



ESSENTIAL MESSAGES FROM ESC GUIDELINES

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Hypertension

**GUIDELINES FOR THE MANAGEMENT OF
ARTERIAL HYPERTENSION**

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ESC ESSENTIAL MESSAGES

2013 ESH/ESC GUIDELINES FOR THE MANAGEMENT OF ARTERIAL HYPERTENSION*

The Task Force for the management of arterial hypertension of
the European Society of Hypertension (ESH)
and of the European Society of Cardiology (ESC)

Chairperson ESC

Professor Robert Fagard

Hypertension & Cardiovascular
Rehabilitation Unit

KU Leuven University

Herestraat 49

3000 Leuven, Belgium

Tel: +32 16 348 707

Fax: +32 16 343 766

Email: robert.fagard@uzleuven.be

Chairperson ESH

Professor Giuseppe Mancia

Centro di Fisiologia Clinica
e Ipertensione

Via F. Sforza, 35

20121 Milano, Italy

Tel: +39 039 233 3357

Fax: +39 039 322 274

Email: giuseppe.mancia@unimib.it

Authors/Task Force Members

Krzysztof Narkiewicz (Section coordinator) (Poland), Josep Redon (Section coordinator) (Spain), Alberto Zanchetti (Section coordinator) (Italy), Michael Böhm (Germany), Thierry Christiaens (Belgium), Renata Cifkova, (Czech Republic), Guy De Backer (Belgium), Anna Dominiczak (UK), Maurizio Galderisi (Italy), Diederick E. Grobbee (Netherlands), Tiny Jaarsma (Sweden), Paulus Kirchhof (Germany/UK), Sverre E. Kjeldsen (Norway), Stéphane Laurent (France), Athanasios J. Manolis (Greece), Peter M. Nilsson (Sweden), Luis Miguel Ruilope (Spain), Roland E. Schmieder (Germany), Per Anton Sirnes (Norway), Peter Sleight (UK), Margus Viigimaa (Estonia), Bernard Waeber (Switzerland), Faiez Zannad (France)..

Other ESC entities having participated in the development of this document:

Association: Heart Failure Association (HFA), European Association of Cardiovascular Imaging (EACVI), European Association for Cardiovascular Prevention & Rehabilitation (EACPR), European Heart Rhythm Association (EHRA).

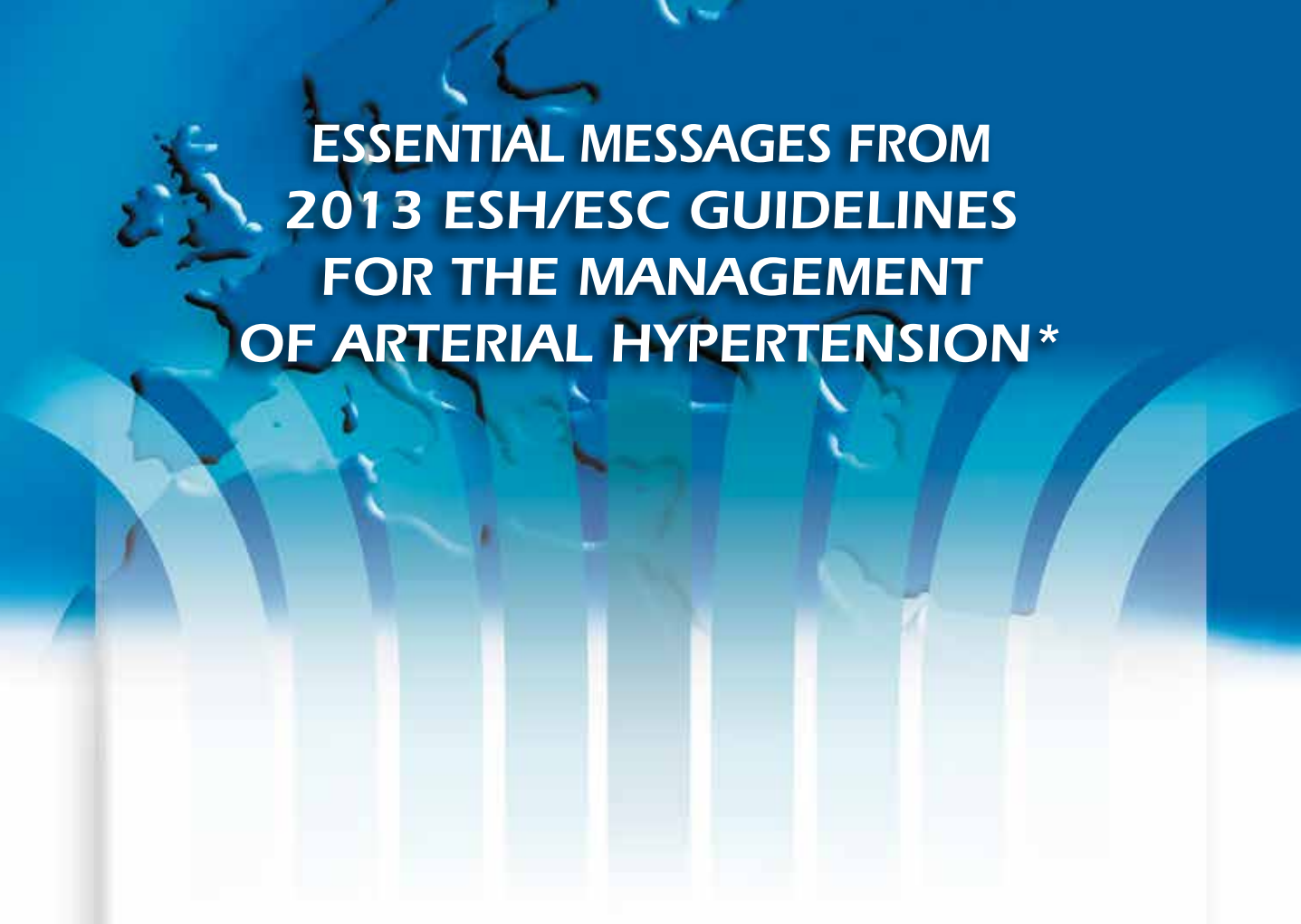
Working Groups: Hypertension and the Heart, Cardiovascular Pharmacology and Drug Therapy.

Councils: Cardiovascular Primary Care, Cardiovascular Nursing and Allied Professions, Cardiology Practice.

ESC Staff:



Veronica Dean, Catherine Despres, Karine Villanese - Sophia Antipolis, France.

*Adapted from the ESH/ESC Guidelines for Management of Arterial Hypertension (Eur Heart J 2013;34:2159-219-doi:10.1093/eurheartj/eh151).

The background features a stylized world map in shades of blue and white, overlaid on a series of vertical, semi-transparent architectural arches that create a sense of depth and structure.

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Take home messages

1 - Total cardiovascular risk stratification

Decisions on management of the hypertensive patient depend on the initial level of total cardiovascular (CV) risk. The stratification of total CV risk in different categories is based on BP category, CV risk factors, asymptomatic organ damage and presence of diabetes, symptomatic CV disease or chronic kidney disease. The classification in low, moderate, high and very high risk refers to the 10-year risk of CV mortality as defined in the 2012 Joint CVD Prevention Guidelines.

Figure 1 Stratification of total CV risk in categories of low, moderate, high and very high risk according to SBP and DBP and prevalence of RFs, asymptomatic OD, diabetes, CKD stage or symptomatic CVD. Subjects with a high normal office but a raised out-of-office BP (masked hypertension) have a CV risk in the hypertension range. Subjects with a high office BP but normal out-of-office BP (white-coat hypertension), particularly if there is no diabetes, OD, CVD or CKD, have lower risk than sustained hypertension for the same office BP.

Other risk factors, asymptomatic organ damage, or disease	Blood Pressure (mmHg)			
	High normal SBP 130–139 or DBP 85–89	Grade 1 HT SBP 140–159 or DBP 90–99	Grade 2 HT SBP 160–179 or DBP 100–109	Grade 3 HT SBP \geq 180 or DBP \geq 110
No other RF		Low risk	Moderate risk	High risk
1–2 RF	Low risk	Moderate risk	Moderate to high risk	High risk
\geq 3 RF	Low to Moderate risk	Moderate to high risk	High Risk	High risk
OD, CKD stage 3 or diabetes	Moderate to high risk	High risk	High risk	High to very high risk
Symptomatic CVD, CKD stage \geq 4 or diabetes with OD/RFs	Very high risk	Very high risk	Very high risk	Very high risk

BP = blood pressure; CV = cardiovascular; CVD = cardiovascular disease; CKD = chronic kidney disease; DBP = diastolic blood pressure; HT = hypertension; OD = organ damage; RF = risk factor; SBP = systolic blood pressure.

Risk factors include age, male sex, smoking, dyslipidaemia, glucose intolerance, obesity and family history of premature CVD. Asymptomatic organ damage mainly involves left ventricular hypertrophy, evidence of vascular damage and microalbuminuria.

2 - Diagnostic evaluation

The initial evaluation of a patient with hypertension should: 1) confirm the diagnosis of hypertension; 2) detect causes of secondary hypertension; and 3) assess CV risk, organ damage, and concomitant clinical conditions. This calls for BP measurement, medical history including family history, physical examination, laboratory investigations, and further diagnostic tests. Some of the investigations are needed in all patients, others only in specific patient groups.

2a. Blood pressure measurement

Office blood pressure

Conventional office BP measurement by use of a validated device is the gold standard for screening, diagnosis and management of hypertension.

Hypertension is defined as systolic BP \geq 140 mmHg and/or diastolic BP \geq 90 mmHg. The diagnosis of hypertension should be based on at least two BP measurements in the sitting position per visit on at least two visits.

Take home messages

Out-of-office BP

Out-of-office BP, assessed by ambulatory or home BP monitoring, is an important adjunct to office BP measurement. The prediction of CV events is significantly better with out-of-office BP than with office BP. Prognosis is better in white-coat hypertension than in sustained hypertension and appears to be similar to that in true normotension. The incidence of CV events is about two times higher in masked hypertension than in true normotension and similar to the incidence in sustained hypertension.

Cut-offs for the definition of hypertension are: 130/80 mmHg for 24-h BP, 135/85 mmHg for daytime ambulatory BP and home BP and 120/70 mmHg for night-time BP.

Major indications for out-of-office BP are suspicion of white-coat, masked or nocturnal hypertension, suspected hypotension, considerable variability of office BP and treatment-resistant hypertension.

2b. Cardiovascular risk factors

Total, LDL and HDL cholesterol, and fasting triglycerides and glucose are considered routine tests in all hypertensive patients.

2c. Search for asymptomatic organ damage and symptomatic disease

Heart: an ECG is recommended in all hypertensive patients; additional tests (echocardiography, exercise testing, Holter monitoring) should be considered based on history, physical examination and ECG findings.

Arteries: carotid and peripheral ultrasound, pulse wave velocity and ankle-brachial index should be considered as additional tests if indicated.

Kidney: measurement of serum creatinine and estimation of glomerular filtration rate, assessment of urinary protein and microalbuminuria are recommended in all hypertensive patients.

2d. Search for secondary hypertension.

All patients should undergo simple screening tests for secondary hypertension, including clinical history, physical examination and laboratory investigations, and a focused search should be undertaken when indicated.

3 - Treatment approach

3a. Lifestyle changes

Appropriate lifestyle changes are the cornerstone for the prevention of hypertension and are also important for its treatment. The following lifestyle measures are recommended:

- Salt restriction to 5-6 g/day.
- Moderation of alcohol consumption (<20-30 g of ethanol per day in men and <10-20 g in women).
- Increased consumption of vegetables, fruits and low-fat dairy products.
- Reduction of weight to BMI of 25 kg/m².
- Regular exercise (≥30 min of moderate dynamic exercise on 5-7 days per week)
- Smoking cessation

Take home messages

3b. Initiation of antihypertensive drug treatment.

Prompt initiation of antihypertensive drugs is recommended in patients at high or very high CV risk. Antihypertensive drugs should be considered in patients at moderate or low risk when BP remains $>140/90$ mmHg after, respectively, several weeks or months of appropriate lifestyle measures, or in case of persistently elevated out-of-office BP.

In elderly patients drug treatment is recommended when systolic BP is ≥ 160 mmHg, or ≥ 140 mmHg if younger than 80 years and treatment is well tolerated.

It is not recommended to initiate antihypertensive treatment at high normal BP and in younger patients with isolated systolic hypertension.

3c. Blood pressure goals

Systolic BP

A systolic BP goal of <140 mmHg is recommended in all hypertensive patients, with few exceptions.

In elderly hypertensive patients less than 80 years old there is solid evidence to reduce systolic BP to between 150 and 140 mmHg, but a goal of <140 mmHg may be considered in fit elderly.

In individuals older than 80 years it is recommended to reduce BP to between 150 and 140 mmHg if they are in good physical and mental condition.

Diastolic BP

A diastolic BP of <90 mmHg is always recommended, except in patients with diabetes, in whom values <85 mmHg are recommended.

3d. Choice of antihypertensive drugs

Diuretics, beta-blockers, calcium antagonists, ACE-inhibitors and angiotensin receptor blockers are all suitable for the initiation and maintenance of antihypertensive treatment, either as monotherapy or in combination therapy. Some agents should be considered as the preferential choice in specific conditions, such as coronary heart disease, heart failure, diabetes or renal dysfunction.

Initiation of antihypertensive therapy with two-drug combination may be considered in patients with markedly high baseline BP or at high CV risk. Among the many possible combinations, some are considered more suitable than others.

4 - Treatment strategies in special conditions

4a. White-coat and masked hypertension

In white-coat hypertensives without additional risk factors, therapeutic intervention is limited to lifestyle changes and close follow-up is warranted. In case of higher CV risk, antihypertensive drug treatment may be considered.

In masked hypertension, both lifestyle measures and drug treatment should be considered because of the high CV risk.

4b. Elderly

When antihypertensive therapy is indicated as described in section 3b, all antihypertensive agents can be used, although diuretics and calcium antagonists may be preferred in isolated systolic hypertension.

Take home messages

4c. Pregnancy

Drug treatment is recommended in severe hypertension in pregnancy (BP >160/110 mmHg), and may be considered in case of persistent BP \geq 150/95 mmHg, and in those with BP \geq 140/90 mmHg in the presence of gestational hypertension, asymptomatic organ damage or symptoms.

Methyldopa, labetalol and nifedipine should be considered preferential antihypertensive drugs in pregnancy. Blockers of the renin-angiotensin system should be avoided in women with child-bearing potential.

4d. Diabetes

It is recommended to start drug treatment when systolic BP is \geq 140 mmHg. The BP target is <140/85 mmHg. All classes of antihypertensive drugs can be used, though blockers of the renin-angiotensin system may be preferred, especially in the presence of proteinuria or microalbuminuria, but simultaneous administration of two blockers of the renin-angiotensin system should be avoided.

4e. Nephropathy

It is recommended to start drug treatment when systolic BP is \geq 140 mmHg, targeting <140 mmHg. A target of <130 mmHg may be considered in case of overt proteinuria, and blockers of the renin-angiotensin system (though not in combination) are indicated in the presence of proteinuria or microalbuminuria.

4f. Cerebrovascular disease

It is not recommended to intervene with BP-lowering therapy during the first week after acute stroke, although clinical judgement should be used in the face of very high systolic BP values.

Antihypertensive treatment is recommended in hypertensive patients with a history of stroke or TIA when systolic BP is \geq 140 mmHg, targeting <140 mmHg. All drug regimens are recommended in these patients, provided that BP is effectively reduced.

4g. Heart disease

Coronary heart disease

It is recommended to start drug treatment when systolic BP is \geq 140 mmHg, and all antihypertensive agents can be used, targeting <140 mmHg. Beta-blockers are recommended in case of recent myocardial infarction, and beta-blockers and calcium antagonists in patients with angina pectoris.

Heart failure

Diuretics, beta-blockers, ACE-inhibitors, angiotensin receptor blockers and/or mineralocorticoid receptor antagonists are recommended in patients with heart failure or severe left ventricular dysfunction. There is no evidence that antihypertensive therapy per se or any particular drug is beneficial in case of preserved ejection fraction. Lowering of systolic BP to around 140 mmHg should be considered in all of these patients.

Left ventricular hypertrophy

Antihypertensive therapy is recommended, and initiation with one of the agents that have shown greater ability to regress left ventricular hypertrophy should be considered, i.e. ACE-inhibitors, angiotensin receptor blockers and calcium antagonists.

Take home messages

4h. Resistant hypertension

In case of true treatment-resistant hypertension, addition of a mineralocorticoid receptor antagonist, amiloride, and/or the alpha-blocker doxazosin should be considered. In case of ineffectiveness of drug treatment invasive procedures such as renal denervation and baroreceptor stimulation may be considered.

5 - Treatment of associated risk factors

It is recommended to use statin therapy in hypertensive patients at moderate to high CV risk, targeting an LDL cholesterol value <3.0 mmol/L (115 mg/dL). When overt CHD is present, it is recommended to administer statin therapy to achieve LDL cholesterol levels <1.8 mmol/L (70 mg/dL).

Antiplatelet therapy, in particular low-dose aspirin, is recommended in hypertensive patients with previous CV events. Aspirin should also be considered in hypertensive patients with reduced renal function or at high CV risk, provided that BP is well controlled. Aspirin is not recommended for CV prevention in low-moderate risk hypertensive patients, in whom absolute benefit and harm are equivalent.

In hypertensive patients with diabetes, a HbA_{1c} target of $<7.0\%$ is recommended with antidiabetic treatment. In more fragile elderly patients with a longer diabetes duration, more comorbidities and at high risk, treatment to a HbA_{1c} target of <7.5 – 8.0% should be considered.

6 - Follow-up and improvement of blood pressure control

Individuals with high normal BP or white-coat hypertension, even in untreated, should be scheduled for regular follow-up, at least annually, to measure office and out-of-office BP, to check the CV risk profile and to reinforce recommendations on lifestyle changes.

After initiation of antihypertensive drug therapy in patients with hypertension, the patient should be seen at 2- to 4-week intervals to evaluate the effects on BP and to assess possible side-effects. Once the target BP is reached, a visit interval of a few months is reasonable. Depending on the local organization of health resources, many of the later visits may be performed by non-physician health care workers, such as nurses. For stable patients, home BP monitoring and electronic communication with the physician may also provide an acceptable alternative. It is advisable to assess risk factors and asymptomatic organ damage at least every 2 years.

The finding of an uncontrolled BP should always lead to a search for the cause(s), such as poor adherence, persistent white-coat effect or use of BP-raising substances. Appropriate actions should be taken for better BP control, avoiding physician inertia.

Major gaps in evidence

Based on the review of the evidence available for the 2013 ESH/ESC Guidelines on Hypertension, it is apparent that several therapeutic issues are still open to question and would benefit from further investigation:

- Should antihypertensive drug treatment be given to all patients with grade 1 hypertension when their CV risk is low-to-moderate?
- Should elderly patients with a SBP between 140 and 160 mmHg be given antihypertensive drug treatments?
- Should drug treatment be given to subjects with white-coat hypertension? Can this condition be differentiated into patients needing or not needing treatment?
- Should antihypertensive drug treatment be started in the high normal BP range and, if so, in which patients?
- What are the optimal office BP values (i.e. the most protective and safe) for patients to achieve by treatment in different demographic and clinical conditions?
- Do treatment strategies based on control of out-of-office BP provide an advantage (reduced clinical morbidity and mortality, fewer drugs, fewer side-effects) over strategies based on conventional (office) BP control?
- What are the optimal out-of-office (home and ambulatory) BP values to be reached with treatment and should targets be lower or higher in high risk hypertensives?
- Does central BP add to CV event prediction in untreated and treated hypertensive patients?
- Do invasive procedures for treatment of resistant hypertension compare favourably with the best drug treatment and provide long-term BP control and reduction of morbid and fatal events?
- Do treatment-induced changes in asymptomatic organ damage predict outcome? Which measures—or combinations of measures—are most valuable?
- Are lifestyle measures known to reduce BP capable of reducing morbidity and mortality in hypertensive patients?
- Does a treatment-induced reduction of 24h BP variability add to CV protection by antihypertensive treatment?
- Does BP reduction substantially lower CV risk in resistant hypertension?

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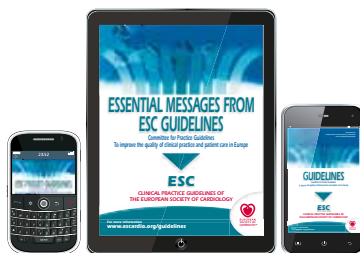
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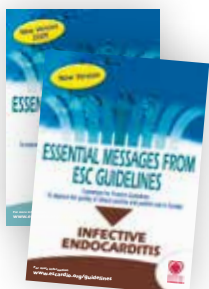
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EUROPEAN SOCIETY OF CARDIOLOGY
2035, ROUTE DES COLLES
LES TEMPLIERS - BP 179
06903 SOPHIA ANTIPOLIS CEDEX - FRANCE
PHONE: +33 (0)4 92 94 76 00
FAX: +33 (0)4 92 94 76 01
E-mail: guidelines@escardio.org

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