratory findings[a]	9 (8.0)	12 (10.2)	2 (3.2)
Headache	2 (1.8)	2 (1.7)	4 (6.5)
Peripheral edema	1 (0.9)	0 (0)	0 (0)
At least 1 SAE	0 (0)	2 (1.7)	2 (3.2)

Dans une population internationale présentant une élévation légère à modérée de la PA, les deux versions du nouveau comprimé triple à faibles doses ont montré des réductions médicalement pertinentes de la PA et une bonne tolérabilité comparée au placebo.

JACC 2024;84(24):2393–2403

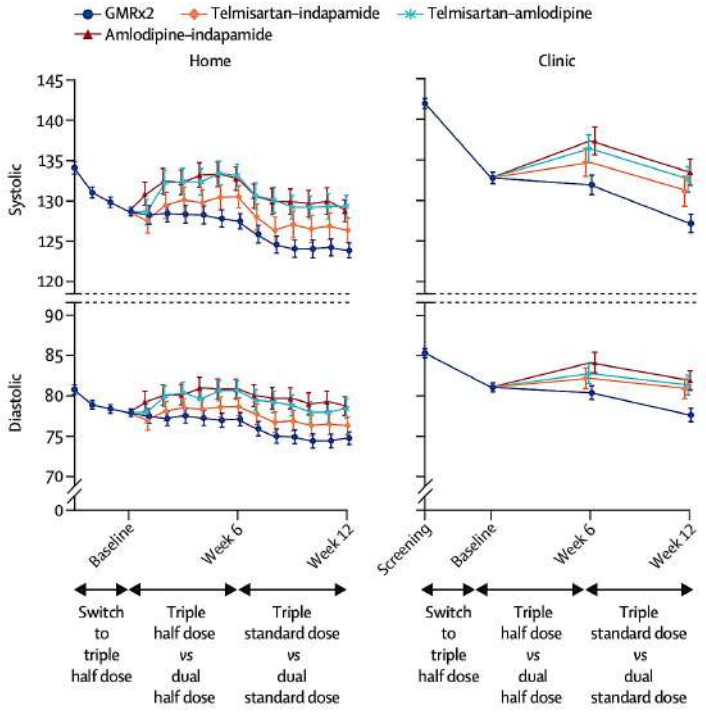
Efficacy and safety of a novel low-dose triple single-pill combination of telmisartan, amlodipine and indapamide, compared with dual combinations for treatment of HT GMRx2

- *international*, randomised, double-blind, active-controlled trial,
- adults with HT receiving 0-3 antihypertensive drugs
- screening SBP from 140–179 mm Hg (on no drugs) to 110–150 mm Hg (on three drugs)

- 1 385 participants on a 4-week active run-in with **GMRx2 triple** half dose (telmisartan 20 mg, amlodipine 2·5 mg, and indapamide 1·25 mg) then randomly allocated 2:1:1:1 to continue GMRx2 half dose or to each possible **dual combination** of components at half doses
- telmisartan 20 mg with amlodipine 2·5 mg,
- telmisartan 20 mg with indapamide 1·25 mg
- amlodipine 2·5 mg with indapamide 1·25 mg

At week 6, doses were doubled in all groups unless contraindicated based on SBP <100 mm Hg or hypotensive symptoms

Lancet 2024; 404: 1536–46



Efficacy and safety of a novel low-dose triple single-pill combination of telmisartan, amlodipine and indapamide, compared with dual combinations for treatment of HT GMRx2

The primary efficacy outcome was mean change in home SBP from baseline to week 12

	GMRx2 *vs* telmisartan–indapamide (N=827)	GMRx2 *vs* telmisartan–amlodipine (N=832)	GMRx2 *vs* amlodipine–indapamide (N=827)
Home systolic			
Week 6	−3·0 (−4·1 to −1·9)	−6·1 (−7·1 to −5·1)	−5·1 (−6·3 to −3·9)
Week 12	−2·5 (−3·7 to −1·3)	−5·4 (−6·8 to −4·1)	−4·4 (−5·8 to −3·1)
Home diastolic			
Week 6	−2·1 (−2·8 to −1·4)	−3·5 (−4·1 to −2·9)	−3·6 (−4·4 to −2·7)
Week 12	−2·1 (−3·0 to −1·2)	−3·4 (−4·1 to −2·6)	−3·6 (−4·6 to −2·6)
Clinic systolic			
Week 6	−3·5 (−5·3 to −1·7)	−5·0 (−6·7 to −3·3)	−5·4 (−7·3 to −3·4)
Week 12	−4·3 (−6·7 to −1·9)	−5·6 (−7·3 to −3·9)	−6·3 (−8·0 to −4·7)
Clinic diastolic			
Week 6	−2·3 (−3·4 to −1·2)	−2·4 (−3·4 to −1·5)	−3·8 (−4·9 to −2·7)
Week 12	−3·5 (−4·9 to −2·1)	−3·7 (−4·7 to −2·8)	−4·5 (−5·8 to −3·2)

Data are difference (95% CI). All differences in home and clinic blood pressure were p<0·0001 and all differences in clinic blood pressure were p<0·001.

Lancet 2024; 404: 1536–46

Efficacy and safety of a novel low-dose triple single-pill combination of telmisartan, amlodipine and indapamide, compared with dual combinations for treatment of HT

	Participants with blood pressure control			
	GMRx2 (N=551)	Telmisartan–indapamide (N=276)	Telmisartan–amlodipine (N=282)	Amlodipine–indapamide (N=276)
Clinic blood pressure control <140/90 mm Hg				
Week 6	346 (63%)	151 (55%)	148 (53%)	122 (44%)
Week 12	407 (74%)	167 (61%)	173 (61%)	146 (53%)
Clinic blood pressure control <130/80 mm Hg				
Week 6	167 (30%)	59 (21%)	65 (23%)	59 (21%)
Week 12	218 (40%)	76 (28%)	126 (45%)	123 (45%)
Home blood pressure control <135/85 mm Hg				
Week 6	346 (63%)	155 (56%)	74 (26%)	79 (29%)
Week 12	398 (72%)	176 (64%)	109 (39%)	91 (33%)
Home blood pressure control <130/80 mm Hg				
Week 6	247 (45%)	90 (33%)	173 (61%)	146 (53%)
Week 12	308 (56%)	121 (44%)	56 (20%)	50 (18%)

Lancet 2024; 404: 1536–46

Efficacy and safety of a novel low-dose triple single-pill combination of telmisartan, amlodipine and indapamide, compared with dual combinations for treatment of HT

The primary safety outcome was withdrawal of treatment due to an adverse event from baseline to week 12

	GMRx2 (N=551)	Telmisartan–indapamide (N=276)	Telmisartan–amlodipine (N=282)	Amlodipine–indapamide (N=276)
Treatment withdrawal due to adverse events	11 (2%)	4 (1%)	3 (1%)	4 (1%)
Adverse events of special interest	184 (34%)	75 (27%)	71 (25%)	79 (29%)
Symptomatic hypotension	32 (6%)	11 (4%)	5 (2%)	4 (1%)
Abnormal laboratory findings*	139 (25%)	59 (22%)	57 (20%)	69 (25%)
Headache	16 (3%)	8 (3%)	5 (2%)	5 (2%)
Peripheral oedema	7 (1%)	1 (0.4%)	6 (2%)	2 (<1%)
Other reason for discontinuation of trial medication	6 (1%)	0	2 (<1%)	1 (<1%)
At least one serious adverse event†	17 (3%)	7 (3%)	6 (2%)	6 (2%)

A novel low-dose SPC product of telmisartan, amlodipine, and indapamide provided clinically meaningful improvements in blood pressure reduction compared with dual combinations and was well tolerated.

Lancet 2024; 404: 1536–46

Cibles de traitement

- Lowering systolic blood pressure to less than 120 mm Hg vs less than 140 mm Hg in patients with high cardiovascular risk with and without diabetes or previous stroke ESPRIT

  Lancet 2024; 404: 245–55 July

- Intensive Blood-Pressure Control in Patients with Type 2 Diabetes BPROAD

  NEJM 2024 Nov 16. Online ahead of print. November

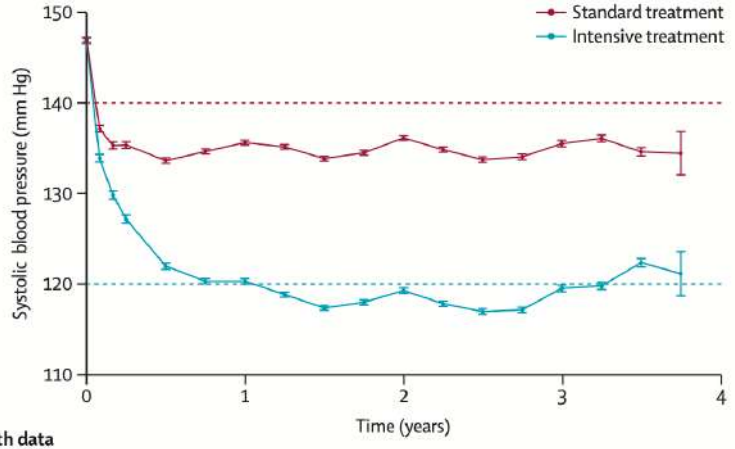
- *Optimal Antihypertensive Systolic Blood Pressure: A Systematic Review and Meta-Analysis*

  Hypertension 2024 December;81:2329–2339

Lowering systolic blood pressure to less than 120 mm Hg vs less than 140 mm Hg in patients with high cardiovascular risk with and without diabetes or previous stroke ESPRIT

- open-label, blinded-outcome, randomised controlled trial,
- 11 255 participants mean age 65 y with high cardiovascular risk enrolled from 116 hospitals or communities in China
  - 4359 with diabetes (39%)
  - 3022 with previous stroke
- assignment to treatment
  - intensive targeting standard office SBP <120 mm Hg
  - standard targeting <140 mm Hg

- mean systolic blood pressure throughout the follow-up was
  - 119 mm Hg in the intensive group
  - 135 mm Hg in the standard group

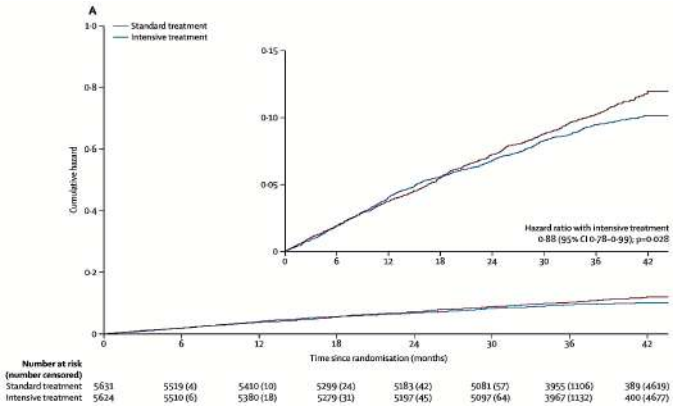


Number with data								
Standard treatment	5631	5077	5283	5223	5081	4791	4180	3226
Intensive treatment	5624	5029	5276	5205	5075	4832	4211	3250
Mean number of medications								
Standard treatment	1·7	2·0	2·0	2·0	2·0	2·0	2·0	2·1
Intensive treatment	1·7	2·5	2·6	2·7	2·7	2·8	2·8	2·8

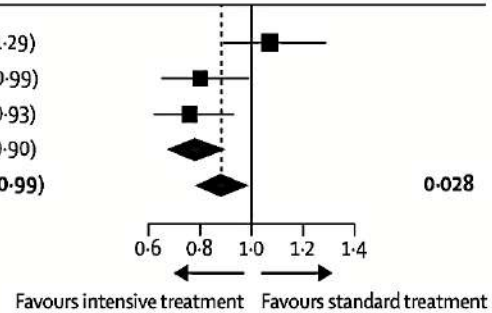
Lancet 2024; 404: 245–55

Lowering systolic blood pressure to less than 120 mm Hg vs less than 140 mm Hg in patients with high cardiovascular risk with and without diabetes or previous stroke ESPRIT

During a median of 3.4 years of follow-up, the primary outcome* event occurred in 547 (9.7%) participants in the intensive treatment group and 623 (11.1%) in the standard treatment group (HR 0.88, 95% CI 0.78–0.99; p=0.028).



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



There was no heterogeneity of effects by diabetes status, duration of diabetes, or history of stroke.

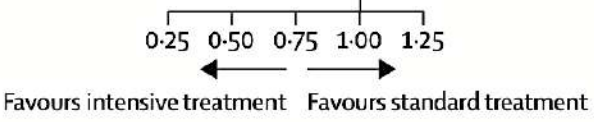
* Composite of myocardial infarction, coronary or non-coronary revascularisation, hospitalisation or emergency room visits for new-onset heart failure or acute decompensated heart failure, stroke, or death from cardiovascular causes

Lancet 2024; 404: 245–55

Lowering systolic blood pressure to less than 120 mm Hg vs less than 140 mm Hg in patients with high cardiovascular risk with and without diabetes or previous stroke ESPRIT

During a median of 3.4 years of follow-up, the primary outcome* event occurred in 547 (9.7%) participants in the intensive treatment group and 623 (11.1%) in the standard treatment group (HR 0.88, 95% CI 0.78–0.99; p=0.028).

	Intensive treatment (n=5624)	Standard treatment (n=5631)	Hazard ratio (95% CI)	p value
Myocardial infarction	82 (1·5%)	91 (1·6%)	0·90 (0·67–1·22)	0·50
Stroke	262 (4·7%)	303 (5·4%)	0·86 (0·73–1·02)	0·083
Heart failure	57 (1·0%)	78 (1·4%)	0·73 (0·52–1·03)	0·072
Death from cardiovascular causes	59 (1·1%)	97 (1·7%)	0·61 (0·44–0·84)	0·0027
Major vascular events without revascularisation	**417 (7·4%)**	**495 (8·8%)**	**0·84 (0·74–0·96)**	**0·010**
Coronary revascularisation	183 (3·3%)	182 (3·2%)	1·01 (0·82–1·24)	0·94
Non-coronary revascularisation	23 (0·4%)	22 (0·4%)	1·05 (0·58–1·88)	0·88
Major vascular events (primary outcome)	**547 (9·7%)**	**623 (11·1%)**	**0·88 (0·78–0·99)**	**0·028**
Death from any cause	160 (2·8%)	203 (3·6%)	0·79 (0·64–0·97)	0·025
Primary outcome or death from any cause	**637 (11·3%)**	**714 (12·7%)**	**0·89 (0·80–0·99)**	**0·039**



Lancet 2024; 404: 245–55

Lowering systolic blood pressure to less than 120 mm Hg vs less than 140 mm Hg in patients with high cardiovascular risk with and without diabetes or previous stroke ESPRIT

	Intensive treatment (n=5624)	Standard treatment (n=5631)	Hazard ratio (95% CI)	p value
Serious adverse event*	2366 (42·1%)	2378 (42·2%)	1·01 (0·95–1·07)	0·78
Conditions of interest				
Serious adverse event only				
Hypotension†	7 (0·1%)	3 (0·1%)	2·33 (0·60–9·02)	0·22
Syncope‡	24 (0·4%)	8 (0·1%)	3·00 (1·35–6·68)	0·0071
Electrolyte abnormality	9 (0·2%)	13 (0·2%)	0·69 (0·30–1·62)	0·40
Injurious fall§	29 (0·5%)	20 (0·4%)	1·45 (0·82–2·57)	0·20
Acute kidney injury¶	3 (0·1%)	2	1·50 (0·25–8·99)	0·66
Emergency room visit or serious adverse event				
Hypotension†	17 (0·3%)	5 (0·1%)	3·40 (1·26–9·22)	0·016
Syncope‡	26 (0·5%)	12 (0·2%)	2·17 (1·09–4·30)	0·027
Electrolyte abnormality	10 (0·2%)	13 (0·2%)	0·77 (0·34–1·76)	0·53
Injurious fall§	40 (0·7%)	33 (0·6%)	1·21 (0·77–1·92)	0·41
Acute kidney injury¶	3 (0·1%)	2	1·50 (0·25–8·99)	0·66
Monitored electrolyte disturbances‖				
Serum sodium <130 mmol/L	92 (1·6%)	60 (1·1%)	1·54 (1·11–2·14)	0·0090
Serum sodium >150 mmol/L	15 (0·3%)	21 (0·4%)	0·72 (0·37–1·39)	0·32
Serum potassium <3·0 mmol/L	97 (1·7%)	91 (1·6%)	1·07 (0·80–1·43)	0·64
Serum potassium >5·5 mmol/L	105 (1·9%)	98 (1·7%)	1·07 (0·82–1·42)	0·61

For hypertensive patients at high cardiovascular risk, regardless of the status of diabetes or history of stroke, the treatment strategy of targeting SBP <120 mm Hg, as compared with that of <140 mm Hg, prevents major vascular events, with minor excess risk.
Lancet 2024; 404: 245–55

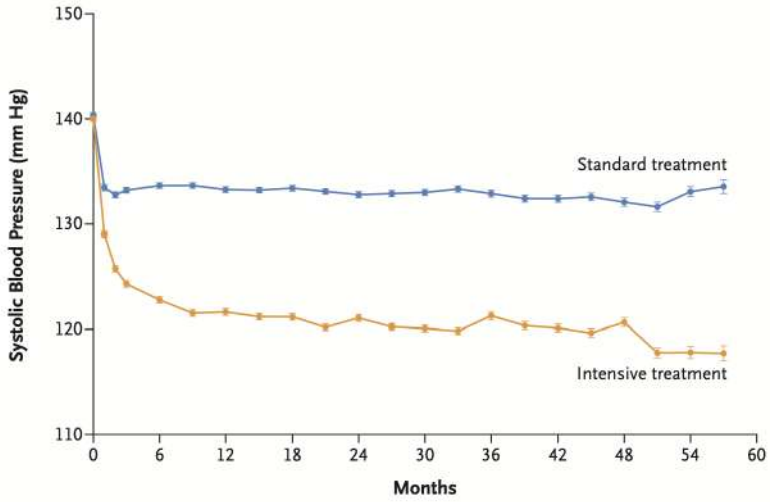
Intensive Blood-Pressure Control in Patients with Type 2 Diabetes BPROAD ... 15 ans après ACCORD

- patients 50 years of age or older with type 2 diabetes, elevated systolic blood pressure, and an increased risk of cardiovascular disease at 145 clinical sites across China

- 12 821 patients randomly assigned to receive
  - intensive treatment targeting a SBP <120 mm Hg
  - standard treatment targeting a SBP <140 mm Hg

  for up to 5 years

- At 1 year of follow-up, the mean SBP was
  - 122 mm Hg in intensive
  - 133 mm Hg in standard

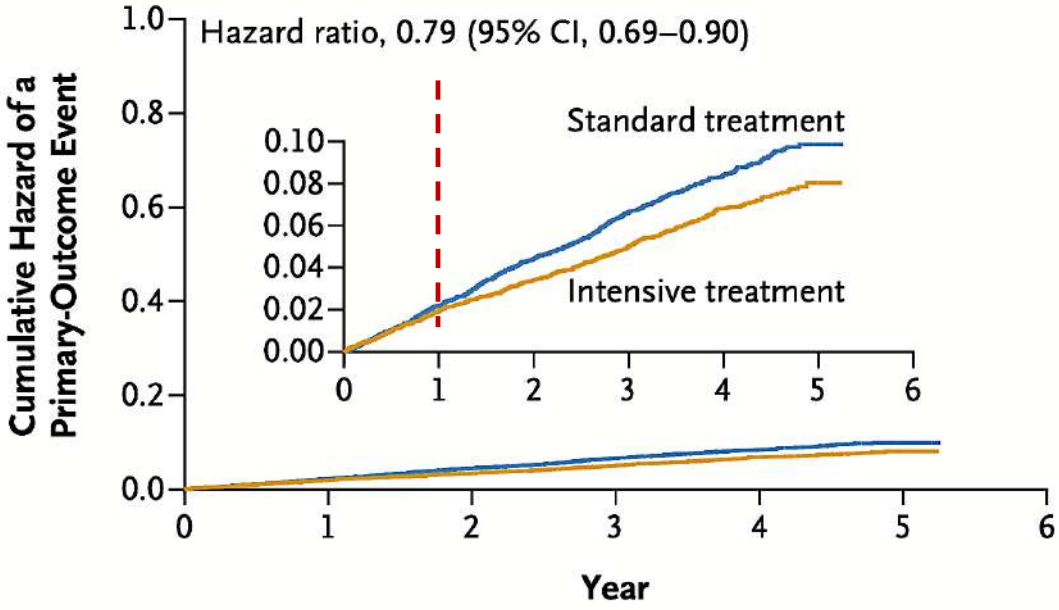


No. with Data										
Standard treatment	6407	5885	5663	5555	5257	4535	4091	3550	3187	1597
Intensive treatment	6414	5858	5612	5474	5244	4541	4119	3573	3198	1622
Mean No. of Medications Prescribed										
Standard treatment	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3
Intensive treatment	1.7	2.0	2.1	2.1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

NEJM 2024 Nov 16. doi: 10.1056/NEJMoa2412006. Online ahead of print.

Intensive Blood-Pressure Control in Patients with Type 2 Diabetes BPROAD

During a median follow-up of 4.2 years



No. at Risk

Standard treatment	6407	6087	5814	4626	3674	132
Intensive treatment	6414	6092	5871	4692	3738	112

NEJM 2024 Nov 16. doi: 10.1056/NEJMoa2412006. Online ahead of print.

Intensive Blood-Pressure Control in Patients with Type 2 Diabetes BPROAD

During a median follow-up of 4.2 years

Outcome	Intensive Treatment (N = 6414)		Standard Treatment (N = 6407)		Hazard Ratio (95% CI)†	P Value†
	No. of Events	Incidence Rate	No. of Events	Incidence Rate		
		no. of events/100 person-yr		*no. of events/100 person-yr*		
Primary outcome: nonfatal stroke, nonfatal MI, treatment or hospitalization for heart failure, or death from cardiovascular causes	393	1.65 (1.50–1.82)	492	2.09 (1.91–2.28)	0.79 (0.69–0.90)	<0.001
Secondary outcomes						
Fatal or nonfatal MI	68	0.28 (0.22–0.35)	81	0.33 (0.27–0.41)	0.84 (0.60–1.16)	—
Fatal or nonfatal stroke	284	1.19 (1.06–1.33)	356	1.50 (1.35–1.66)	0.79 (0.67–0.92)	—
Treatment or hospitalization for heart failure	31	0.13 (0.09–0.18)	46	0.19 (0.14–0.25)	0.66 (0.41–1.04)	—
Death from cardiovascular causes	60	0.24 (0.19–0.31)	79	0.32 (0.26–0.40)	0.76 (0.55–1.06)	—
Death from any cause	169	0.69 (0.59–0.80)	179	0.73 (0.63–0.84)	0.95 (0.77–1.17)	—
Primary-outcome event or death from any cause	493	2.07 (1.90–2.26)	584	2.48 (2.28–2.69)	0.83 (0.74–0.94)	—
CKD outcomes						
CKD progression	24	1.61 (1.08–2.41)	16	1.11 (0.68–1.80)	1.36 (0.71–2.59)	—
CKD development	232	1.14 (1.00–1.29)	214	1.05 (0.92–1.20)	1.11 (0.92–1.34)	—
Incident albuminuria	554	11.29 (10.39–12.27)	648	13.84 (12.81–14.95)	0.87 (0.77–0.97)	—

NEJM 2024 Nov 16. doi: 10.1056/NEJMoa2412006. Online ahead of print.

Intensive Blood-Pressure Control in Patients with Type 2 Diabetes BPROAD

Table 3. Adverse Events.*

Outcome	Intensive Treatment (N=6414)		Standard Treatment (N=6407)		Hazard Ratio (95% CI)	P Value
	No. of Events	Percentage of Participants	No. of Events	Percentage of Participants		
Serious adverse event†	2340	36.5	2328	36.3	1.00 (0.94–1.06)	0.96
Conditions of interest‡						
Arrhythmia	69	1.1	68	1.1	1.01 (0.72–1.41)	0.95
Electrolyte abnormality	36	0.6	35	0.6	1.03 (0.65–1.64)	0.91
Injurious fall	65	1.0	61	1.0	1.06 (0.75–1.51)	0.74
Symptomatic hypotension	8	0.1	1	<0.1	7.92 (0.99–63.34)	0.05
Syncope	10	0.2	10	0.2	1.00 (0.41–2.39)	0.99
Acute renal failure	4	0.1	5	0.1	0.79 (0.21–2.95)	0.73
Clinical safety alerts§						
Serum sodium <130 mmol/liter	46	0.7	47	0.8	0.97 (0.65–1.46)	0.89
Serum sodium >150 mmol/liter	22	0.4	25	0.4	0.88 (0.49–1.56)	0.65
Serum potassium <3.0 mmol/liter	32	0.5	33	0.5	0.97 (0.60–1.58)	0.90
Serum potassium >5.5 mmol/liter	177	2.8	125	2.0	1.41 (1.12–1.77)	0.003

9 / 12 821 ! …

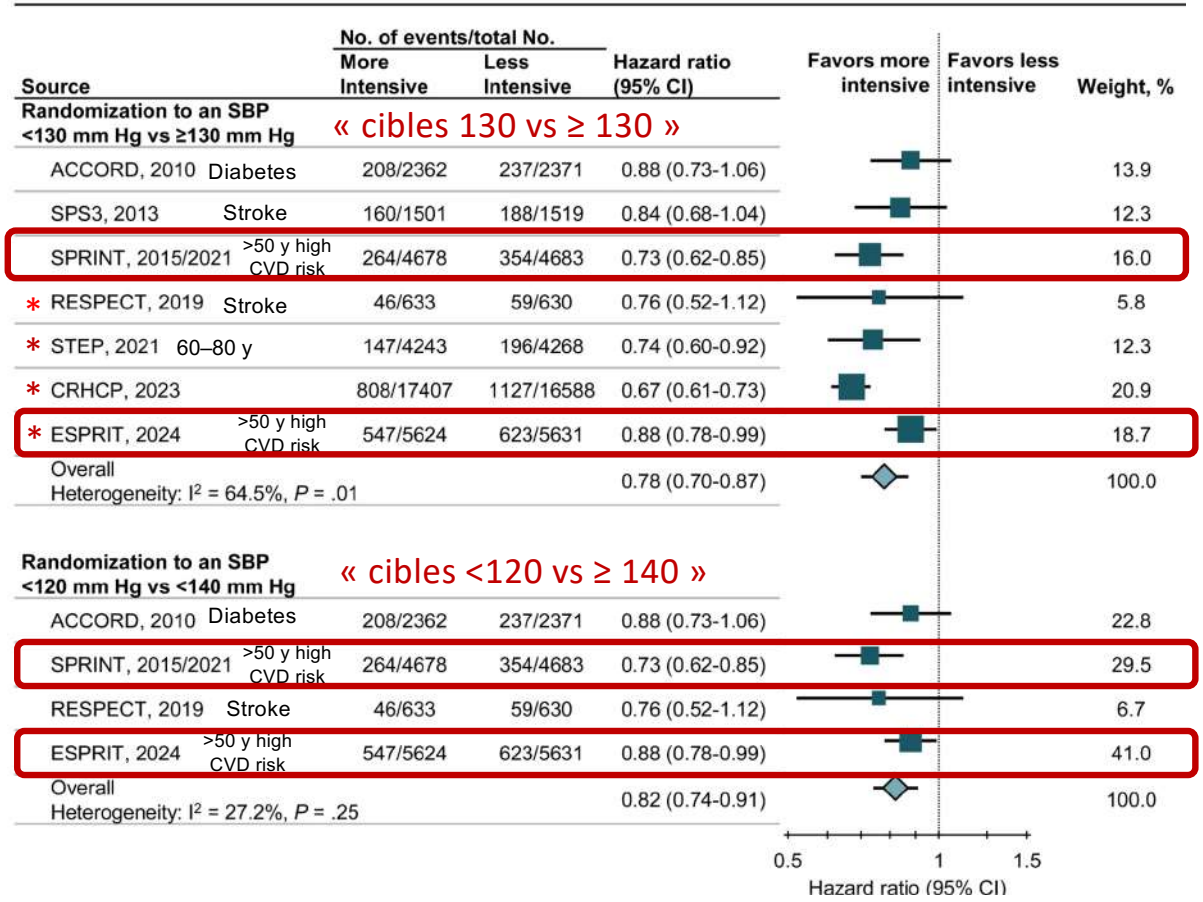
“quelques” patients n’ont peut-être pas atteint les cibles de traitement intensif …

Among patients with type 2 diabetes, the incidence of major cardiovascular events was significantly lower with intensive treatment targeting a SBP <120 than with standard treatment targeting a SBP <140 mm Hg.

NEJM 2024 Nov 16. doi: 10.1056/NEJMoa2412006. Online ahead of print.

Optimal Antihypertensive Systolic Blood Pressure: A Systematic Review and Meta-Analysis

excluant BPROAD



Hypertension 2024 November;81:2329–2339

Optimal Antihypertensive Systolic Blood Pressure: A Systematic Review and Meta-Analysis

« cibles 130 vs ≥ 130 » « cibles <120 vs ≥ 140 »

Trial outcomes and adverse events	No. of trials	No./total No.	Hazard ratio (95% CI)	No. of trials	No./total No.	Hazard ratio (95% CI)
Issues CV						
Stroke	7	1219/36 448 vs 1620/35 690	0.74 (0.66–0.84)	4	406/13 297 vs 495/13 315	0.81 (0.70–0.94)
Coronary heart disease	7	638/36 448 vs 756/35 690	0.83 (0.75–0.92)	4	442/13 297 vs 505/13 315	0.87 (0.76–1.00)
Heart failure	5	258/34 314 vs 358/33 541	0.69 (0.55–0.87)	3	208/12 664 vs 273/12 685	0.76 (0.60–0.97)
Cardiovascular mortality	6	414/35 815 vs 561/35 060	0.73 (0.61–0.86)	3	160/12 664 vs 226/12 685	0.72 (0.50–1.05)
Evénements adverses NNH			NNH (95% CI)			NNH (95% CI)
Hypotension	6	642/35 815 vs 359/35 060	508 (309–1425)	3	168/12 664 vs 83/12 685	602 (309–11 890)
Syncope	7	279/36 448 vs 188/35 690	1701 (991–5999)	4	190/13 297 vs 117/13 315	1005 (588–3467)
Injurious falls	4	460/29 210 vs 419/28 421	2941 (1479–258 938)	2	364/10 302 vs 337/10 314	1979 (829–5134)
Electrolyte abnormality	5	277/30 704 vs 233/29 903	3222 (1150–4013)	4	189/13 297 vs 141/13 315	1948 (797–4380)
Acute kidney injury or acute renal failure	5	276/17 540 vs 193/17 583	1657 (693–4235)	4	264/13 297 vs 180/13 315	984 (439–4096)

N.B.
PAS atteintes en moyenne 119-122 avec différentes méthodes de mesure

Cibler un PAS <130 mm Hg réduit considérablement les risques de MCV majeures et de mortalité toutes causes. Les résultats soutiennent également une cible de PAS de <120 mm Hg, basée sur un plus petit nombre d'essais.

Hypertension 2024 December;81:2329–2339

Meilleure étude toutes catégories ...

- ARMS Crossover Randomized Clinical Trial ?

  JAMA Internal Medicine 2024 Oct;184(12):1436-1442

- « PAMELA coffee » study ?

  Journal of Hypertension 2024 June;42:1094–1100

- Novel low-dose triple single-pill combination compared with dual combinations GMRx2 ?

  Lancet 2024; 404: 1536–46

- *Optimal Antihypertensive Systolic Blood Pressure: A Systematic Review and Meta-Analysis*

  Hypertension. 2024;81:2329–2339

Mentions honorables

- Diuretic Comparison Project … saga

- Guides de pratique / mises au point

Traitement pharmacologique
Diuretic Comparison Project … saga

Chlorthalidone vs Hydrochlorothiazide for Hypertension – Cardiovascular Events

Outcome	Chlorthalidone (N=6756)	Hydrochlorothiazide (N=6767)	Hazard Ratio (95% CI)†
Primary composite outcome — no. (%)‡	702 (10.4)	675 (10.0)	1.04 (0.94–1.16)§
Secondary outcomes: components of the primary outcome — no. (%)			
MI	142 (2.1)	140 (2.1)	1.02 (0.80–1.28)
Stroke	83 (1.2)	83 (1.2)	1.00 (0.74–1.36)
Hospitalization due to heart failure	242 (3.6)	232 (3.4)	1.04 (0.87–1.25)
Unstable angina leading to urgent coronary revascularization	20 (0.3)	13 (0.2)	1.54 (0.77–3.10)
Non–cancer-related death	359 (5.3)	354 (5.2)	1.01 (0.88–1.17)
Death from any cause — no. (%)	446 (6.6)	448 (6.6)	1.00 (0.87–1.13)

N Engl J Med 2022; 387:2401

Aucune différence entre les groupes au niveau des issues cardiovasculaires majeures et de la mortalité

Secondary Analysis

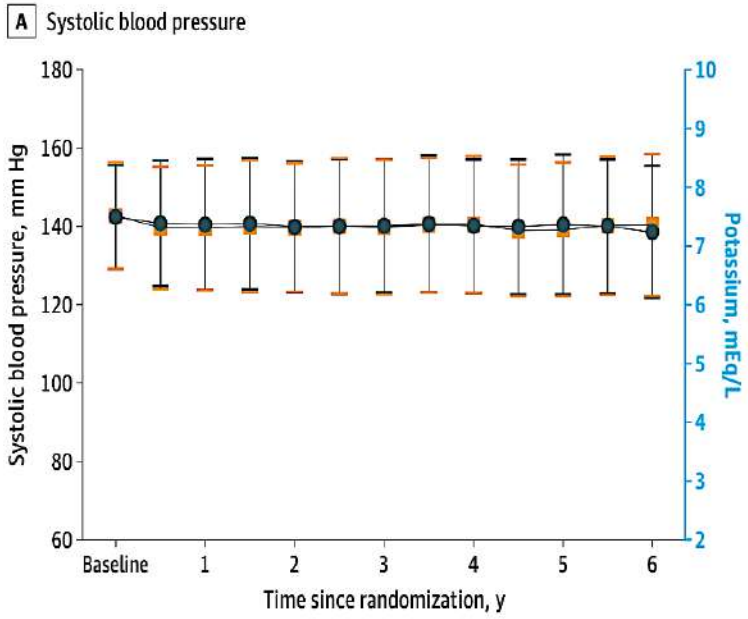
- Chlorthalidone vs Hydrochlorothiazide and Kidney Outcomes in Patients With Hypertension

  JAMA Network Open. 2024;7(12):e2449576 December

Chlorthalidone vs Hydrochlorothiazide and Kidney Outcomes in Patients With Hypertension

Plusieurs études observationnelles récentes comparant la chlorthalidone à l'hydrochlorothiazide ont suggéré un risque accru de lésion rénale aiguë et de progression de la maladie rénale avec la chlorthalidone par rapport à l'hydrochlorothiazide (*JAMA Intern Med* 2020; 180:542 et *JAMA Network Open* 2021;4:e2123365)

- essai clinique randomisé comparant la chlorthalidone et l'hydrochlorothiazide dans les établissements d'anciens combattants aux USA
- 12 265 participants ayant une mesure de créatinine de base et ≥ 1 mesures au suivi
- âge médian de 71 (69-75) ans (3.2% de femmes…)
- eGFR médian de 71 (59-85) mL/min/1.73 m^2
- la durée moyenne de l'étude était de 3,9 ans



La maîtise de l'HTA était équivalente entre les groupes chlorthalidone et hydrochlorothiazide

- au début 143 vs 142 mm Hg
- après 2,4 ans 140 vs 140 mm Hg

JAMA Network Open. 2024;7(12):e2449576.

Chlorthalidone vs Hydrochlorothiazide and Kidney Outcomes in Patients With Hypertension

The main kidney outcome was CKD progression, defined as doubling of serum creatinine level from baseline, a terminal estimated glomerular filtration rate (eGFR) less than 15 mL/min or dialysis initiation

Table 2. Primary and Exploratory Composite Kidney Outcomes by Treatment

Outcome	No. (%) of patients with outcome		Unadjusted[a]		Adjusted[b]	
	Chlorthalidone group (n = 6118)	Hydrochlorothiazide group (n = 6147)	HR (95% CI)	*P* value	HR (95% CI)	Log-rank *P* value
Primary composite outcome 1[c]	369 (6.0)	396 (6.4)	0.94 (0.81-1.08)	.37	0.96 (0.83-1.11)	.57
Exploratory composite outcome 2[d] *	778 (12.7)	818 (13.3)	0.96 (0.87-1.06)	.39	0.98 (0.88-1.08)	.63
Outcome components						
Doubling of baseline serum creatinine level	331 (5.4)	353 (5.7)	0.94 (0.81-1.10)	.46	0.95 (0.82-1.11)	.52
eGFR decreased ≥40%	746 (12.2)	787 (12.8)	0.96 (0.86-1.06)	.37	0.97 (0.87-1.07)	.52
eGFR<15 mL/min/1.73 m^2	255 (4.2)	255 (4.2)	1.01 (0.85-1.20)	.93	1.06 (0.89-1.27)	.50
Dialysis initiation	19 (0.3)	17 (0.3)	1.13 (0.59-2.17)	.72	1.13 (0.59-2.18)	.71

* 40% or greater reduction of eGFR was substituted for doubling of creatinine

JAMA Network Open. 2024;7(12):e2449576.

Chlorthalidone vs Hydrochlorothiazide and Kidney Outcomes in Patients With Hypertension

Table 3. Other Kidney and Safety Outcomes by Treatment

Outcome	No. (%) of patients[a]		*P* value
	Chlorthalidone group (n = 6118)	Hydrochlorothiazide group (n = 6147)	
Other renal outcomes			
Yearly change in eGFR slope, mean (SD), mL/min/1.73 m^2	−1.0 (7.9)	−1.1 (8.9)	.18[b]
Incident CKD	961/4520 (21.3)	939/4518 (20.8)	.59
Adverse outcomes			
Hospitalization for acute kidney injury	391 (6.4)	379 (6.2)	.63
Hypokalemia	545 (8.9)	426 (6.9)	<.001
Primary cause of hospitalization	213 (3.5)	178 (2.9)	.07
Potassium <3.1 mEq/L	400 (6.5)	293 (4.8)	<.001

Considérant les issues réanles, la chlorthalidone n'était pas supérieure à l'hydrochlorothiazide mais était associée à un risque accru d'hypokaliémie.
Compte tenu de ces résultats, les cliniciens devraient se sentir confiants de prescrire l'un ou l'autre de ces agents pour traiter de l'hypertension et prévenir les complications rénales.

JAMA Network Open. 2024;7(12):e2449576.

Guides de pratique / mises au point

- The Management of Elevated Blood Pressure in the Acute Care Setting: A Scientific Statement From the American Heart Association

  Hypertension. 2024;81:e94–e106. August

- Renal Denervation for the Treatment of Hypertension: A Scientific Statement From the American Heart Association

  Hypertension. 2024;81:e135–e148. October

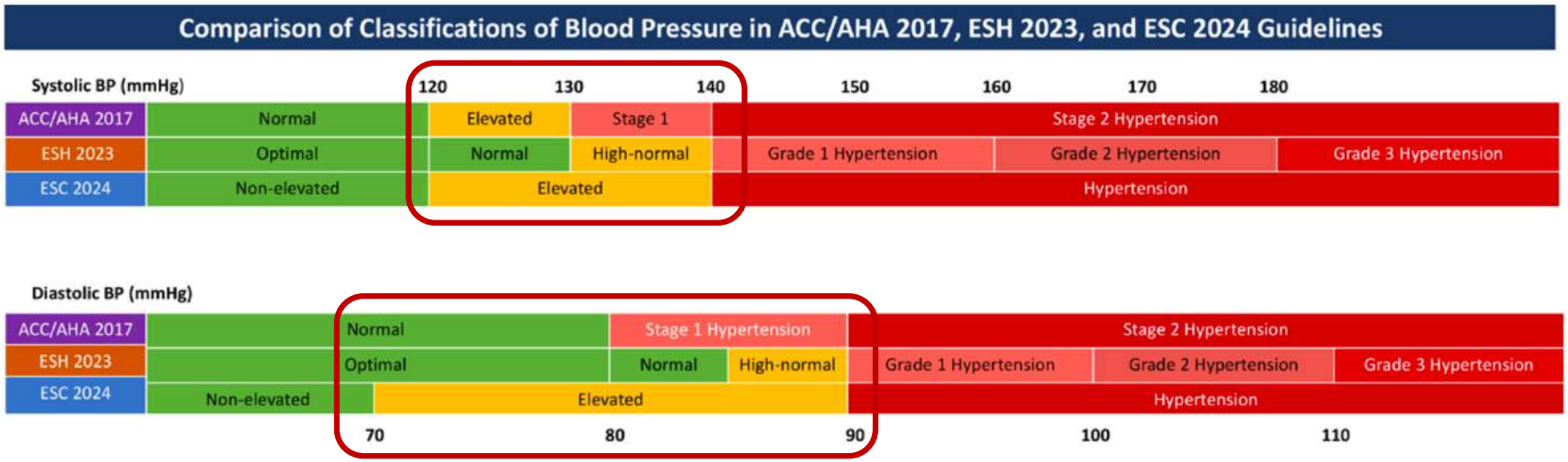
- 2024 ESC Guidelines for the Management of Elevated Blood Pressure and Hypertension: Developed by the Task Force on the Management of Elevated Blood Pressure and Hypertension of the European Society of Cardiology

  Eur Heart J. 2024;45:3912–4018 October

- Innovations in blood pressure measurement and reporting technology: International Society of Hypertension position paper

  J Hypertens 42:1874–1888 November

2024 ESC Guidelines for the Management of Elevated Blood Pressure and Hypertension



Eur Heart J. 2024;45:3912–4018