Università degli Studi di Ferrara

Anno Accademico 2019-2020
C.L. Infermieristica – C.L. Ostetricia

Corso di Semeiotica Medica e Medicina Interna

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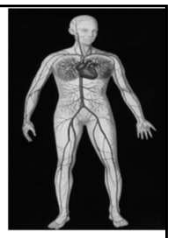
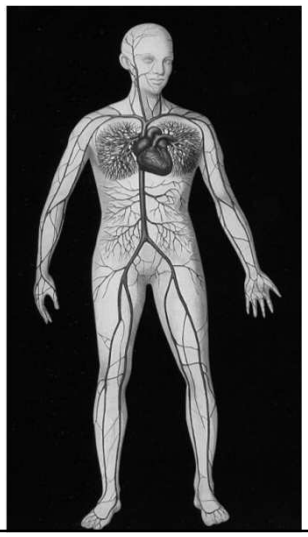


Malattie dell'apparato cardiovascolare I

-Ipertensione arteriosa
-Patologia cardiovascolare aterosclerotica (cardiopatia ischemica, angina e infarto)
-Differenze di genere
-Sindrome Takotsubo
-Scompenso cardiaco

Ipertensione arteriosa



Pressione arteriosa

Forma di energia potenziale che deriva dalla contrazione del cuore e serve per consentire al sangue di scorrere contro la resistenza offerta dalle arteriole periferiche.

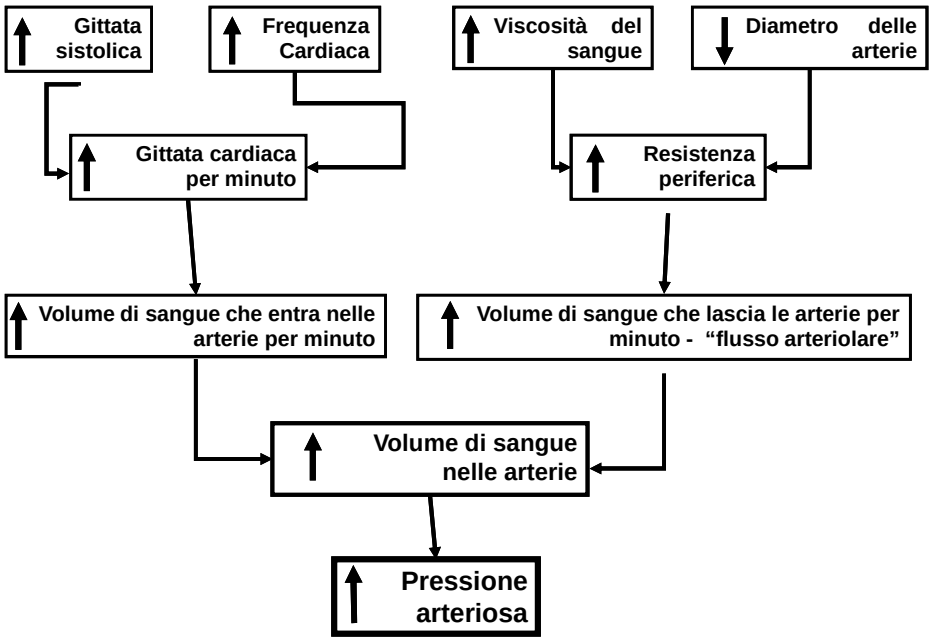
Viene espressa in mmHg: altezza raggiunta da colonna di mercurio, se si applica a questa la forza del sistema arterioso.

Da cosa è determinata?

$$P = V \times R$$

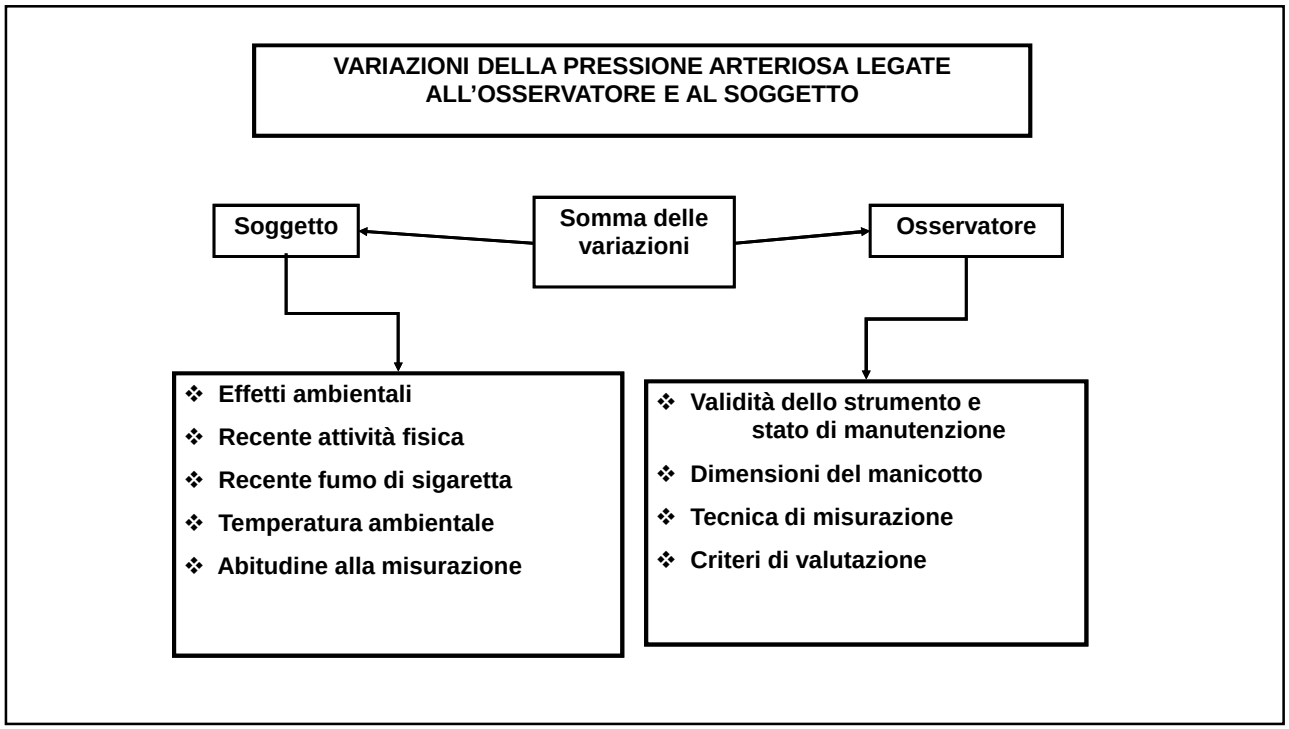
V= volume minuto cardiaco= vol sistolico x freq. cardiaca

R= resistenza periferica totale= lunghezza sistema arterioso x viscosità plasmatica/raggio del vaso^4



Pressione arteriosa

- Pressione arteriosa sistolica (PAS): picco della pressione intravascolare raggiunto durante la sistole ventricolare per l'eiezione del sangue ventricolare
- Pressione arteriosa diastolica (PAD): pressione intravascolare raggiunta alla fine della diastole ventricolare = resistenza vascolare periferica
- Pressione differenziale: differenza tra le due



Regolazione della pressione arteriosa

(1) Sistema nervoso autonomo

(2) Sistema renina angiotensina aldosterone (SAA)

(3) Endotelio vasale

(4) Ormone antidiuretico (ADH)

(1) Sistema Nervoso Autonomo

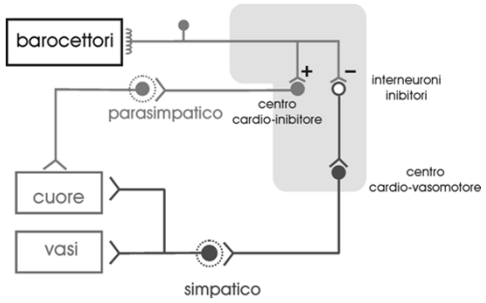
Regola l'omeostasi pressoria attraverso la modulazione:

(1) simpatica (recettori β renali), della diuresi e del volume circolante, sia direttamente che mediante il SRAA;

(2) adrenergica (recettori α) del tono vasocostrittore periferico

(3) parasimpatica e simpatica (recettori muscarinici sensibili all'acetilcolina (Ach) e recettori β sensibili alla noradrenalina (NA) della frequenza, della gittata cardiaca, dell'inotropismo cardiaco.

Il tono simpatico dipende da influenze nervose centrali, dalla regolazione riflessa barocettiva e chemocettiva e dalla secrezione periferica di NA

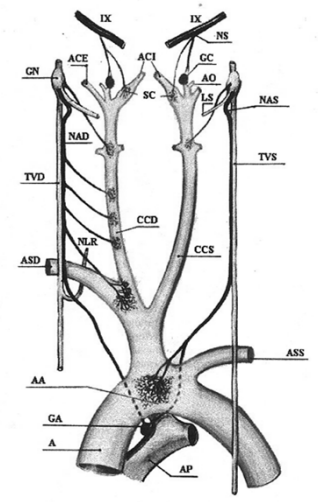


(1) Sistema Nervoso Autonomo

I barocettori sono terminazioni sensitive localizzate nei seni carotidei e nell'arco aortico.

Captano variazioni pressorie e inviano stimoli ai centri nervosi cerebrali.

Se PA ↓ → ↑ scarica vagale sul nodo sinusale → ↑ FC e ↑ attività nervi simpatici → vasocostrizione periferica e rilascio renina → ↑ pressione arteriosa



(1) Sistema Nervoso Autonomo

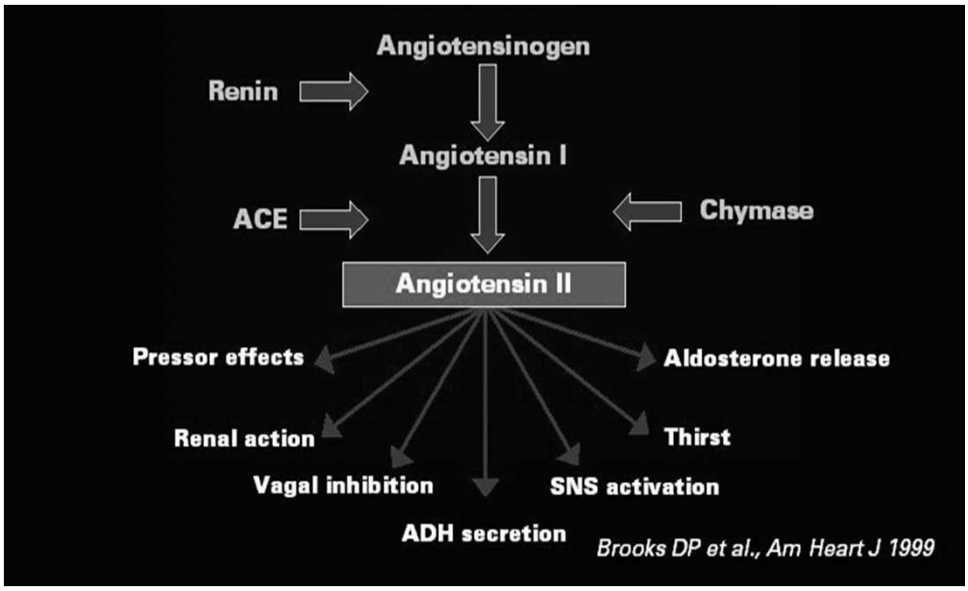
I chemocettori sono localizzati nell'arco aortico e nei corpi carotidei. Sono attivati da: **ipossia**, **acidosi** e **ipocapnia**

nelle situazioni di ipotensione grave.

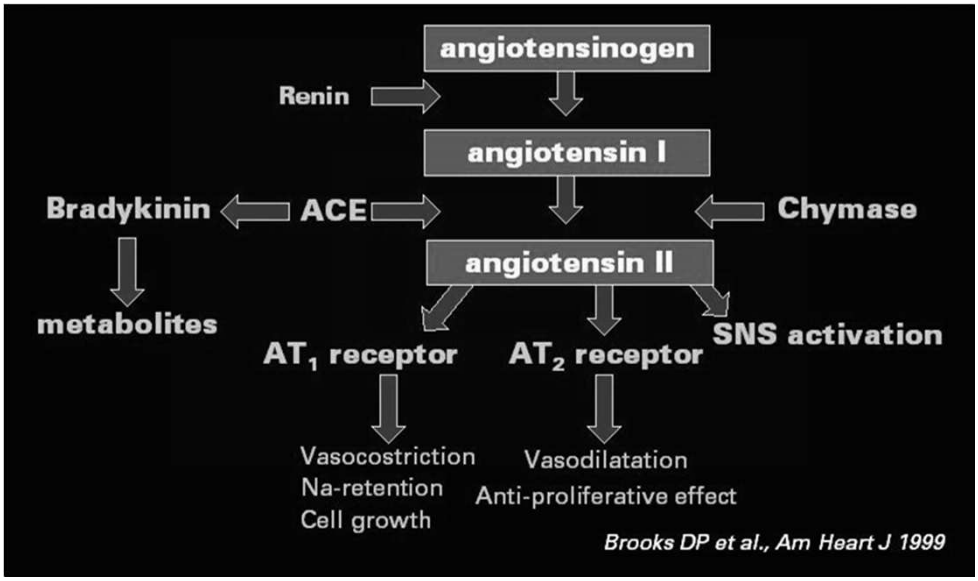
Inducono aumento della ventilazione se si riduce PO_2 nel sangue arterioso

Attivazione → ↑ scarica simpatica → vasocostrizione arteriolare→ ↑ FC → ↑ distensione polmonare

(2) Sistema Renina-Angiotensina-Aldosterone (SRAA)



(2) Sistema Renina-Angiotensina-Aldosterone (SRAA)



(3) Endotelio vasale

Le cellule endoteliali secernono mediatori chimici ad azione paracrina che possono favorire o inibire la contrazione delle cellule muscolari liscie

Vasodilatatori: ossido nitrico (NO), prostaglandina I_2 (PGI_2), fattore iperpolarizzante endotelio attivato

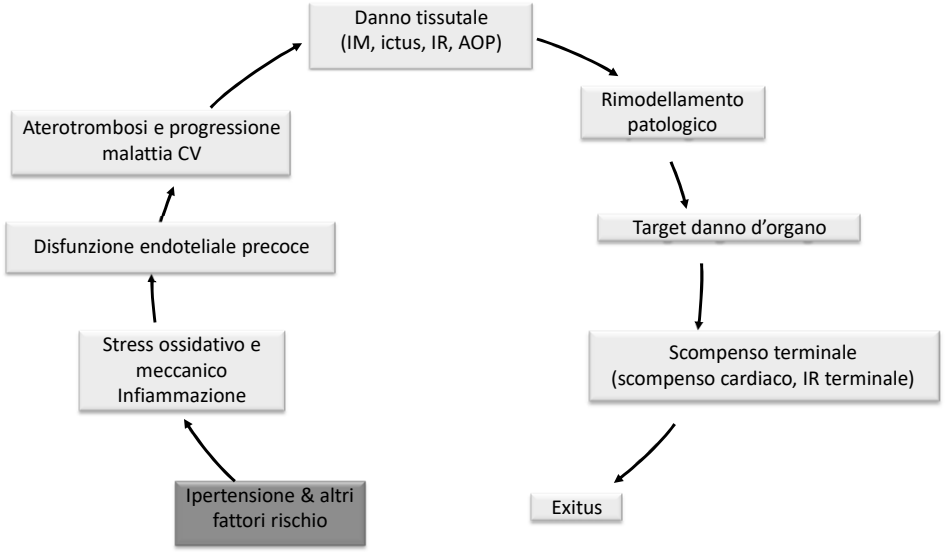
Vasocostrittori: endoteline (endotelina 1) trombossano A_2 (TXA_2), prostaglandina H_2 (PGH_2)

(4) Ormone antidiuretico

Prodotto dall'ipotalamo, agisce modificando la permeabilità dell'epitelio del nefrone distale all'acqua e dunque la concentrazione urinaria. La sua liberazione dipende da modificazioni dell'osmolalità e dell'ipovolemia.

↑ Permeabilità all'acqua → passaggio di acqua nell'interstizio → riduzione del volume urinario → ↑ concentrazione intratubulare di NaCl → ↑ riassorbimento di NaCl.

Dall'ipertensione al continuum delle patologie cardiovascolari



Circulation

American Heart Association.

Heart Disease and Stroke Statistics—2017 Update: A Report From the American Heart Association

Emelia J. Benjamin, Michael J. Blaha, Stephanie E. Chiuve, Mary Cushman, Sandeep R. Das, Rajat Deo, Sarah D. de Ferranti, James Floyd, Myriam Fornage, Cathleen Gillespie, Carmen R. Isasi, Monik C. Jiménez, Lori Chaffin Jordan, Suzanne E. Judd, Daniel Lackland, Judith H. Lichtman, Lynda Lisabeth, Simin Liu, Chris T. Longenecker, Rachel H. Mackey, Kunihiro Matsushita, Dariush Mozaffarian, Michael E. Mussolino, Khurram Nasir, Robert W. Neumar, Latha Palaniappan, Dilip K. Pandey, Ravi R. Thiagarajan, Mathew J. Reeves, Matthew Ritchey, Carlos J. Rodriguez, Gregory A. Roth, Wayne D. Rosamond, Comilla Sasson, Amytis Towfighi, Connie W. Tsao, Melanie B. Turner, Salim S. Virani, Jenifer H. Voeks, Joshua Z. Willey, John T. Wilkins, Jason HY. Wu, Heather M. Alger, Sally S. Wong, Paul Muntner and On behalf of the American Heart Association Statistics Committee and Stroke Statistics Subcommittee

Circulation. published online January 25, 2017;
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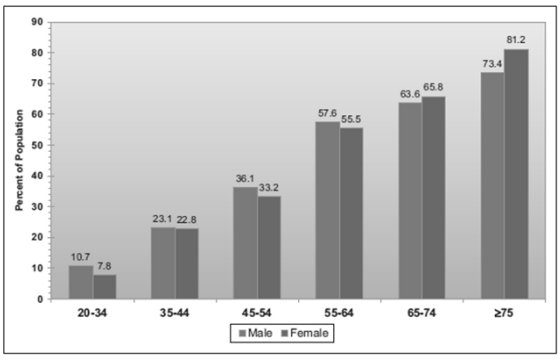
AHA STATISTICAL UPDATE

Heart Disease and Stroke Statistics—2017 Update

A Report From the American Heart Association

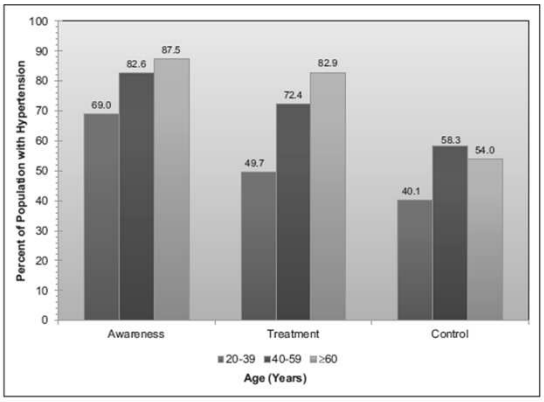
AHA Statistical 2016 Update, Circulation 2017

Prevalenza dell'ipertensione negli adulti (NHANES 2007-2012)



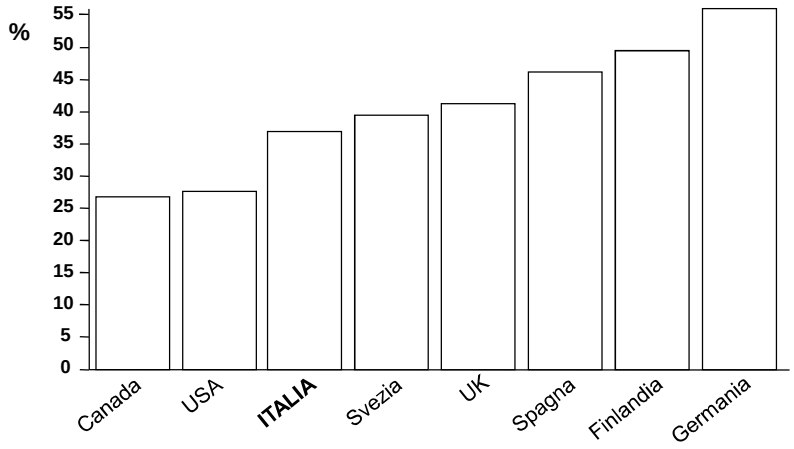
AHA Statistical 2017 Update, Circulation 2017

Prevalenza dell'ipertensione negli adulti (NHANES 2007-2012)



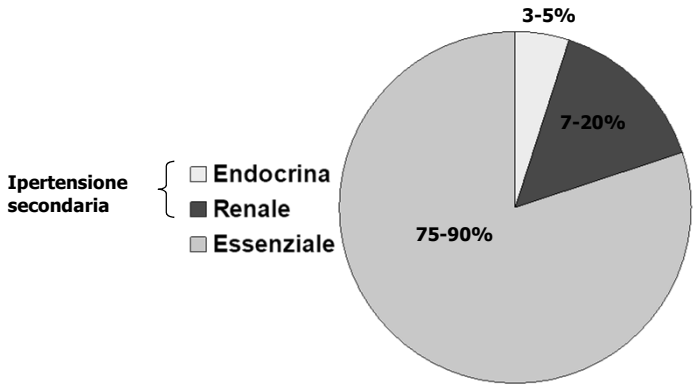
AHA Statistical 2017 Update, Circulation 2017

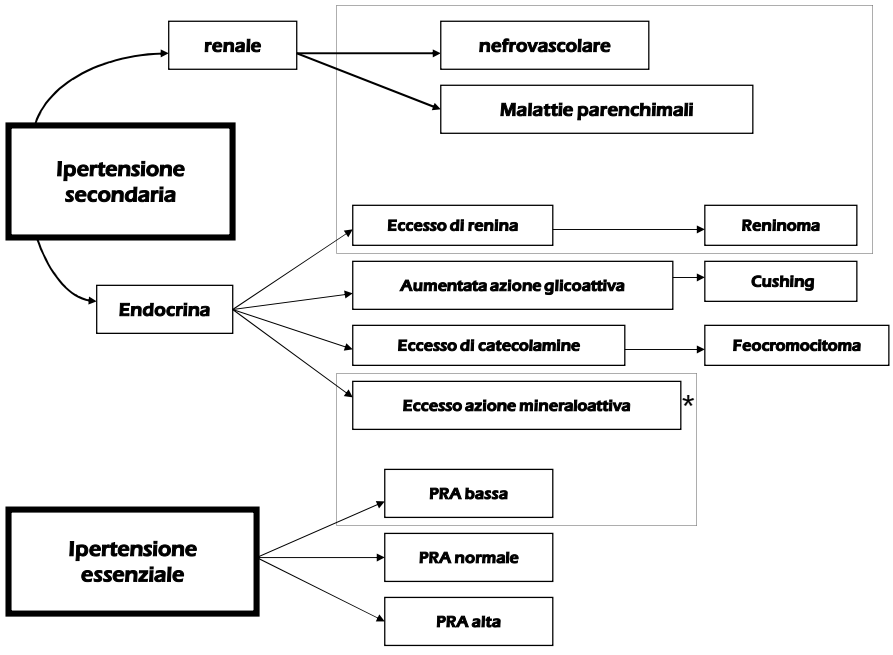
Prevalenza dell'ipertensione nella popolazione italiana



Wolf-Maier K et al, JAMA 2003

Cause di ipertensione





ESC European Society of Cardiology
European Heart Journal (2018) 39, 3021–3104
doi:10.1093/eurheartj/ehy339

2018 ESC/ESH Guidelines for the management of arterial hypertension

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

Table 1 ESC Classes of recommendations

Classes of recommendations	Definition	Suggested wording to use
Class I	Evidence and/or general agreement that a given treatment or procedure is beneficial, useful, effective.	Is recommended/is indicated
Class II	Conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of the given treatment or procedure.	
Class IIa	*Weight of evidence/opinion is in favour of usefulness/efficacy.*	Should be considered
Class IIb	*Usefulness/efficacy is less well established by evidence/opinion.*	May be considered
Class III	Evidence or general agreement that the given treatment or procedure is not useful/effective, and in some cases may be harmful.	Is not recommended

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Table 2 ESC Levels of evidence

Level of evidence A	Data derived from multiple randomized clinical trials or meta-analyses.
Level of evidence B	Data derived from a single randomized clinical trial or large non-randomized studies.
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies, registries.

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New concepts
BP measurement • **Wider use of out-of-office BP measurement with ABPM and/or HBPM, especially HBPM**, as an option to confirm the diagnosis of hypertension, detect white-coat and masked hypertension, and monitor BP control.
Less conservative treatment of BP in older and very old patients • **Lower BP thresholds and treatment targets for older patients**, with emphasis on considerations of biological rather than chronological age (i.e. the importance of frailty, independence, and the tolerability of treatment). • Recommendation that **treatment should never be denied or withdrawn on the basis of age**, provided that treatment is tolerated.
A SPC treatment strategy to improve BP control • **Preferred use of two-drug combination** therapy for the initial treatment of most people with hypertension. • **A single-pill treatment strategy for hypertension** with the preferred use of SPC therapy for most patients. • **Simplified drug treatment algorithms** with the preferred use of an ACE inhibitor or ARB, combined with a CCB and/or a thiazide/thiazide-like diuretic, as the core treatment strategy for most patients, with beta-blockers used for specific indications.
New target ranges for BP in treated patients • **Target *BP ranges* for treated patients** to better identify the recommended BP target and **lower safety boundaries for treated BP**, according to a patient's age and specific comorbidities.
Detecting poor adherence to drug therapy • A strong emphasis on the **importance of evaluating treatment adherence** as a major cause of poor BP control.
A key role for nurses and pharmacists in the longer-term management of hypertension • **The important role of nurses and pharmacists** in the education, support, and follow-up of treated hypertensive patients is emphasized as part of the overall strategy to improve BP control.

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ABPM = ambulatory blood pressure monitoring; ACE = angiotensin-converting enzyme; AF = atrial fibrillation; ARB = angiotensin receptor blocker; BP = blood pressure; CCB = calcium channel blocker; CV = cardiovascular; CVD = cardiovascular disease; HBPM = home blood pressure monitoring; HMOD = hypertension-mediated organ damage; SCORE = Systematic COronary Risk Evaluation; SPC = single-pill combination.

ESC European Society of Cardiology European Heart Journal (2018) 39, 3021–3104 doi:10.1093/eurheartj/ehy339 ESC/ESH GUIDELINES

2018 ESC/ESH Guidelines for the management of arterial hypertension

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

Table 3 Classification of office blood pressure[a] and definitions of hypertension grade[b]

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	<120	and	<80
Normal	120–129	and/or	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[b]	≥140	and	<90

BP = blood pressure; SBP = systolic blood pressure.
[a]BP category is defined according to seated clinic BP and by the highest level of BP, whether systolic or diastolic.
[b]Isolated systolic hypertension is graded 1, 2, or 3 according to SBP values in the ranges indicated.
The same classification is used for all ages from 16 years.

Hypertension disease staging	Other risk factors, HMOD, or disease	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 or DBP ≥110
Stage 1 (uncomplicated)	No other risk factors	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 (asymptomatic disease)	HMOD, CKD grade 3, or diabetes mellitus without organ damage	Moderate to high risk	High risk	High risk	High to very high risk
Stage 3 (established disease)	Established CVD, CKD grade ≥4, or diabetes mellitus with organ damage	Very high risk	Very high risk	Very high risk	Very high risk

Figure 1 Classification of hypertension stages according to blood pressure levels, presence of cardiovascular risk factors, hypertension-mediated organ damage, or comorbidities. CV risk is illustrated for a middle-aged male. The CV risk does not necessarily correspond to the actual risk at different ages. The use of the SCORE system is recommended for formal estimation of CV risk for treatment decisions. BP = blood pressure; CKD = chronic kidney disease; CV = cardiovascular; DBP = diastolic blood pressure; HMOD = hypertension-mediated organ damage; SBP = systolic blood pressure; SCORE = Systematic COronary Risk Evaluation.

Fattori di rischio

Stili di Vita

Dieta Ipercalorica o ricca in Acidi grassi Saturi e Colesterolo

Fumo

Consumo eccessivo di Alcol

Sedentarietà

FRC Modificabili

Ipertensione Arteriosa

Elevato LDL-Colesterolo

Ridotto HDL-Colesterolo

Elevati Trigliceridi

Iperglicemia/Diabete

Obesità

FRC Non Modificabili

Età

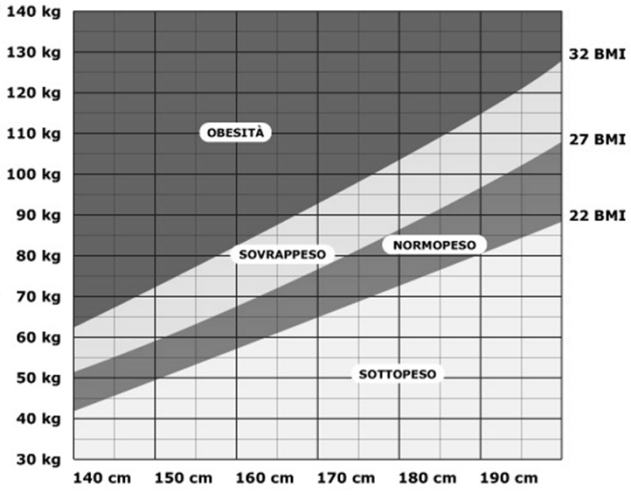
Sesso

Storia familiare di CHD o altra malattia aterosclerotica precoce (maschi<55 a, femmine<65 a

Anamnesi positiva per CHD o altra malattia aterosclerotica

Fattori di rischio

Classificazione	BMI (kg/m²)
	Cut-off principali
Sottopeso	< 18,50
Magrezza severa	<16,00
Magrezza moderata	16,00 – 16,99
Magrezza leggera	17,00 – 18,49
Normopeso	18,50 – 24,99
Sovrappeso	≥ 25,00
Pre-obesità	25,00 – 29,99
Obesità	≥ 30,00
Obesità I classe	30,00 – 34,99
Obesità II classe	35,00 – 39,99
Obesità III classe	≥ 40,00



Stratificazione del rischio

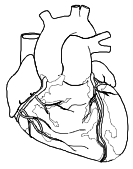
Risk factors
Male sex
Age (men ≥55 years; women ≥65 years)
Smoking
Dyslipidaemia
Total cholesterol >4.9 mmol/L (190 mg/dL), and/or
Low-density lipoprotein cholesterol >3.0 mmol/L (115 mg/dL), and/or
High-density lipoprotein cholesterol: men <1.0 mmol/L (40 mg/dL), women <1.2 mmol/L (46 mg/dL), and/or
Triglycerides >1.7 mmol/L (150 mg/dL)
Fasting plasma glucose 5.6–6.9 mmol/L (102–125 mg/dL)
Abnormal glucose tolerance test
Obesity [BMI ≥30 kg/m^2 (height^2)]
Abdominal obesity (waist circumference: men ≥102 cm; women ≥88 cm) (in Caucasians)
Family history of premature CVD (men aged <55 years; women aged <65 years)

Asymptomatic organ damage
Pulse pressure (in the elderly) ≥60 mmHg
Electrocardiographic LVH (Sokolow–Lyon index >3.5 mV; RaVL >1.1 mV; Cornell voltage duration product >244 mV*ms), or
Echocardiographic LVH [LVM index: men >115 g/m^2; women >95 g/m^2 (BSA)][a]
Carotid wall thickening (IMT >0.9 mm) or plaque
Carotid–femoral PWV >10 m/s
Ankle-brachial index <0.9
CKD with eGFR 30–60 ml/min/1.73 m^2 (BSA)
Microalbuminuria (30–300 mg/24 h), or albumin–creatinine ratio (30–300 mg/g; 3.4–34 mg/mmol) (preferentially on morning spot urine)

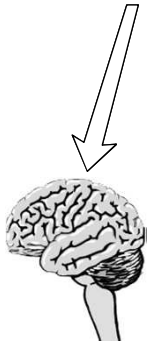
Diabetes mellitus
Fasting plasma glucose ≥7.0 mmol/L (126 mg/dL) on two repeated measurements, and/or
HbA_{1c} >7% (53 mmol/mol), and/or
Post-load plasma glucose >11.0 mmol/L (198 mg/dL)
Established CV or renal disease
Cerebrovascular disease: ischaemic stroke; cerebral haemorrhage; transient ischaemic attack
CHD: myocardial infarction; angina; myocardial revascularization with PCI or CABG
Heart failure, including heart failure with preserved EF
Symptomatic lower extremities peripheral artery disease
CKD with eGFR <30 mL/min/1.73m^2 (BSA); proteinuria (>300 mg/24 h).
Advanced retinopathy: haemorrhages or exudates, papilloedema

Danno d'organo

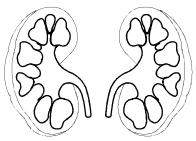
Ipertensione



Angina pectoris
Angina instabile
Infarto miocardico
Morte improvvisa
Scompenso cardiaco



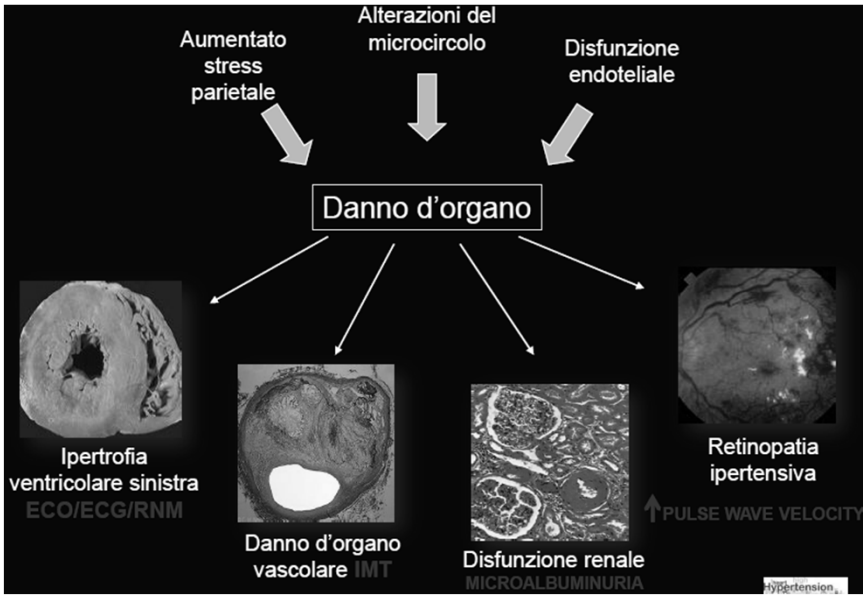
TIA
Ictus ischemico
Ictus emorragico



Patologia renovascolare
Insufficienza renale

Claudicatio
Aneurisma
Ischemia degli arti

Danno d'organo



Valutazione diagnostica

SCOPI

(a) Stabilire i livelli pressori

(b) Identificare le cause di ipertensione secondaria

(c) Stratificazione prognostica del rischio

PROCEDURE

(d) Misurazione ripetuta della pressione arteriosa

(e) Valutazione della storia clinica

(f) Esame fisico

(g) Valutazione strumentale e di laboratorio

Definizione dei valori pressori

Table 9 Definitions of hypertension according to office, ambulatory, and home blood pressure levels

Category	SBP (mmHg)		DBP (mmHg)
Office BP[a]	≥140	and/or	≥90
Ambulatory BP			
Daytime (or awake) mean	≥135	and/or	≥85
Night-time (or asleep) mean	≥120	and/or	≥70
24 h mean	≥130	and/or	≥80
Home BP mean	≥135	and/or	≥85

BP = blood pressure; DBP = diastolic blood pressure; SBP = systolic blood pressure.
[a]Refers to conventional office BP rather than unattended office BP.

Monitoraggio non invasivo della PA 24-ore

INDICAZIONI

- Considerevole variabilità tra i valori pressori ambulatoriali
- Elevati valori pressori in pz. con rischio cardiovascolare basso
- Marcata discrepanza tra valori pressori ambulatoriali e domiciliari
- Sospetta ipertensione secondaria
- Monitoraggio terapia (efficacia antipertensiva – copertura 24 ore)
- Dipping notturno
- Finalità di ricerca

Routine diagnostica e laboratoristica

Table 14 Routine workup for evaluation of hypertensive patients

Routine laboratory tests
Haemoglobin and/or haematocrit
Fasting blood glucose and glycated HbA_{1c}
Blood lipids: total cholesterol, LDL cholesterol, HDL cholesterol
Blood triglycerides
Blood potassium and sodium
Blood uric acid
Blood creatinine and eGFR
Blood liver function tests
Urine analysis: microscopic examination; urinary protein by dipstick test or, ideally, albumin:creatinine ratio
12-lead ECG

eGFR = estimated glomerular filtration rate; ECG = electrocardiogram; HbA_{1c} = haemoglobin A1c.

Valutazione del danno d'organo

Table 15 Assessment of hypertension-mediated organ damage

Basic screening tests for HMOD	Indication and interpretation
12-lead ECG	Screen for LVH and other possible cardiac abnormalities, and to document heart rate and cardiac rhythm
Urine albumin:creatinine ratio	To detect elevations in albumin excretion indicative of possible renal disease
Blood creatinine and eGFR	To detect possible renal disease
Fundoscopy	To detect hypertensive retinopathy, especially in patients with grade 2 or 3 hypertension
More detailed screening for HMOD	
Echocardiography	To evaluate cardiac structure and function, when this information will influence treatment decisions
Carotid ultrasound	To determine the presence of carotid plaque or stenosis, particularly in patients with cerebrovascular disease or vascular disease elsewhere
Abdominal ultrasound and Doppler studies	• To evaluate renal size and structure (e.g. scarring) and exclude renal tract obstruction as possible underlying causes of CKD and hypertension • Evaluate abdominal aorta for evidence of aneurysmal dilatation and vascular disease • Examine adrenal glands for evidence of adenoma or phaeochromocytoma (CT or MRI preferred for detailed examination); see section 8.2 regarding screening for secondary hypertension • Renal artery Doppler studies to screen for the presence of renovascular disease, especially in the presence of asymmetric renal size
PWV	An index of aortic stiffness and underlying arteriosclerosis
ABI	Screen for evidence of LEAD
Cognitive function testing	To evaluate cognition in patients with symptoms suggestive of cognitive impairment
Brain imaging	To evaluate the presence of ischaemic or haemorrhagic brain injury, especially in patients with a history of cerebrovascular disease or cognitive decline

ABI = ankle-brachial index; CKD = chronic kidney disease; CT = computed tomography; ECG = electrocardiogram; eGFR = estimated glomerular filtration rate; HMOD = hypertension-mediated organ damage; LEAD = lower extremity artery disease; LVH = left ventricular hypertrophy; MRI = magnetic resonance imaging; PWV = pulse wave velocity.

Table 18 Sensitivity to detect treatment-induced changes, reproducibility and operator independence, time to changes, and prognostic value of changes provided by markers of hypertension-mediated organ damage

Marker of HMOD	Sensitivity to changes	Reproducibility and operator independence	Time to changes	Prognostic value of the change
LVH by ECG	**Low**	High	Moderate (>6 months)	Yes
LVH by echocardiogram	Moderate	Moderate	Moderate (>6 months)	Yes
LVH by CMR	High	High	Moderate (>6 months)	No data
eGFR	Moderate	High	**Very slow (years)**	Yes
Urinary protein excretion	High	Moderate	Fast (weeks to months)	Moderate
Carotid IMT	**Very low**	**Low**	**Slow (>12 months)**	**No**
PWV	High	**Low**	Fast (weeks to months)	Limited data
Ankle-brachial index	**Low**	Moderate	**Slow (>12 months)**	Moderate

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CMR = cardiac magnetic resonance; ECG = electrocardiogram; eGFR = estimated glomerular filtration rate; HMOD = hypertension-mediated organ damage; IMT = intima-media thickness; LVH = left ventricular hypertrophy; PWV = pulse wave velocity.

Obiettivi del trattamento

L'obiettivo primario del trattamento del pz. iperteso è quello di ottenere la **massima riduzione del rischio cardiovascolare globale a lungo termine**.

E' perciò richiesto il trattamento di tutti i fattori di rischio reversibili identificati, una gestione appropriata delle condizioni cliniche associate, oltre al trattamento dell'ipertensione stessa

Modifiche degli stili di vita (lifestyle changes)

Abolizione del fumo
Calo ponderale
Riduzione del consumo di alcolici, se eccessivo
Esercizio fisico
Dieta iposodica
Incremento di apporto alimentare di frutta e verdura
Riduzione dei grassi totali alimentari

Trattamento iniziale

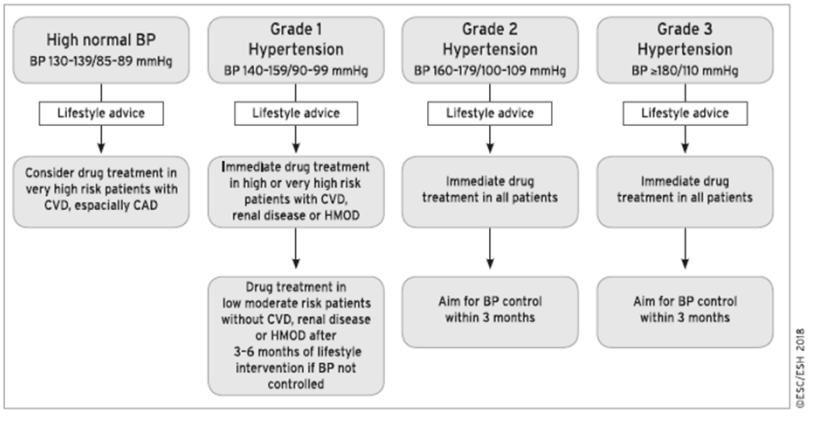

Figure 3 Initiation of blood pressure-lowering treatment (lifestyle changes and medication) at different initial office blood pressure levels. BP = blood pressure; CAD = coronary artery disease; CVD = cardiovascular disease; HMOD = hypertension-mediated organ damage.

Strategie terapeutiche

Nella maggior parte dei casi il trattamento dovrebbe essere iniziato gradualmente e valutato nell'arco di alcune settimane

A seconda dei valori pressori di base e della presenza o meno di altri fattori, è ragionevole iniziare la terapia con uno o due farmaci, entrambi a basso dosaggio

E' probabile che per raggiungere il target pressorio sia necessario l'impiego di una terapia di associazione tra due o più farmaci.

Entrambe le strategie terapeutiche presentano vantaggi e svantaggi.

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 ≥180 or DBP ≥110
No other RF	• No BP intervention	• Lifestyle changes for several months • Then add BP drugs targeting <140/90	• Lifestyle changes for several weeks • Then add BP drugs targeting <140/90	• Lifestyle changes • Immediate BP drugs targeting <140/90
1–2 RF	• Lifestyle changes • No BP intervention	• Lifestyle changes for several weeks • Then add BP drugs targeting <140/90	• Lifestyle changes for several weeks • Then add BP drugs targeting <140/90	• Lifestyle changes • Immediate BP drugs targeting <140/90
≥3 RF	• Lifestyle changes • No BP intervention	• Lifestyle changes for several weeks • Then add BP drugs targeting <140/90	• Lifestyle changes • BP drugs targeting <140/90	• Lifestyle changes • Immediate BP drugs targeting <140/90
OD, CKD stage 3 or diabetes	• Lifestyle changes • No BP intervention	• Lifestyle changes • BP drugs targeting <140/90	• Lifestyle changes • BP drugs targeting <140/90	• Lifestyle changes • Immediate BP drugs targeting <140/90
Symptomatic CVD, CKD stage ≥4 or diabetes with OD/RFs	• Lifestyle changes • No BP intervention	• Lifestyle changes • BP drugs targeting <140/90	• Lifestyle changes • BP drugs targeting <140/90	• Lifestyle changes • Immediate BP drugs targeting <140/90

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

Soglie di trattamento

Table 19 Summary of office blood pressure thresholds for treatment

Age group	Office SBP treatment threshold (mmHg)					Office DBP treatment threshold (mmHg)
	Hypertension	+ Diabetes	+ CKD	+ CAD	+ Stroke/TIA	
18 - 65 years	≥140	≥140	≥140	≥140[a]	≥140[a]	≥90
65 - 79 years	≥140	≥140	≥140	≥140[a]	≥140[a]	≥90
≥80 years	≥160	≥160	≥160	≥160	≥160	≥90
Office DBP treatment threshold (mmHg)	≥90	≥90	≥90	≥90	≥90	

BP = blood pressure; CAD = coronary artery disease; CKD = chronic kidney disease; DBP = diastolic blood pressure; SBP = systolic blood pressure; TIA = transient ischaemic attack.
[a]Treatment may be considered in these very high-risk patients with high–normal SBP (i.e. SBP 130–140 mmHg).

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Trattamento farmacologico e scelte terapeutiche

-I principali benefici dipendono non solo dalla riduzione dei valori di PA ma anche dal tipo di farmaco impiegato

-Le classi principali di farmaci antipertensivi: diuretici, β-bloccanti, calcioantagonisti diidropiridinici, ACE-inibitori, bloccanti recettoriali dell'AT II sono tutte indicate come scelte terapeutiche con cui iniziare e proseguire il trattamento

-Identificare una classe come prima scelta è di relativa importanza vista la frequente necessità di associare due o più farmaci

-I farmaci si differenziano però per alcuni specifici effetti farmacologici con conseguenti indicazioni differenti

-Esiste una diversa tollerabilità da paziente a paziente

Trattamento farmacologico e scelte terapeutiche

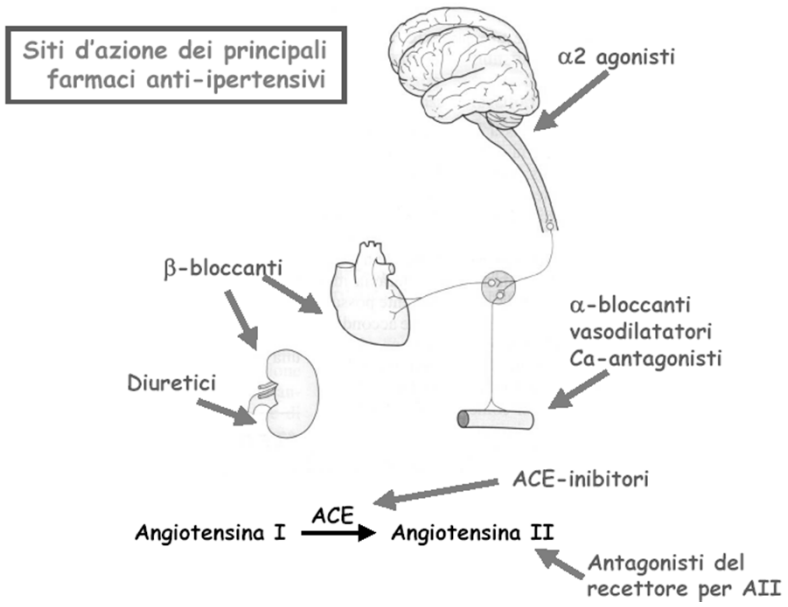
Altri farmaci

- α-bloccanti
- farmaci che agiscono a livello del SNC (clonidina, metildopa)
- farmaci agenti sui recettori imidazolinici I_1
- agonisti dei recettori a_2 adrenergici

Non sono consigliati come prima scelta

Consigliabile invece il loro utilizzo in terapia di associazione

Alcuni di questi hanno indicazioni ed usi specifici



Trattamento farmacologico e scelte terapeutiche

La scelta terapeutica può influenzata da numerosi fattori:

- I farmaci impiegati in passato;
- Il profilo di rischio del paziente;
- La presenza o meno di danno d'organo (TOD), diabete e complicanze (CCA);
- Il costo dei vari farmaci;
- L'eventuale preferenza espressa dal paziente;
- Effetti positivi o negativi del trattamento combinato con classi diverse

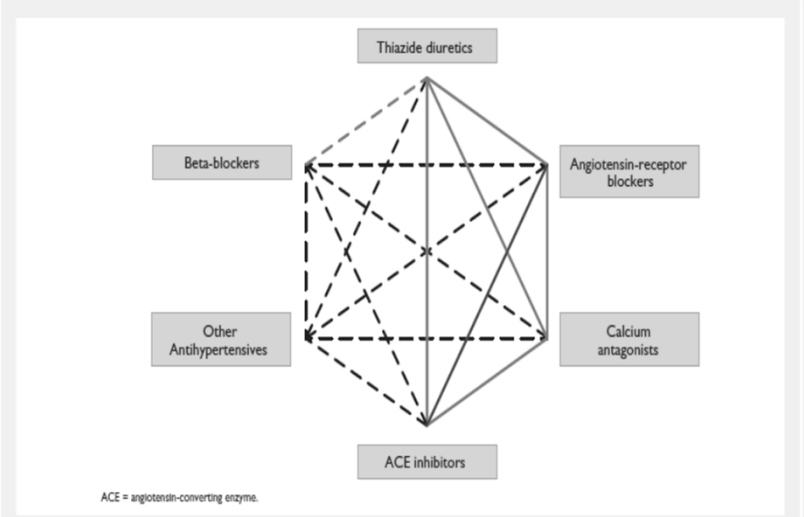


Figure 4 Possible combinations of classes of antihypertensive drugs. Green continuous lines: preferred combinations; green dashed line: useful combination (with some limitations); black dashed lines: possible but less well-tested combinations; red continuous line: not recommended combination. Although verapamil and diltiazem are sometimes used with a beta-blocker to improve ventricular rate control in permanent atrial fibrillation, only dihydropyridine calcium antagonists should normally be combined with beta-blockers.

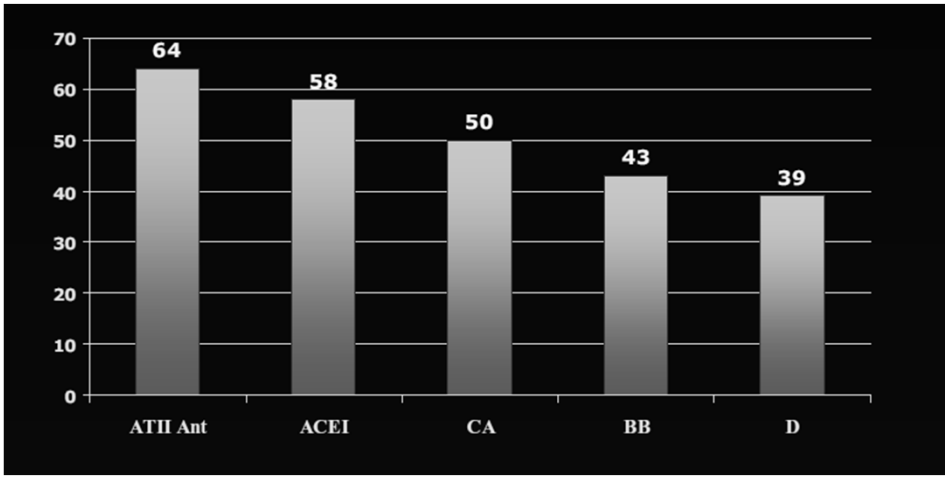
Controindicazioni principali

Table 20 Compelling and possible contraindications to the use of specific antihypertensive drugs

Drug	Contraindications	
	Compelling	Possible
Diuretics (thiazides/thiazide-like, e.g. chlorthalidone and indapamide)	• Gout	• Metabolic syndrome • Glucose intolerance • Pregnancy • Hypercalcaemia • Hypokalaemia
Beta-blockers	• Asthma • Any high-grade sinoatrial or atrioventricular block • Bradycardia (heart rate <60 beats per min)	• Metabolic syndrome • Glucose intolerance • Athletes and physically active patients
Calcium antagonists (dihydropyridines)		• Tachyarrhythmia • Heart failure (HFrEF, class III or IV) • Pre-existing severe leg oedema
Calcium antagonists (verapamil, diltiazem)	• Any high-grade sinoatrial or atrioventricular block • Severe LV dysfunction (LV ejection fraction <40%) • Bradycardia (heart rate <60 beats per min)	• Constipation
ACE inhibitors	• Pregnancy • Previous angioneurotic oedema • Hyperkalaemia (potassium >5.5 mmol/L) • Bilateral renal artery stenosis	• Women of child-bearing potential without reliable contraception
ARBs	• Pregnancy • Hyperkalaemia (potassium >5.5 mmol/L) • Bilateral renal artery stenosis	• Women of child-bearing potential without reliable contraception

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; HFrEF = heart failure with reduced ejection fraction; LV = left ventricular.

Persistenza in terapia (a 1 anno)



Ipertensione resistente al trattamento

Elevati valori basali di PA
Età avanzata
Obesità
Eccessivo introito di sale
Malattia renale cronica
Diabete

AHA Scientific Statement

Resistant Hypertension: Diagnosis, Evaluation, and Treatment

A Scientific Statement From the American Heart Association Professional Education Committee of the Council for High Blood Pressure Research

David A. Calhoun, MD, FAHA, Chair; Daniel Jones, MD, FAHA; Stephen Textor, MD, FAHA; David C. Goff, MD, FAHA; Timothy P. Murphy, MD, FAHA; Robert D. Toto, MD, FAHA; Anthony White, PhD; William C. Cushman, MD, FAHA; William White, MD; Domenic Sica, MD, FAHA; Keith Ferdinand, MD; Thomas D. Giles, MD; Bonita Falkner, MD, FAHA; Robert M. Carey, MD, MACP, FAHA

Chaloun DA et al, Hypertension 2008

Ipertensione resistente al trattamento

Table 28 Medications and other substances that may increase blood presssure[397]

Medication/substance	
Oral contraceptive pill	Especially oestrogen containing; cause hypertension in ~5% of women, usually mild but can be severe
Diet pills	For example, phenylpropanolamine and sibutramine
Nasal decongestants	For example, phenylephrine hydrochloride and naphazoline hydrochloride
Stimulant drugs	Amphetamine, cocaine, and ecstasy; these substances usually cause acute rather than chronic hypertension
Liquorice	Chronic excessive liquorice use mimics hyperaldosteronism by stimulating the mineralocorticoid receptor and inhibiting cortisol metabolism
Immunosuppressive medications	For example, cyclosporin A (tacrolimus has less effect on BP and rapamycin has almost no effect on BP) and steroids (e.g. corticosteroids and hydrocortisone)
Antiangiogenic cancer therapies	Antiangiogenic drugs such as VEGF inhibitors (e.g. bevacizumab), tyrosine kinase inhibitors (e.g. sunitinib), and sorafenib have been reported to increase BP
Other drugs and substances that may raise BP	Anabolic steroids, erythropoietin, non-steroidal anti-inflammatory drugs, and herbal remedies (e.g. ephedra and ma huang)

BP = blood pressure; VEGF = vascular endothelial growth factor.

Condizioni particolari

8.9 Women, pregnancy, oral contraception, and hormone-replacement therapy

Management of hypertension in pregnancy

Recommendations	Class[a]	Level[b]
In women with gestational hypertension, pre-existing hypertension superimposed by gestational hypertension, or with hypertension and subclinical organ damage or symptoms, initiation of drug treatment is recommended when SBP is ≥140 mmHg or DBP ≥90 mmHg.	I	C
In all other cases, initiation of drug treatment is recommended when SBP is ≥150 mmHg or DBP is ≥95 mmHg.	I	C
Methyldopa, labetalol, and CCBs are recommended as the drugs of choice for the treatment of hypertension in pregnancy.[447,448]	I	B (methyldopa)
	I	C (labetalol or CCBs)
ACE inhibitors, ARBs, or direct renin inhibitors are not recommended during pregnancy.	III	C
SBP ≥170 mmHg or DBP ≥110 mmHg in a pregnant woman is an emergency, and admission to hospital is recommended.	I	C
In severe hypertension, drug treatment with i.v. labetalol, oral methyldopa, or nifedipine is recommended.	I	C
The recommended treatment for hypertensive crisis is i.v. labetalol or nicardipine and magnesium.	I	C
In pre-eclampsia associated with pulmonary oedema, nitroglycerin given as an i.v. infusion is recommended.	I	C
In women with gestational hypertension or mild pre-eclampsia, delivery is recommended at 37 weeks.[453]	I	B
It is recommended to expedite delivery in pre-eclampsia with adverse conditions, such as visual disturbances or haemostatic disorders.	I	C

ACE = angiotensin-converting enzyme; ARB = angiotensin receptor blocker; CCB = calcium channel blocker; DBP = diastolic blood pressure; i.v. = intravenous; SBP = systolic blood pressure.
[a]Class of recommendation.
[b]Level of evidence.

Percentuale di controllo della PA (pz in trattamento)