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Department of Medical Sciences
Division of Internal Medicine
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**Nutrizione e patologie cardiovascolari,
prevenzione e cura**

Torino 22 Gennaio 2022

Franco Veglio

CHE COS'È IL RISCHIO ?

E' la probabilità di ammalare prevedibile sulla base di livelli noti dei principali fattori di rischio:

pressione arteriosa, colesterolemia, fumo, diabete e obesità addominale !

Il rischio è continuo...

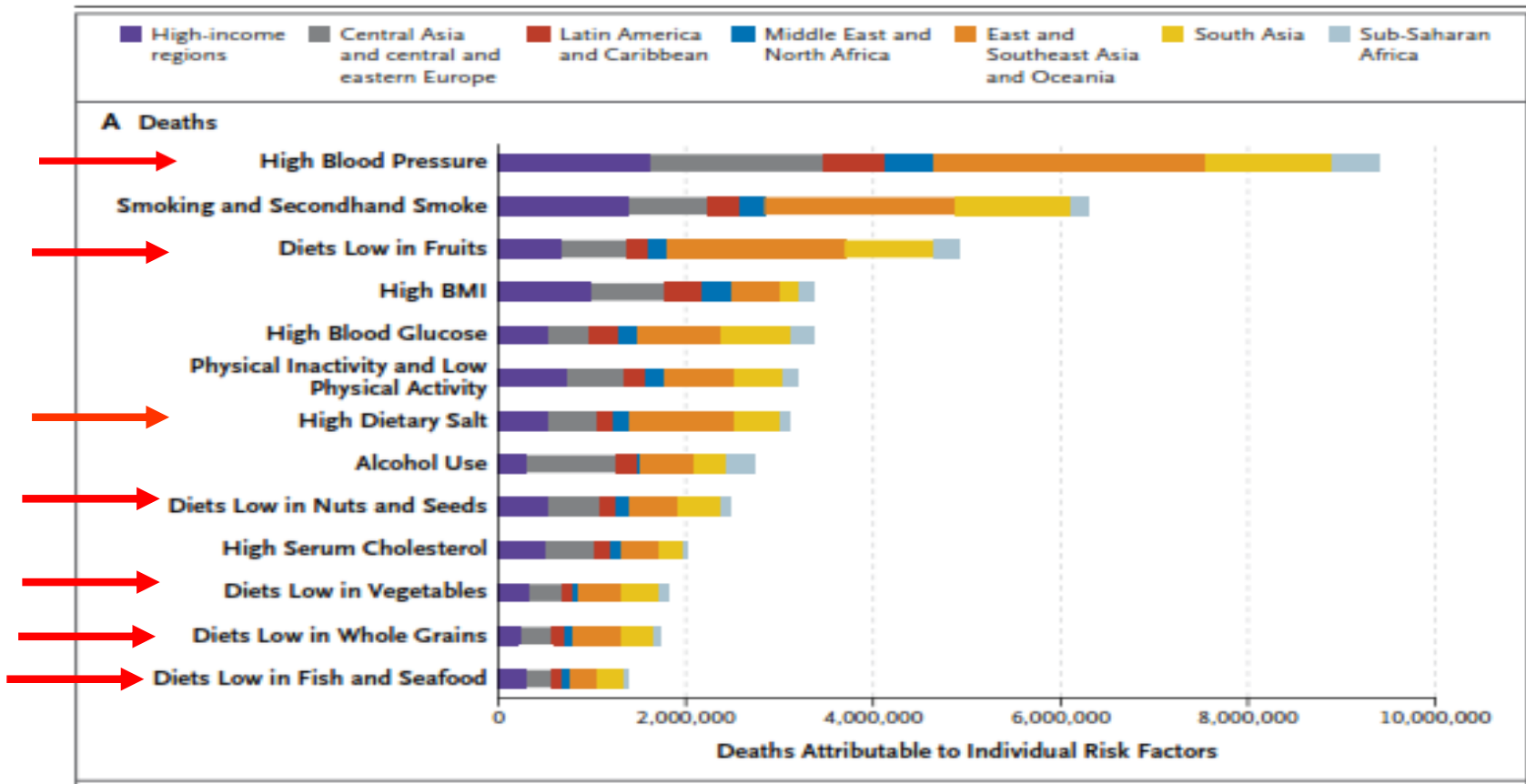
■ aumenta con l'avanzare dell'età

I FATTORI DI RISCHIO CHE POSSONO RIDURRE LA DURATA DELLA NOSTRA VITA

1. AUMENTO DELLA PRESSIONE ARTERIOSA
OVVERO, **L'IPERTENSIONE ARTERIOSA;**
2. AUMENTO DEL COLESTEROLO NEL SANGUE
OVVERO, **L'IPERCOLESTEROLEMIA;**
3. AUMENTO DEL GLUCOSIO NEL SANGUE
OVVERO, **IL DIABETE;**
4. AUMENTO DELLA CIRCONFERENZA DELL'ADDOME
OVVERO, **L'OBESITA' ADDOMINALE**



Behavioral and Dietary Risk Factors



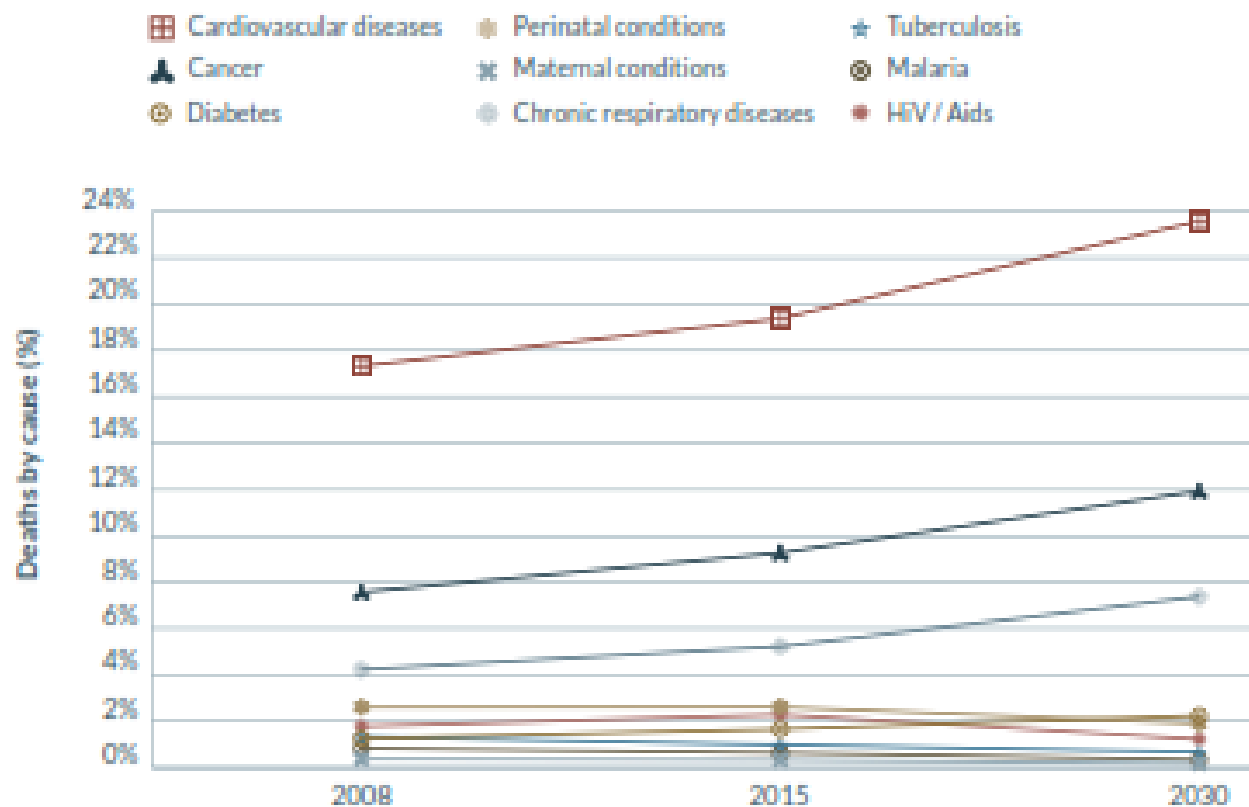
WHO 2015

FIGURE 04

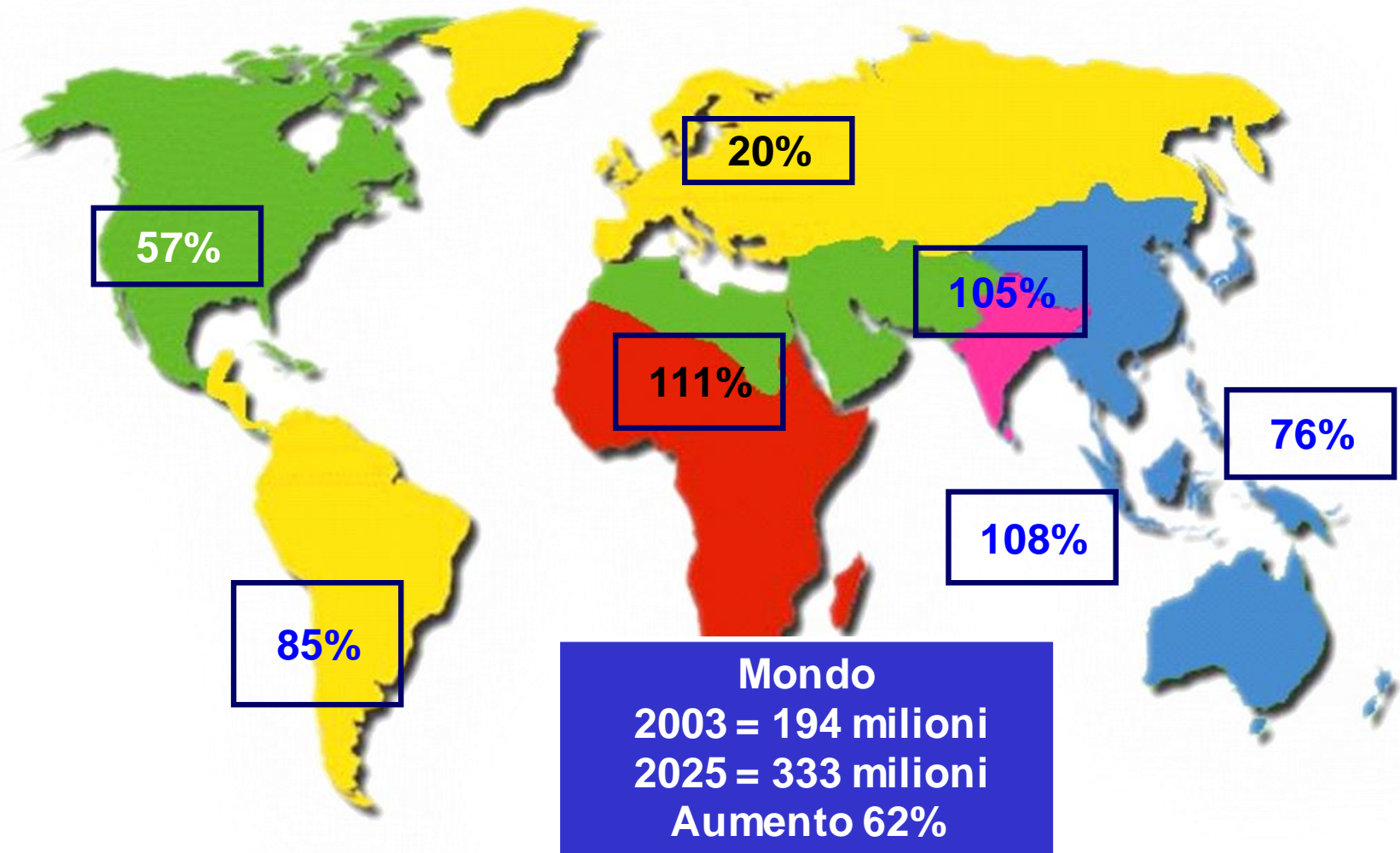
THE PROJECTED MORTALITY TREND FROM 2008 TO 2030 FOR MAJOR NONCOMMUNICABLE DISEASES AND COMMUNICABLE DISEASES

Source:

The Global Burden of Disease, 2004 update. Geneva, World Health Organization, 2008.

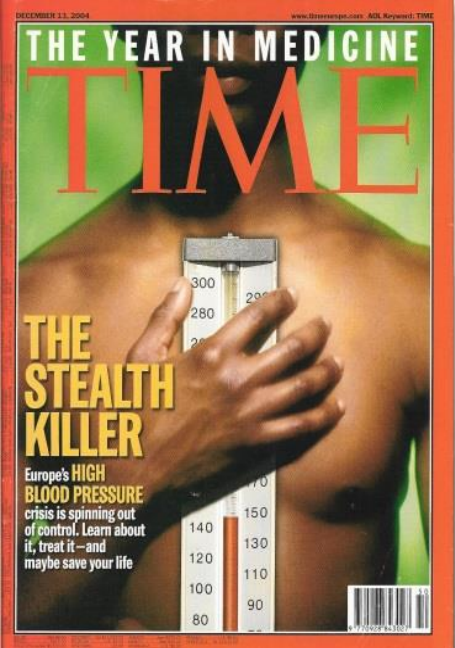


Epidemia del Diabete nel mondo 2003-2025 (milioni)





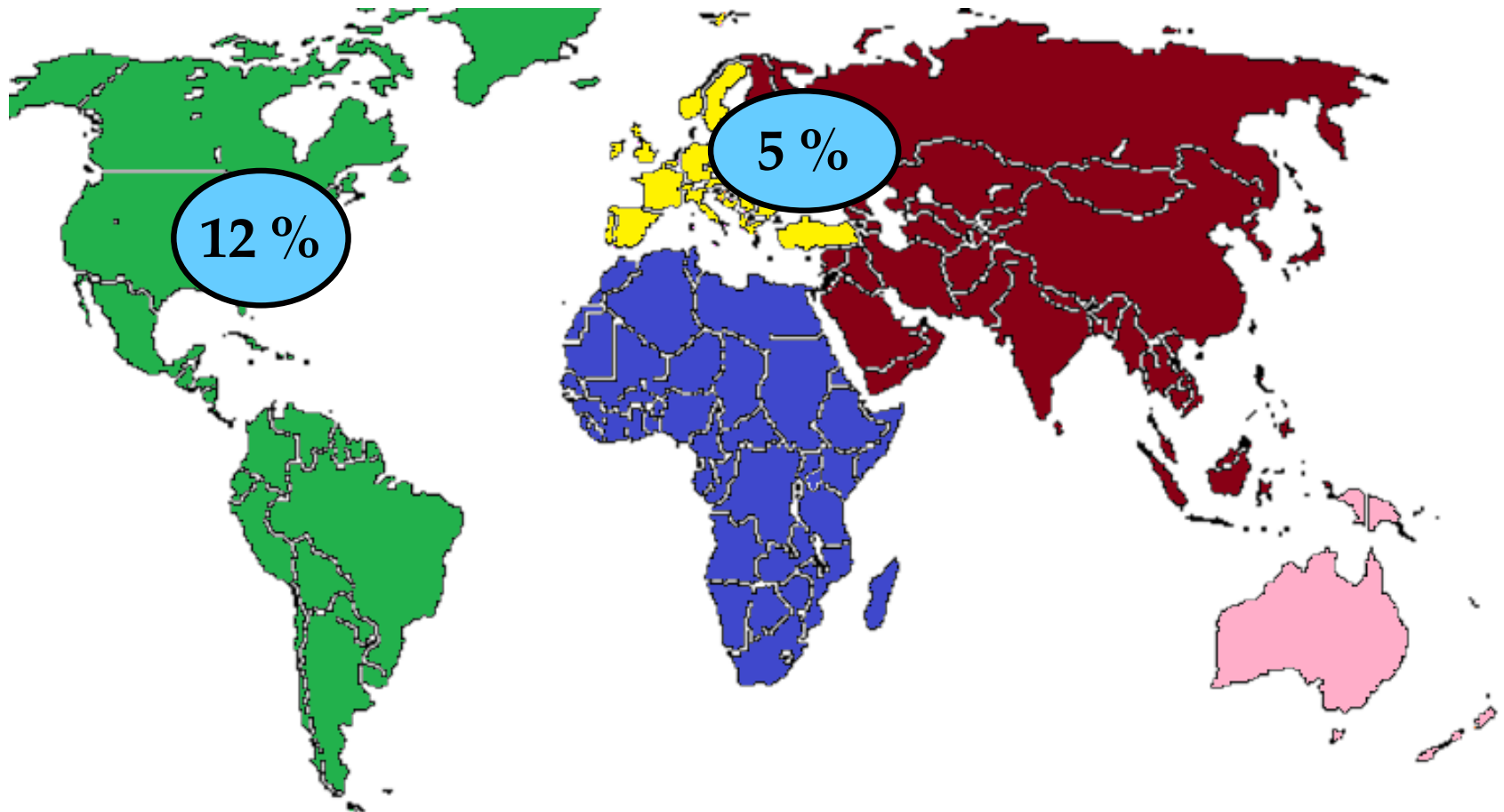
**7 MILIARDI DI ABITANTI
8 MILIONI DI
DECESSI/ANNO/IPERTENSIONE**



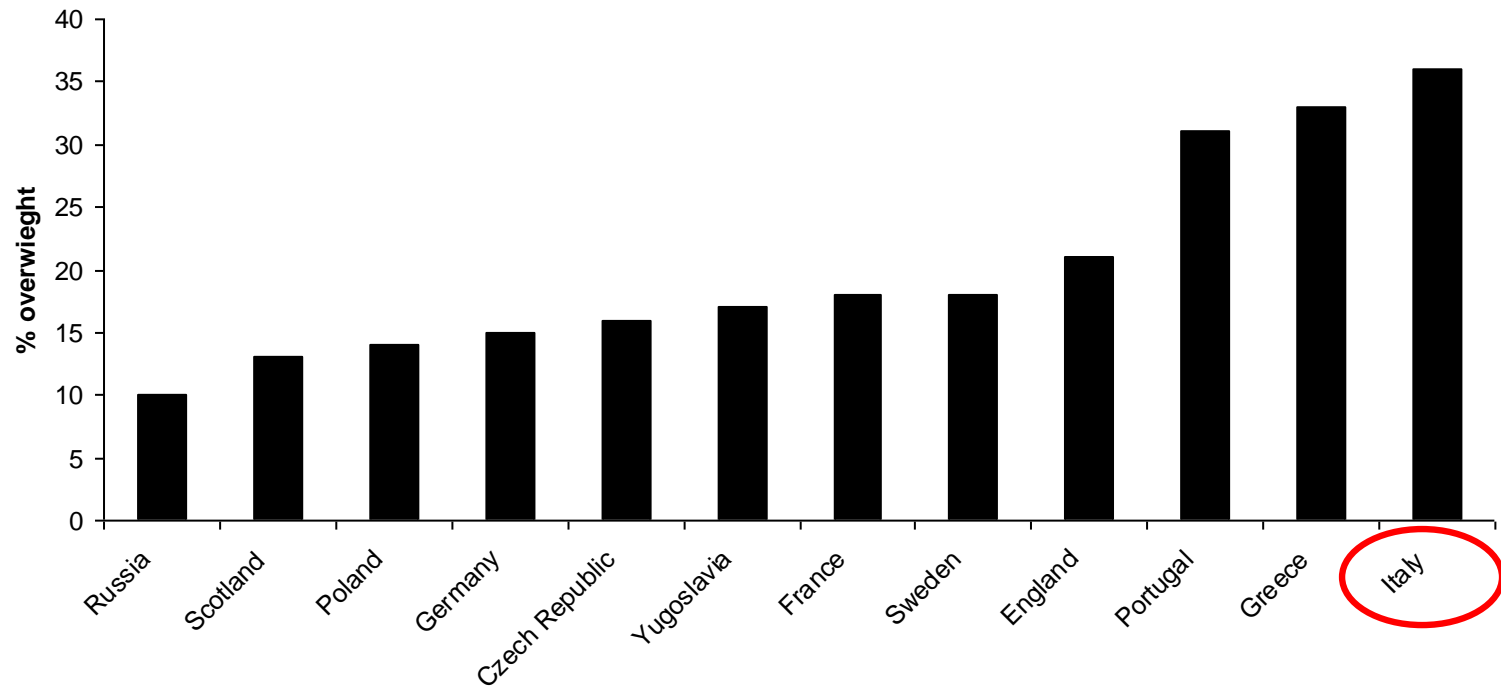
Worldwide burden of HBP

- **HTN** affects about **40%** of the industrialized populations
- **HTN** is associated with additional RF's in over **80%** of patients
- **HTN** is responsible for :
 - **7.6 million** deaths each year (13.5% of total)
 - **6.3 millions** of years of disability (4.4% of total)
 - **54%** of Stroke and **47%** of CHD, **≈30%** ESRD

PEDIATRIC HYPERTENSION PREVALENCE



PREVALENZA DEL SOVRAPPESO IN ADOLESCENZA IN EUROPA



In the WHO European Region

1 in 3 
11-year-olds is

overweight
or
obese

www.euro.who.int/obesity

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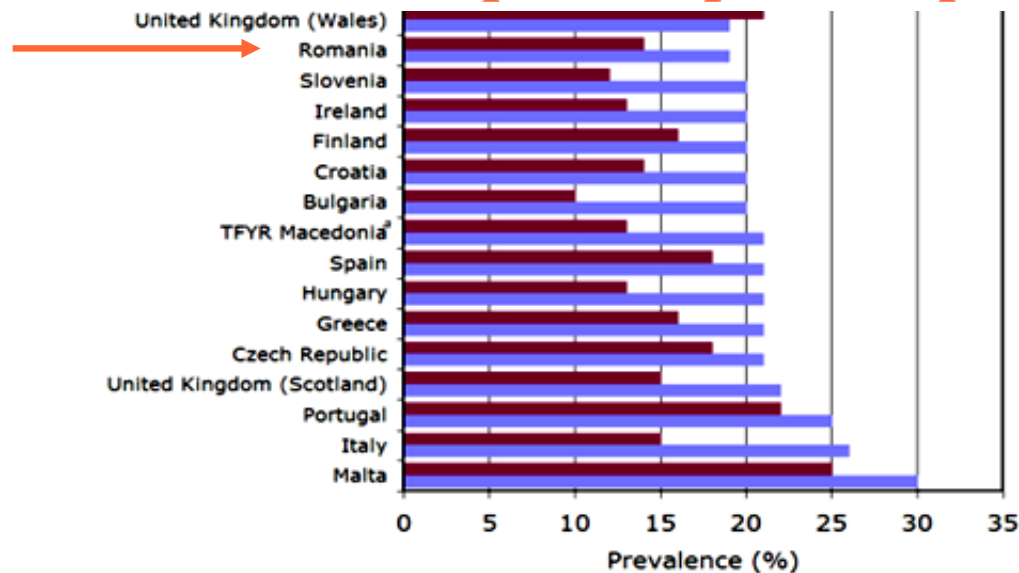
SEDENTARIETA'



Prevalence of overweight (including obesity) among 11-year-olds in 36 countries and areas of the WHO European Region, 2005/2006



“Potato chips+ computer chips”





**Che cos'è
l'ipertensione arteriosa**



Una persona è ipertesa quando i suoi valori pressori sono $\geq 140/90$ mmHg

≡ **Pressione sistolica:** misura la pressione arteriosa quando il cuore si contrae

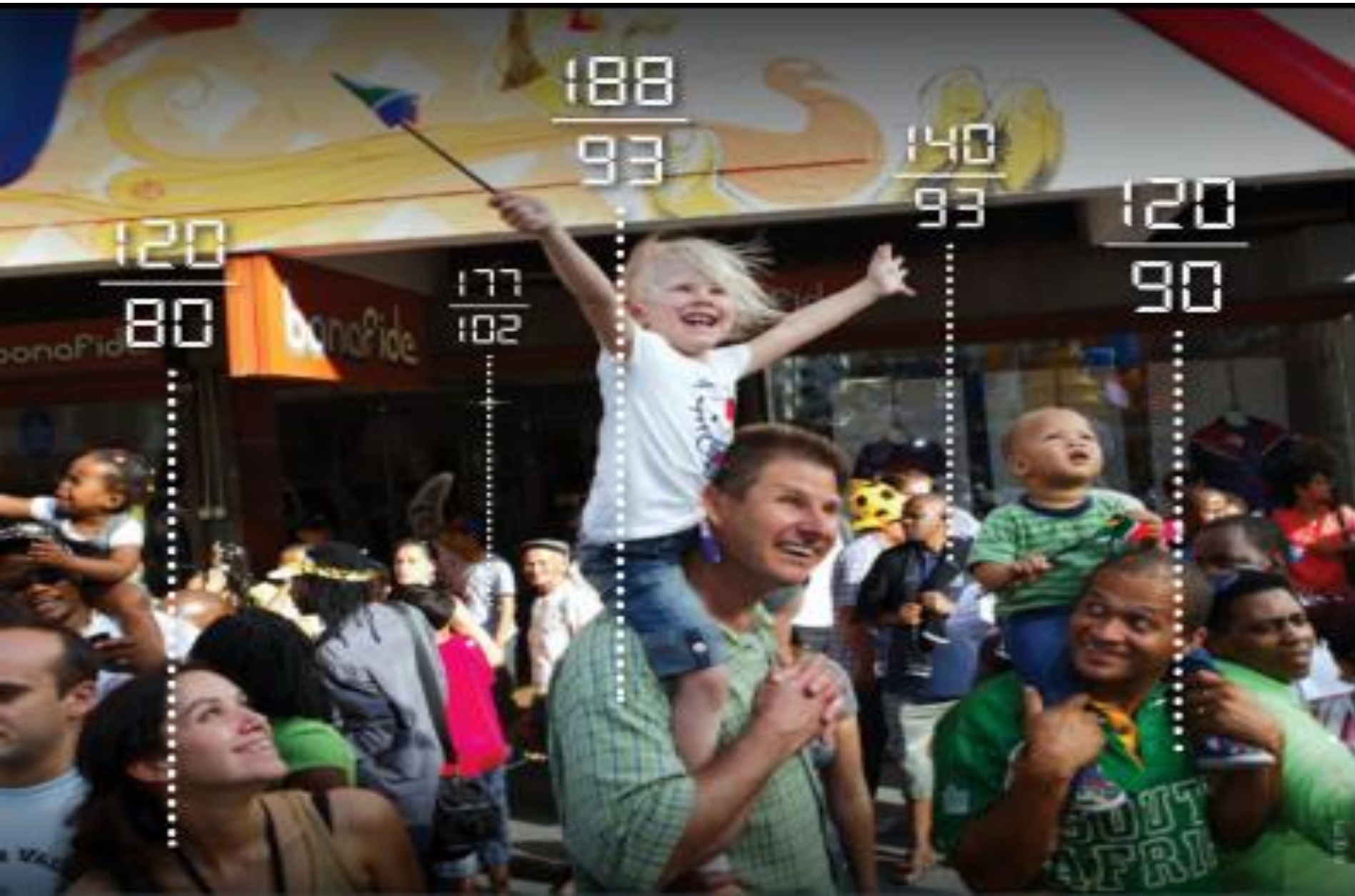
≡ **Pressione diastolica:** misura la pressione arteriosa all'interno dei vasi durante la diastole, ovvero il rilasciamento del ventricolo sinistro

Calcolo del rischio cardiovascolare

Very high risk	People with any of the following:				
	Documented CVD, either clinical or unequivocal on imaging. <ul style="list-style-type: none"> ● Clinical CVD includes acute myocardial infarction, acute coronary syndrome, coronary or other arterial revascularization, stroke, TIA, aortic aneurysm, and PAD ● Unequivocal documented CVD on imaging includes significant plaque (i.e. $\geq 50\%$ stenosis) on angiography or ultrasound; it does not include increase in carotid intima-media thickness ● Diabetes mellitus with target organ damage, e.g. proteinuria or a with a major risk factor such as grade 3 hypertension or hypercholesterolaemia ● Severe CKD (eGFR < 30 mL/min/1.73 m²) ● A calculated 10 year SCORE of $\geq 10\%$ 				
	High risk People with any of the following: <ul style="list-style-type: none"> ● Marked elevation of a single risk factor, particularly cholesterol > 8 mmol/L (> 310 mg/dL), e.g. familial hypercholesterolaemia or grade 3 hypertension (BP $\geq 180/110$ mmHg) ● Most other people with diabetes mellitus (except some young people with type 1 diabetes mellitus and without major risk factors, who may be at moderate-risk) 				
	Hypertensive LVH Moderate CKD eGFR 30-59 mL/min/1.73 m ² A calculated 10 year SCORE of 5-10%				
Moderate risk	People with: <ul style="list-style-type: none"> ● A calculated 10 year SCORE of ≥ 1 to $< 5\%$ ● Grade 2 hypertension ● Many middle-aged people belong to this category 	→	Recommendation CV risk assessment with the SCORE system is recommended for hypertensive patients who are not already at high or very high risk due to established CVD, renal disease, or diabetes, a markedly elevated single risk factor (e.g. cholesterol), or hypertensive LVH. ^{33,35}	Class^a I	Level^b B
Low risk	People with: <ul style="list-style-type: none"> ● A calculated 10 year SCORE of $< 1\%$ 	→			

Hypertension

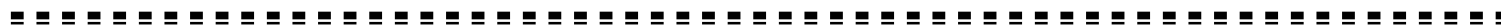
Silent killer, global public health crisis



Il 25% della popolazione è ipertesa

...

... ma il 30% non sa di esserlo !



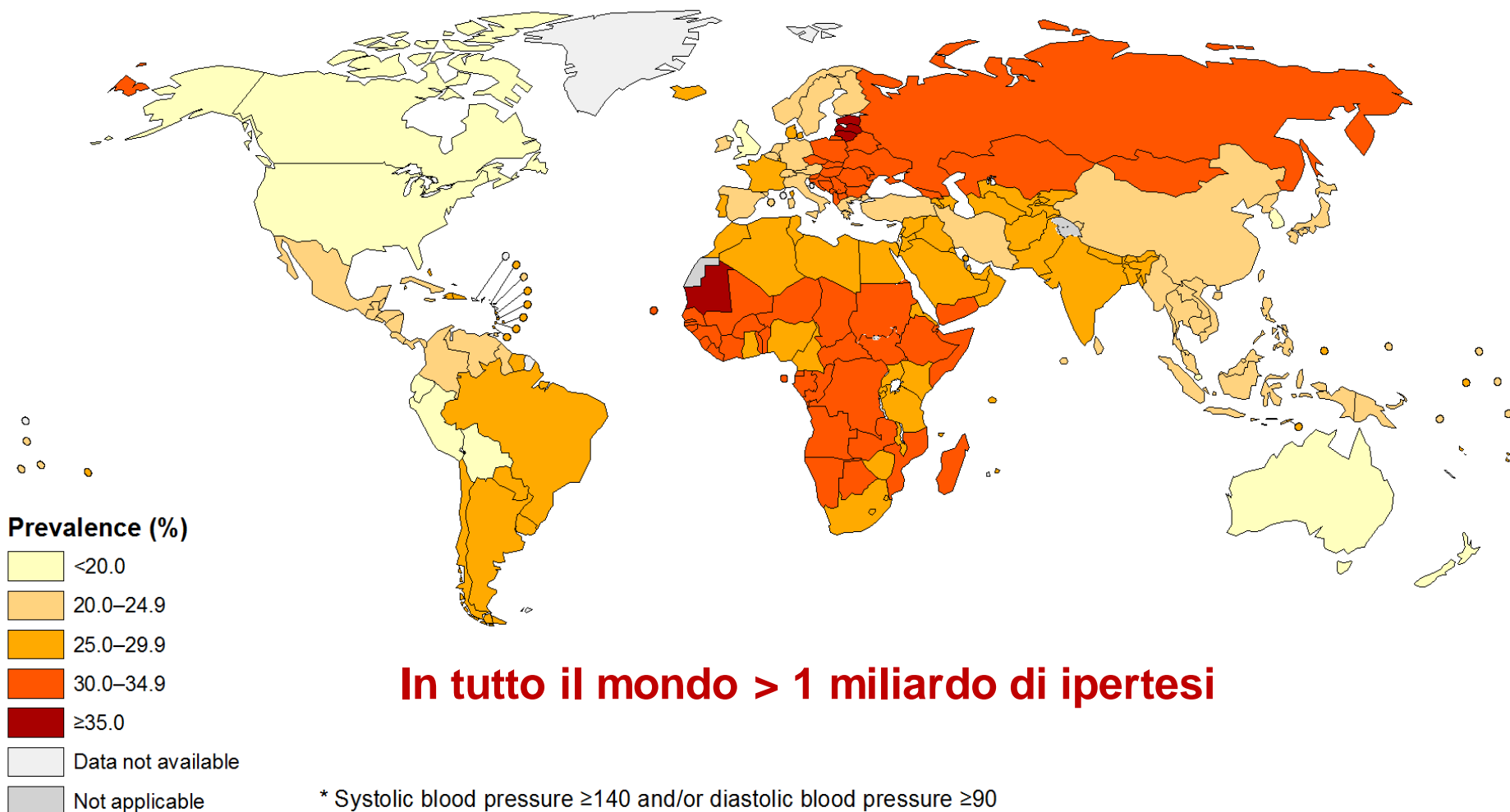
**La probabilità di sviluppare ipertensione
aumenta con l'età.**

Classificazione degli Stadi di Ipertensione Arteriosa

Classificazione degli stadi dell'ipertensione in base ai gradi di pressione arteriosa, la presenza dei fattori di rischio cardiovascolare, di danni d'organo correlati all'ipertensione ed alle comorbidità.

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 \geq 180 or DBP \geq 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
	\geq 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 \geq 4, or diabetes mellitus with organ damage	Very high risk	Very high risk	Very high risk	Very high risk

Prevalenza di Ipertensione Arteriosa nel mondo OMS Soggetti maschi di età > 18 anni



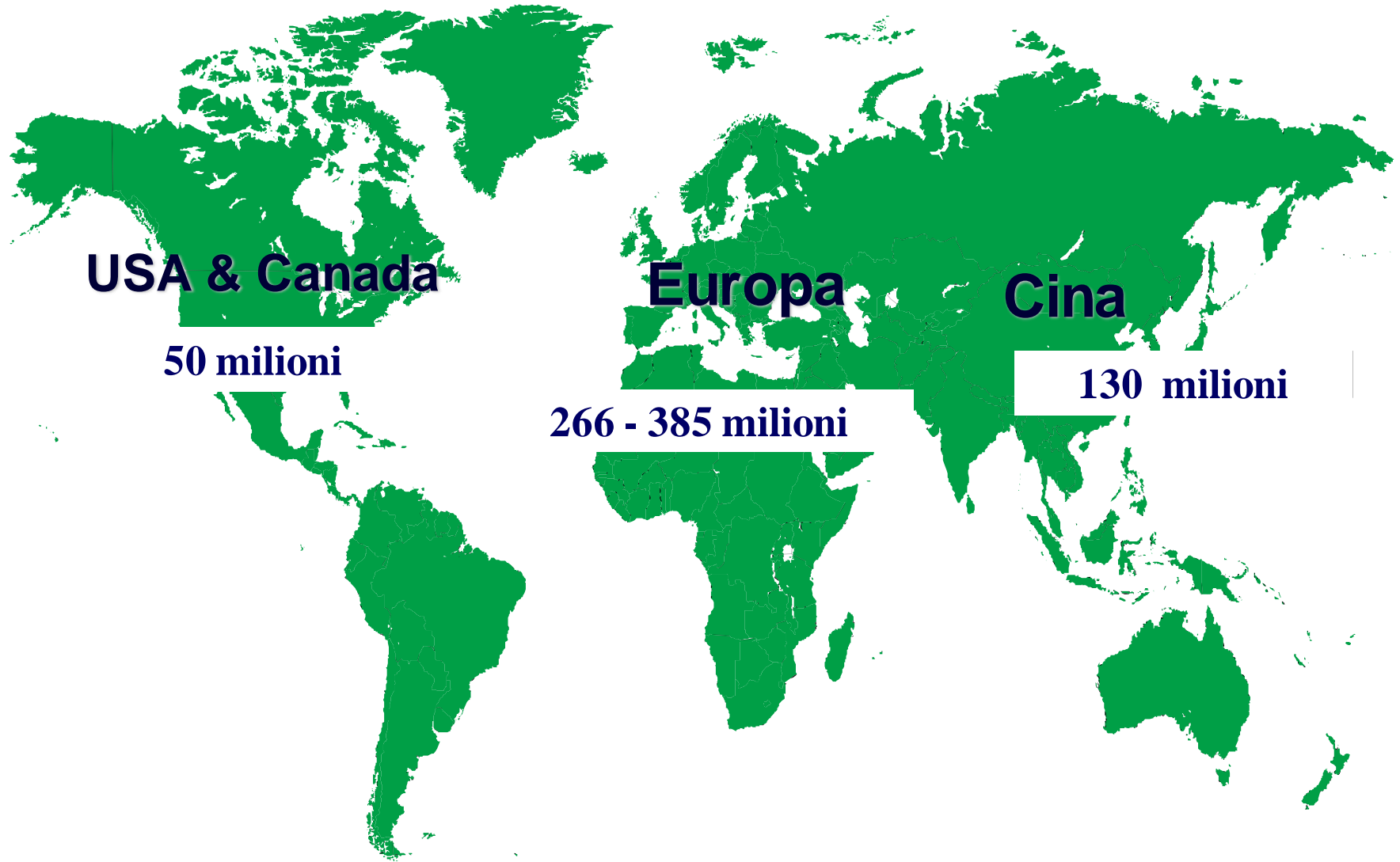
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: World Health Organization
Map Production: Health Statistics and
Information Systems (HSI)
World Health Organization



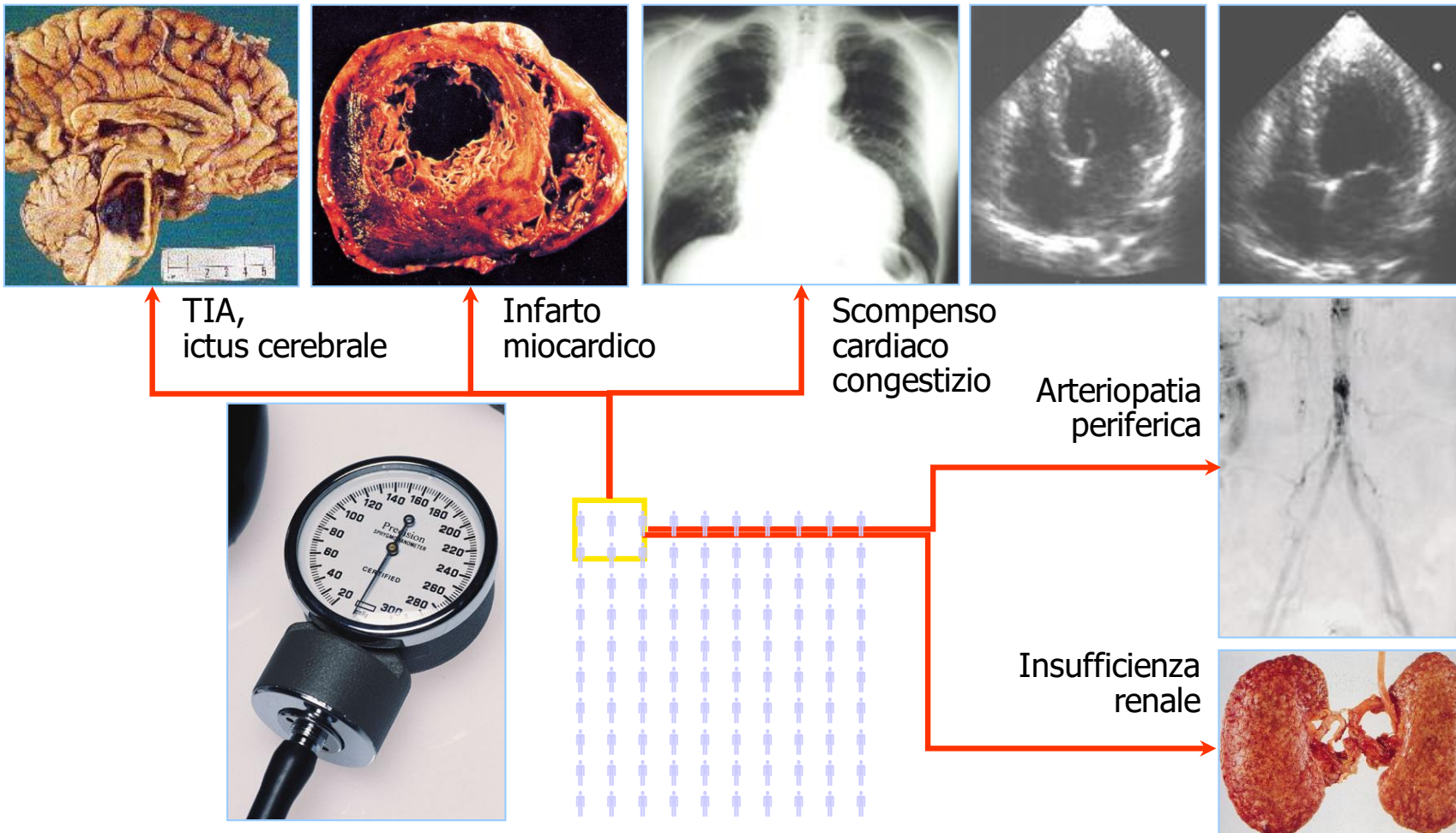
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Prevalenza di ipertensione arteriosa nel mondo



Incidenza di eventi cardiovascolari in soggetti con Ipertensione Arteriosa

Circa 2 eventi ogni 100 soggetti per anno



Classificazione della pressione arteriosa clinica e definizione del grado di ipertensione

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.

^aBP category is defined according to seated clinic BP and by the highest level of BP, whether systolic or diastolic.

^bIsolated 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.

Quando la ipertensione arteriosa fa la storia



Churchill, Roosevelt e Stalin alla conferenza di Yalta nel 1945

190/110 mmHg

240/130 mmHg

180/110 mmHg

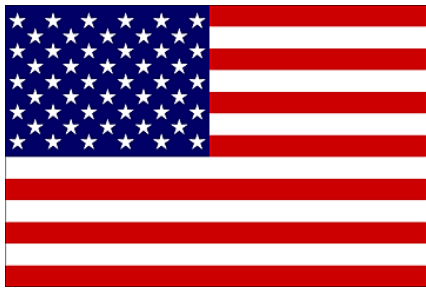


Lifestyle interventions for patients with hypertension or high-normal BP

Recommendations	Class ^a	Level ^b
Salt restriction to <5 g per day is recommended. ^{248,250,255,258}	I	A
It is recommended to restrict alcohol consumption to: <ul style="list-style-type: none">• Less than 14 units per week for men.• Less than 8 units per week for women.³⁵	I	A
It is recommended to avoid binge drinking.	III	C
Increased consumption of vegetables, fresh fruits, fish, nuts, and unsaturated fatty acids (olive oil); low consumption of red meat; and consumption of low-fat dairy products are recommended. ^{262,265}	I	A
Body-weight control is indicated to avoid obesity (BMI >30 kg/m ² or waist circumference >102 cm in men and >88 cm in women), as is aiming at healthy BMI (about 20–25 kg/m ²) and waist circumference values (<94 cm in men and <80 cm in women) to reduce BP and CV risk. ^{262,271,273,290}	I	A
Regular aerobic exercise (e.g. at least 30 min of moderate dynamic exercise on 5–7 days per week) is recommended. ^{262,278,279}	I	A
Smoking cessation, supportive care, and referral to smoking cessation programs are recommended. ^{286,288,291}	I	B

DIET AND EFFECTS ON CARDIOVASCULAR OUTCOMES

<i>Diet</i>	<i>Description</i>	<i>Study type</i>	<i>Outcomes</i>
DASH eating plan	High intake of fruits and vegetables, low-fat dairy products, whole grains, poultry, fish, and nuts; low intake of total and saturated fat and cholesterol ¹⁰	Meta-analysis of cohort studies ¹¹	21% reduced risk of coronary artery disease and 21% reduced risk of stroke ¹¹
Mediterranean diet	Fruits and vegetables; whole grains; olive oil; moderate intake of fish, seafood, dairy, wine ¹²	Meta-analysis of cohort studies ¹³ Spanish randomized controlled trial ¹⁴	10% reduction in cardiovascular events and 8% reduction in mortality ¹³ Reduction in cardiovascular events over 4.8 years ¹⁴
Swedish diet (based on national standards)	Low intake of saturated fat and sugar; higher intake of dietary fiber, fish, and fruits and vegetables ⁷	Swedish prospective cohort ⁷	Reduced risk of cardiovascular events (32% in men, 27% in women) ⁷



Follow the DASH diet to potentially lower your blood pressure.



DIETA DASH

- ✓ Apporto importante di frutta, vegetali e latticini a basso contenuto di grassi
- ✓ Pane integrale, pollame, pesce e nocciole
- ✓ Contenuto molto basso in grassi, carni rosse, dolciumi, bevande contenenti zucchero
- ✓ Ricca pertanto in potassio, magnesio, calcio e fibre, povera in grassi totali, grassi saturi, e colesterolo
- ✓ Piuttosto alta in proteine

Benefit

Fruits, Nuts, Fish

Vegetables, Vegetable Oils

Whole Grains, Beans, Yogurt

Cheese

Eggs, Poultry, Milk

Butter

Unprocessed Red Meats

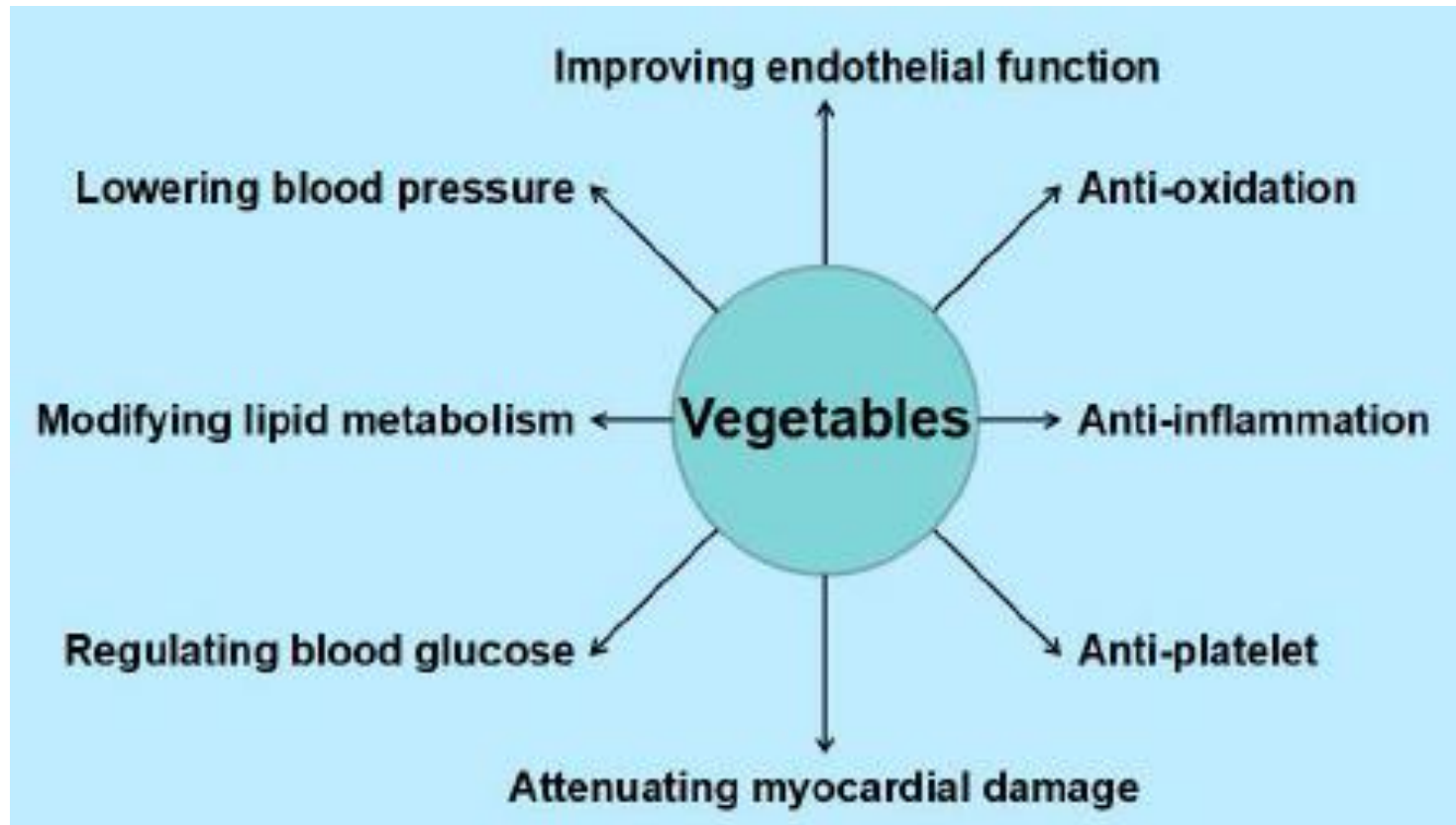
Refined Grains, Starches, Sugars

Processed Meats, High Sodium Foods

Industrial Trans Fat

Harm

The cardioprotective effects of vegetables



LIFESTYLE MODIFICATIONS

	ASH/ISH 2014 ⁵⁶	ESH/ESC 2013 ⁴	BHS IV 2004 ⁵⁷	PAS (mmHg)
Weight reduction	Yes	Yes	Yes	5-20 /10Kg
Reduction in dietary salt intake	Yes	Yes	Yes	2-8
Increase in dietary fresh fruit and vegetable intake	Yes	Yes	Yes	8-14
Increase in dietary low-fat dairy intake	Not mentioned	Yes	Yes	8-14
Physical activity*	Yes	Yes	Yes	4-9
Moderate alcohol intake	Yes	Yes	Yes	2-4
Reduction in saturated fat and cholesterol intake	Not mentioned	Yes	Yes	
Regular fish intake	Not mentioned	Yes	Not mentioned	

ASH=American Society of Hypertension. ISH=International Society of Hypertension. ESH=European Society of Hypertension. ESC=European Society of Cardiology. BHS=British Hypertension Society. *Endurance, dynamic resistance, and isometric resistance.

- Camminare per 30-45 min per \geq 4 giorni la settimana (\downarrow rischio del 20-50%)



- Smettere di fumare

- Modificazioni dietetiche



**- Limitare il consumo di
alcol**

**- Perdere
peso**





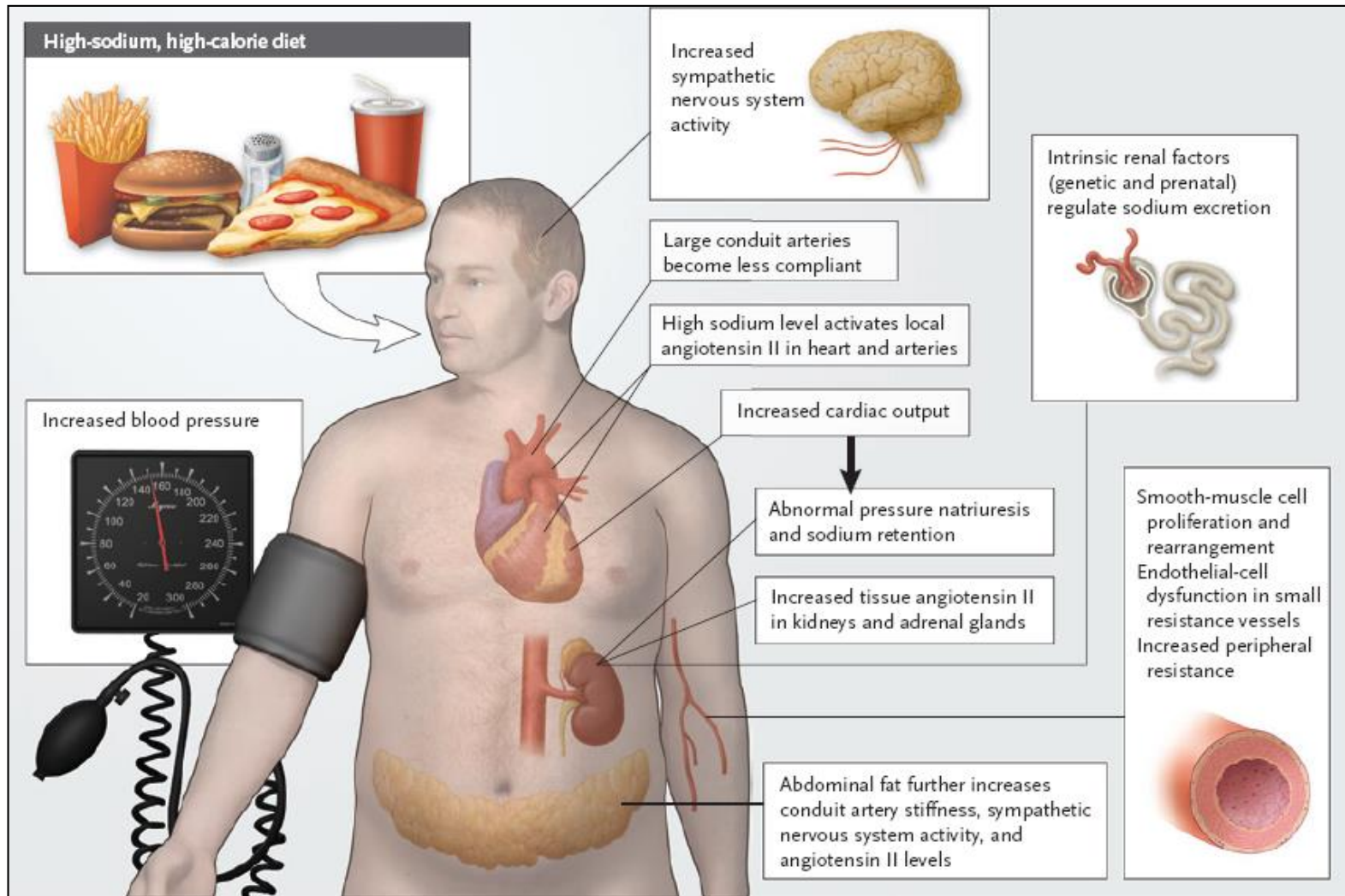
Se troppo sale è utilizzato nei cibi, il polso si indurisce.

Huang Di Nei Ching Su Wen

Il Canone di Medicina Interna dell' Imperatore Giallo

Cina – 2600 a.c.

Sodium and Hypertension





**World Health
Organization**

L'Organizzazione Mondiale della Sanità ha sancito che, in una dieta salutare, debbano essere presenti:

Meno di 5 g di sale (circa un cucchiaino da caffè) al giorno

5 grammi in
meno di sale al
giorno (circa un
cucchiaino da
caffè)

- 😊 potrebbero evitare in tutto il mondo più di 1 milione di morti per ictus e circa 3 milioni di morti per malattie cardiovascolari
- 😊 riducono del 23 % il pericolo di avere un ictus
- 😊 riducono del 17 % il pericolo di avere una malattia del cuore

TAKE-HOME MESSAGES



- **HTN** is the most common RF of CVD
- **HTN** epidemiology is well defined and involves the population worldwide
- **HTN** control contributes to CV prevention and must be improved.
- Actions promoting lifestyle modifications may improve **HTN** management, reducing the overall burden of CVD



Thanks