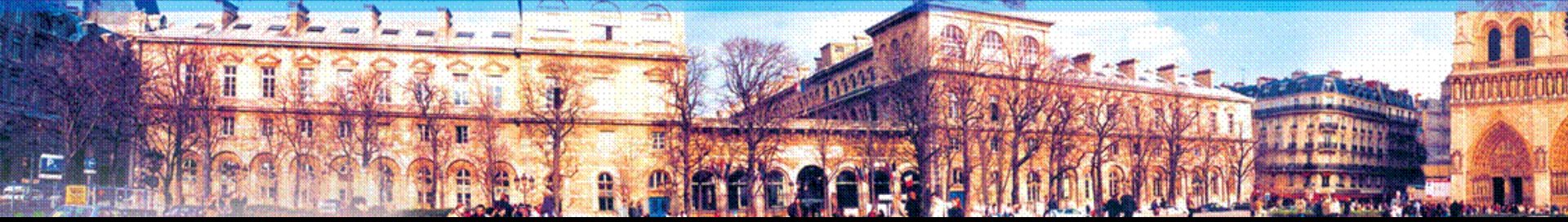


Epidémiologie de l'hypertension arterielle

Jacques Blacher
Unité hypertension artérielle, soins et prévention cardiovasculaires
Centre de diagnostic et de thérapeutique, Hôtel-Dieu, Paris

Décembre 2010

Déclaration de conflits d'intérêt de Jacques Blacher :

- Absence de participation financière dans le capital d'une entreprise liée aux médicaments.

- Absence de lien durable avec une entreprise liée aux médicaments (contrat de travail, rémunération régulière...).

- Interventions ponctuelles en rapport avec des entreprises liées aux médicaments (essais cliniques, travaux scientifiques, comités scientifiques, rapports d'expertise, conférences, colloques, actions de formation, participation à divers symposia, rédaction de brochures...) avec, le cas échéant, facturation d'honoraires ; et ceci avec la majorité des entreprises du médicaments commercialisant des produits cardiovasculaires et autres produits en rapport avec mes domaines de spécialité (SERVIER, NOVARTIS, PFIZER, MSD, SANOFI, BRISTOL-MYERS SQUIBB, GLAXO SMITHKLINE, PIERRE FABRE, DANONE, ASTRA-ZENECA, ABBOTT, AMGEN, ARDIX-THERVAL, IPSEN, MERCK SERONO, EUTHERAPIE, BOEHRINGER INGELHEIM, MENARINI, DAIICHI-SANKYO,...).

- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

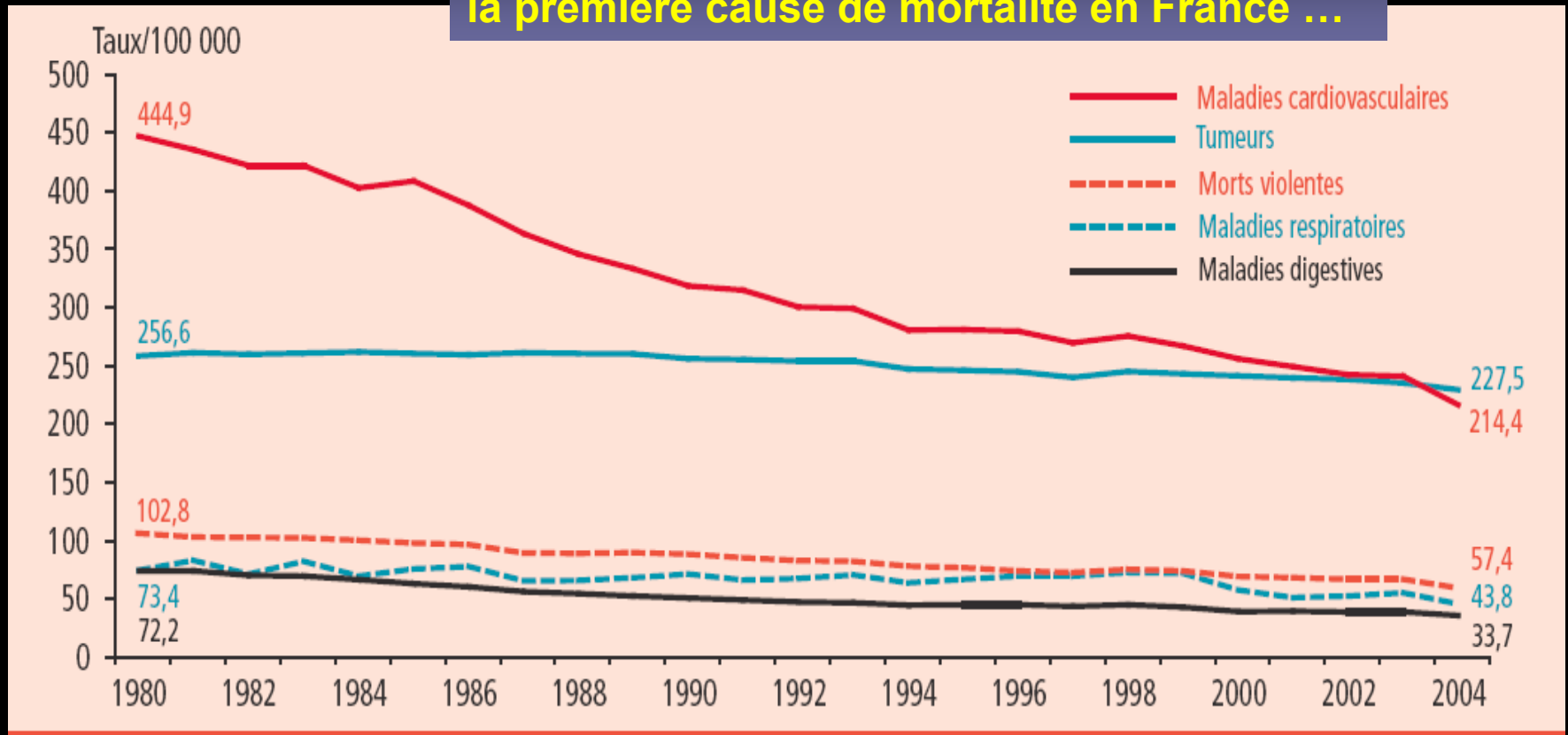
- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

BEH Bulletin épidémiologique hebdomadaire

Septembre 2007

Evolution des taux* de décès par grande catégorie de causes de décès, 1980-2004, France métropolitaine, deux sexes

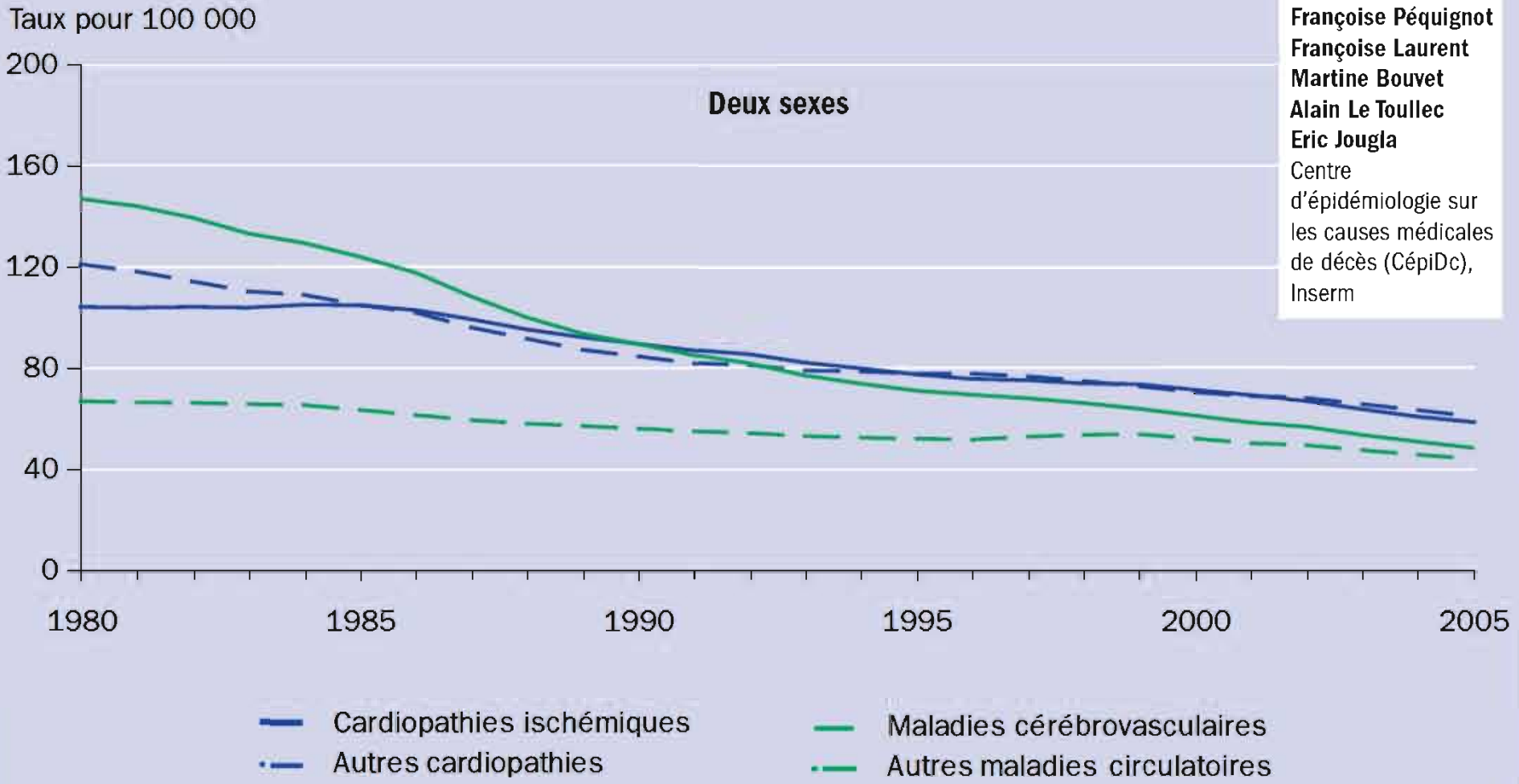
Les maladies cardiovasculaires ne sont plus la première cause de mortalité en France …



* Taux de décès standardisés pour 100 000.

Évolution des taux de décès standardisés par catégories de maladies de l'appareil circulatoire, selon le sexe (1980-2005, France métropolitaine)

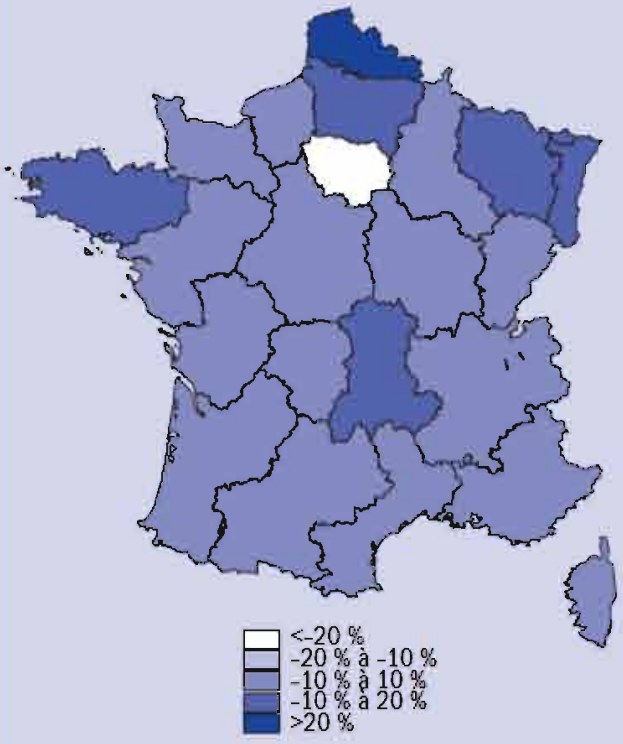
Albertine Aouba
Françoise Péquignot
Françoise Laurent
Martine Bouvet
Alain Le Toullec
Eric Jougla
Centre d'épidémiologie sur les causes médicales de décès (CépiDc), Inserm



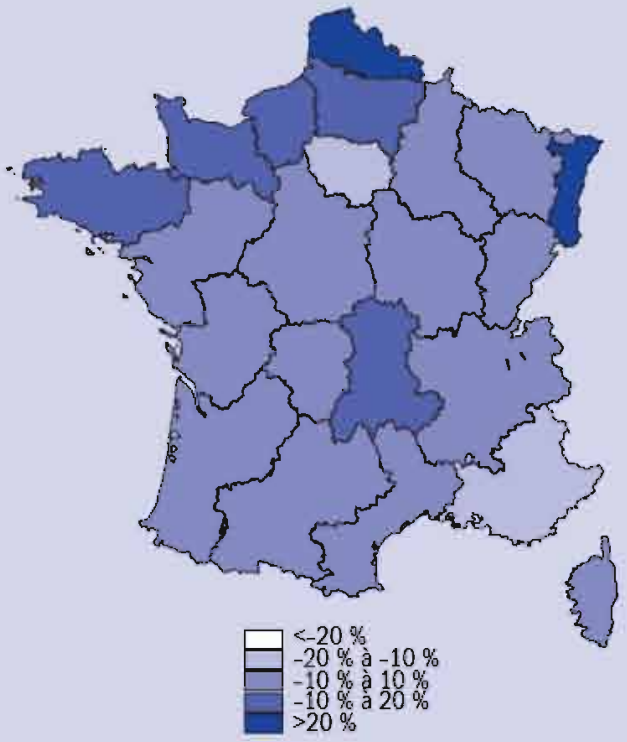
Courbes lissées sur trois années

Taux* régionaux moyens de décès tous âges par maladies de l'appareil circulatoire, cardiopathies ischémiques et maladies cérébro-vasculaires (deux sexes, France métropolitaine, 2003-2005)

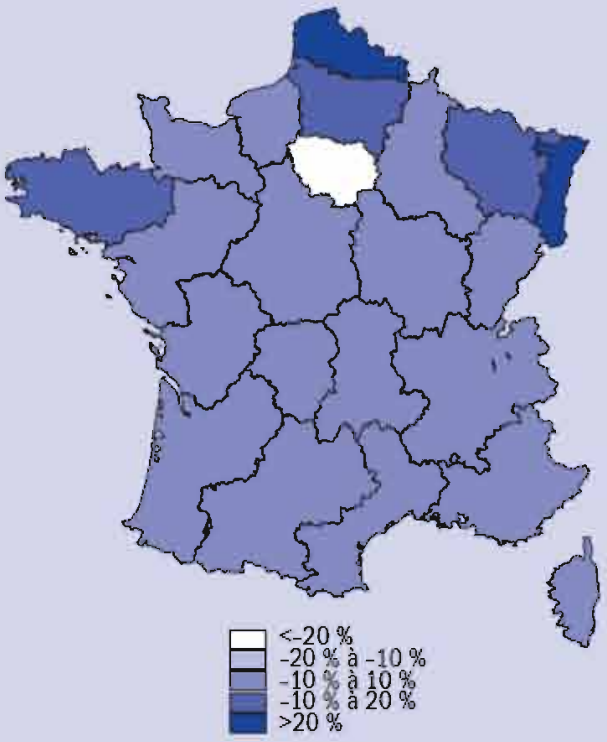
Maladies de l'appareil circulatoire



Cardiopathies ischémiques



Maladies cérébrovasculaires



*Taux standardisés par âge (moyenne 2003-2005), variation par rapport à la moyenne nationale : [(moyenne régionale – moyenne nationale) / moyenne nationale] x 100.

Albertine Aouba
Françoise Péquignot
Françoise Laurent
Martine Bouvet
Alain Le Toullec
Eric Jougla
Centre d'épidémiologie sur les causes médicales de décès (CépiDc), Inserm

Taux de décès standardisés des maladies de l'appareil circulatoire, deux sexes (Union européenne, 2004*)

* Les dernières données disponibles pour l'Italie = 2002, la Belgique = 1997 et le Danemark = 2001.

Albertine Aouba
Françoise Péquignot
Françoise Laurent
Martine Bouvet
Alain Le Toullec
Eric Jougla
Centre d'épidémiologie sur les causes médicales de décès (CépiDc), Inserm

BMJ

RESEARCH

Life expectancy in relation to cardiovascular risk factors: 38 year follow-up of 19 000 men in the Whitehall study

Robert Clarke, reader in epidemiology and public health medicine,[1] Jonathan Emberson, senior statistician,[1] Astrid Fletcher, professor of epidemiology,[2] Elizabeth Breeze, lecturer in epidemiology,[3] Michael Marmot, professor of epidemiology and public health medicine,[3] Martin J Shipley, senior lecturer in medical statistics[3]

Table 5 | Hazard ratios for vascular and non-vascular mortality and life expectancy by all cause mortality risk scores

Risk score categories	Prevalence at baseline (%)	Vascular deaths		Non-vascular deaths		Life expectancy at age 50 (SE)
		Deaths	HR* (95% CI)	Deaths	HR (95% CI)	
Risk score based on SBP, cholesterol, and smoking						
1 (lowest fifth)	20.0	812	1.0	1044	1.0	33.5 (0.2)
2	20.0	1023	1.28 (1.17 to 1.41)	1240	1.23 (1.13 to 1.33)	31.2 (0.2)
3	20.0	1173	1.61 (1.47 to 1.76)	1336	1.47 (1.35 to 1.59)	29.4 (0.2)
4	20.0	1292	1.91 (1.75 to 2.09)	1387	1.66 (1.53 to 1.80)	27.6 (0.2)
5 (highest fifth)	20.0	1583	2.74 (2.51 to 2.98)	1353	1.94 (1.78 to 2.10)	24.2 (0.2)
Risk score based on SBP, cholesterol, smoking, BMI, grade, glucose intolerance, and diabetes						
1 (lowest fifth)	20.0	782	1.0	977	1.0	34.0 (0.2)
2	20.0	1007	1.35 (1.23 to 1.49)	1223	1.34 (1.23 to 1.45)	31.3 (0.2)
3	20.0	1181	1.71 (1.56 to 1.87)	1260	1.50 (1.38 to 1.63)	29.8 (0.2)
4	20.0	1361	2.17 (1.98 to 2.37)	1390	1.86 (1.71 to 2.02)	26.9 (0.2)
5 (highest fifth)	20.0	1552	2.85 (2.60 to 3.11)	1510	2.41 (2.22 to 2.62)	23.6 (0.3)
Lowest 5%	5.0	154	1.0	228	1.0	35.4 (0.4)
Middle 90%	90.0	5276	2.18 (1.86 to 2.56)	5784	1.68 (1.47 to 1.92)	29.3 (0.1)
Highest 5%	5.0	453	4.65 (3.86 to 5.60)	348	2.70 (2.28 to 3.20)	20.2 (0.6)

SBP=systolic blood pressure, BMI=body mass index.
*Hazard ratios adjusted for age at risk and calendar period.

Global causes of death

Population	**6,400,000,000**
Total deaths per year	**57,000,000 (0.9%)**
Cardiovascular death	**16,600,000 (31%)**
	43% coronary heart disease
	32% stroke
	78% not in high income countries
AIDS	**2,850,000**
Tuberculosis	**1,700,000**
Malaria	**1,140,000 (mostly in Africa)**

World Health Report 2003

- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

World Health Organization

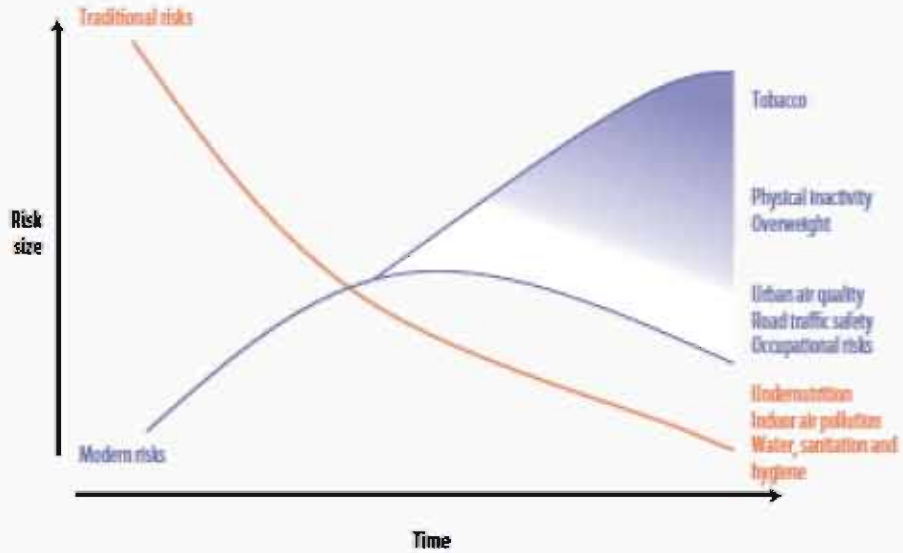
1.3 The risk transition

As a country develops, the types of diseases that affect a population shift from primarily infectious, such as diarrhoea and pneumonia, to primarily non-communicable, such as cardiovascular disease and cancers *(5)*. This shift is caused by:

- improvements in medical care, which mean that children no longer die from easily curable conditions such as diarrhoea
- the ageing of the population, because noncommunicable diseases affect older adults at the highest rates
- public health interventions such as vaccinations and the provision of clean water and sanitation, which reduce the incidence of infectious diseases.

This pattern can be observed across many countries, with wealthy countries further advanced along this transition.

Figure 2: The risk transition. Over time, major risks to health shift from traditional risks (e.g. inadequate nutrition or unsafe water and sanitation) to modern risks (e.g. overweight and obesity). Modern risks may take different trajectories in different countries, depending on the risk and the context.



GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

World Health Organization

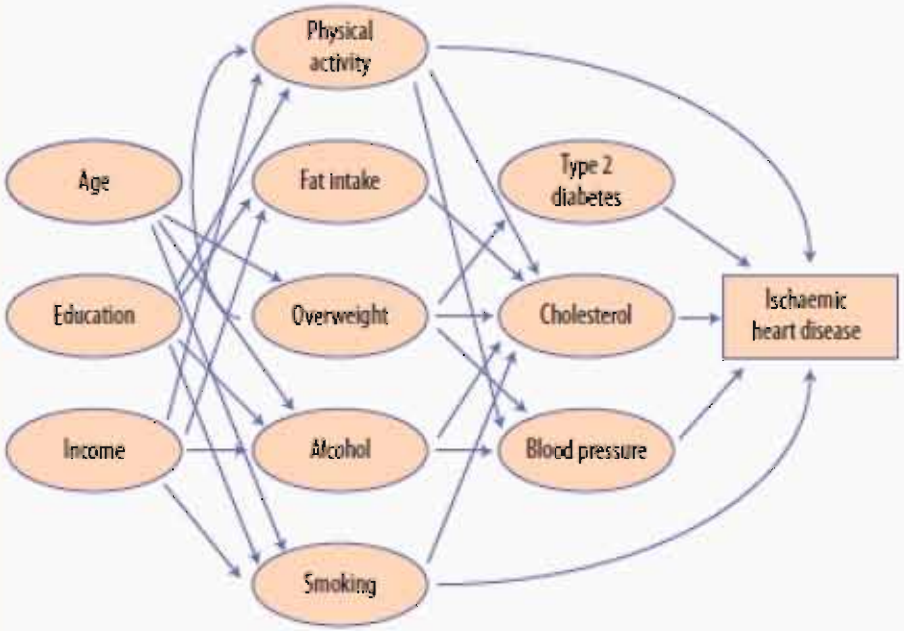
1.3 The risk transition

As a country develops, the types of diseases that affect a population shift from primarily infectious, such as diarrhoea and pneumonia, to primarily noncommunicable, such as cardiovascular disease and cancers *(5)*. This shift is caused by:

- improvements in medical care, which mean that children no longer die from easily curable conditions such as diarrhoea
- the ageing of the population, because noncommunicable diseases affect older adults at the highest rates
- public health interventions such as vaccinations and the provision of clean water and sanitation, which reduce the incidence of infectious diseases.

This pattern can be observed across many countries, with wealthy countries further advanced along this transition.

Figure 1: The causal chain. Major causes of ischaemic heart disease are shown. Arrows indicate some (but not all) of the pathways by which these causes interact.



GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

World Health Organization

Figure 6: Deaths attributed to 19 leading risk factors, by country income level, 2004.

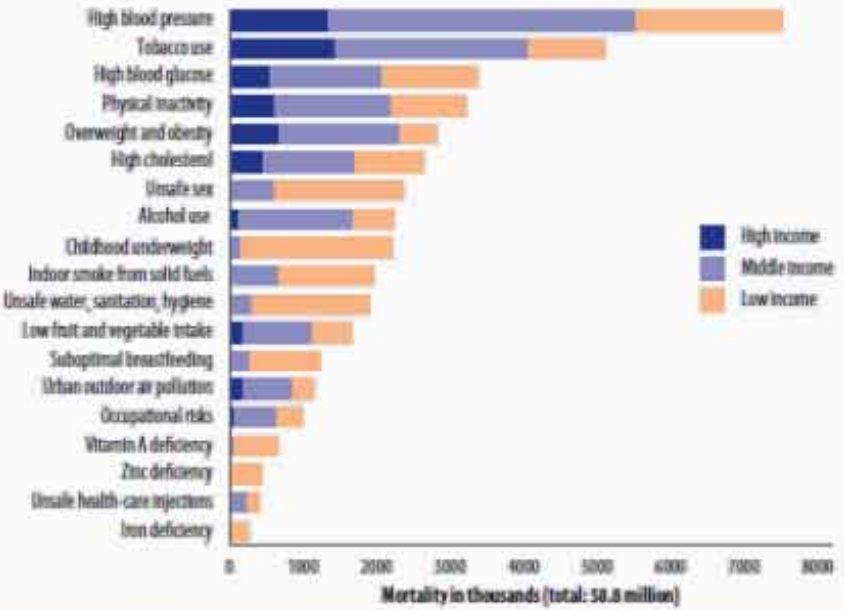


Table 1: Ranking of selected risk factors: 10 leading risk factor causes of death by income group, 2004

	Risk factor	Deaths (millions)	Percentage of total		Risk factor	Deaths (millions)	Percentage of total
	World				*Low-income countries**		
1	High blood pressure	7.5	12.8	1	Childhood underweight	2.0	7.8
2	Tobacco use	5.1	8.7	2	High blood pressure	2.0	7.5
3	High blood glucose	3.4	5.8	3	Unsafe sex	1.7	6.6
4	Physical inactivity	3.2	5.5	4	Unsafe water, sanitation, hygiene	1.6	6.3
5	Overweight and obesity	2.8	4.8	5	High blood glucose	1.3	4.9
6	High cholesterol	2.6	4.5	6	Indoor smoke from solid fuels	1.3	4.8
7	Unsafe sex	2.4	4.0	7	Tobacco use	1.0	3.9
8	Alcohol use	2.3	3.8	8	Physical inactivity	1.0	3.8
9	Childhood underweight	2.2	3.8	9	Suboptimal breastfeeding	1.0	3.7
10	Indoor smoke from solid fuels	2.0	3.3	10	High cholesterol	0.9	3.4
	*Middle-income countries**				*High-income countries**		
1	High blood pressure	4.2	17.2	1	Tobacco use	1.5	17.9
2	Tobacco use	2.6	10.8	2	High blood pressure	1.4	16.8
3	Overweight and obesity	1.6	6.7	3	Overweight and obesity	0.7	8.4
4	Physical inactivity	1.6	6.6	4	Physical inactivity	0.6	7.7
5	Alcohol use	1.6	6.4	5	High blood glucose	0.6	7.0
6	High blood glucose	1.5	6.3	6	High cholesterol	0.5	5.8
7	High cholesterol	1.3	5.2	7	Low fruit and vegetable intake	0.2	2.5
8	Low fruit and vegetable intake	0.9	3.9	8	Urban outdoor air pollution	0.2	2.5
9	Indoor smoke from solid fuels	0.7	2.8	9	Alcohol use	0.1	1.6
10	Urban outdoor air pollution	0.7	2.8	10	Occupational risks	0.1	1.1

* Countries grouped by gross national income per capita – low income (US$ 825 or less), high income (US$ 10 066 or more).

GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

World Health Organization

Figure 6: Deaths attributed to 19 leading risk factors, by country income level, 2004.

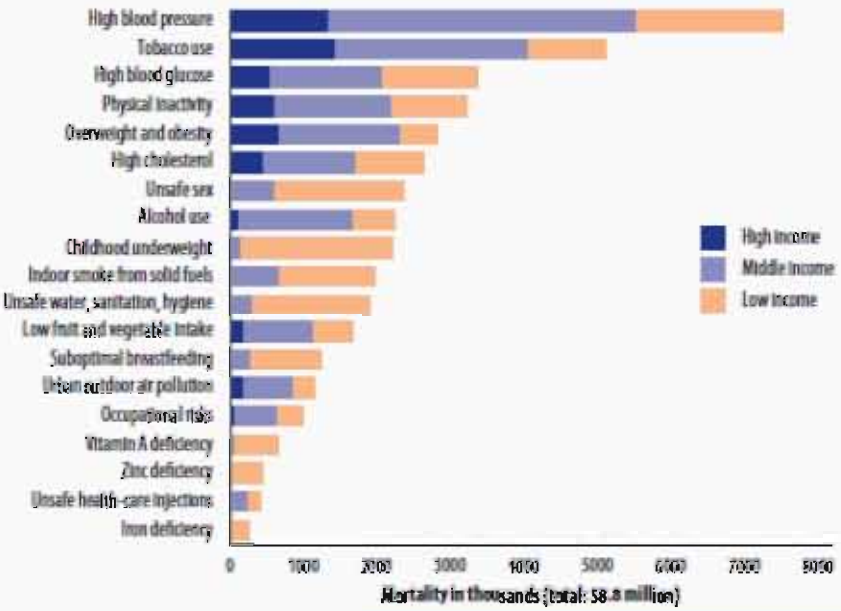
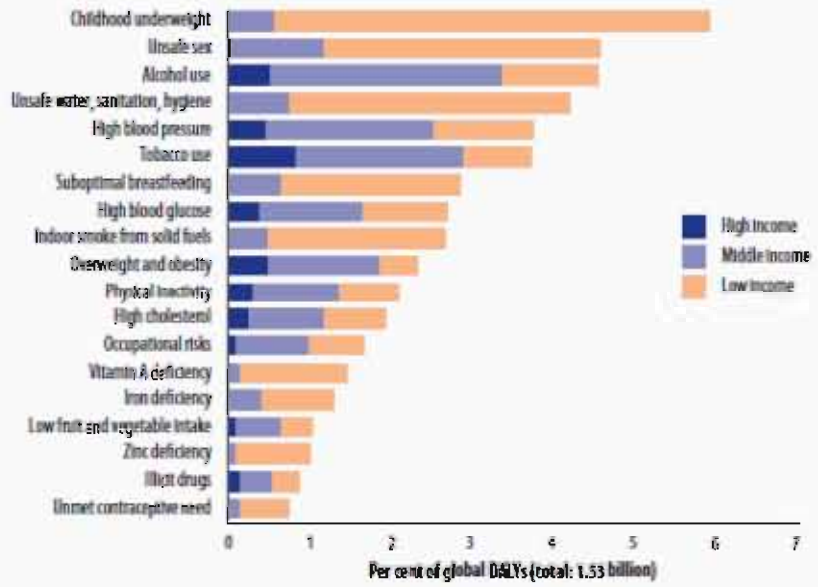


Figure 7: Percentage of disability-adjusted life years (DALYs) attributed to 19 leading risk factors, by country income level, 2004.



GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks

World Health Organization

Figure 7: Percentage of disability-adjusted life years (DALYs) attributed to 10 leading risk factors, by country income level, 2004.

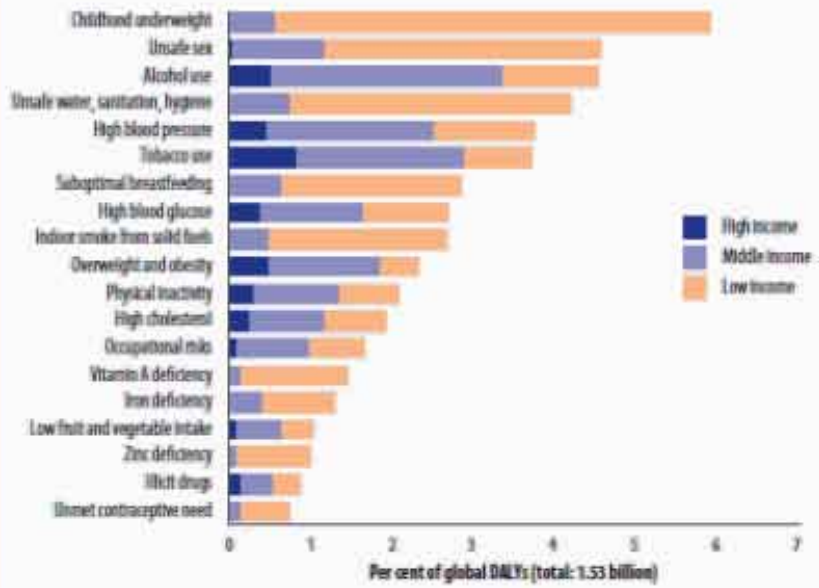


Table 2: Ranking of selected risk factors: 10 leading risk factor causes of DALYs by income group, 2004

	Risk factor	DALYs (millions)	Percentage of total		Risk factor	DALYs (millions)	Percentage of total
	World				*Low-income countries**		
1	Childhood underweight	91	5.9	1	Childhood underweight	82	9.9
2	Unsafe sex	70	4.6	2	Unsafe water, sanitation, hygiene	53	6.3
3	Alcohol use	69	4.5	3	Unsafe sex	52	6.2
4	Unsafe water, sanitation, hygiene	64	4.2	4	Suboptimal breastfeeding	34	4.1
5	High blood pressure	57	3.7	5	Indoor smoke from solid fuels	33	4.0
6	Tobacco use	57	3.7	6	Vitamin A deficiency	20	2.4
7	Suboptimal breastfeeding	44	2.9	7	High blood pressure	18	2.2
8	High blood glucose	41	2.7	8	Alcohol use	18	2.1
9	Indoor smoke from solid fuels	41	2.7	9	High blood glucose	16	1.9
10	Overweight and obesity	36	2.3	10	Zinc deficiency	14	1.7
	*Middle-income countries**				*High-income countries**		
1	Alcohol use	44	7.6	1	Tobacco use	13	10.7
2	High blood pressure	31	5.4	2	Alcohol use	8	6.7
3	Tobacco use	31	5.4	3	Overweight and obesity	8	6.5
4	Overweight and obesity	21	3.6	4	High blood pressure	7	6.1
5	High blood glucose	20	3.4	5	High blood glucose	6	4.9
6	Unsafe sex	17	3.0	6	Physical inactivity	5	4.1
7	Physical inactivity	16	2.7	7	High cholesterol	4	3.4
8	High cholesterol	14	2.5	8	Illicit drugs	3	2.1
9	Occupational risks	14	2.3	9	Occupational risks	2	1.5
10	Unsafe water, sanitation, hygiene	11	2.0	10	Low fruit and vegetable intake	2	1.3

* Countries grouped by 2004 gross national income per capita – low income (US$ 825 or less), high income (US$ 10 066 or more).

GLOBAL HEALTH RISKS

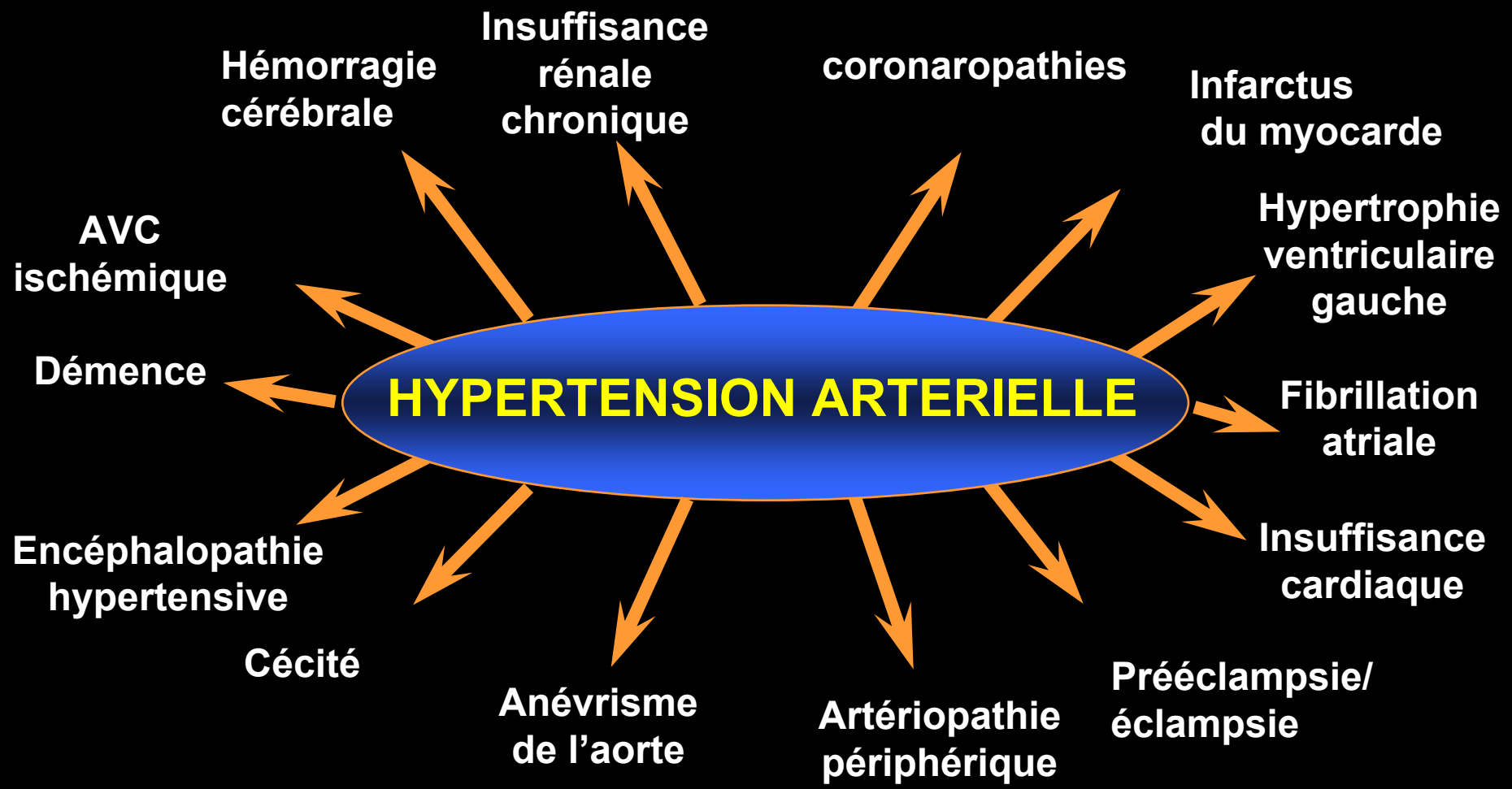
Mortality and burden of disease attributable to selected major risks

World Health Organization

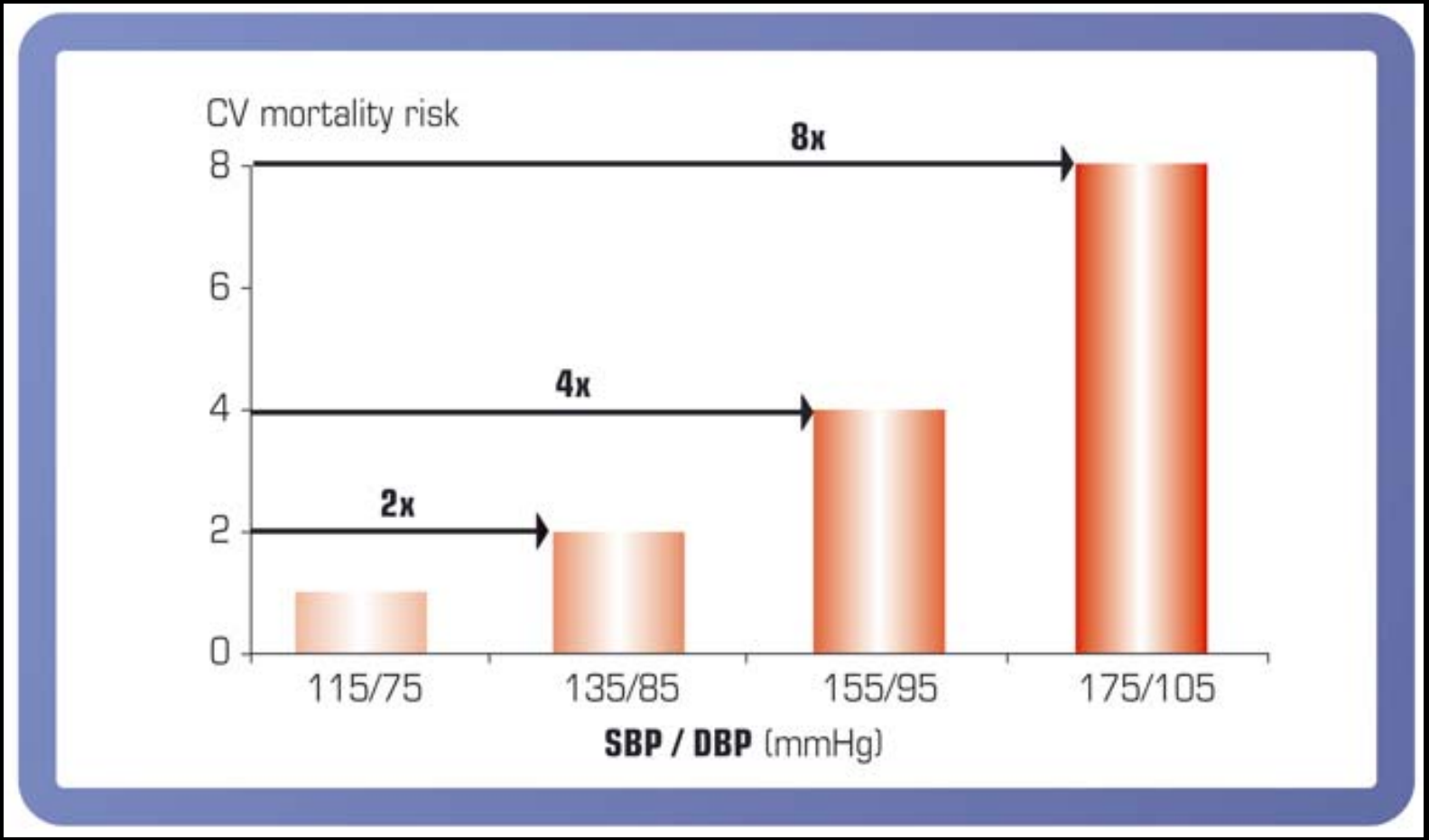
Table 4: Deaths and DALYs attributable to six diet-related risks and physical inactivity, and to all six risks combined, by region, 2004

Risk	World	Low and middle income	High income
Percentage of deaths			
High blood pressure	12.8	12.1	16.8
High blood glucose	5.8	5.6	7.0
Physical inactivity	5.5	5.1	7.7
Overweight and obesity	4.8	4.2	8.4
High cholesterol	4.5	4.3	5.8
Low fruit and vegetable intake	2.9	2.9	2.5
All six risks	19.1	18.1	25.2
Percentage of DALYs			
High blood pressure	3.8	3.5	6.1
High blood glucose	2.7	2.5	4.9
Physical inactivity	2.1	1.9	4.1
Overweight and obesity	2.4	2.0	6.5
High cholesterol	2.0	1.8	3.4
Low fruit and vegetable intake	1.1	1.0	1.3
All six risks	7.0	6.5	12.6

Hypertension : silent killer



Le risque de mortalité cardiovasculaire double pour chaque augmentation de PAS/PAD de 20/10 mmHg



* Individus âgés de 40–69 ans

Lewington et al. Age-specific relevance of usual blood pressure to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies. Lancet 2002 ; 360 : 1903–13.

Age-specific relevance of usual BP to vascular mortality: a meta-analysis of individual data for one million adults in 61 prospective studies.

Prospective Studies Collaboration* Lancet 2002; 360: 1903–13

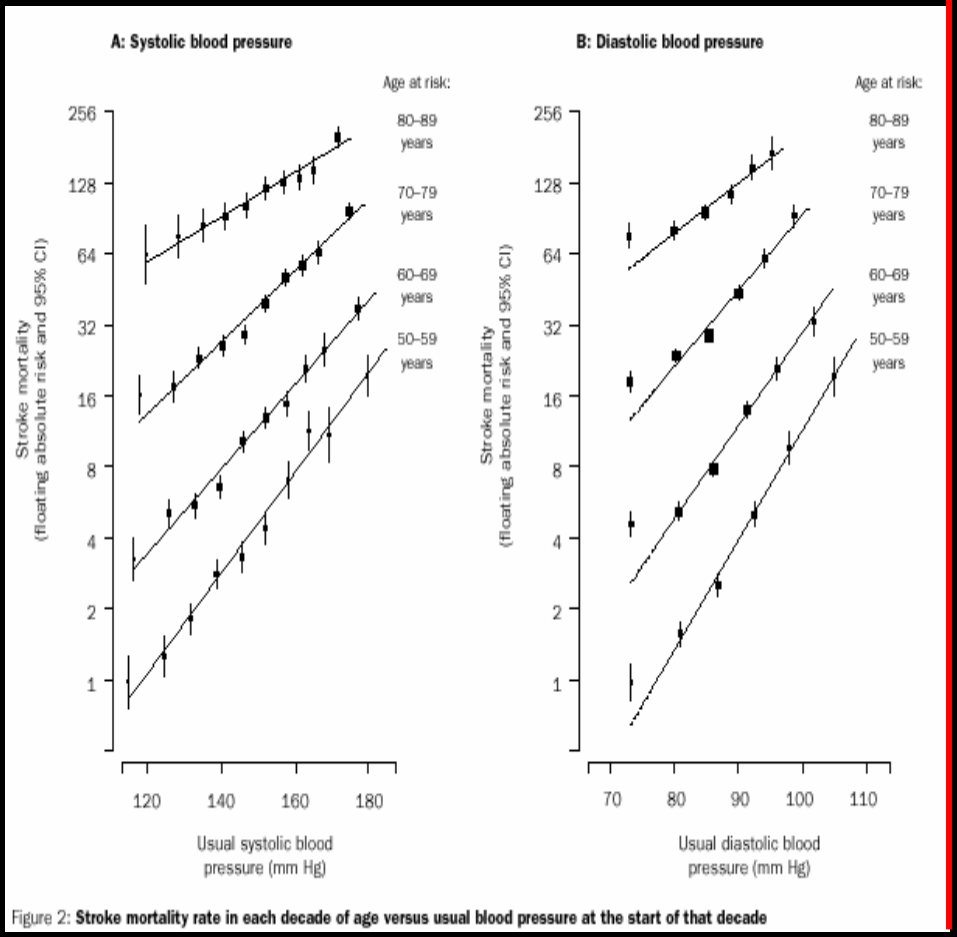


Figure 2: **Stroke mortality rate in each decade of age versus usual blood pressure at the start of that decade**

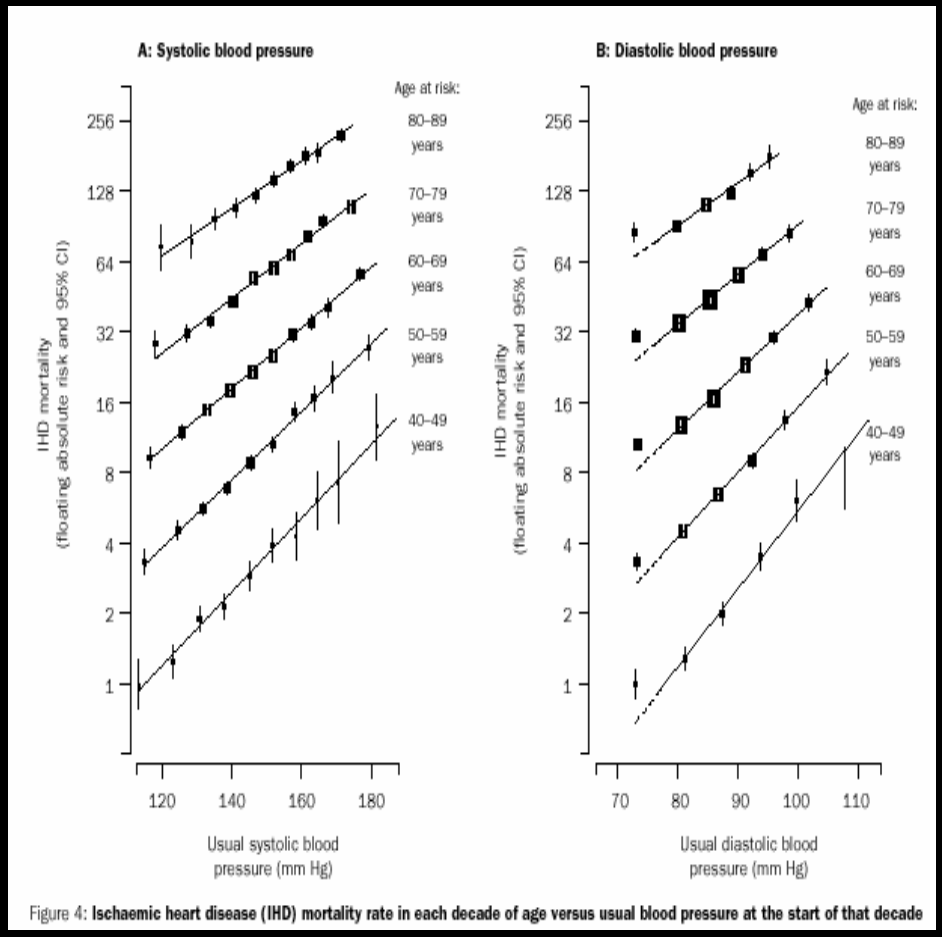


Figure 4: **Ischaemic heart disease (IHD) mortality rate in each decade of age versus usual blood pressure at the start of that decade**

Pour chaque augmentation de 10 mmHg de PAS ou de 5 mmHg de PAD, le risque moyen de mortalité cérébro-vx augmente de 40% et cardiaque ischémique de 30%.

- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

Global burden of hypertension: analysis of worldwide data

Patricia M Kearney, Megan Whelton, Kristi Reynolds, Paul Muntner, Paul K Whelton, Jiang He

Lancet 2005; 365: 217–23

Departments of Epidemiology (P M Kearney MD, M Whelton BS, K Reynolds PhD, P Muntner PhD, Prof P K Whelton MD, Prof J He MD), and Medicine (P Muntner, Prof P K Whelton, Prof J He), and Tulane Hypertension and Renal Center of Excellence (P Munter, Prof P K Whelton, Prof J He), Tulane University School of Public Health and Tropical Medicine, New Orleans, LA, USA; and Clinical Trial Service Unit and Epidemiological Studies Unit, Radcliffe Infirmary, Oxford, UK (P M Kearney)

Correspondence to: Dr Jiang He, Department of Epidemiology, Tulane University School of Public Health and Tropical Medicine, 1430 Tulane Avenue SL18, New Orleans, LA 70112, USA
jhe@tulane.edu

Summary

Background Reliable information about the prevalence of hypertension in different world regions is essential to the development of national and international health policies for prevention and control of this condition. We aimed to pool data from different regions of the world to estimate the overall prevalence and absolute burden of hypertension in 2000, and to estimate the global burden in 2025.

Methods We searched the published literature from Jan 1, 1980, to Dec 31, 2002, using MEDLINE, supplemented by a manual search of bibliographies of retrieved articles. We included studies that reported sex-specific and age-specific prevalence of hypertension in representative population samples. All data were obtained independently by two investigators with a standardised protocol and data-collection form.

Results Overall, 26·4% (95% CI 26·0–26·8%) of the adult population in 2000 had hypertension (26·6% of men [26·0–27·2%] and 26·1% of women [25·5–26·6%]), and 29·2% (28·8–29·7%) were projected to have this condition by 2025 (29·0% of men [28·6–29·4%] and 29·5% of women [29·1–29·9%]). The estimated total number of adults with hypertension in 2000 was 972 million (957–987 million); 333 million (329–336 million) in economically developed countries and 639 million (625–654 million) in economically developing countries. The number of adults with hypertension in 2025 was predicted to increase by about 60% to a total of 1·56 billion (1·54–1·58 billion).

Interpretation Hypertension is an important public-health challenge worldwide. Prevention, detection, treatment, and control of this condition should receive high priority.

Global burden of hypertension: analysis of worldwide data

Patricia M Kearney, Megan Whelton, Kristi Reynolds, Paul Muntner, Paul K Whelton, Jiang He

Lancet 2005; 365: 217–23

2005 : 972 millions d'hypertendus 25% de la population mondiale

2025 : 1.5 Milliards ; 30% de la population.

Deux facteurs extrêmes favorisent l'augmentation de la prévalence

- **Vieillissement de la population**
- **Epidémie d'obésité**

US Trends in Prevalence, Awareness, Treatment, and Control of Hypertension, 1988-2008

Brent M. Egan, MD
Yumin Zhao, DMSc
R. Neal Axon, MD

Context Hypertension is a major risk factor for cardiovascular disease and treatment and control of hypertension reduces risk. The Healthy People 2010 goal was to achieve blood pressure (BP) control in 50% of the US population.

Objective To assess progress in treating and controlling hypertension in the United States from 1988-2008.

Design, Setting, and Participants The National Health and Nutrition Examination Survey (NHANES) 1988-1994 and 1999-2008 in five 2-year blocks included 42 856 adults aged older than 18 years, representing a probability sample of the US civilian population.

Main Outcome Measures Hypertension was defined as systolic BP of at least 140 mm Hg and diastolic BP of at least 90 mm Hg, self-reported use of antihypertensive medications, or both. Hypertension control was defined as systolic BP values of less than 140 mm Hg and diastolic BP values of less than 90 mm Hg. All survey periods were age-adjusted to the year 2000 US population.

Results Rates of hypertension increased from 23.9% (95% confidence interval [CI], 22.7%-25.2%) in 1988-1994 to 28.5% (95% CI, 25.9%-31.3%; $P<.001$) in 1999-2000, but did not change between 1999-2000 and 2007-2008 (29.0%; 95% CI, 27.6%-30.5%; $P=.24$). Hypertension control increased from 27.3% (95% CI, 25.6%-29.1%) in 1988-1994 to 50.1% (95% CI, 46.8%-53.5%; $P=.006$) in 2007-2008, and BP among patients with hypertension decreased from 143.0/80.4 mm Hg (95% CI, 141.9-144.2/79.6-81.1 mm Hg) to 135.2/74.1 mm Hg (95% CI, 134.2-136.2/73.2-75.0 mm Hg; $P=.02$/$P<.001$). Blood pressure control improved significantly more in absolute percentages between 1999-2000 and 2007-2008 vs 1988-1994 and 1999-2000 (18.6%; 95% CI, 13.3%-23.9%; vs 4.1%; 95% CI, −0.5% to 8.8%; $P<.001$). Better BP control reflected improvements in awareness (69.1%; 95% CI, 67.1%-71.1%; vs 80.7%; 95% CI, 78.1%-83.0%; P for trend = .03), treatment (54.0%; 95% CI, 52.0%-56.1%; vs 72.5%; 95% CI, 70.1%-74.8%; $P=.004$), and proportion of patients who were treated and had controlled hypertension (50.6%; 95% CI, 48.0%-53.2%; vs 69.1%; 95% CI, 65.7%-72.3%; $P=.006$). Hypertension control improved significantly between 1988-1994 and 2007-2008, across age, race, and sex groups, but was lower among individuals aged 18 to 39 years vs 40 to 59 years ($P<.001$) and 60 years or older ($P<.001$), and in Hispanic vs white individuals ($P=.004$).

Conclusions Blood pressure was controlled in an estimated 50.1% of all patients with hypertension in NHANES 2007-2008, with most of the improvement since 1988 occurring after 1999-2000. Hypertension control was significantly lower among younger than middle-aged individuals and older adults, and Hispanic vs white individuals.

JAMA. 2010;303(20):2043-2050 www.jama.com

HYPERTENSION IS A PREVALENT condition affecting approximately 65 million individuals in the United States based on a preliminary report from the National Health and Nutrition Examination Survey (NHANES) 2005-2006 and coincident US population estimates.[1,2] Given the prevalence and impact of hypertension on health outcomes and disparities,[3-6] several national initiatives developed programs, guidelines, and policies to facilitate hypertension prevention, detection/awareness, treatment, and control.[7-10] Hypertension control (defined as systolic blood pressure [BP] of <140 mm Hg and diastolic BP of <90 mm Hg) increased from 10% in NHANES II (1976-1980) to 31.0% in 1999-2000.[11,12] Another NHANES analysis reported that hypertension control increased from 25.0% in 1999-2000 to 33.1% in 2003-2004.[13] A preliminary NHANES 2005-2006 report noted approximately 44% of all adults with hypertension achieved systolic BP of less than 140 mm Hg and diastolic BP of less than 90 mm Hg.[1]

The reports indicate progress toward the Healthy People 2010 na-

Table 1. Characteristics of All US Adults in the NHANES 1988-1994 and 1999-2008[a]

Characteristics	Mean or % (95% Confidence Interval) by Years						*P* for Trend
	1988-1994 (n = 17 250)	1999-2000 (n = 4755)	2001-2002 (n = 5251)	2003-2004 (n = 4902)	2005-2006 (n = 5028)	2007-2008 (n = 5670)	
Mean age, y	43.8 (42.9-44.6)	43.9 (43.1-44.7)	44.4 (43.4-45.5)	44.9 (43.8-46.0)	45.5 (43.8-47.2)	45.8 (44.8-46.8)	.02
Sex, %							
Men	47.6 (46.7-48.5)	48.4 (46.8-50.1)	48.3 (47.2-49.4)	48.8 (47.1-50.4)	48.4 (47.4-49.5)	48.3 (47.1-49.5)	.11
Women	52.4 (51.5-53.3)	51.6 (49.9-53.2)	51.7 (50.6-52.8)	51.2 (49.6-52.9)	51.6 (50.5-52.7)	51.7 (50.5-52.9)	
Race/ethnicity, %							
White	75.8 (73.2-78.3)	70.7 (64.5-76.3)	72.5 (67.3-77.3)	73.2 (65.0-80.0)	72.1 (66.0-77.5)	69.4 (61.3-76.5)	.05
Black	11.1 (9.9-12.5)	10.7 (7.6-14.8)	10.8 (7.7-14.9)	11.3 (7.9-15.9)	11.1 (7.7-15.9)	11.4 (7.9-16.2)	.85
Hispanic	5.2 (4.4-6.1)	14.7 (9.3-22.6)	12.9 (8.4-19.3)	11.3 (7.3-17.2)	11.6 (8.9-14.9)	13.5 (9.8-18.4)	.006
Other	7.9 (6.4-9.7)	3.9 (2.4-6.1)	3.8 (2.8-5.2)	4.3 (3.0-5.9)	5.2 (4.1-6.7)	5.7 (4.1-7.9)	[b]
Mean BP, mm Hg							
Systolic	120.0 (119.3-120.8)	122.4 (120.9-123.9)	121.9 (120.9-122.9)	122.2 (121.1-123.2)	121.7 (120.7-122.7)	120.9 (120.1-121.7)	.76
Diastolic	72.9 (72.4-73.4)	72.6 (71.7-73.4)	72.0 (71.2-72.9)	70.9 (70.2-71.7)	70.0 (69.3-70.7)	70.6 (69.9-71.4)	.03
BP, mm Hg, %							
≥160/≥100	4.7 (4.1-5.3)	5.5 (4.4-7.0)	5.1 (4.4-5.9)	5.1 (4.3-6.1)	4.3 (3.6-5.2)	3.4 (3.0-3.9)	[b]
140-159/90-99	11.9 (11.1-12.8)	13.1 (11.7-14.6)	12.2 (11.1-13.5)	12.2 (10.4-14.2)	11.8 (10.4-13.2)	11.4 (10.4-12.6)	.36
120-139/80-89	32.2 (31.1-33.3)	37.1 (35.1-39.2)	35.5 (33.8-37.3)	36.5 (34.5-38.6)	35.8 (33.8-37.8)	35.8 (33.3-38.4)	.11
<120/<80	51.2 (49.5-53.0)	44.2 (41.1-47.4)	47.2 (44.6-49.7)	46.3 (43.6-48.9)	48.2 (45.6-50.8)	49.4 (46.7-52.1)	.74
Mean BMI	26.4 (26.2-26.6)	27.8 (27.3-28.3)	27.9 (27.5-28.2)	28.0 (27.7-28.3)	28.4 (27.8-28.9)	28.5 (28.1-28.8)	<.001
BMI, %							
<25.0	46.1 (44.4-47.8)	37.2 (33.8-40.8)	35.7 (34.2-37.2)	34.7 (32.6-36.8)	33.9 (30.9-37.0)	32.8 (30.8-34.9)	.002
25.0-29.9	32.1 (31.0-33.2)	33.3 (30.7-36.0)	34.7 (32.5-37.0)	34.0 (31.6-36.5)	32.7 (30.9-34.6)	33.9 (32.3-35.6)	.30
≥30.0	21.8 (20.5-23.1)	29.5 (26.4-32.8)	29.6 (27.4-31.9)	31.4 (28.9-33.9)	33.4 (30.2-36.7)	33.2 (30.9-35.6)	<.001
Diabetes, %	5.3 (4.8-5.8)	5.9 (4.9-7.1)	6.4 (5.6-7.3)	7.0 (5.8-8.3)	7.6 (6.7-8.7)	8.9 (7.5-10.5)	.01

Abbreviations: BMI, body mass index, calculated as weight in kilograms divided by height in meters squared; BP, blood pressure; NHANES, National Health and Nutrition Examination Survey.

[a] *P* for trend denotes statistical significance over the 6 NHANES between 1988 and 2008. Other race/ethnicity included American Indian, Native Alaskan, Asian or Pacific Islander, and other race not specified.

[b] Cannot be reported because the coefficients of variation was more than 0.3.

Table 2. Characteristics of All Patients With Hypertension in NHANES 1988-1994 and 1999-2008[a]

Characteristics	Mean or % (95% Confidence Interval) by Years						*P* for Trend
	1988-1994 (n = 5061)	1999-2000 (n = 1534)	2001-2002 (n = 1616)	2003-2004 (n = 1609)	2005-2006 (n = 1498)	2007-2008 (n = 2057)	
Mean age, y	59.3 (58.4-60.2)	58.2 (56.2-60.3)	58.5 (57.4-59.6)	58.7 (57.6-59.7)	59.1 (56.5-61.8)	58.9 (58.2-59.5)	.86
Sex, %							
Men	48.2 (45.8-50.5)	47.8 (44.2-51.5)	45.1 (42.5-47.6)	49.4 (46.0-52.9)	48.4 (45.8-51.0)	47.8 (45.8-49.8)	.73
Women	51.8 (49.5-54.2)	52.2 (48.5-55.8)	54.9 (52.4-57.5)	50.6 (47.1-54.0)	51.6 (49.0-54.2)	52.2 (50.2-54.2)	
Race/ethnicity, %							
White	77.3 (74.6-79.8)	72.4 (64.8-79)	74.3 (67.9-79.7)	75.7 (66.1-83.2)	75.0 (68.2-80.8)	73.3 (63.8-81.1)	.15
Black	14.4 (12.7-16.2)	12.8 (8.5-18.9)	14.3 (9.4-21.2)	13.4 (8.8-19.8)	14.3 (9.9-20.3)	14.2 (8.9-21.9)	.58
Hispanic	3.4 (2.9-3.9)	11.1 (5.7-20.6)	8.4 (4.4-15.5)	7.5 (3.6-14.7)	6.1 (4.2-8.8)	8.8 (5.6-13.3)	[b]
Other	5.0 (3.6-6.8)	3.6 (1.7-7.8)	3.0 (2.1-4.4)	3.5 (2.2-5.6)	4.6 (3.1-6.9)	3.8 (2.6-5.6)	[b]
Mean BP, mm Hg							
Systolic	143.0 (141.9-144.2)	142.6 (140.4-144.8)	141.3 (139.9-142.7)	139.5 (138.1-140.9)	137.9 (136.3-139.4)	135.2 (134.2-136.2)	.02
Diastolic	80.4 (79.6-81.1)	77.9 (76.2-79.5)	77.1 (76.2-78.1)	75.6 (74.1-77.1)	74.6 (73.1-76.0)	74.1 (73.2-75.0)	<.001
BP, mm Hg, %							
≥160/≥100	20.7 (19.0-22.4)	20.5 (16.5-25.2)	19.0 (16.3-22)	17.5 (15.1-20.2)	14.8 (12.2-17.9)	11.5 (10.0-13.2)	.03
140-159/90-99	52.5 (50.7-54.3)	48.5 (45.1-51.8)	45.7 (43.3-48.1)	41.8 (37.8-46.0)	40.4 (36.7-44.3)	38.3 (34.8-42.0)	.002
120-139/80-89	18.7 (17.4-20.1)	22.2 (18.2-26.7)	22.8 (20.7-25.2)	26.9 (23.7-30.4)	28.9 (26.0-31.9)	30.1 (26.9-33.4)	.005
<120/<80	8.1 (7.1-9.3)	8.9 (7.2-10.9)	12.5 (10.1-15.3)	13.7 (11.7-16.2)	15.9 (13.5-18.6)	20.2 (17.3-23.3)	[b]
Mean BMI	29.0 (28.6-29.4)	30.3 (29.6-30.9)	29.9 (29.3-30.5)	30.0 (29.5-30.6)	30.5 (30.0-31.0)	30.7 (30.3-31.1)	.01
BMI, %							
<25.0	27.2 (25.3-29.3)	20.7 (17.7-23.9)	21.8 (19.7-24.2)	20.5 (17.5-23.8)	21.5 (19.1-24.0)	20.6 (18.3-23.2)	.06
25.0-29.9	36.2 (34.1-38.3)	34.0 (30.7-37.5)	36.5 (32.6-40.5)	35.5 (31.5-39.8)	32.9 (29.7-36.3)	32.9 (29.4-36.6)	.16
≥30.0	36.6 (34.0-39.3)	45.3 (41.8-48.9)	41.7 (38.3-45.2)	44.0 (39.7-48.4)	45.6 (42.8-48.5)	46.5 (43.5-49.5)	.04
Diabetes, %	11.9 (10.8-13.1)	13.6 (11.6-15.9)	14.4 (13.0-16.0)	15.9 (14.0-18.1)	17.2 (15.8-18.6)	19.8 (16.5-23.6)	.006

Abbreviations: BMI, body mass index, calculated as weight in kilograms divided by height in meters squared; BP, blood pressure; NHANES, National Health and Nutrition Examination Survey.

[a] *P* for trend denotes statistical significance over the 6 NHANES between 1988 and 2008. Other race/ethnicity included American Indian, Native Alaskan, Asian or Pacific Islander, and other race not specified.

[b] Cannot be reported because the coefficients of variation was more than 0.3.

Three-City study

(≥ 65 y, Bordeaux, Dijon, Montpellier, n=8679)

Mean age: 74.2 y, > 80 years : 17%

≥ 160/95mmHg	
Total	**62.1%**
Men	66.5%
Women	59.4%
≥ 140/90mmHg	
Total	**78.1%**
Men	83.3%
Women	74.8%

J Hypertens. 2006 ;24:51-8.

Niveau tensionnel moyen et prévalence de l'hypertension artérielle chez les adultes de 18 à 74 ans, ENNS 2006-2007

Hélène Godet-Thobie[1], Michel Vernay[1], Amivi Noukpoape[2], Benoît Salanave[2], Aurélie Malon[1], Katia Castetbon[2], Christine de Peretti[1] (c.deperetti@invs.sante.fr)

1 / Institut de veille sanitaire (InVS), Saint-Maurice, France 2 / Unité de surveillance et d'épidémiologie nutritionnelle, InVS, Université Paris 13, Cnam, Paris, France

Tableau 3 **Prévalence de l'hypertension artérielle, traitement et contrôle, France, ENNS 2006-2007**

Table 3 Prevalence, treatment and control of hypertension, France, ENNS Survey 2006-2007

Hommes	18-34 ans	35-44 ans	45-54 ans	55-64 ans	65-74 ans	18-74 ans	[IC95 %]
Mesure dans l'année (%)	68,3	86,4	96,5	92,7	97,5	86,5	[83,1-89,9]
Prévalence de l'HTA (%)	4,0	19,5	42,6	62,4	69,9	34,1	[29,8-38,4]
HTA connue* (%)	21,5	22,9	40,5	55,2	59,9	46,9	[39,4-54,5]
HTA connue traitée* (%)	**	55,7	60,3	85,5	91,4	77,4	[67,2-87,6]
HTA traitée contrôlée* (%)	**	**	46,8	43,5	33,9	41,8	[32,3-51,3]
Femmes	**18-34 ans**	**35-44 ans**	**45-54 ans**	**55-64 ans**	**65-74 ans**	**18-74 ans**	**[IC95 %]**
Mesure dans l'année (%)	87,5	88,1	89,5	93,6	95,7	90,2	[87,9-92,6]
Prévalence de l'HTA (%)	5,6	13,1	31,4	43,7	65,0	27,8	[24,7-30,8]
HTA connue* (%)	22,3	55,5	52,9	62,0	68,6	58,8	[52,4-65,2]
HTA connue traitée* (%)	**	60,8	78,4	91,5	94,9	86,6	[81,1-92,1]
HTA traitée contrôlée* (%)	**	**	64	59,4	49,6	58,5	[51,1-65,8]

* HTA connue= proportion d'hypertendus connus parmi les hypertendus.
HTA connue traitée= proportion d'hypertendus traités par médicaments à action antihypertensive parmi les hypertendus connus.
HTA traitée contrôlée= proportion d'hypertendus contrôlés parmi les hypertendus traités.

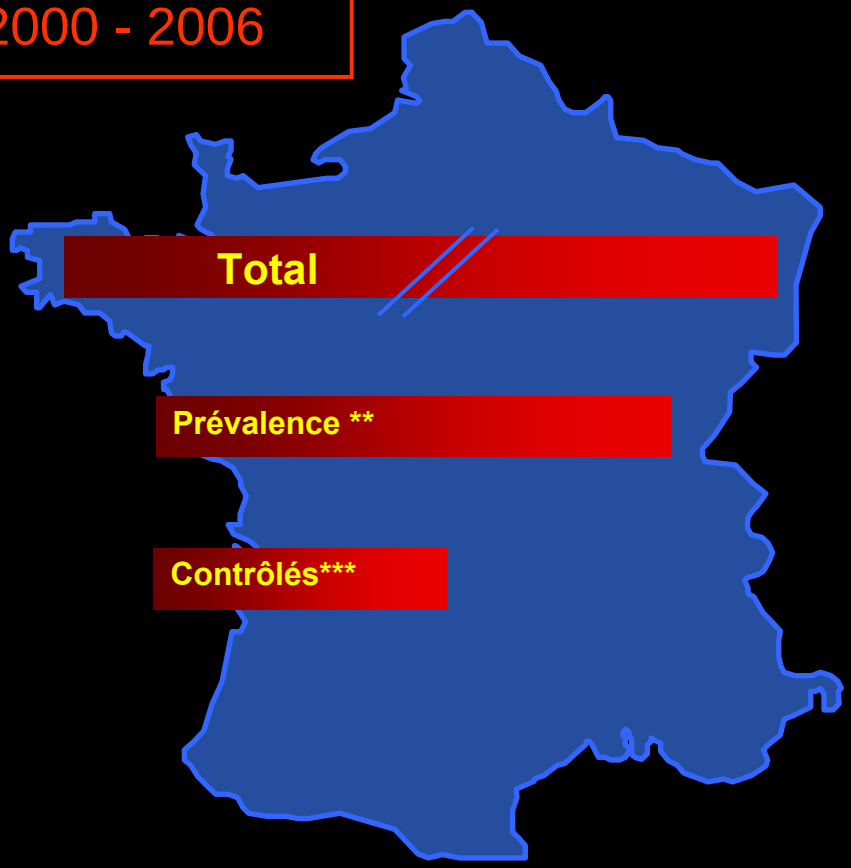
** Effectifs insuffisants.

Champ : France métropolitaine 18-74 ans.

Source : Étude ENNS, 2006-2007.

L'hypertension artérielle en France

2000 - 2006



1 consultation / 5 en médecine ambulatoire*

14 millions de patients*

21% des hommes
24% des femmes

50,9%

* HAS –service des recommandations professionnelles - Juillet 2005.
** CNAM octobre 2007
*** ENNS JHTA Décembre

- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

JNC VII JAMA
21 Mai 2003

Reappraisal of European guidelines on hypertension management: a European Society of Hypertension Task Force document

Giuseppe Mancia[a], Stéphane Laurent[b], Enrico Agabiti-Rosei[c], Ettore Ambrosioni[d], Michel Burnier[e], Mark J. Caulfield[f], Renata Cifkova[g], Denis Clément[h], Antonio Coca[i], Anna Dominiczak[j], Serap Erdine[k], Robert Fagard[l], Csaba Farsang[m], Guido Grassi[n], Hermann Haller[o], Anthony Heagerty[p], Sverre E. Kjeldsen[q], Wolfgang Kiowski[r], Jean Michel Mallion[s], Athanasios Manolis[t], Krzysztof Narkiewicz[u], Peter Nilsson[v], Michael H. Olsen[w], Karl Heinz Rahn[x], Josep Redon[y], José Rodicio[z], Luis Ruilope[a1], Roland E. Schmieder[a2], Harry A.J. Struijker-Boudier[a3], Pieter A. van Zwieten[a4], Margus Viigimaa[a5] and Alberto Zanchetti[a6]

Journal of Hypertension 2009, 27:2121–2158

Correspondence to Professor Giuseppe Mancia, Clinica Medica, University of Milan-Bicocca, San Gerardo Hospital, Via Pergolesi 33, 20052 Monza, Milan, Italy

HAS

HAUTE AUTORITÉ DE SANTÉ

RECOMMANDATIONS POUR LA PRATIQUE CLINIQUE

PRISE EN CHARGE DES PATIENTS ADULTES ATTEINTS D'HYPERTENSION ARTÉRIELLE ESSENTIELLE

Issue date: June 2006

Hypertension

Management of hypertension in adults in primary care

This is a partial update of NICE clinical guideline 18

Programme Éducatif Canadien sur l'Hypertension

Canadian Hypertension Education Program

2010

Recommandations canadiennes pour le traitement de l'hypertension artérielle

Du nouveau et des rappels importants

Siegel D, Lopez J. Trends in antihypertensive drug use in the United States. Do the JNC V recommendations affects prescribing. JAMA 1997 ; 278 : 1745-8.

- **1992** (part de marché)
- **AC : 33 %**
- **IEC : 25 %**
- **Béta - : 18 %**
- **Diur. : 16 %**

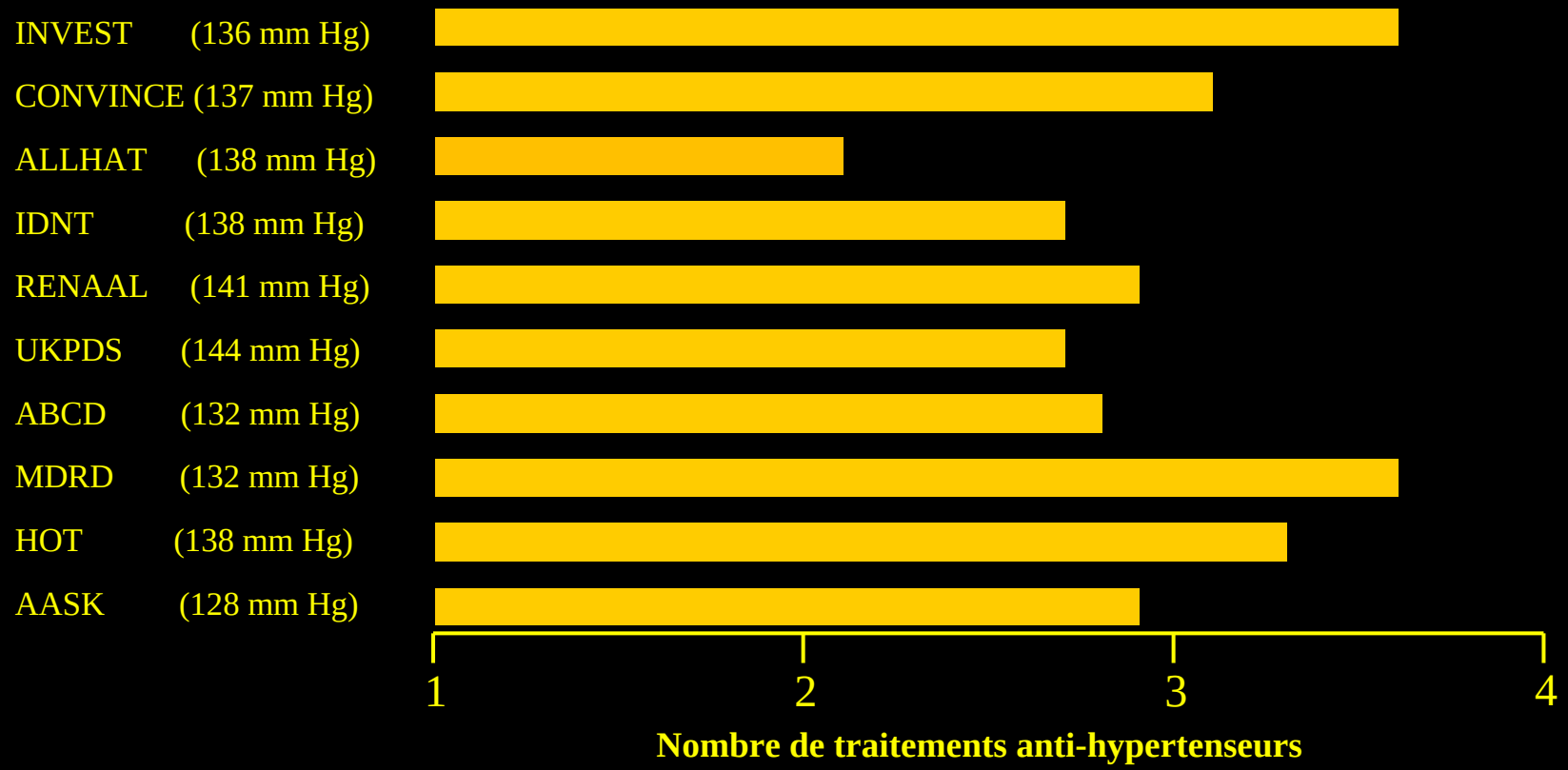
Siegel D, Lopez J. Trends in antihypertensive drug use in the United States. Do the JNC V recommendations affects prescribing. JAMA 1997 ; 278 : 1745-8.

- **1992** (part de marché)
- **AC : 33 %**
- **IEC : 25 %**
- **Béta - : 18 %**
- **Diur. : 16 %**

- **1995** (part de marché)
- **AC : 38 %**
- **IEC : 33 %**
- **Béta - : 11 %**
- **Diur. : 8 %**

Combien de classes d'anti-HTA pour atteindre les objectifs tensionnels ?

Grands essais thérapeutiques [1]



(1) Adapté de Bakris GL *et al*. Am J Kidney Dis. 2000;36(3):646-61.

Une monothérapie chez 43% des hypertendus

Monothérapie
3.9 millions

Bithérapie
3.4 millions

Trithérapie
1.6 million

4 ou +
0.5 m

Monothérapie
à base

d'IEC ou ARAII

1.9 million

Bithérapie

IEC + HCTZ
ou
ARA2 + HCTZ

1.6 million

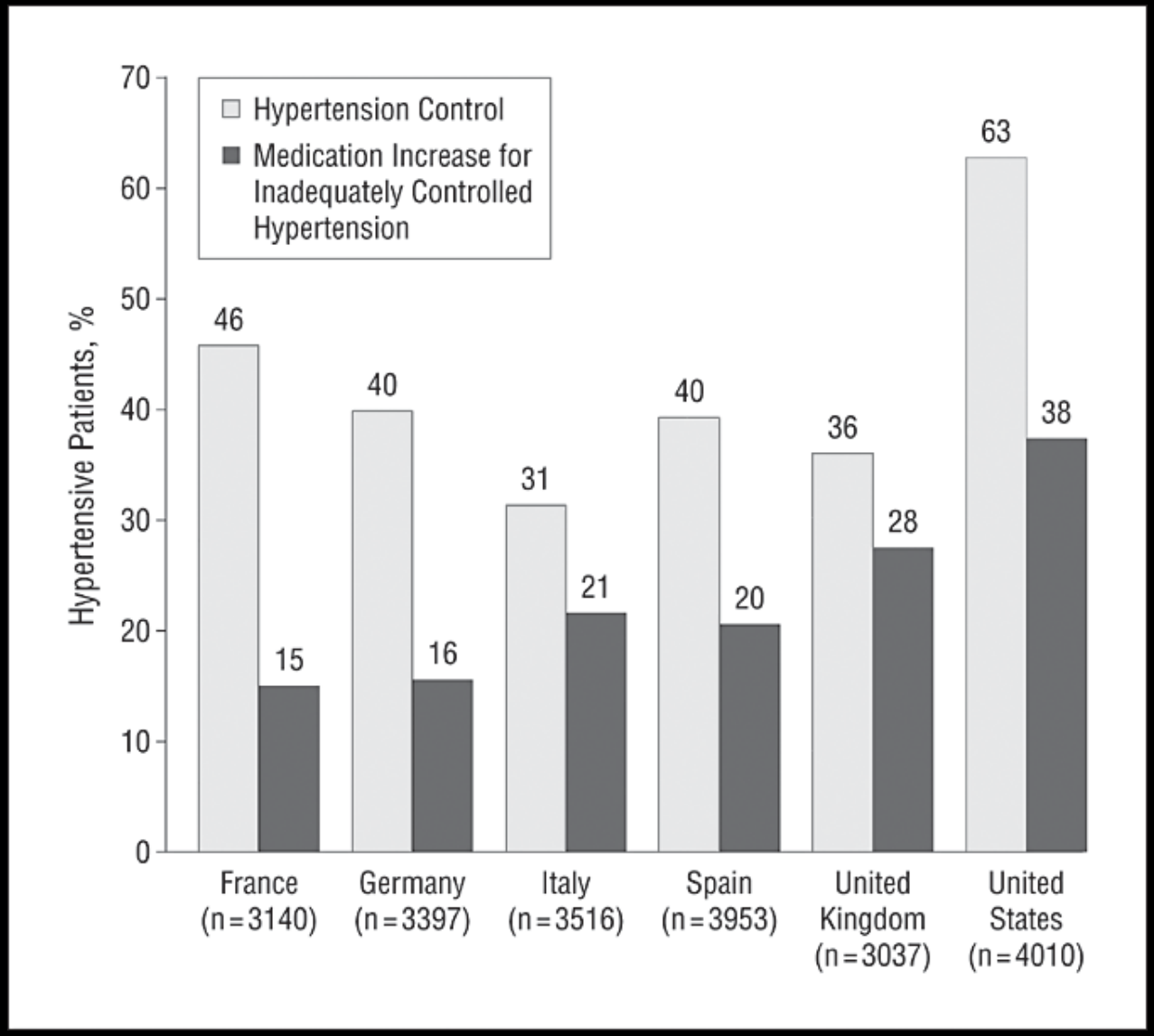
Trithérapie

ARA2 +
ICA +
HCTZ

0.5 million

Une monothérapie chez 43% des hypertendus
Une bithérapie chez 38% des hypertendus

Patients traités pour l'HTA en France. Thales France HTA 2009.



Traitement externe, intensification du traitement et contrôle en Europe de l'Ouest et aux Etats-Unis. Y. Richard Wang, G. Caleb Alexander, Randall S. Stafford. Arch Intern Med 2007;167:141-147.

Continued Improvement in Hypertension Management in England

Results From the Health Survey for England 2006

Emanuela Falaschetti, Moushumi Chaudhury, Jennifer Mindell, Neil Poulter

Abstract—This study evaluate whether blood pressure management has improved in England between 2003 and 2006, using cross-sectional, nationally representative, random samples of 8834 (in 2003) and 7478 (in 2006) noninstitutionalized adults (aged ≥16 years) of mean age 46 (in 2003) and 47 (in 2006) years. Overall mean blood pressure levels in 2006 were 130.8/74.2 mm Hg in men and 124.0/72.4 mm Hg in women. Awareness of hypertension increased significantly in the overall population (from 62% in 2003% to 66% in 2006; $P<0.001$), the increase being significant in women (from 64% in 2003% to 71% in 2006; $P<0.001$) but not in men (from 60% to 62%; $P=0.26$). Similarly, the proportion treated had risen significantly overall (from 48% to 54%; $P<0.001$) and in women (from 52% to 62%; $P<0.001$) but not in men (from 43% to 47%; $P=0.05$). Control rates (<140/90 mm Hg) were higher in 2006 than in 2003 (from 22% to 28%; $P<0.001$) and had increased more among women than men: from 23% to 32% in women ($P<0.001$) and from 21% to 24% in men ($P=0.02$). Among those on treatment, control rates increased from 46% to 52% ($P<0.001$; from 44% to 53% in women, $P<0.001$; and from 48% to 52% in men, $P=0.18$). The most common agents used for monotherapy have changed since 2003 and were angiotensin-converting enzyme inhibitors or angiotensin receptor blockers. Where ≥2 drugs were used, the most common antihypertensive class used varied by age and ethnicity. Awareness, treatment, and control of hypertension increased between 2003 and 2006, particularly in women, but opportunities for further improvement remain. (*Hypertension*. 2009;53:480-486.)

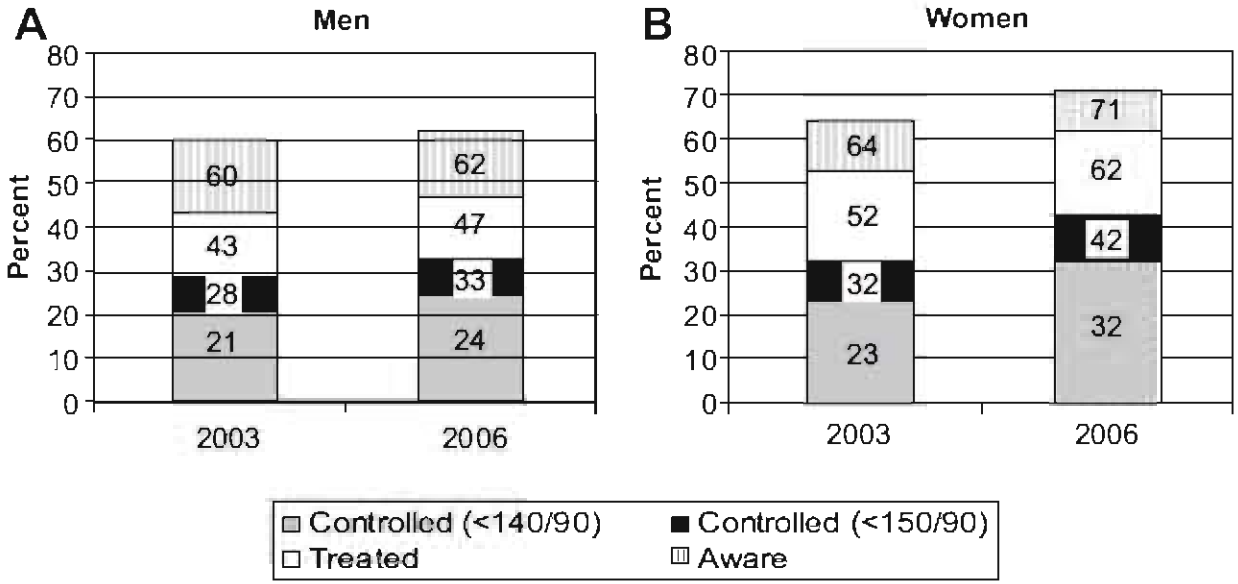


Figure 2. Prevalence of awareness, treatment, and control of hypertension (≥140 mm Hg or on medication) in 2003 and 2006 for men (A) and women (B).

Recent population-based surveys of hypertension management throughout the world have been consistent in showing variably inadequate levels of blood pressure control.[1–3] Data arising from the annual, nationally representative Health Survey for England (HSE) have shown improving levels of blood pressure control between 1994 and 1998[3,4] and subsequently in 2003,[5] but despite this improvement, control rates (defined as systolic blood pressure <140 mm Hg and diastolic blood pressure <90 mm Hg) of those deemed hypertensive (ie, either systolic ≥140 mm Hg or diastolic ≥90 mm Hg or on treatment for hypertension) were only 22% in 2003.

Since April 2004, the Quality and Outcomes Framework was introduced in the new General Medical Services contract in the United Kingdom. This is a pay-for-performance system with which general practitioners receive remuneration for achieving various clinical targets, with points and payments awarded according to the level of achievement. It is a voluntary part of the new General Medical Services contract; general practices can aspire to achieve all, part, or none of the points available in the Quality and Outcomes Framework (although, to date, most practices with a General Medical Services contract have participated fully). One of the measured achievements is lowering blood pressure levels to <150 mm Hg and <90 mm Hg.[6] The potential impact of this aspect of the practitioners' new contract on blood pressure control in the population has not been evaluated in any rigorous way using a population-based sample in England. However, a recent study on data from general practices from April 2004 to March 2007 attributed improved blood pressure monitoring and control in the United Kingdom for the first time to the physician pay-for-performance incentives.[7] Meanwhile, British guidelines continue to recommend optimal blood pressure targets to be <140 mm Hg systolic and <90 mm Hg diastolic and lower for those with diabetes mellitus or established vascular disease.[8]

In 2006, the focus of the HSE was cardiovascular disease and associated risk factors: these data allow an evaluation of whether blood pressure management, in terms of awareness, treatment, and control rates, has continued to improve since 2003.

Methods

The HSE is an annual, nationally representative sample of the noninstitutionalized English population of all ages, randomly se-

- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

The NEW ENGLAND JOURNAL of MEDICINE

CLINICAL THERAPEUTICS

Dietary Therapy in Hypertension

Frank M. Sacks, M.D., and Hannia Campos, Ph.D.

This Journal *feature begins with a case vignette that includes a therapeutic recommendation. A discussion of the clinical problem and the mechanism of benefit of this form of therapy follows. Major clinical studies, the clinical use of this therapy, and potential adverse effects are reviewed. Relevant formal guidelines, if they exist, are presented. The article ends with the authors' clinical recommendations.*

A 57-year-old woman presents to an outpatient clinic for evaluation of hypertension. She has no history or symptoms of cardiovascular disease and reports having gained 15 kg over the past 30 years. Her blood pressure is 155/95 mm Hg, her weight 86 kg, her height 165 cm, her body-mass index (BMI, the weight in kilograms divided by the square of the height in meters) 31, and her waist circumference 98 cm. Her serum triglyceride level is 175 mg per deciliter (2.0 mmol per liter), high-density lipoprotein cholesterol 42 mg per deciliter (1.1 mmol per liter), low-density lipoprotein cholesterol 110 mg per deciliter (2.8 mmol per liter), and glucose 85 mg per deciliter (4.7 mmol per liter). Her clinical profile is thus consistent with the metabolic syndrome.[1] She is a nonsmoker, is sedentary, and eats a diet that is high in white bread, processed meats, and snacks and drinks containing sugars and sodium and is low in fruits and vegetables. She is interested in adopting a healthier lifestyle.

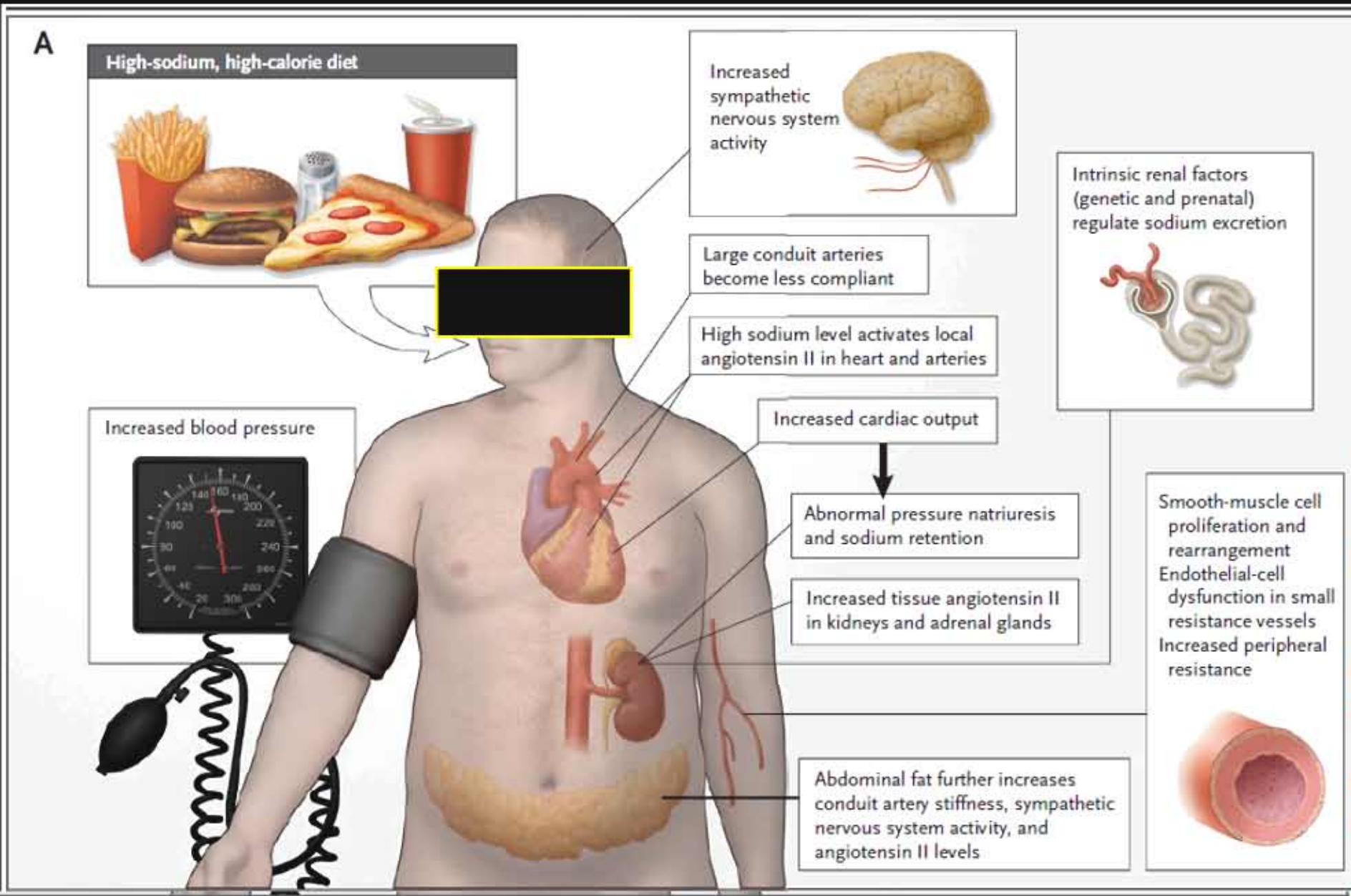


Figure 1. Mechanisms Linked to Increases in Blood Pressure and the Therapeutic Effects of Healthful Dietary Patterns, Sodium Reduction, and Weight Loss.

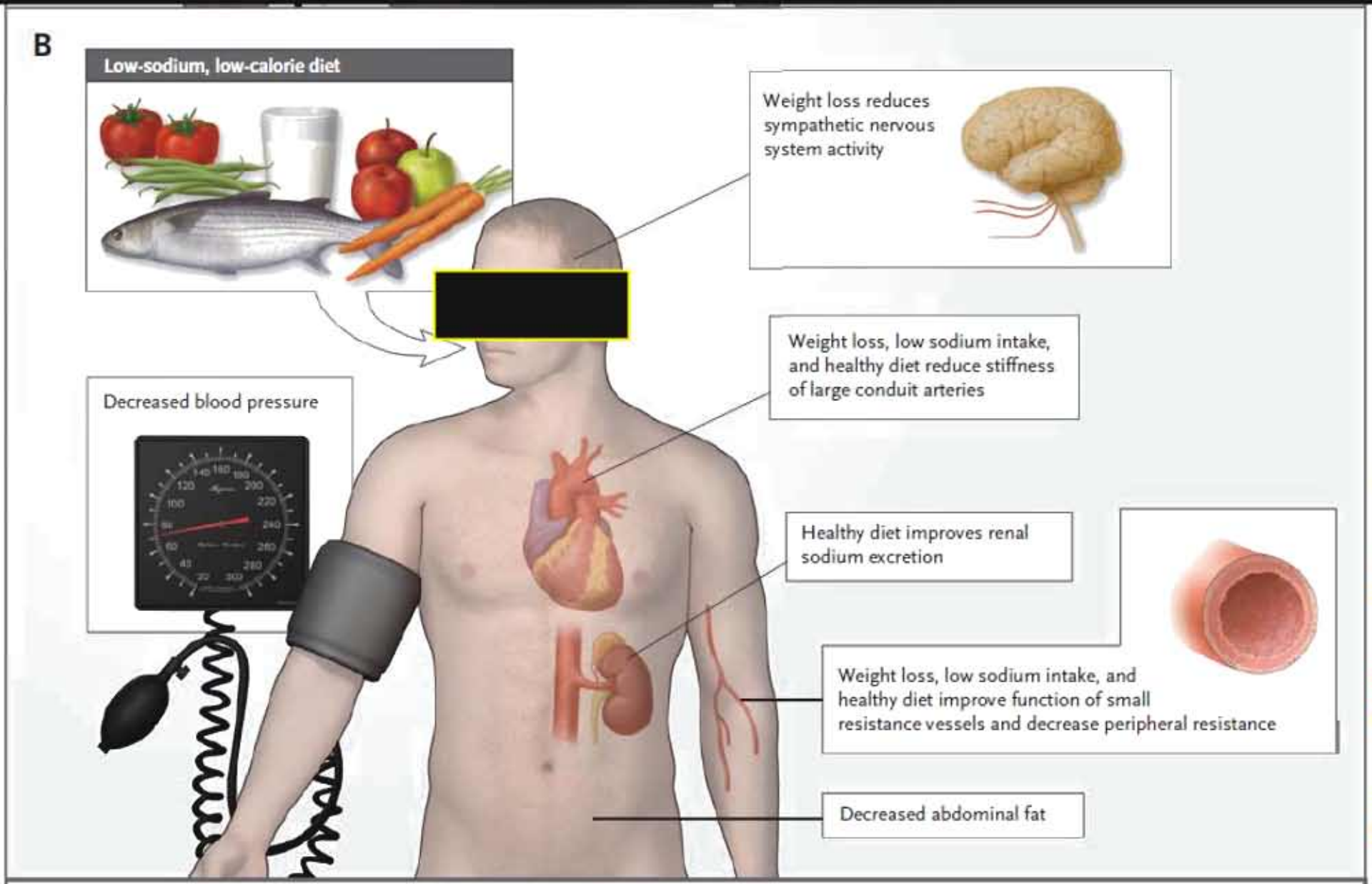
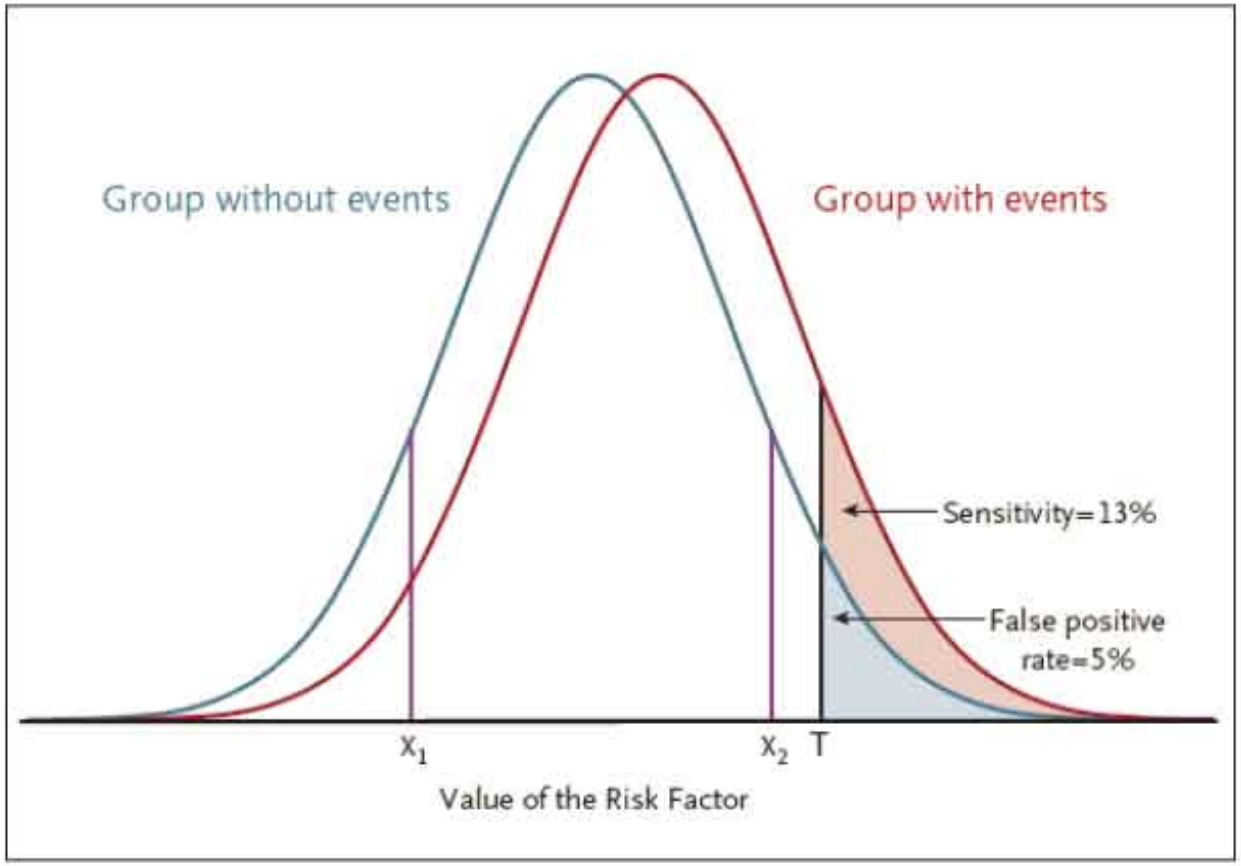
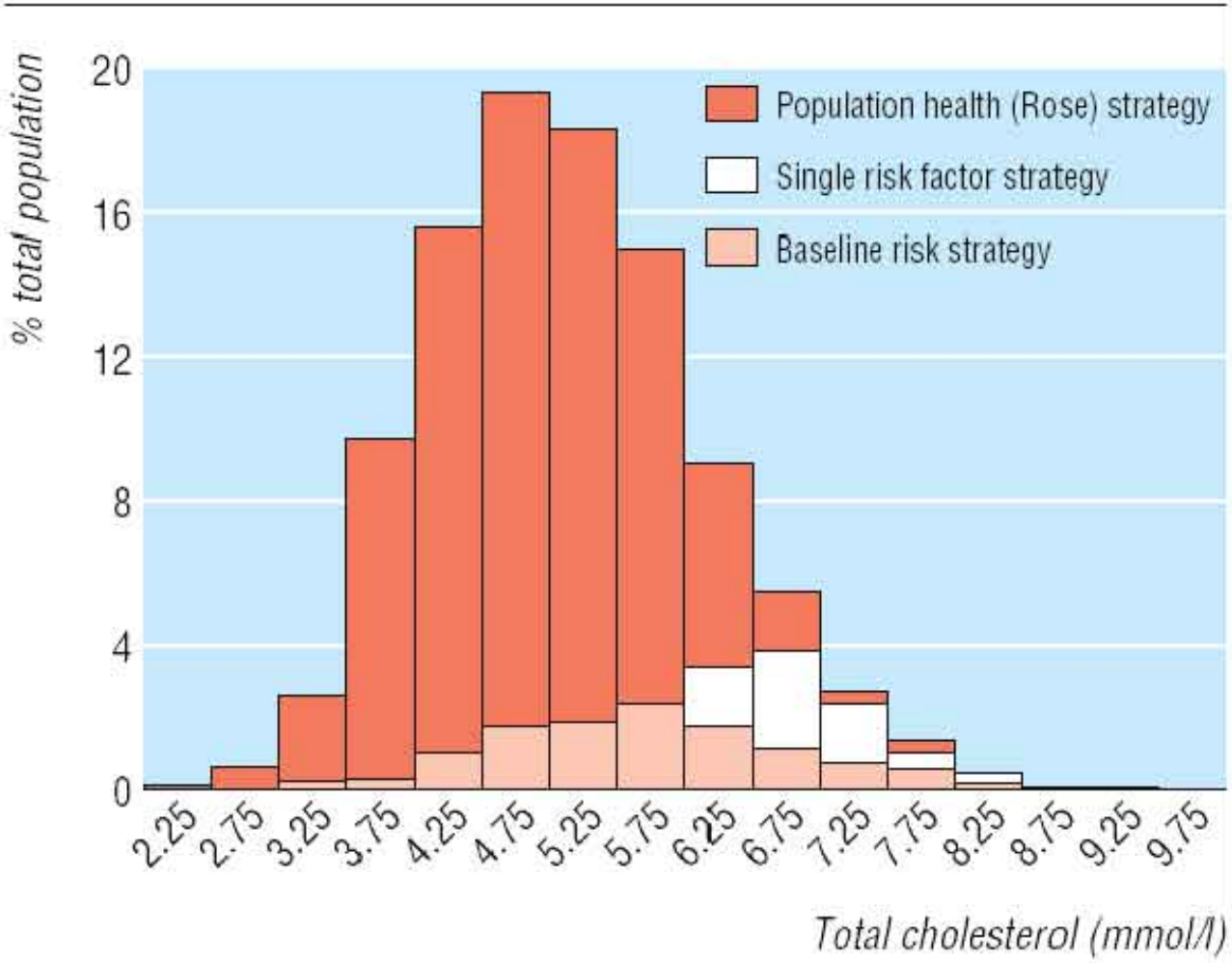


Figure 1. Mechanisms Linked to Increases in Blood Pressure and the Therapeutic Effects of Healthful Dietary Patterns, Sodium Reduction, and Weight Loss.



Normal Probability Density Functions of the Risk Factor among Persons Who Will Not Have the Event (Blue) and among Those Who Will (Red).

The 10th and 90th percentiles of the distribution in the event-free group are labeled as x_1 and x_2, respectively. The cutoff value for a diagnostic test with 95% specificity (false positive probability = 0.05) is labeled as T. To calculate the conditional probability of membership in the group with an event, given a value of the risk factor, one assigns weights to the probability densities in the two groups according to their population prevalence of either 5% or 95%.



Total cholesterol concentration in populations targeted by three preventive strategies. Based on data from Canadians aged 20-74 in 1990

A strategy to reduce cardiovascular disease by more than 80%

N J Wald, M R Law,
BMJ 2003;326:1419

Polypill

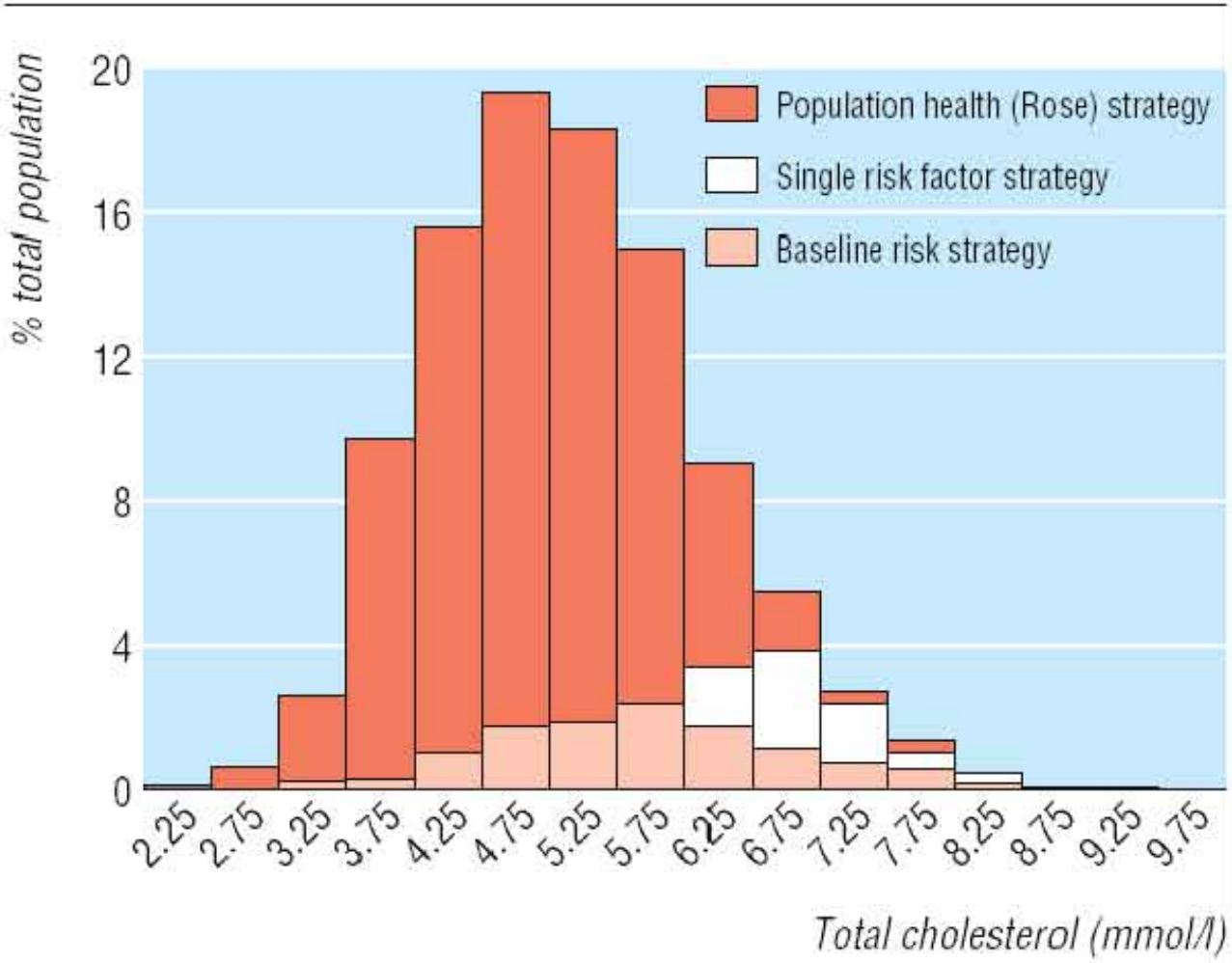
- Absence d'interaction
  - Statine réduit le RCV de 30%
  - Thiazide réduit le RCV de 30%
  - Béta-bloqueur réduit le RCV de 20%
  - IEC réduit le RCV de 30%
  - Aspirine réduit le RCV de 20%
  - Acide folique réduit le RCV de 15%
- Risque initial = 100 → 18,6592 : RRR = 81,3408 %
  - Statine : 100 → 70
  - Thiazide : 70 → 49
  - Béta-bloqueur : 49 → 39,2
  - IEC : 39,2 → 27,44
  - Aspirine : 27,44 → 21,952
  - Acide folique : 21,952 → 18,6592

La polypill :

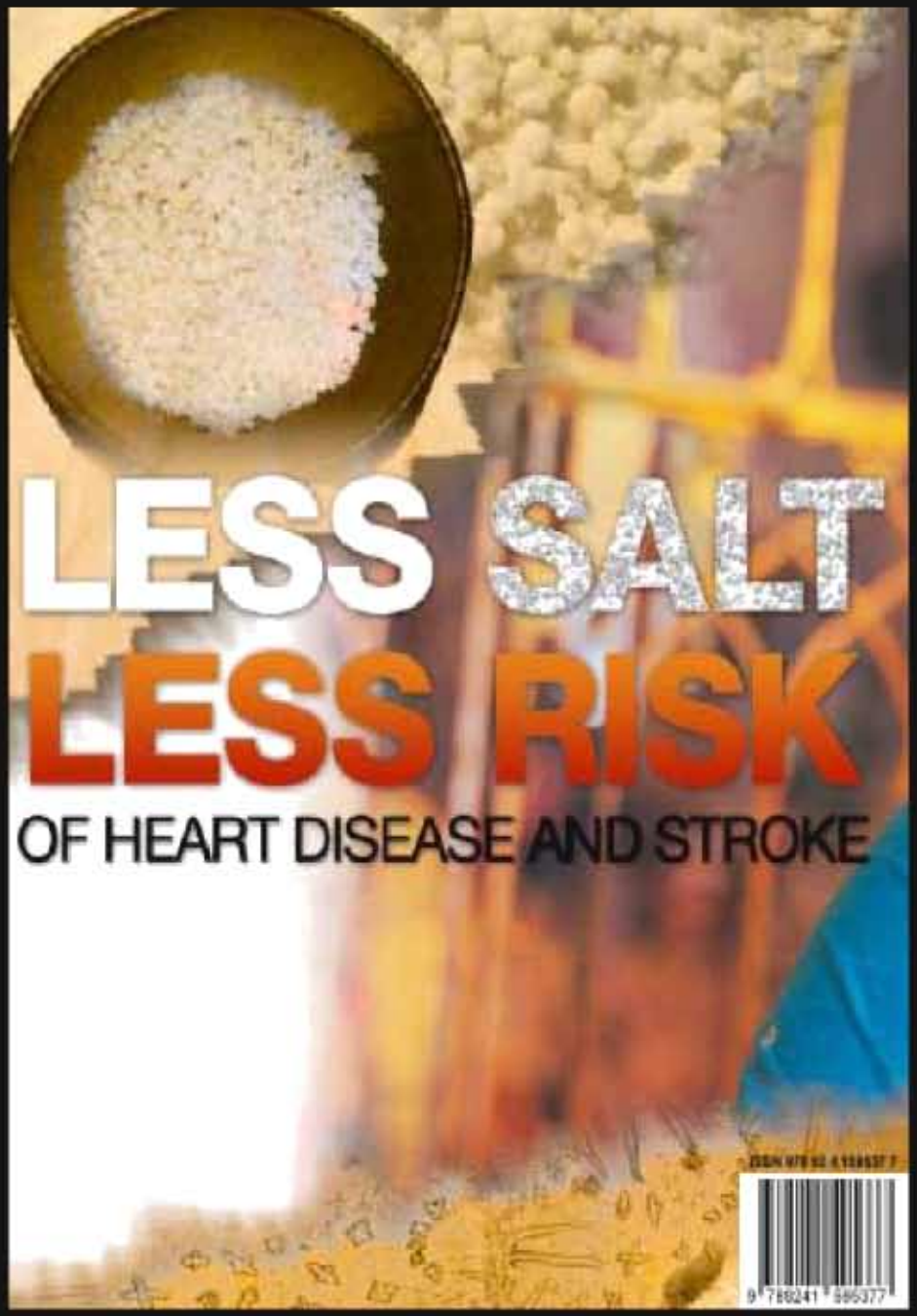
- Oui pour associer les médicaments de prévention cardiovasculaire, notamment les antihypertenseurs, dans un seul comprimé

- Oui à la haute couture, non au prêt-à-porter. Il faut viser le meilleur pour tous

- On soigne des individus, pas des populations



Total cholesterol concentration in populations targeted by three preventive strategies. Based on data from Canadians aged 20-74 in 1990

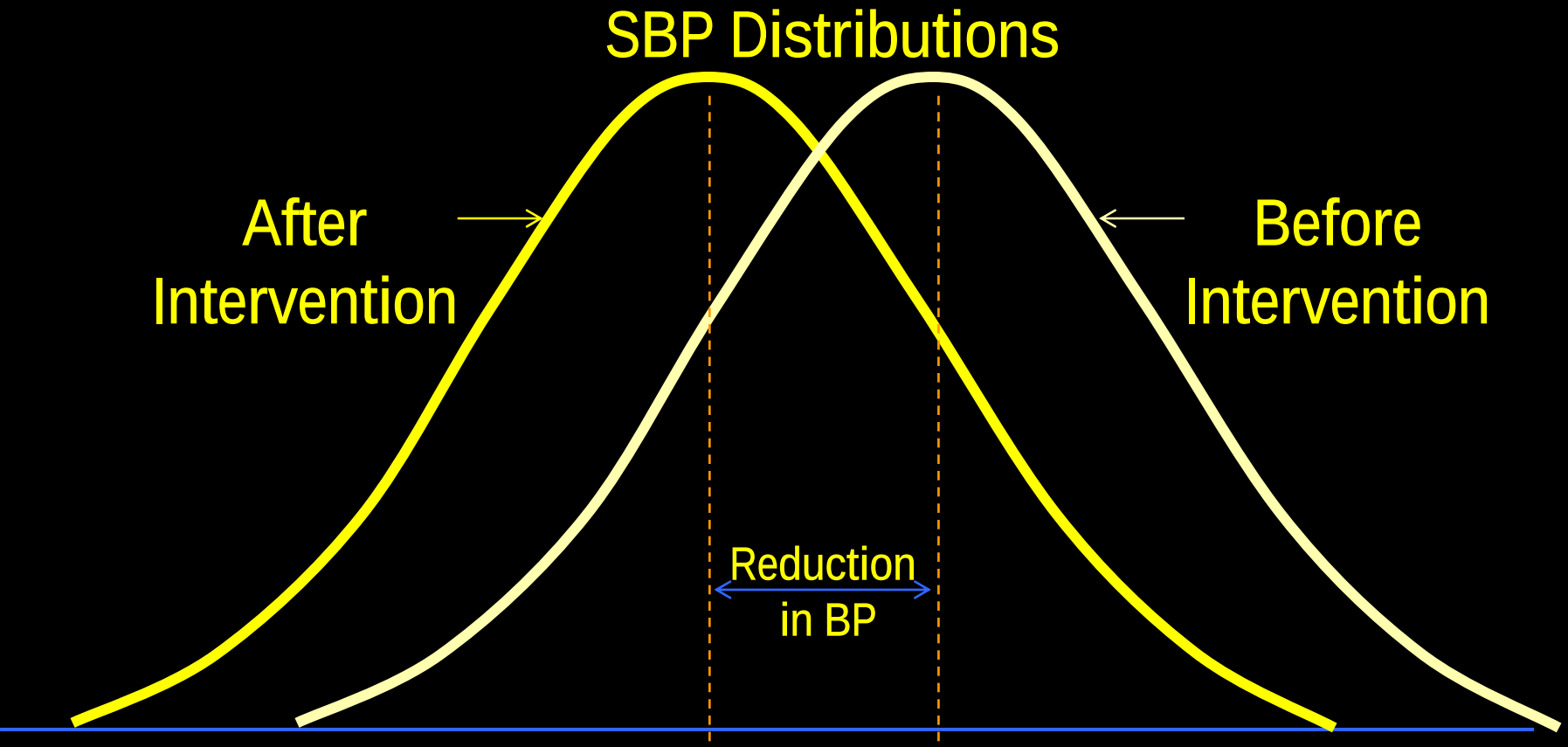


REDUCING SALT INTAKE IN POPULATIONS

Report of a WHO Forum and Technical meeting 5–7 October 2006, Paris, France

World Health Organization

Population-Based Strategy

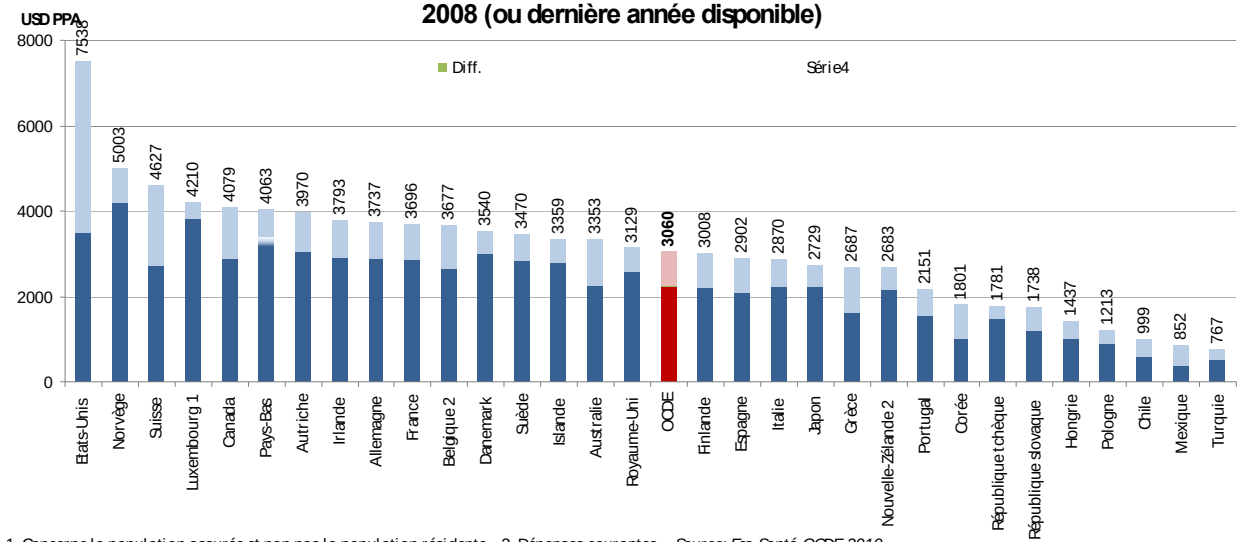


Reduction in SBP mmHg	% Reduction in Mortality Stroke	CHD	Total
2	–6	–4	–3
3	–8	–5	–4
5	–14	–9	–7

Objectif no 71

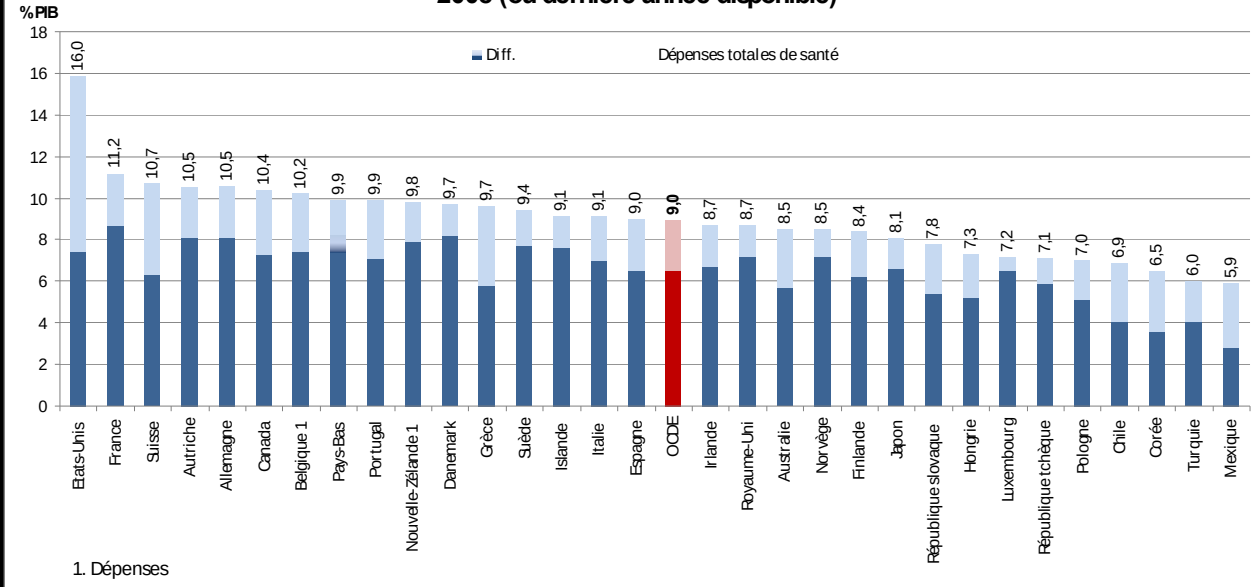
- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

Graphique 3. Dépenses de santé par habitant, US$ PPA, 2008 (ou dernière année disponible)



1. Concerne la population assurée et non pas la population résidente. 2. Dépenses courantes. Source: *Eco-Santé OCDE 2010*.
Les données sont exprimées en dollars US ajustés pour les parités de pouvoir d'achat (PPA). Les PPA permettent la comparaison des dépenses entre les pays sur une base commune. Les PPA sont des taux de conversion monétaire qui égalisent le coût d'un "panier" donné de produits et services dans différents pays.

Graphique 2. Dépenses de santé en proportion du PIB, 2008 (ou dernière année disponible)

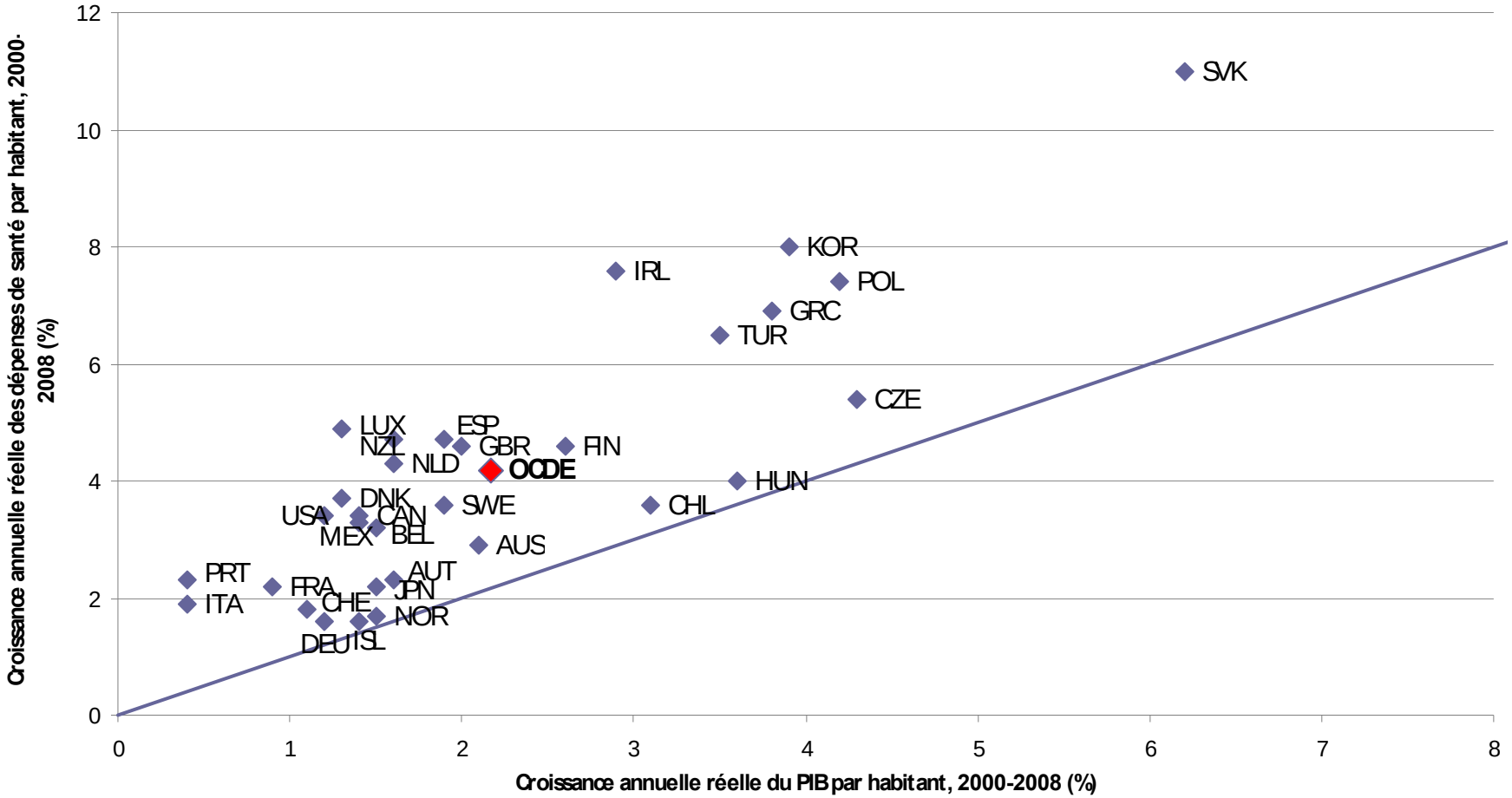


1. Dépenses

L’augmentation des dépenses de santé pèse sur les budgets publics, selon Eco-Santé OCDE 2010

29/06/2010 - Dans tous les pays de l’OCDE, les dépenses totales de santé progressent plus rapidement que l’activité économique, entraînant une hausse de la part du PIB consacrée à la santé. Cette part est passée de 7.8% du PIB en 2000 à 9.0% en 2008 dans l’ensemble des pays de l’OCDE. Les facteurs à l’origine de cette augmentation – progrès technologique, attentes grandissantes de la population et vieillissement – vont continuer à exercer des pressions sur les coûts dans les années à venir.

Graphique 1. Croissance annuelle des dépenses de santé et du PIB, 2000-2008



Notes: 2000-2006: Luxembourg et Portugal. 2000-2007: Australie, Danemark, Grèce, Japon et Turquie. 2000-2009: Islande.
Source: *Eco-Santé OCDE 2010*.

- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

Critères à prendre en compte dans l'évaluation d'un biomarqueur ?

- **Population d'étude**
  - **Meilleure performance chez les sujets à haut risque**
- **Les caractéristiques du marqueur étudié**
  - **Les ajustements dans le modèle**
- **Les outils statistiques doivent tenir compte de :**
  - **La mesure de la force de l'association : HR ou OR**
  - **La capacité de discrimination : courbes ROC et méthodes de reclassification.**

- **Nouvelles méthodes statistiques évaluent comment le patient se re-classe dans un niveau de risque donné**

Relative Integrated Discrimination Improvement (RIDI%)

- **RIDI mesure le % d'amélioration ou détérioration dans la discrimination quand une variable est remplacée par une autre dans le modèle**
- **Permet de mieux classer les sujets à risque intermédiaire**
  - ***l'augmentation de la probabilité de faire un événement est bénéfique seulement chez ceux qui ont fait un événement au cours du suivi***
  - ***Une diminution de la probabilité est seulement bénéfique chez ceux qui n'ont pas fait d'événement***

Pencina, D'Agostino,Vasan, Stat Med 2008;27;157-172 and 2007-112

Effects of a fixed combination of perindopril and indapamide on macrovascular and microvascular outcomes in patients with type 2 diabetes mellitus (the ADVANCE trial): a randomised controlled trial

*ADVANCE Collaborative Group**

Summary

Background Blood pressure is an important determinant of the risks of macrovascular and microvascular complications of type 2 diabetes, and guidelines recommend intensive lowering of blood pressure for diabetic patients with hypertension. We assessed the effects of the routine administration of an angiotensin converting enzyme (ACE) inhibitor-diuretic combination on serious vascular events in patients with diabetes, irrespective of initial blood pressure levels or the use of other blood pressure lowering drugs.

Methods The trial was done by 215 collaborating centres in 20 countries. After a 6-week active run-in period, 11140 patients with type 2 diabetes were randomised to treatment with a fixed combination of perindopril and indapamide or matching placebo, in addition to current therapy. The primary endpoints were composites of major macrovascular and microvascular events, defined as death from cardiovascular disease, non-fatal stroke or non-fatal myocardial infarction, and new or worsening renal or diabetic eye disease, and analysis was by intention-to-treat. The macrovascular and microvascular composites were analysed jointly and separately. This trial is registered with ClinicalTrials.gov, number NCT00145925.

Lancet 2007; 370: 829–40

Published Online September 2, 2007 DOI:10.1016/S0140-6736(07)61303-8

See Comment page 804

*Collaborators listed at end of paper

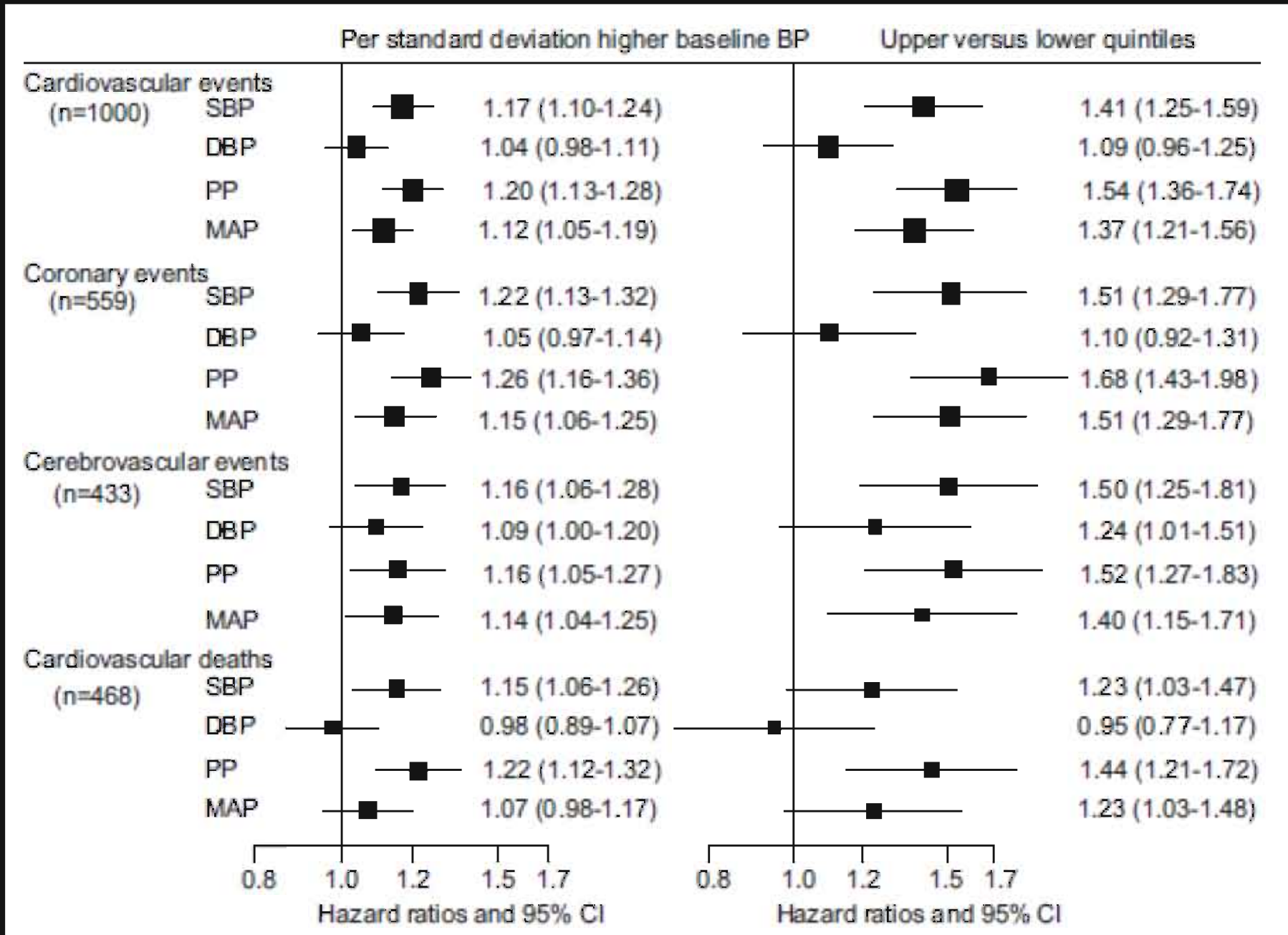
Correspondence to: Dr Anushka Patel FRACP Cardiovascular Division, The George Institute for International Health, University of Sydney, PO Box M201, Missenden Road, Sydney, NSW 2050, Australia

Blood Pressure Variables and Cardiovascular Risk

New Findings From ADVANCE

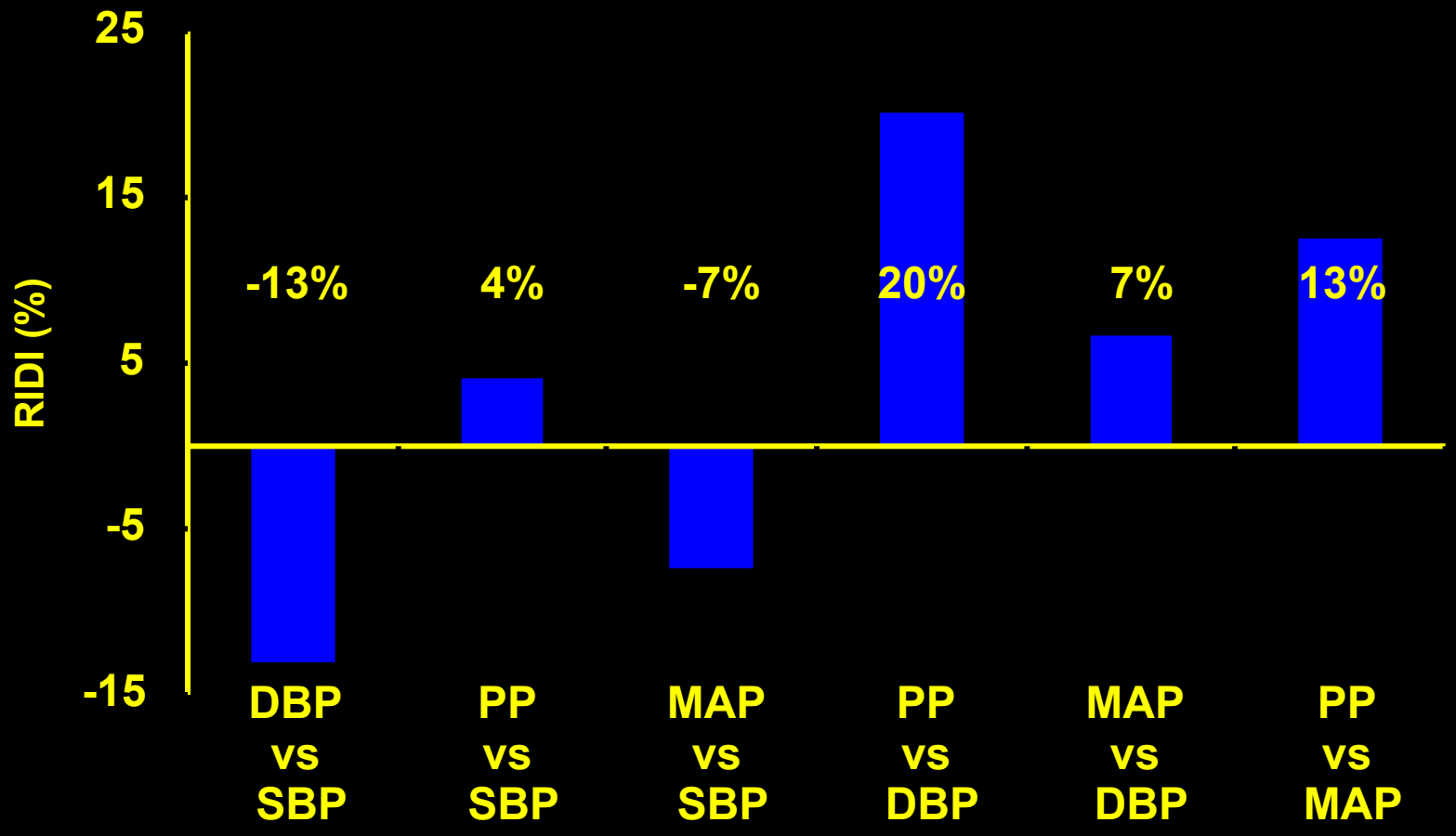
Andre-Pascal Kengne, Sébastien Czernichow, Rachel Huxley, Diederick Grobbee, Mark Woodward, Bruce Neal, Sophia Zoungas, Mark Cooper, Paul Glasziou, Pavel Hamet, Stephen B. Harrap, Giuseppe Mancia, Neil Poulter, Bryan Williams, John Chalmers, on behalf of the ADVANCE Collaborative Group

Hypertension 2009


Per standard deviation higher baseline BP
Upper versus lower quintiles
Cardiovascular events (n=1000)
SBP
1.17 (1.10-1.24)
1.41 (1.25-1.59)
DBP
1.04 (0.98-1.11)
1.09 (0.96-1.25)
PP
1.20 (1.13-1.28)
1.54 (1.36-1.74)
MAP
1.12 (1.05-1.19)
1.37 (1.21-1.56)
Coronary events (n=559)
SBP
1.22 (1.13-1.32)
1.51 (1.29-1.77)
DBP
1.05 (0.97-1.14)
1.10 (0.92-1.31)
PP
1.26 (1.16-1.36)
1.68 (1.43-1.98)
MAP
1.15 (1.06-1.25)
1.51 (1.29-1.77)
Cerebrovascular events (n=433)
SBP
1.16 (1.06-1.28)
1.50 (1.25-1.81)
DBP
1.09 (1.00-1.20)
1.24 (1.01-1.51)
PP
1.16 (1.05-1.27)
1.52 (1.27-1.83)
MAP
1.14 (1.04-1.25)
1.40 (1.15-1.71)
Cardiovascular deaths (n=468)
SBP
1.15 (1.06-1.26)
1.23 (1.03-1.47)
DBP
0.98 (0.89-1.07)
0.95 (0.77-1.17)
PP
1.22 (1.12-1.32)
1.44 (1.21-1.72)
MAP
1.07 (0.98-1.17)
1.23 (1.03-1.48)
0.8
1.0
1.2
1.5
1.7
Hazard ratios and 95% CI
0.8
1.0
1.2
1.5
1.7
Hazard ratios and 95% CI

Variables	Major Cardiovascular (n=1000)	Major Coronary (n=559)	Major Cerebrovascular (n=433)
SBP (A)	0.624 (0.606 to 0.642)	0.653 (0.631 to 0.676)	0.582 (0.555 to 0.610)
DBP (B)	0.616 (0.598 to 0.634)	0.642 (0.619 to 0.664)	0.576 (0.548 to 0.604)
PP (C)	0.627 (0.609 to 0.645)	0.657 (0.635 to 0.679)	0.581 (0.553 to 0.609)
MAP (D)	0.620 (0.602 to 0.638)	0.647 (0.625 to 0.669)	0.580 (0.552 to 0.607)
Differences			
A–B	0.008 (P=0.008)	0.012 (P=0.007)	0.006 (P=0.286)
A–C	−0.003 (P=0.209)	−0.004 (P=0.157)	0.001 (P=0.751)
A–D	0.005 (P=0.007)	0.006 (P=0.005)	0.002 (P=0.426)
B–C	−0.011 (P=0.008)	−0.015 (P=0.004)	−0.005 (P=0.522)
B–D	−0.004 (P=0.040)	−0.005 (P=0.037)	−0.003 (P=0.245)
C–D	0.007 (P=0.032)	0.010 (P=0.019)	0.001 (P=0.826)
Overall P	0.055	0.040	0.463

RIDI % : survenue d'un événement cardiovasculaire majeur (critère combiné)



- La pathologie cardiovasculaire représente-t-elle encore un problème majeur de santé publique ?
- Quelle est la part de l'HTA en matière d'épidémiologie cardiovasculaire ?
- Prévalence de l'HTA – prévalence du contrôle tensionnel
- Pourquoi est-on si mauvais – comment faire mieux?
- Traitement/prévention – santé individuelle/collective
- Ça coûte combien trop plus ?
- Quel paramètre tensionnel – nouvel outil
- Conclusion

« La folie, c’est se comporter de la même manière et s’attendre à un résultat différent »

« La folie, c’est se comporter de la même manière et s’attendre à un résultat différent »