

Management of Hypertension in special groups

BY

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AGENDA

- SPECIAL GROUPS
- SPECIFIC DRUGS FOR SPECIAL GROUPS
- TARGET BP FOR SPECIAL GROUPS:
 - *ESC 2013
 - *JNC 7
 - *JNC 8

SPECIAL GROUPS

- **Masked & White coated HTN**
- **Elderly**
- **Women**
- **DM**
- **CKD**
- **Cerebrovascular Disease**
- **Heart Disease**
- **PVD**
- **OSAS**
- **Sexual Dysfunction**
- **Peri-operative HTN**
- **Resistant HTN**
- **Secondary HTN**
- **HTN urgency & emergency**



A 3D rendered scene featuring a dark, reflective grid floor. In the foreground, there are several large, square tiles in shades of blue and grey. Two highly reflective, metallic spheres are positioned on the grid, one in the upper left and one in the lower right. The text "Special Groups" is overlaid in the center in a red, outlined font.

Special Groups

Condition	Drug
Asymptomatic organ damage	
LVH	ACE inhibitor, calcium antagonist, ARB
Asymptomatic atherosclerosis	Calcium antagonist, ACE inhibitor
Microalbuminuria	ACE inhibitor, ARB
Renal dysfunction	ACE inhibitor, ARB
Clinical CV event	
Previous stroke	Any agent effectively lowering BP
Previous myocardial infarction	BB, ACE inhibitor, ARB
Angina pectoris	BB, calcium antagonist
Heart failure	Diuretic, BB, ACE inhibitor, ARB, mineralocorticoid receptor antagonists
Aortic aneurysm	BB
Atrial fibrillation, prevention	Consider ARB, ACE inhibitor, BB or mineralocorticoid receptor antagonist
Atrial fibrillation, ventricular rate control	BB, non-dihydropyridine calcium antagonist
ESRD/proteinuria	ACE inhibitor, ARB
Peripheral artery disease	ACE inhibitor, calcium antagonist
Other	
ISH (elderly)	Diuretic, calcium antagonist
Metabolic syndrome	ACE inhibitor, ARB, calcium antagonist
Diabetes mellitus	ACE inhibitor, ARB
Pregnancy	Methyldopa, BB, calcium antagonist
Blacks	Diuretic, calcium antagonist



Antihypertensive Drug Therapy With Potential Favorable Effects for Special Patient Populations/Comorbid Conditions

ACC

Indication/Population	Drug Therapy
Atrial Tachycardia and Fibrillation	β -Blockers, Diltiazem, Verapamil
Cyclosporine-Induced Hypertension	Calcium Channel Blockers
Essential Tremor	β -Blockers (Noncardioselective)
Hyperthyroidism	β -Blockers
Migraine	β -Blockers (Noncardioselective), Diltiazem, Verapamil
Osteoporosis	Thiazides
Benign Prostatic Hyperplasia	α -Blockers
Raynaud Syndrome	Calcium Channel Blockers (Dihydropyridine)
African-Americans	Diuretics, CCBs Most Effective in Reducing BP

Antihypertensive Drug Therapy With Potential Unfavorable Effects for Special Patient Populations/Comorbid Conditions



Indication/Population	Drug Therapy
Angioedema History	ACE Inhibitors
Bronchospastic Disease	β -Blockers
Depression	β -Blockers, Central α -Agonists, Reserpine
Gout	Diuretics
2 ^o and 3 ^o Heart Block	β -Blockers, Diltiazem, Verapamil
Liver Disease	Labetalol, Methyldopa
Peripheral Vascular Disease	Non-vasodilating β -Blockers
Pregnancy	ACE Inhibitors, Angiotensin II Receptor Blockers
African-Americans	β -Blockers, ACE Inhibitors, Angiotensin II Receptor Blockers Less Effective in Reducing BP (but are cardio/renoprotective)



MASKED HTN

**WHITE COATED
HTN**

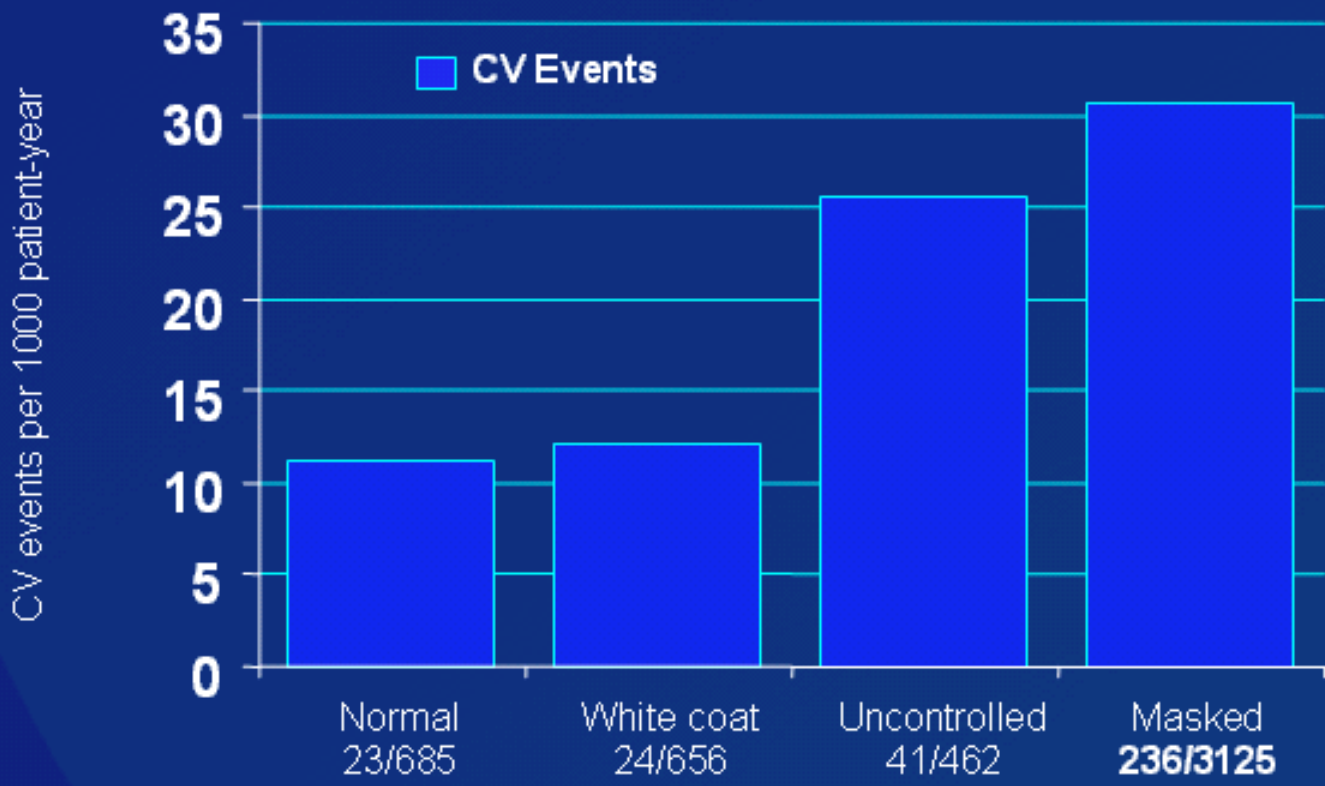
Clinic BP versus ABP ?

Clinic Pressure  140/90	White Coat Hypertension	Sustained Hypertension
	True Normotension	Masked Hypertension
	135/85  Ambulatory Pressure	



The Prognosis of Masked Hypertension

Prevalence is approximately 10% in hypertensive patients.



Bobrie et al. JAMA 2004;291:1342-9

Hypertension

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Masked Hypertension

Thomas G. Pickering, Karina Davidson, William Gerin and Joseph E. Schwartz
Hypertension 2002;40:795-796; originally published online Nov 4, 2002;

DOI: 10.1161/01.HYP.0000038733.08436.98

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Patients with masked hypertension should
show more extensive target organ
damage than true normotensive
subjects.??



10-Year Follow-Up From the Ohasama Study

Takayoshi Ohkubo, MD, PhD,*§|| Masahiro Kikuya, MD, PhD,*§ Hirohito Metoki, MD,†§||
Kei Asayama, MD,†§|| Taku Obara, MS,†§ Junichiro Hashimoto, MD, PhD,*§||
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Yutaka Imai, MD, PhD†§||

Sendai and Iwate, Japan

**Prognosis of "Masked" Hypertension and "White-Coat" Hypertension
Detected by 24-h Ambulatory Blood Pressure Monitoring: 10-Year Follow-Up
From the Ohasama Study**
Takayoshi Ohkubo, Masahiro Kikuya, Hirohito Metoki, Kei Asayama, Taku Obara,
Junichiro Hashimoto, Kazuhito Totsune, Haruhisa Hoshi, Hiroshi Satoh, and Yutaka
Imai
J. Am. Coll. Cardiol. 2005;46:508-515; originally published online Jul 14, 2005;
doi:10.1016/j.jacc.2005.03.070

OBJECTIVES We sought to investigate the prognosis in subjects with "white-coat" hypertension (WCHT) and "masked" hypertension (MHT), in which blood pressure (BP) is lower in clinical measurements than during ambulatory monitoring.

BACKGROUND The prognostic significance of WCHT remains controversial, and little is known about MHT.

METHODS We obtained 24-h ambulatory BP and "casual" BP (i.e., obtained in clinical scenarios) values from 1,332 subjects (872 women, 460 men) ≥ 40 years old in a representative sample of the general population of a Japanese community. Survival and stroke morbidity were then followed up for a mean duration of 10 years.

Masked hypertension represents a strong predictor of cardiovascular risk and was present in 16% of subjects without antihypertensive medication and 18% of those with antihypertensive medication.

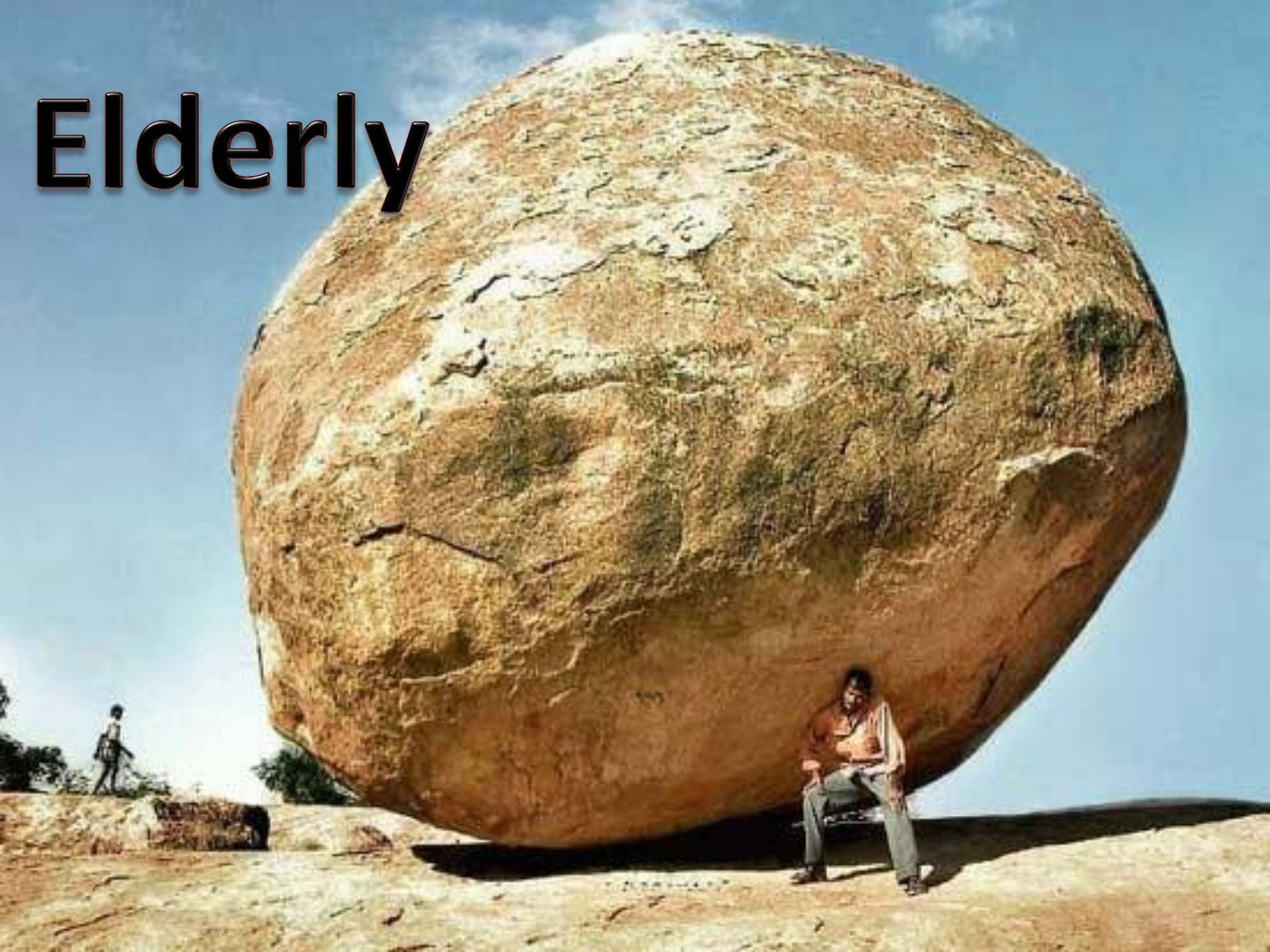
Treatment strategies in white-coat and masked hypertension

Recommendations	Class ^a	Level ^b
In white-coat hypertensives without additional risk factors, therapeutic intervention should be considered only, with a close follow-up.	IIa	C
In white-coat hypertensives with a higher CV risk because of metabolic derangements or asymptomatic OD, drug treatment may be considered in addition to lifestyle changes.	IIb	C
In masked hypertension, both lifestyle measures and a... considered... has b... risk very close to that of in- and out-of-office hypertension.	IIa	C

Life Style modification

Therapy

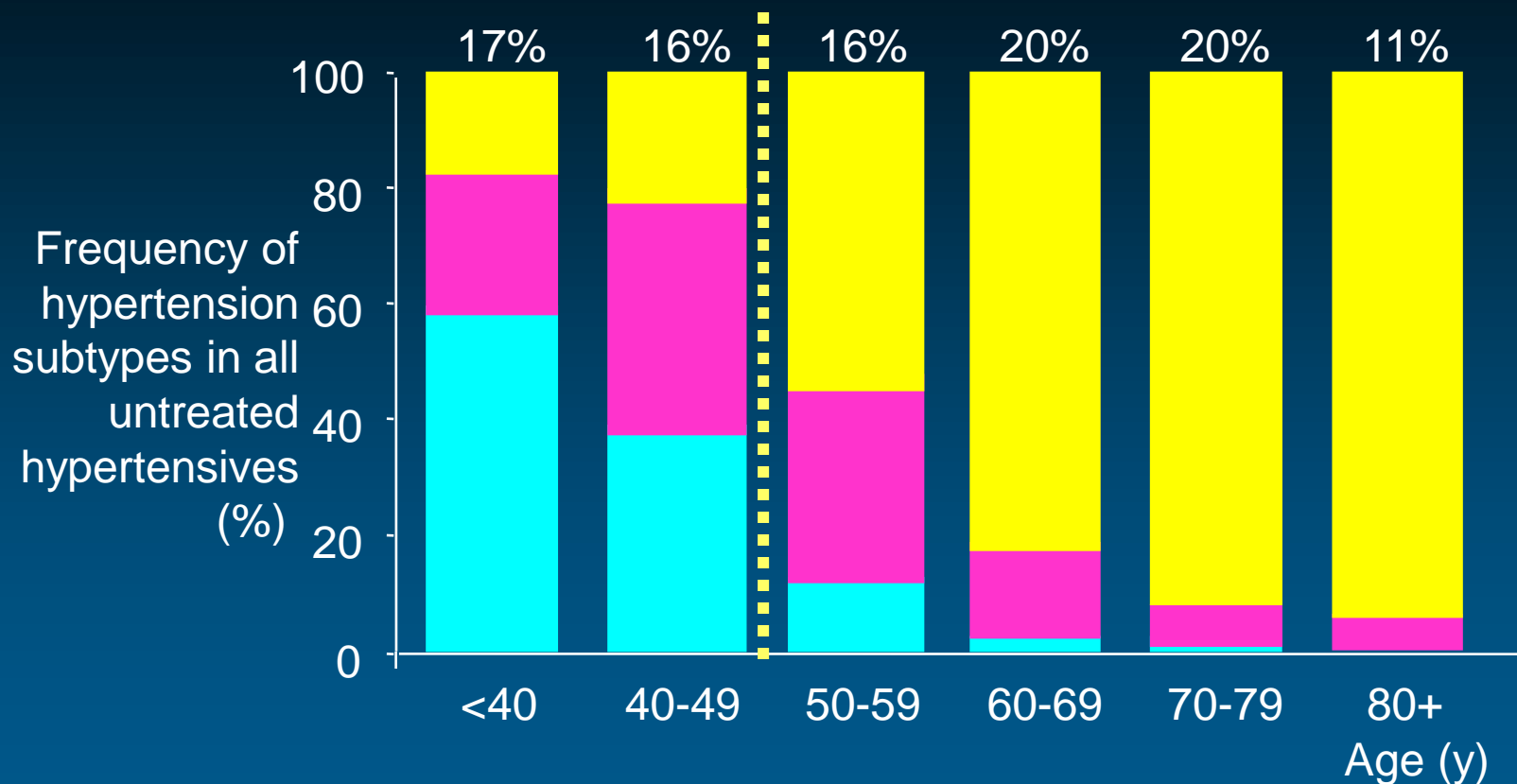
Elderly



Distribution of Hypertension Subtype in the untreated Hypertensive Population in NHANES

III by Age

- ISH (SBP ≥ 140 mm Hg and DBP < 90 mm Hg)
- SDH (SBP ≥ 140 mm Hg and DBP ≥ 90 mm Hg)
- IDH (SBP < 140 mm Hg and DBP ≥ 90 mm Hg)



Numbers at top of bars represent the overall percentage distribution of untreated hypertension by age.

Franklin et al. *Hypertension* 2001;37: 869-874.

ESC 2013

Recommendations	Class ^a	Level ^b
In elderly hypertensives with SBP ≥ 160 mmHg there is solid evidence to recommend reducing SBP to between 150 and 140 mmHg.	I	A
In fit elderly old antihypertensive treatment may be considered if SBP ≥ 140 mmHg and SBP < 140 mmHg if treatment is well tolerated.	IIb	C
In individuals with an SBP ≥ 160 mmHg it is recommended to reduce SBP to between 150 and 140 mmHg, provide physical and mental conditions.	I	B
In frail elderly patients, it is recommended to leave decisions on antihypertensive therapy to the treating physician, and based on monitoring of the clinical effects of treatment.	I	C
Continuation of well-tolerated antihypertensive treatment should be considered when a treated individual becomes octogenarian.	IIa	C
All hypertensive agents are recommended and can be used in the elderly, although diuretics and calcium antagonists may be preferred in isolated systolic hypertension.	I	A

140/90

150/90

Women



Recommendations	Class ^a	Level ^b
<p>Hormone therapy and selective oestrogen receptor modulators are not recommended and should not be used for primary or secondary prevention of CVD. If treatment of younger perimenopausal women is considered for severe menopausal symptoms, the benefits should be weighed against potential risks.</p>	III	A
<p>Drug treatment of severe hypertension in pregnancy (SBP >160 mmHg or DBP >110 mmHg) is recommended.</p>	I	C
<p>Drug treatment should be considered in women with persistent SBP $\geq 150/95$ mmHg or DBP ≥ 140 mmHg in the presence of hypertension, subclinical OD or symptoms.</p>	IIb	C
<p>In women at high risk of pre-eclampsia, provided they are at low risk of gastrointestinal haemorrhage, treatment with low dose aspirin from 12 weeks until delivery may be considered.</p>	IIb	B
<p>In women with child-bearing potential RAS blockers are not recommended and should be avoided.</p>	III	C
<p>Methyldopa, labetalol and nifedipine should be considered preferential antihypertensive drugs in pregnancy. Intravenous labetalol or infusion of nitroprusside should be considered in case of emergency (pre-eclampsia).</p>	IIa	B

150/95



Hypertension in pregnancy: the management of hypertensive disorders during pregnancy

August 2010 (revised reprint January 2011)

Definitions

Term	Presentation	Significant proteinuria ^a
Chronic hypertension	Present at booking or before 20 weeks	No
Gestational hypertension	Presenting after 20 weeks	No
Pre-eclampsia	Presenting after 20 weeks	Yes

^aSignificant proteinuria is > 300 mg protein in a 24-hour urine collection OR >30mg/ml in a spot urinary protein:creatinine sample

Chronic HTN with pregnancy

Chronic HTN with pregnancy



Pre-pregnancy advice

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graph TD; A[Pre-pregnancy advice] --> B[Antihypertensive treatment]; A --> C[Dietary sodium];
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Antihypertensive treatment

Tell women who are taking ACE inhibitors, ARBs or chlorothiazide:

- there is an increased risk of congenital abnormalities if ACE inhibitors or ARBs are taken during pregnancy
- there may be an increased risk of congenital abnormalities and neonatal complications if chlorothiazide is taken during pregnancy
- limited evidence shows no increased risk of congenital abnormalities with other antihypertensive treatments
- to discuss other antihypertensive treatments with the healthcare professional responsible for managing their hypertension, if they are planning pregnancy.

Dietary sodium

- Encourage the woman to lower dietary sodium intake or use sodium substitute. [This recommendation is adapted from 'Hypertension: management of hypertension in adults in primary care' (NICE clinical guideline 34)^{3,4}].

Antenatal care

Consultations

- Schedule additional appointments based on individual needs.

Timing of birth

If BP < 160/110 mmHg with or without antihypertensive treatment:

- do not offer birth before 37 weeks
- after 37 weeks, timing of and maternal and fetal indications for birth should be agreed between woman and senior obstetrician.

If refractory severe chronic hypertension, offer birth after course of corticosteroids (if required) has been completed.

Antihypertensive treatment

- Stop ACE inhibitors and ARBs within 2 days of notification of pregnancy and offer alternatives.
- Offer antihypertensive treatment based on pre-existing treatment, side-effect profile and teratogenicity.
- Aim for BP < 150/100 mmHg.
- If target organ damage, aim for BP < 140/90 mmHg.
- Do not offer treatment to lower DBP to < 80 mmHg.
- If secondary chronic hypertension, offer referral to specialist in hypertensive disorders.

Fetal monitoring

At 28–30 and 32–34 weeks carry out

- Ultrasound fetal growth and amniotic fluid volume assessment.
- Umbilical artery doppler velocimetry.

If results normal do not repeat after 34 weeks unless clinically indicated.

If fetal activity abnormal carry out

- Cardiotocography.

Postnatal care

Antihypertensive treatment

- Aim to keep BP < 140/90 mmHg.
- Measure BP:
 - daily for first 2 days after birth
 - at least once 3–5 days after birth
 - as clinically indicated if antihypertensive treatment changed.
- If methyldopa[†] was used during pregnancy, stop within 2 days of birth and restart pre-pregnancy antihypertensive treatment.
- Continue antenatal hypertensive treatment.

If woman breastfeeding

- Avoid diuretic treatment for hypertension.
- Assess clinical wellbeing of baby, especially adequacy of feeding, at least daily for first 2 days after birth.
- Offer woman information about safety of drugs for babies receiving breast milk (see section 1.6).

Follow-up care

```
graph TD; A[Follow-up care] --> B[Review long-term treatment 2 weeks after birth, Offer medical review at 6-8 week postnatal review with pre-pregnancy care team.];
```

- Review long-term treatment 2 weeks after birth,
- Offer medical review at 6–8 week postnatal review with pre-pregnancy care team.

Breastfeeding

- Tell women that the following drugs have **no known adverse effects** on babies receiving breast milk:
 - labetalol[†]
 - nifedipine[†]
 - enalapril[†]
 - captopril[†]
 - atenolol[†]
 - metoprolol[†].
- Tell women that there is **insufficient evidence on the safety** of the following drugs in babies receiving breast milk:
 - ARBs
 - amlodipine
 - ACE inhibitors other than enalapril[†] and captopril[†].

Weight management

- Advise women who have had pre-eclampsia to achieve and keep BMI 18.5–24.9 kg/m² before next pregnancy [in line with 'Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children' (NICE clinical guideline 43)²].

HTN with DM



Recommendations	Class ^a	Level ^b
While initiation of antihypertensive drug treatment in diabetic patients whose SBP is ≥ 160 mmHg is mandatory, it is strongly recommended to start drug treatment if the SBP is ≥ 140 mmHg.	I	A
A SBP goal of <140/85 is recommended for patients with diabetes.	I	A
The DBP target in patients with diabetes is recommended to be <85 mmHg.	I	A
All classes of antihypertensive agents are recommended and can be used in patients with diabetes; RAS blockers may be preferred, especially in the presence of proteinuria or microalbuminuria.	I	A
It is recommended that individual drug choice takes comorbidities into account.	I	C
Simultaneous administration of two blockers of the RAS is not recommended and should be avoided in patients with diabetes.	III	B

Current Recommendations for BP Goals

- **JNC 7** (Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood):
Goal with Diabetes or CKD **<130/80**
- **JNC8** : with DM or CKD **140 / 90**

Metabolic Syndrome

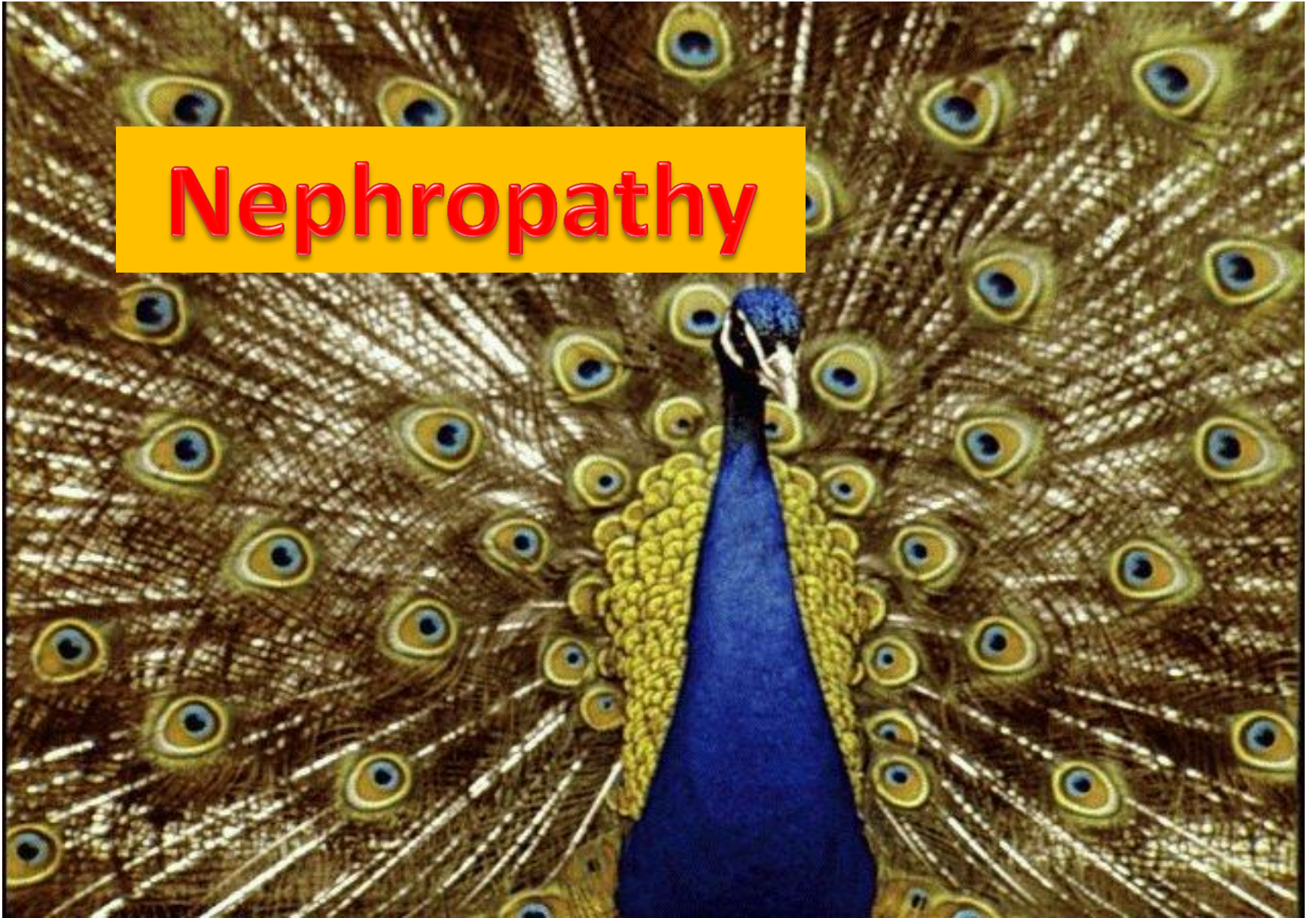


Recommendations	Class ^a	Level ^b
<p>Lifestyle changes, particularly weight loss and physical exercise, are to be recommended to all individuals with the metabolic syndrome. To improve not only metabolic control but also the syndrome and its onset.</p>	I	B
<p>As the metabolic syndrome can be considered a 'pre-diabetic' state, antihypertensive agents potentially improving or at least not worsening insulin sensitivity, such as RAS blockers and calcium antagonists, should be considered as the preferred drugs. Beta-blockers (with the exception of vasodilating beta-blockers) and diuretics should be considered only as additional drugs, preferably in association with a potassium-sparing agent.</p>	IIa	C
<p>It is recommended to prescribe antihypertensive drugs with particular care in hypertensive patients with a systolic blood pressure disturbance of 140/90 mmHg after lifestyle changes. BP < 140/90</p>	I	B
<p>BP lowering drugs are not recommended in individuals with metabolic syndrome and high normal BP.</p>	III	A

Life Style

140/90

Nephropathy



Recommendations	Class ^a	Level ^b
Lowering SBP to <140 mmHg should be considered.	IIa	B
When overt proteinuria is present, treatment may change to 130-140/85	IIb	B
RAS blockers are superior in reducing albuminuria than other antihypertensive agents, and are indicated in hypertensive patients in the presence of microalbuminuria or overt proteinuria.	I	A
Reaching BP goals usually requires combination therapy, and it is recommended to combine RAS blockers with other antihypertensive agents.	I	A
Combination of two RAS blockers, though potentially more effective in reducing proteinuria, is not recommended.	III	A
Aldosterone antagonists cannot be recommended in CKD, especially in combination with a RAS blocker, because of the risk of excessive reduction in renal function and of hyperkalaemia.	III	C



CEREBROVASCULAR DISEASE

Recommendations	Class ^a	Level ^b
<p>It is not recommended to intervene with BP lowering therapy during the first week after acute stroke in the face of BP level, although judgement should be used in the face of very high SBP values.</p>	III	B
<p>Antihypertensive treatment is recommended in hypertensive patients with a history of stroke or TIA, even when initial SBP is in the 140–159 mmHg range.</p>	I	B
<p>In hypertensives with a history of stroke or TIA, a SBP goal of 140/90 mmHg should be considered.</p>	IIa	B
<p>In elderly hypertensives with previous stroke or TIA, SBP values for intervention and goal may be considered to be somewhat higher.</p>	IIb	B
<p>All drug regimens are recommended for stroke prevention, provided that BP is effectively reduced.</p>	I	A



Heart disease

Recommendations	Class ^a	Level ^b
<p>In hypertensive patients with CHD, a SBP goal <140 mmHg should be considered.</p>	<p>IIa</p>	<p>B</p>
<p>In hypertensive patients with a recent myocardial infarction beta-blockers are recommended. In case of other antihypertensives can be used, but beta-blockers are preferred, for symptomatic reasons (angina).</p>	<p>I</p>	<p>A</p>
<p>Diuretics, beta-blockers, ACE inhibitors, angiotensin receptor blockers, and/or mineralocorticoid receptor antagonists are recommended in patients with heart failure or severe LV dysfunction to reduce mortality and hospitalization.</p>	<p>I</p>	<p>A</p>

ACS

Diuretics, beta-blockers, ACE inhibitors, angiotensin receptor blockers, and/or mineralocorticoid receptor antagonists are recommended in patients with heart failure or severe LV dysfunction to reduce mortality and hospitalization.

I

A

LV DYSFUNCTION

In patients with heart failure and hypertension, as well as in patients with hypertension and systolic dysfunction, lowering SBP to around 140 mmHg should be considered. Treatment guided by relief of symptoms (congestion with diuretics, high heart rate with beta-blockers, etc.) should also be considered.

IIa

C

ACE inhibitors and angiotensin receptor blockers and beta-blockers and mineralocorticoid receptor antagonists if atrial fibrillation coexists, should be considered as antihypertensive agents in patients at risk of new or recurrent atrial fibrillation.

AF

IIa

C

It is recommended that all patients with LVH receive antihypertensive agents.

In patients with LVH, initiation of treatment with one of the agents that have shown a greater ability to regress LVH should be considered, i.e. ACE inhibitors, angiotensin receptor blockers and calcium antagonists.

I

B

IIa

B

Resistant HTN

Resistant HTN



Recommendations	Class ^a	Level ^b
In resistant hypertensive patients it is recommended that physicians check whether the drugs included in the existing multiple drug regimen have any BP lowering effect, and withdraw them if their effect is absent or minimal.	I	C
Mineralocorticoid receptor antagonists, amiloride, and the alpha-1-blocker doxazosin should be considered, if no contraindication exists.	IIa	B
In case of ineffectiveness of drug treatment invasive procedures such as renal denervation and baroreceptor stimulation may be considered.	IIb	C
Until more evidence is available on the long-term efficacy and safety of renal denervation and baroreceptor stimulation, it is recommended that these procedures remain in the hands of experienced operators and diagnosis and follow-up restricted to hypertension centers.	I	C
It is recommended that the invasive approaches are considered only for truly resistant hypertensive patients, with clinic values ≥ 160 mmHg SBP or ≥ 110 mmHg DBP and with BP elevation confirmed by ABPM.	I	C



OSAS

- (i) the risk of new-onset hypertension was lower in subjects treated with **continuous positive air pressure CPAP** , although the benefit seemed restricted to those with daytime sleepiness.

Therapeutic strategies in
hypertensive patients with
atherosclerosis, arteriosclerosis,
and peripheral artery
disease



Atherosclerosis & PVD

Recommendations	Class ^a	Level ^b
<p>In the presence of carotid atherosclerosis, prescription of calcium antagonists and ACE inhibitors should be considered as these agents have shown a greater efficacy in delaying atherosclerosis progression than diuretics and beta-blockers.</p>	IIa	B
<p>In hypertensive patients with a PWV a goal of 140/90 mmHg should be considered. BP reduction should be consistently achieved.</p>	IIa	B
<p>Antihypertensive therapy is recommended in hypertensive patients with PAD to achieve a goal of <140/90 mmHg, because of their high risk of myocardial infarction, stroke, heart failure, and CV death.</p>	I	A
<p>Though a careful follow up is necessary, beta-blockers may be considered for the treatment of arterial hypertension in patients with PAD, since their use does not appear to be associated with exacerbation of PAD symptoms.</p>	IIb	A

الحياة بعد الزواج !!

**SEXUAL
DYSFUNCTION**

Sexual dysfunction

- Sexual dysfunction is more prevalent in hypertensive than normotensive individuals
- Erectile dysfunction is considered to be an **independent CV risk factor** and an early diagnostic indicator for asymptomatic or clinical OD
- Lifestyle modification may ameliorate erectile function.

- newer agents (**ARBs, ACE inhibitors, calcium antagonists and vasodilating beta-blockers**) have neutral or even beneficial effects on erectile function.
- **Phospho-diesterase-5 inhibitors** may be safely administered to hypertensives, even those on multiple drug regimens (with the possible exception of alpha-blockers and in absence of nitrate administration)



Peri-operative management
of hypertension

- Sudden withdrawal of **clonidine or beta-blockers** should be avoided because of potential BP or heart rate rebounds.
- Both types of agent can be continued over surgery and, when patients are unable to take oral medications, beta-blockers can be given parenterally and clonidine transdermally.
- **Diuretics** should be avoided on the day of surgery because of potential adverse interaction with surgery-dependent fluid depletion.
- **ACE inhibitors and ARBs** may also be potentiated by surgery-dependent fluid depletion and it has been suggested that they should not be taken on the day of surgery and restarted after fluid repletion has been assured.
- Post-surgery BP elevation, when it occurs, is frequently caused by **anxiety and pain** after awakening, and disappears after treating anxiety and pain. (Class IIb, Level C).

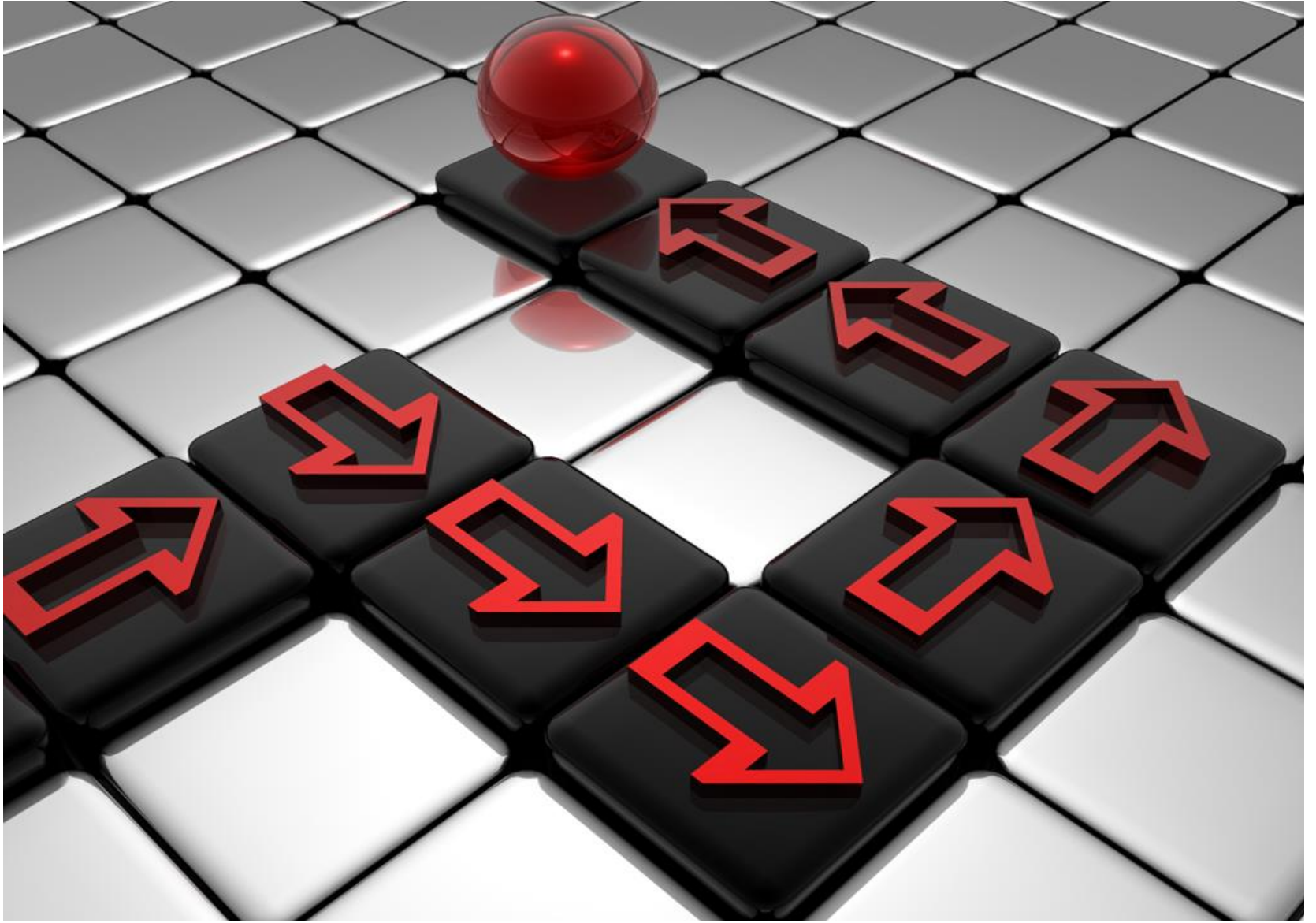


Conclusion JNC8

Blood pressure goals in hypertensive patients

Recommendations	Class ^a	Level ^b
A SBP goal <140 mmHg:		
a) is recommended in patients at low–moderate CV risk;	I	B
b) is recommended in patients with diabetes;	I	A
c) should be considered in patients with previous stroke or TIA;	IIa	B
d) should be considered in patients with CVD;	IIa	B
e) should be considered in patients with	IIa	B
In elderly hypertensives less than 80 years old, we recommend reducing SBP to between 150 and 140 mmHg.	I	A
In fit elderly patients less than 80 years old SBP values <140 mmHg may be considered, whereas in the fragile elderly population SBP goals should be adapted to individual tolerability.	IIb	C
In individuals older than 80 years and with initial SBP \geq 160 mmHg, it is recommended to reduce SBP to between 150 and 140 mmHg provided they are in good physical and mental conditions.	I	B
A DBP target of <90 mmHg is always recommended, except in patients with diabetes, in whom values <85 mmHg are recommended. It should nevertheless be considered that DBP values between 80 and 85 mmHg are safe and well tolerated.	I	A

ESC 2013



Recommendations (1/3)

	<u>BP thresholds</u>	<u>Goals</u>
✓ <u>Recommendation 1</u> <i>(Strong recommendation)</i>		
General population ≥60 years	SBP ≥150 mm Hg or DBP ≥90 mm Hg	SBP <150 mm Hg and DBP <90 mm Hg
✓ <u>Recommendation 2</u> <i>(Strong recommendation)</i>		
General population <60 years	DBP ≥90 mm Hg	DBP <90 mm Hg
✓ <u>Recommendation 3</u> <i>(Expert opinion)</i>		
General population <60 years	SBP ≥140 mm Hg	SBP <140 mm Hg

Recommendations (2/3)

✓ Recommendation 4

(Expert opinion)

Population with **CKD**
≥18 years

CKD: chronic kidney disease

BP thresholds

SBP ≥140 mm Hg
or DBP ≥90 mm Hg

Goals

SBP <140 mm Hg
and DBP <90 mm Hg

✓ Recommendation 5

(Expert opinion)

Population with **diabetes**
≥18 years

SBP ≥140 mm Hg
or DBP ≥90 mm Hg

SBP <140 mm Hg
and DBP <90 mm Hg

✓ Recommendation 6

(Moderate recommendation)

General **nonblack**
population *(with diabetes)*

Initial treatment

Thiazide-type diuretic,
calcium channel blocker (CCB),
angiotensin-converting enzyme inhibitor (ACEI),
or angiotensin receptor blocker (ARB)

Recommendations (3/3)

✓ Recommendation 7

(Moderate recommendation)

General *(with diabetes)*
black population

Initial treatments

**Thiazide-type diuretic,
or calcium channel blocker (CCB)**

✓ Recommendation 8

(Moderate recommendation)

Population **with CKD**
≥18 years

Initial or add-on treatments

**Angiotensin-converting enzyme inhibitor (ACEI),
or angiotensin receptor blocker (ARB)**

✓ Recommendation 9

(Expert opinion)

Goal BP not reached
within **a month** of treatment

Goal BP not reached
with 2 drugs

Non control strategies

**Increase the dose of the initial drug,
or add a second drug *(from the list provided)***

Add and titrate a third drug *(from the list provided)*
Do not use an ACEI and an ARB together in the same patient





THANK
YOU!