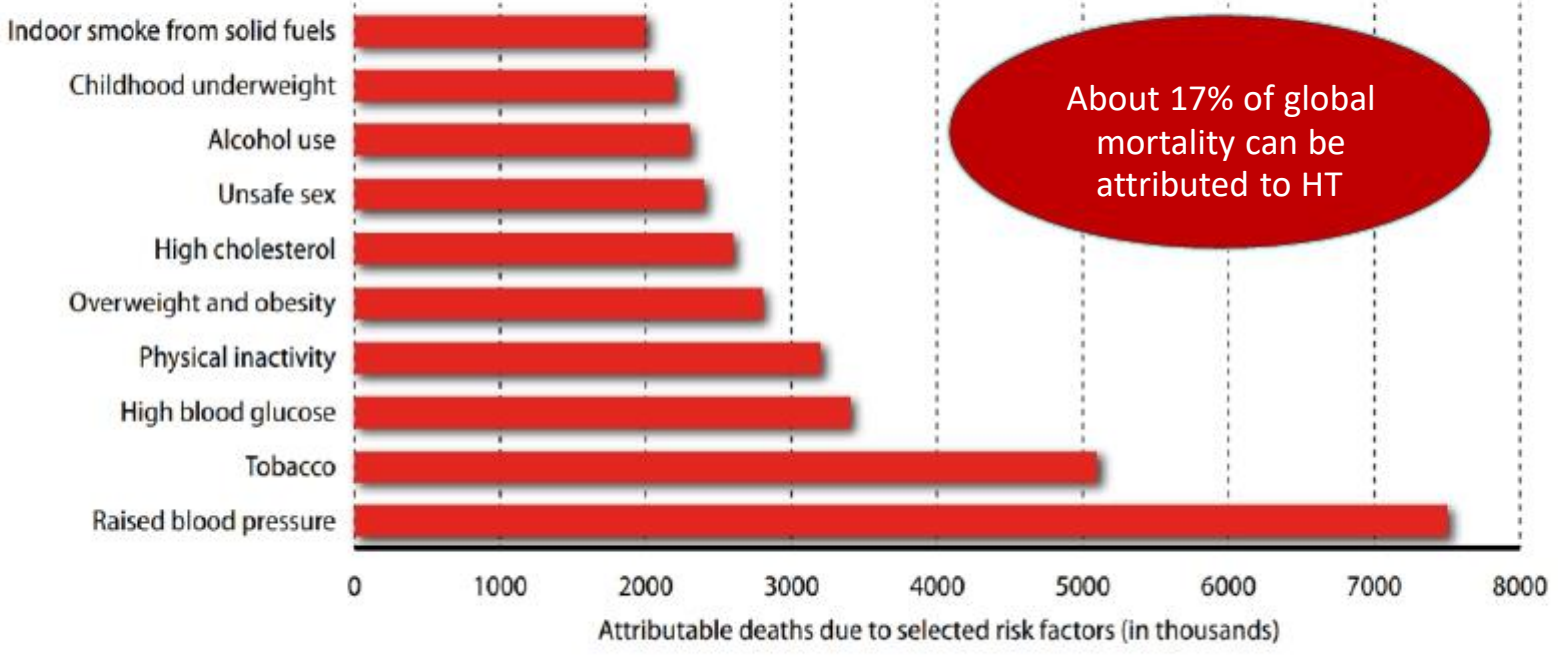
TĂNG HUYẾT ÁP

Khuyến cáo và ứng dụng lâm sàng

PGS TS Châu Ngọc Hoa
Bộ môn Nội- ĐHYD Tp HCM

ESC
European Society
of Cardiology

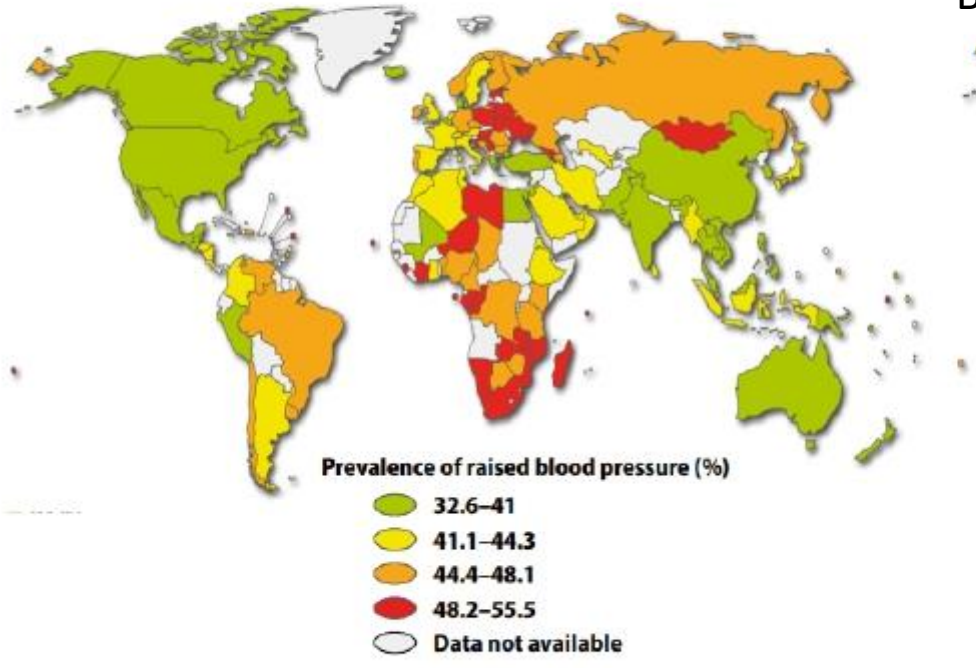
Hypertension is the leading risk factor for CVD globally



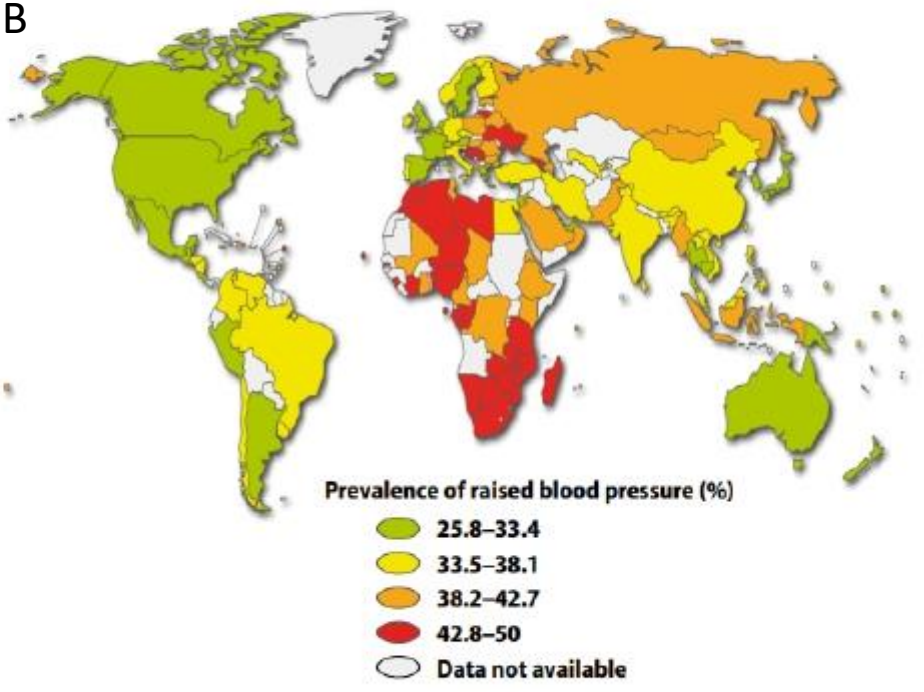
World Health Organisation. Global atlas on cardiovascular disease prevention and control. 2011 Availableat: http://www.who.int/cardiovascular_diseases/publications/atlas_cvd/en/index.html

Worldwide Prevalence of Hypertension in males (A) & females (B) ≥ 25 years

A



B



The state of hypertension care in 44 low-income and middle-income countries: a cross-sectional study of nationally representative individual-level data from 1·1 million adults

Pascal Geldsetzer, Jennifer Manne-Goehler, Maja-Emilia Marcus, Cara Ebert, Zhaxybay Zhum
Adil Supiyev, Lela Sturua, Silver K Bahendeka, Abla M Sibai, Sarah Quesnel-Crooks, Bolormaa
Roy Wong-McClure, Mary T Mayige, Joao S Martins, Nuno Lunet, Demetre Labadarios, Khem
Nahla C Hwalla, Dismand Houinato, Corine Houehanou, Mohamed Msaidié, David Guwatud
Maria Dorobantu, Albertino Damasceno, Pascal Bovet, Brice W Bicaba, Krishna K Aryal, Glenn
Justine I Davies, Till Bärnighausen*, Rifat Atun*, Sebastian Vollmer*, Lindsay M Jaacks*

- 192,441 participants with hypertension
  - 29.9% received HTN treatment
    - 10.3% achieved HTN control

Lancet. 2019 Jul 18. pii: S0140-6736(19)30955-9

Long-term and recent trends in hypertension awareness, treatment, and control in 12 high-income countries: an analysis of 123 nationally representative surveys

NCD Risk Factor Collaboration (NCD-RisC)*

Summary
Background Antihypertensive medicines are effective in reducing adv
to compare hypertension awareness, treatment, and control, and how
income countries.

In the best performing countries, treatment coverage reached up to 80% and control rates just less < 70%. But in some countries control was as low as < 30%

Lancet. 2019 Jul 18. pii: S0140-6736(19)31145-6

What The World Needs to Do

To reach the SDG 3.4 target of a 1/3 reduction of the risk of death among people ages 30-69

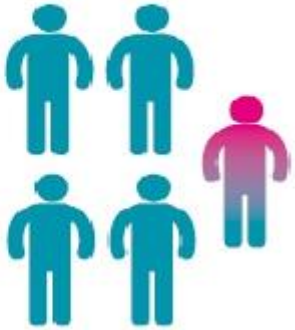
Intervention	Target percent reduction to achieve SDG 3.4	Estimated potential reduction in risk of death from selected NCDs ages 30-69
Tobacco control*	50%	15.0%
Sodium reduction*	30%	5.5%
Prevention, detection, and treatment of cervical*, liver, colon, and other cancers	27% overall	5.0%
Treatment of hypertension*	50% hypertension control	4.8%
Reduction of indoor air pollution	25%	3.3%
Artificial trans fat elimination	100%	1.9%
Reduction of harmful alcohol use*	20%	0.9%
TOTAL		**36.4%**
CVD		**27.2%**

**WHO "Best Buy" for NCD prevention*

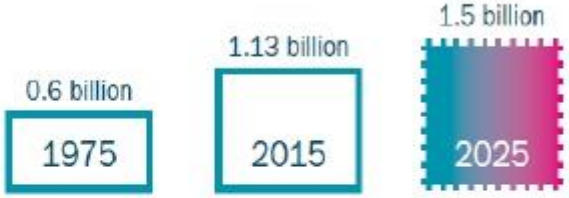
Note: some lives saved may be counted twice

Adapted from Resolve to Save Lives

Prevalence of hypertension



1 out of 5 adults
are living with hypertension



In 40 years, the number of adults with hypertension has nearly doubled

Low income countries
are mainly affected

70% of hypertensive patients are older than 65 years old

1. http://www.who.int/features/qa/82/en 2. SAND abstract N° 169 from the BEACH program: Hypertension, comorbidity and blood pressure control. Sydney: FMRC University of Sydney.2011 ISSN1444-9072 c2011 3.Wozniak G et al.Hypertension Control Cascade: AFramework to Improve Hypertension. J Clin Hypertens. 2015:18(3):1-8 c 2015

Tăng huyết áp theo nhóm tuổi và giới, 2015-2016

Địa phương điều tra dịch tễ trên toàn quốc*

(chưa bao gồm quần đảo Hoàng Sa và Trường Sa)*

Nhóm tuổi	Nữ	Nam	Chung
25-29	9.4%	19.6%	12.4%
30-34	9.4%	23.3%	12.8%
35-39	12.4%	27.1%	16.7%
40-44	23.6%	29.6%	25.2%
45-49	32.1%	45.6%	36.8%
50-54	40.8%	53.0%	45.0%
55-59	45.8%	64.6%	52.5%
60-64	60.8%	65.4%	62.5%
65-69	66.2%	67.3%	66.6%
70-74	76.2%	82.0%	78.6%
75-79	73.7%	79.5%	75.8%
80-84	80.0%	82.9%	81.3%
85++	82.8%	95.4%	87.9%
≥ 25	**42.6%**	**56.4%**	**47.3%**

Hypertension

"There are few stories in the history of medicine that are filled with more errors or misconceptions than the story of hypertension and its treatment."

Prof Marvin Moser (1925-2015)
Yale University School of Medicine

Are we all Hypertensive? And if so, why?

1. Genetics

2. Obesity

3. Immobility

4. Alcohol

5. Nutrition

What is a Normal Blood Pressure? The Yanomani Indians

Nonpharmacological Interventions

6.2. Nonpharmacological Interventions

Recommendations for Nonpharmacological Interventions References that support recommendations are summarized in Online Data Supplements 9-21.		
COR	LOE	Recommendations
I	A	1. Weight loss is recommended to reduce BP in adults with elevated BP or hypertension who are overweight or obese (1-4).
I	A	2. A heart-healthy diet, such as the DASH (Dietary Approaches to Stop Hypertension) diet, that facilitates achieving a desirable weight is recommended for adults with elevated BP or hypertension (5-7).
I	A	3. Sodium reduction is recommended for adults with elevated BP or hypertension (8-12).
I	A	4. Potassium supplementation, preferably in dietary modification, is recommended for adults with elevated BP or hypertension, unless contraindicated by the presence of CKD or use of drugs that reduce potassium excretion (13-17).
I	A	5. Increased physical activity with a structured exercise program is recommended for adults with elevated BP or hypertension (3, 4, 12, 18-22).
I	A	6. Adult men and women with elevated BP or hypertension who currently consume alcohol should be advised to drink no more than 2 and 1 standard drinks* per day, respectively (23-28).

Whelton PK, et al. J Am Coll Cardiol. 2017.

SURPRISING TRENDS FROM THE FRONT LINES

- 90% of cardiologists had no or minimal nutrition education during fellowship training
- Only 8% had a “solid nutrition education” that they considered “adequate”

Devries S, Agatston A, Aggarwal M, Aspry KE, Esselstyn CB, Kris-Etherton P, Miller M, O'Keefe JH,Ros E, Rzeszut AK, White BA, Williams KA, **Freeman AM**. A Deficiency of Nutrition Education and Practice in Cardiology. Am JMed. 2017 May 24.

CVD Prevention Guidelines

Get Your 30

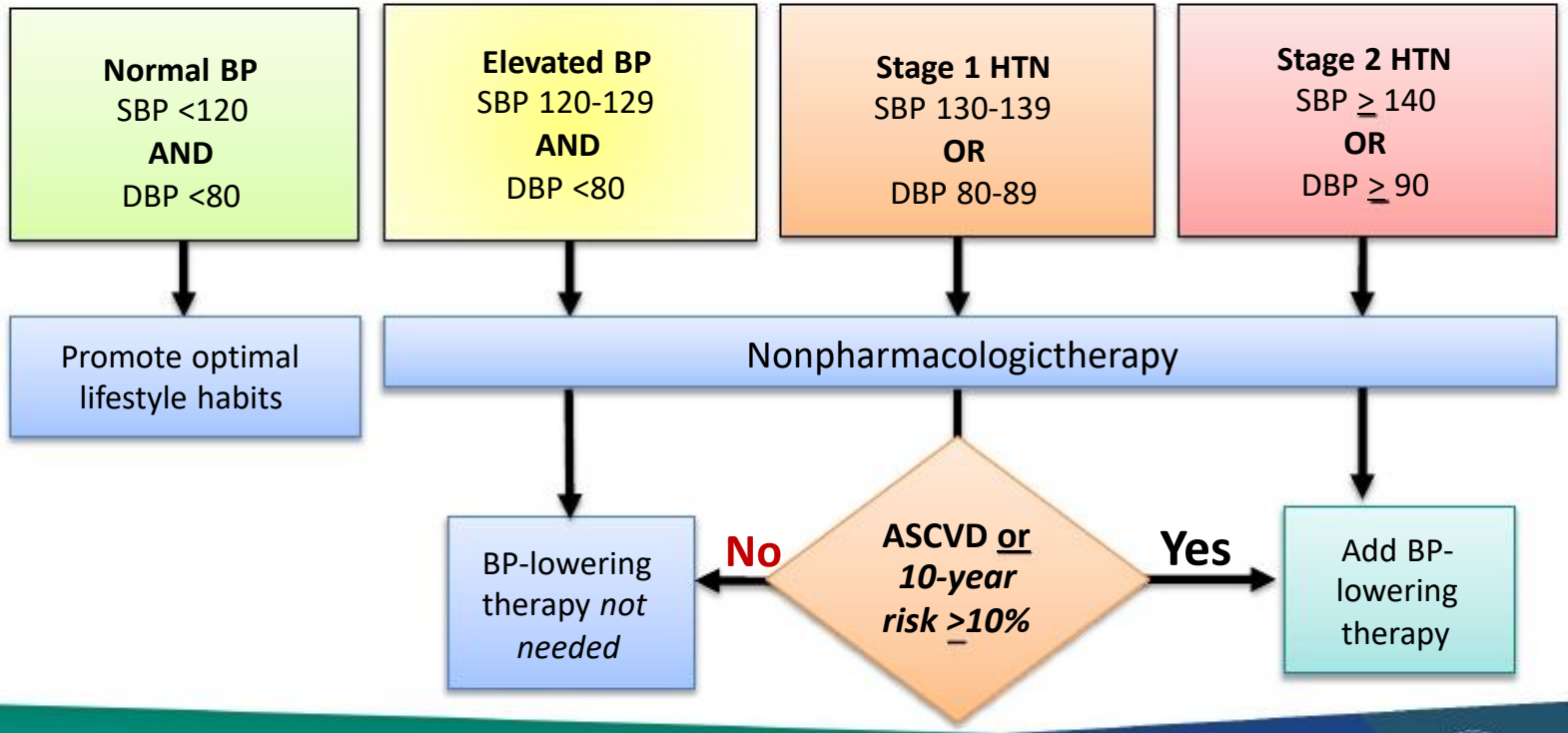
- Adults should aim for 150 minutes per week of accumulated moderate-intensity physical activity or 75 minutes per week of vigorous-intensity physical activity.
- Aim for 30 minutes day to keep it simple!
- Get rid of the sedentary behavior
- If unable to hit targets, do your best! The guidelines are favorable towardsANY activity, though targets should be striven for!

ASCVD Risk Estimation to Guide the Management of Hypertension: The Time Has Come

Ty J. Gluckman, MD, FACC, FAHA
Medical Director, Center for Cardiovascular Analytics, Research and Data Science (CARDS)
Providence Heart Institute
Providence St. Joseph Health
Portland, Oregon

AMERICAN COLLEGE of CARDIOLOGY

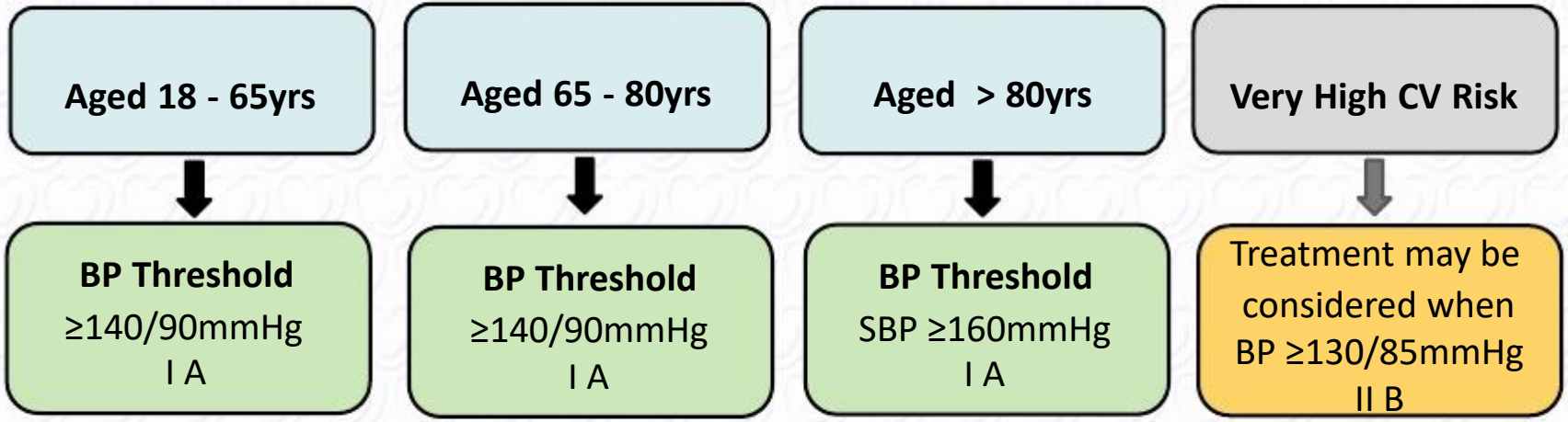
2017ACC/AHA Hypertension Guideline Management of BP inAdults



Whelton P, et al. JACC 2018;71(19):e127-248.

What's new in 2018?

Office Blood Pressure Thresholds for Drug Treatment of Hypertension*



*Lifestyle Interventions recommended for all when BP is high-normal (BP ≥130/85mmHg)

2018 ESC/ESH Guidelines for the management of arterial hypertension
European Heart Journal (2018) doi:10.1093/eurheartj/ehy339
Journal of Hypertension (2018) doi:10.1097/HJH.0000000000001940

Table 5. 10-year CV risk categories (SCORE system)

Very high-risk	**People with any of the following:** **Documented CVD, either clinical or unequivocal on imaging.** • **Clinical CVD** includes; acute myocardial infarction, acute coronary syndrome, coronary or other arterial revascularization, stroke, TIA, aortic aneurysm, PAD. • **Unequivocal documented CVD on imaging** includes: significant plaque (i.e. ≥ 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 m_2). **A calculated 10-year SCORE of ≥ 10%.**

Table 5. 10-year CV risk categories (SCORE system)

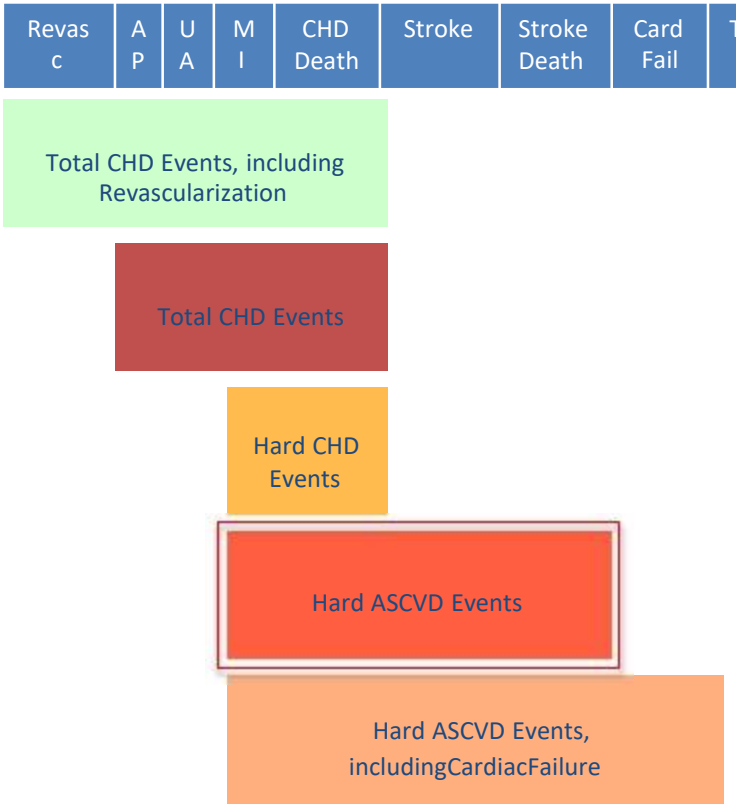
High-risk	**People with any of the following:** **Marked elevation of a single risk factor,** particularly cholesterol > 8 mmol/L (> 310 mg/dL) e.g. familial hypercholesterolaemia, grade 3 hypertension (BP ≥ 180/110 mmHg). **Most other people with diabetes mellitus** (except some young people with type 1 diabetes mellitus and without major risk factors, that may be moderate risk). **Hypertensive LVH.** **Moderate CKD eGFR 30–59 mL/min/1.73 m2).** **A calculated 10-year SCORE of 5–10%.**

Ways to Assess Cardiovascular Risk

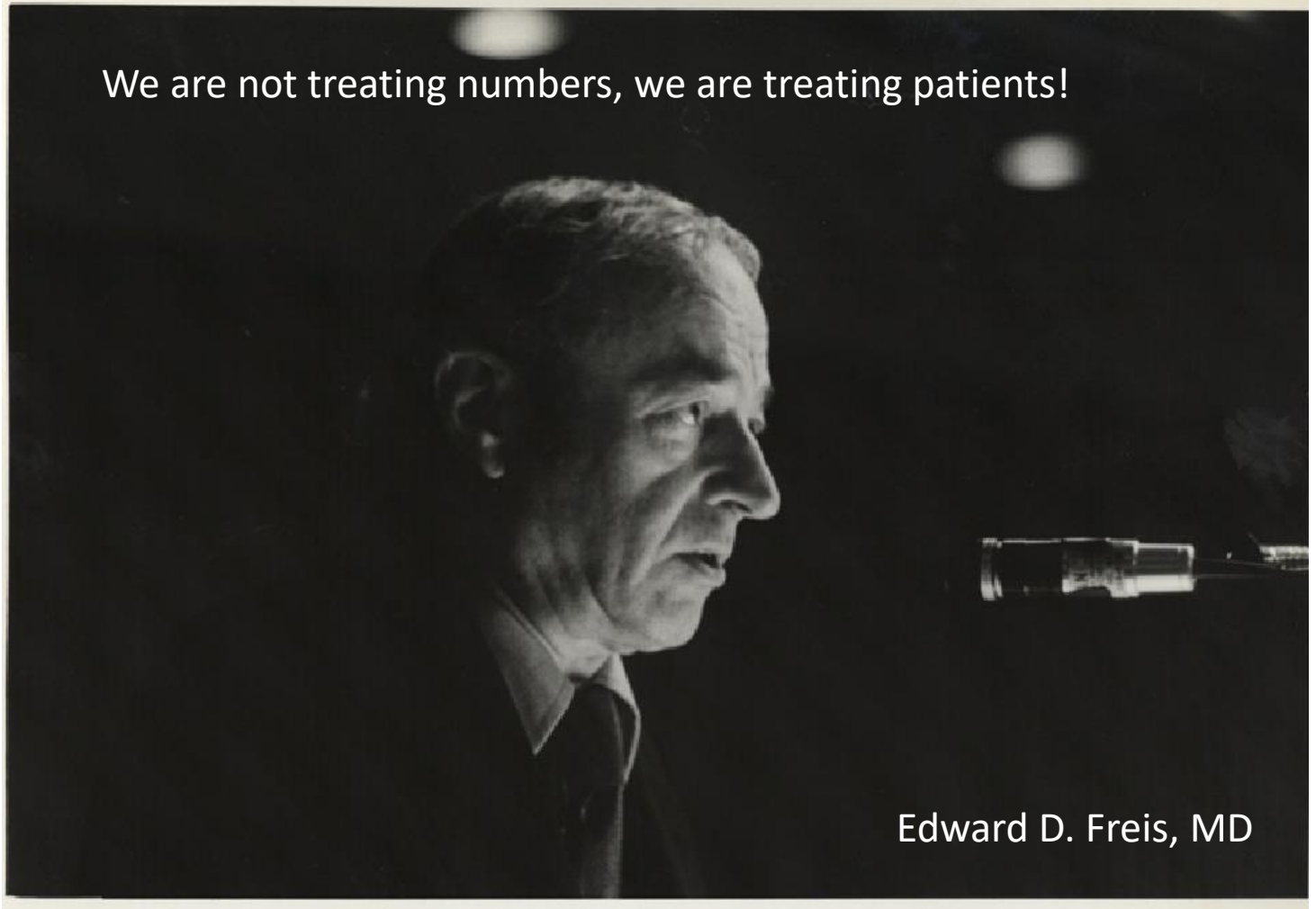
Risk Score

Cardiovascular End Points

Study Group	Coron Revasc	Ang Pect	UA	MI	CHD Death	Stroke	Stroke Death	Card Fail	TIA
Framingham CHD		X	X	X	X				
ATPIII				X	X				
Framingham Global				X	X	X	X	X	
PRO-CAM	X			X	X				
QRISK	X	X	X	X	X	X	X		X
Reynolds Men	X			X	X	X	X		
Reynolds Women	X			X	X	X	X		
EURO-SCORE					X		X		
Pooled Cohort				X	X	X	X		



Goff DC et al. *J Am Coll Cardiol* 2014;63:2935-2959


We are not treating numbers, we are treating patients!
Edward D. Freis, MD

REVIEW

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Ministry of Health, Amman, Jordan

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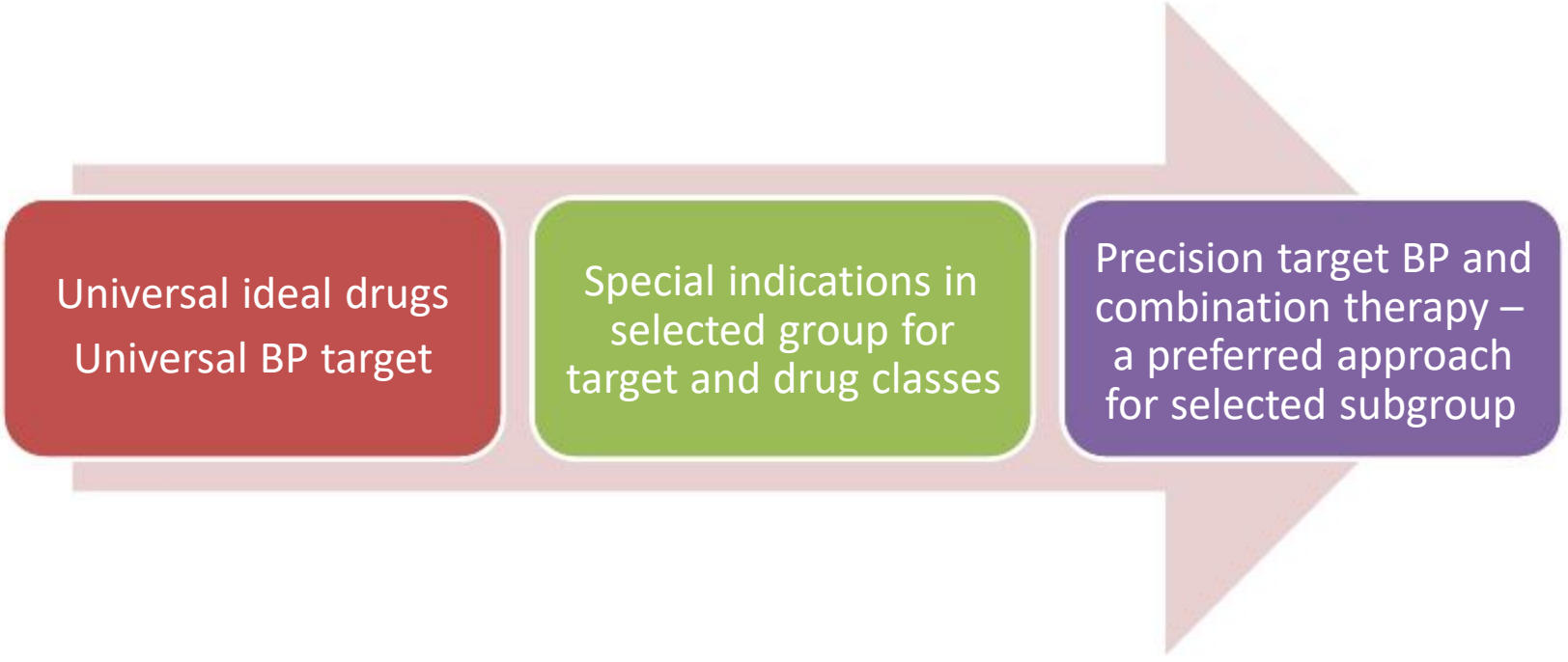
Department of Cardiovascular Medicine, Sydell and Arnold Miller Family Heart and Vascular Institute, Cleveland Clinic

CME MOC ACCREDITED

Hypertension guidelines: Treat patients, not numbers

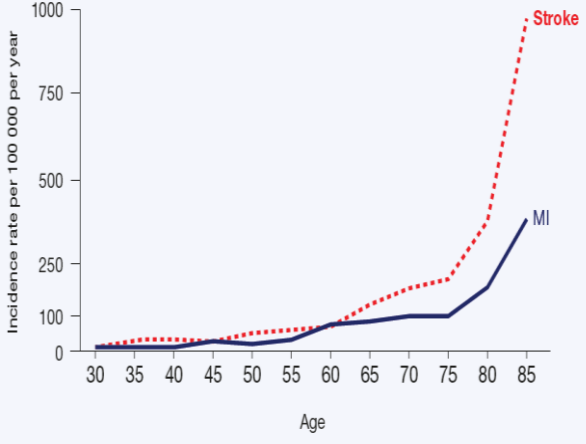
- Blood pressure targets should be applied in the appropriate clinical context and on a patient by-patient basis.
- In clinical practice, one size does not always fit all, as special cases exist.
- Treating numbers rather than patients may result in unbalanced patient care. The optimal approach to blood pressure management relies on a comprehensive risk factor assessment and shared decision-making with the patient before setting specific blood pressure targets.

Changing paradigm in hypertension management

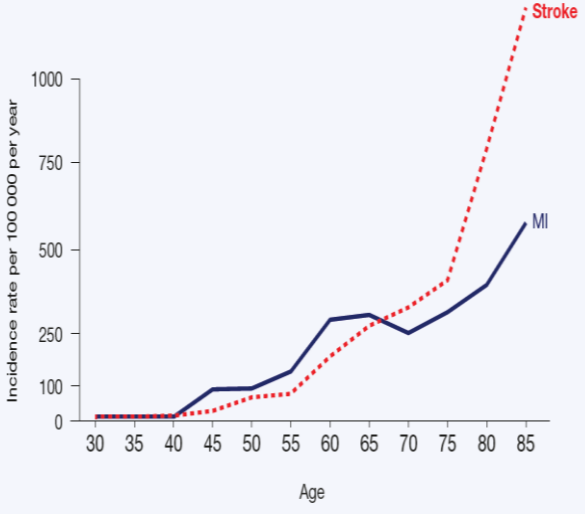


Stroke is the most devastating complication for older hypertensive patients

Age-specific incidence rates of stroke and acute myocardial infarction (MI) in women[1]



Age-specific incidence rates of stroke and acute myocardial infarction (MI) in men[1]



1. Gentil A et al. *J Neurol Neurosurg Psychiatry*. 2009;80:1006-1010.)

Changes in overall disease burden in China:

Stroke becomes the first cause of death

- Researchers from the Chinese Center for Disease Control and Prevention, the University of Washington Health Index and Evaluation Institute, and other institutions have conducted a comprehensive assessment of the disease burden in China (1990-2010).
- Studies have shown that, unlike the world's 235 death causes, ischemic disease is the first cause of death in China.

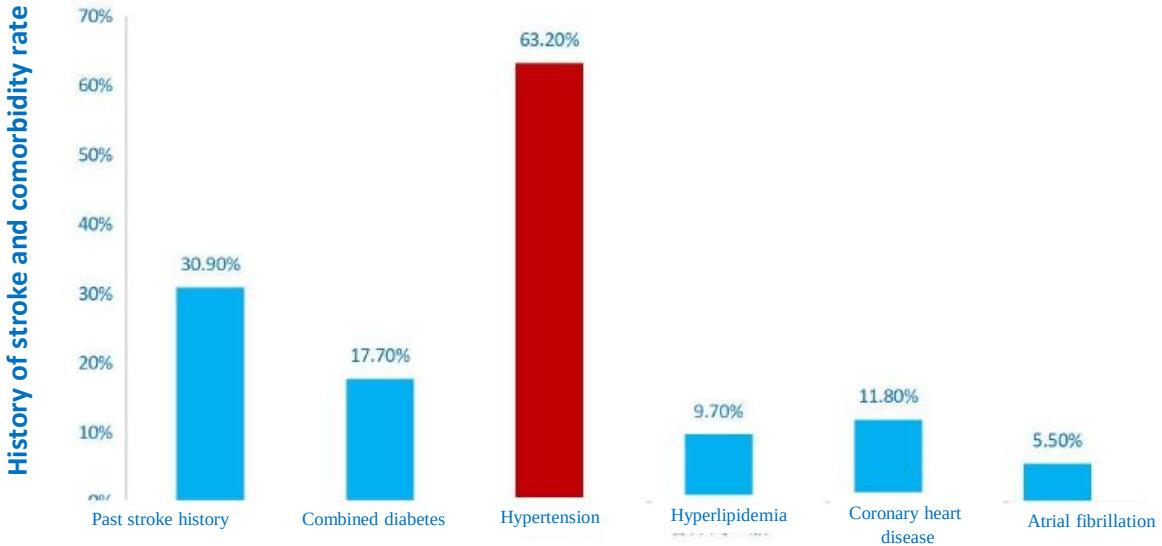
China's top three fatal diseases in 2010

COPD=chronic obstructive pulmonary disease.

Gonghuan Yang, et al. Lancet 2013; 381: 1987–2015.

Stroke patients with high rates of hypertension

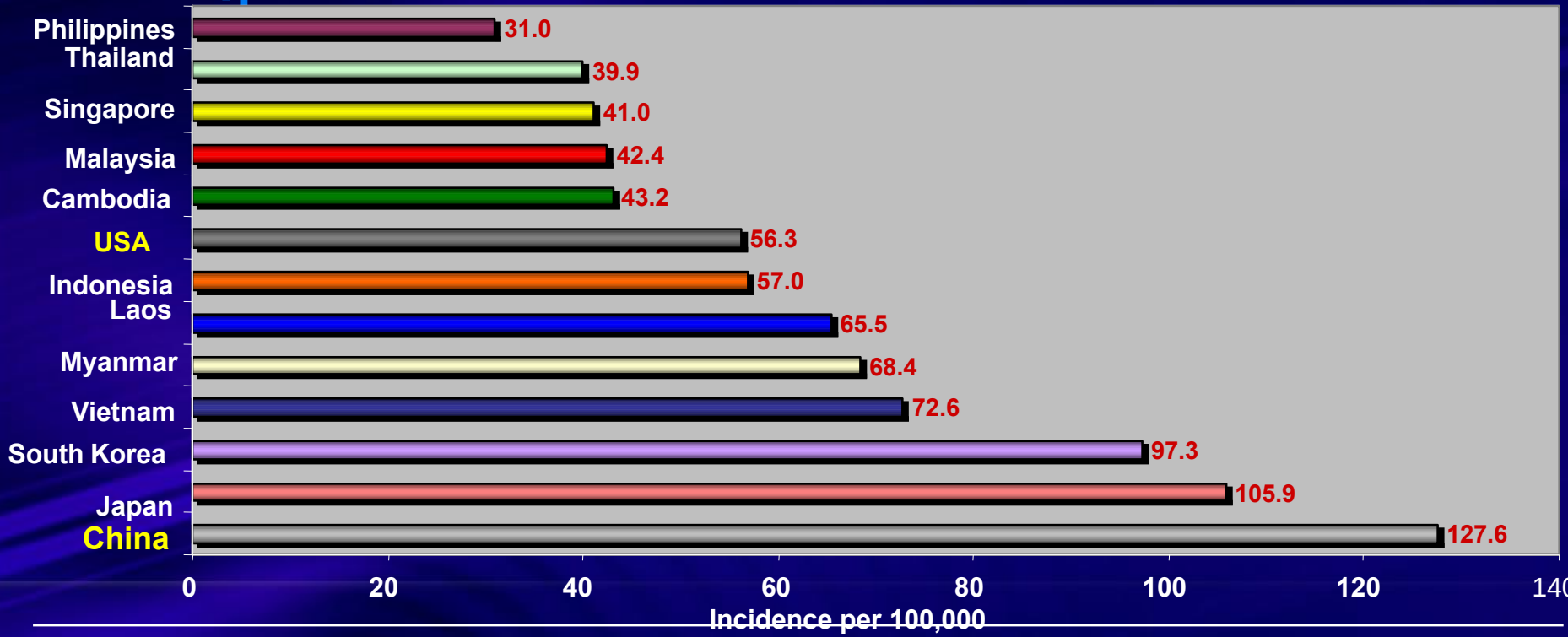
(China National Stroke Registry)



The statistical results were obtained from a total of 21,902 stroke patients from 132 hospitals across the country (including all 31 provincial administrative units including Hong Kong) from CNSR (China National Stroke Registry) 2007.9-2008.8. Among them, 63. 2% were hypertensive.

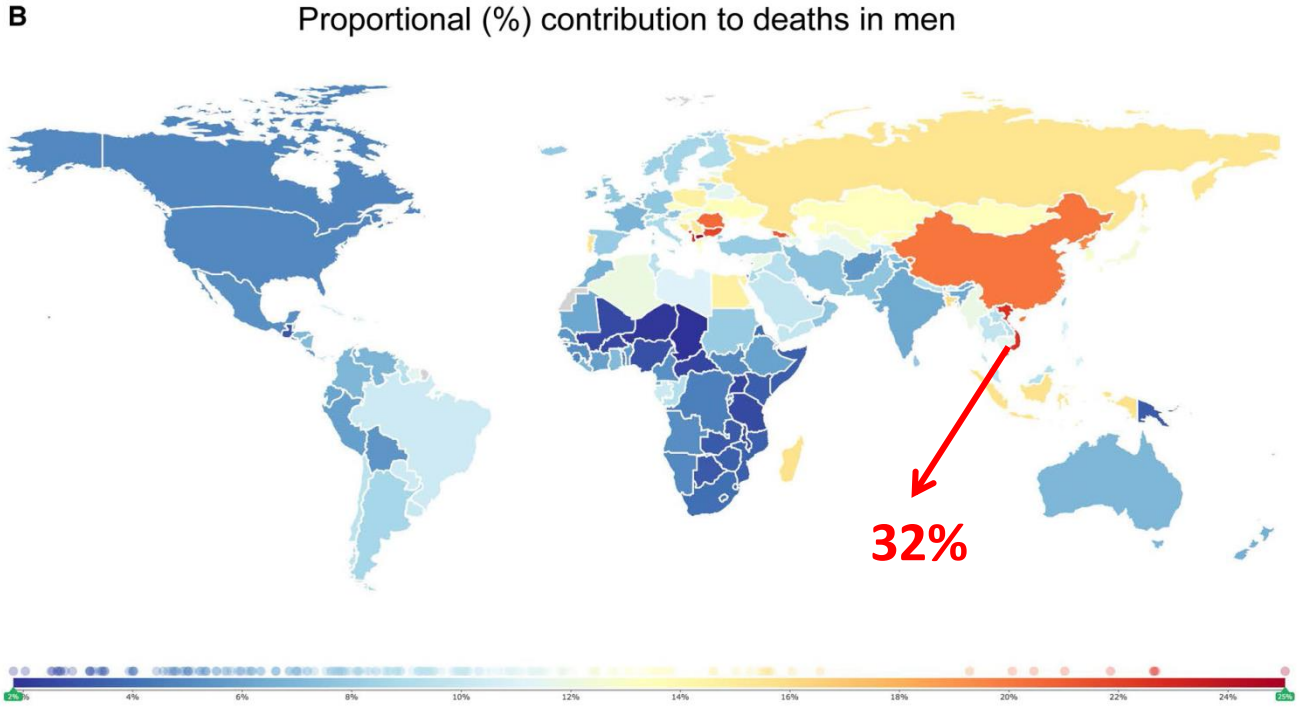
Wang Y, et al. Int J Stroke. 2011 Aug;6(4):355-61.

Incidence of Stroke in the Asian Pacific Region (2002)



Atlas of Heart Disease and Stroke. MacKay J & Mensah G. 2004. Geneva. WHO Figures (not adjusted for age).

Đột quị: tỉ lệ tử vong rất cao tại Việt Nam

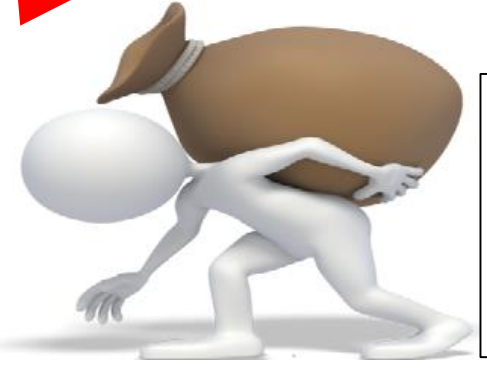


Valery L. Feigin, Bo Norrving, George A. Mensah; Global Burden of Stroke; *Circ Res*. 2017;120:439-448n

2016: STROKE IS IN TOP 3 REASON OF MORTALITY IN VIETNAM

200.000 cases/year
100.000 died

- 80 mils VND if have surgery
- 10 mils VND internal treatment for inpatients
- 3 – 5 kinds of drugs for outpatients



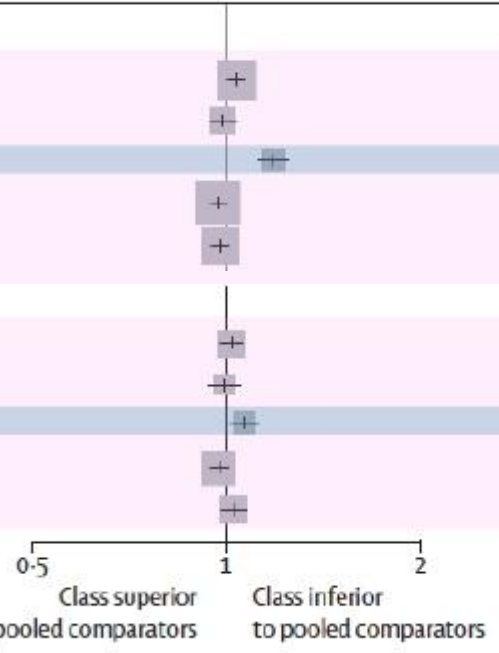
- **90% pts have after-effect**

Be paralysed, Diminish capacity, Depression…

- **1/3 will have recurrent stroke in 5 years.**

Impact of Specific BP-lowering Treatments versus alternative class on Major Cardiovascular Outcomes & Mortality

	Studies	Intervention		Control		RR (95% CI)
		Events	Participants	Events	Participants	
Major cardiovascular events						
ACE inhibitor	10	5379	31652	9766	50805	1·03 (1·00–1·06)
ARB	8	3647	27140	3779	29331	0·98 (0·93–1·02)
β blocker	9	2863	25989	2520	27231	1·17 (1·11–1·24)
CCB	21	7857	63693	12808	82904	0·97 (0·94–0·99)
Diuretic	11	5830	38353	6782	42410	0·97 (0·94–1·00)
All-cause mortality						
ACE inhibitor	14	3321	33104	5865	52263	1·01 (0·97–1·05)
ARB	11	2546	29282	2638	31404	0·99 (0·94–1·04)
β blocker	12	2805	40953	2688	42170	1·06 (1·01–1·12)
CCB	26	5602	76672	8428	95932	0·97 (0·94–1·00)
Diuretic	12	3425	41625	3806	45707	1·02 (0·97–1·06)



Justifies the focus of treatment on ACE-I or ARB, CCB or Diuretic

Ettehad D, et al. Lancet 2016; 387: 957-967

Khuyến cáo
Cho bệnh nhân lớn tuổi

ESH/ESC guidelines suggest a CCB or a diuretic may be particularly useful for elderly patients[1]

2013

All hypertensive agents are recommended and can be used in the elderly, although diuretics and calcium antagonists may be preferred in isolated systolic hypertension.	I	A

1. Mancia G et al. *Eur Heart J*. 2013;34:2159-2219.

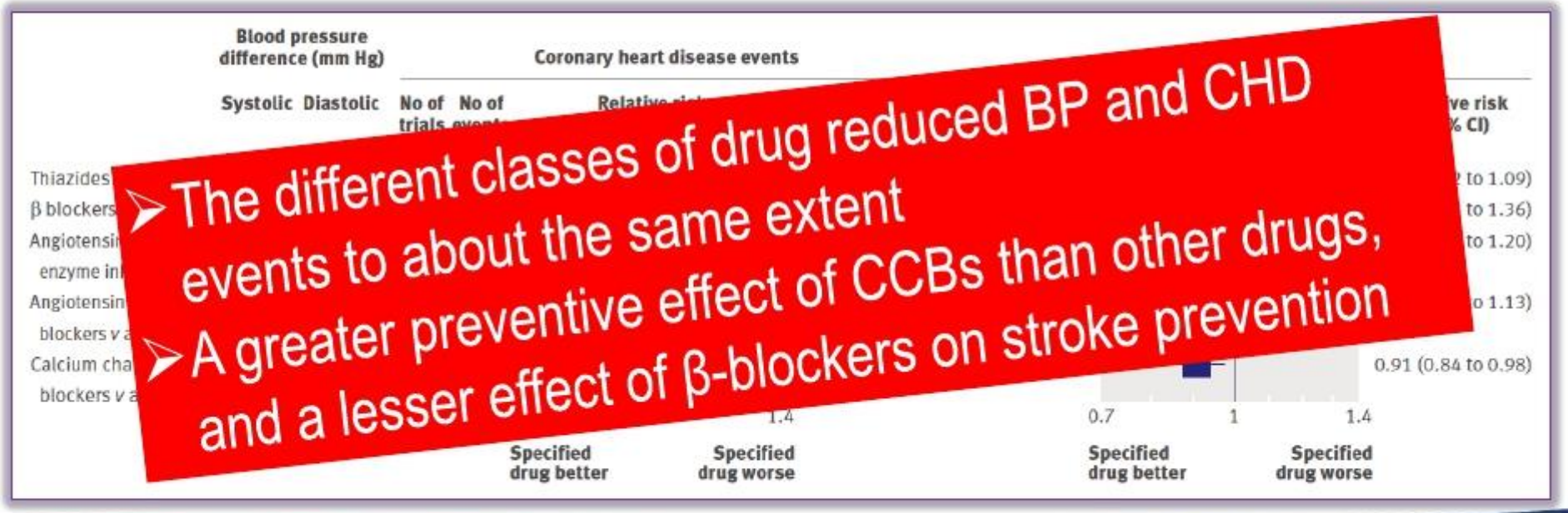
THA Người Cao Tuổi

Khuyến Cáo	Loại	Mức Chứng Cứ
Ngưỡng HA ở người ≥ 65 tuổi cần điều trị thuốc hạ áp là ≥ 140/90mmHg, THA > 80 tuổi ngưỡng HA cần điều trị ≥160/90 mmHg	I	B
Đích hạ HA ở người THA ≥ 65 tuổi chung đối với HATT là trong ranh giới 130-<140mmHg và HATTr là 70-80mmHg	I	C
Theo dõi sát các tác dụng phụ của thuốc điều trị	I	C
Đích nầy khuyến cáo cho bệnh nhân ở bất kỳ mức nguy cơ nào và có bệnh tim mạch hay không	I	C
Điều trị thuốc có thể cho ở bệnh nhân cao tuổi có hội chứng lão hóa nếu dung nạp	IIb	B
Đối với người cao tuổi ≥65 tuổi có THA, với bệnh đồng mắc và có hạn chế về tuổi thọ cần thẩm định lâm sàng kỷ, điều kiện sống, để ưu tiên chăm sóc và đánh giá toàn diện giữa nguy cơ và lợi ích để quyết định xem xét điều trị tích cực hạ áp và chọn lựa thuốc thích hợp	IIa	C
Các nhóm thuốc hạ HA được khuyến cáo và có thể dùng ở người cao tuổi, lợi tiểu và chẹn kênh canci có thể ưu tiên cho THA tâm thu đơn độc	I	A

ESC/ESH 2018

BP Lowering Drugs in the Prevention of CVD

RR estimates of **CHD** events and **stroke** in 46 drug comparison trials comparing each of the five classes of BP lowering drug with any other class of drug



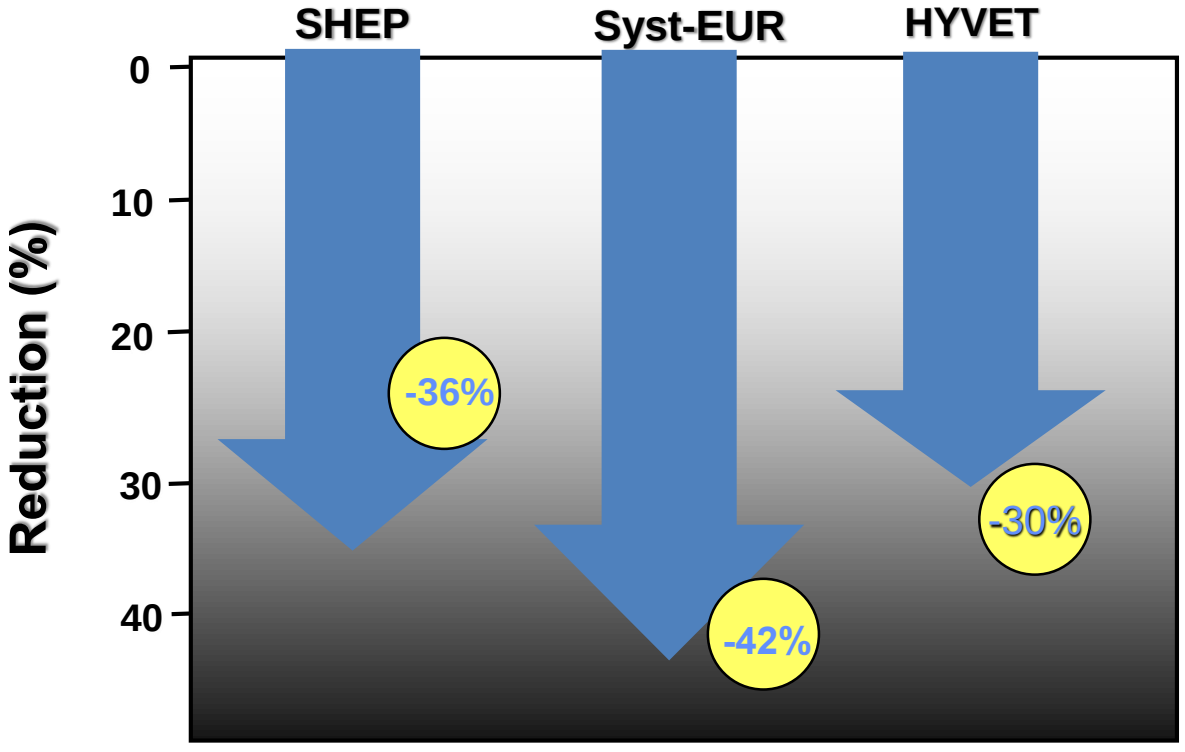
- The different classes of drug reduced BP and CHD events to about the same extent
- A greater preventive effect of CCBs than other drugs, and a lesser effect of β-blockers on stroke prevention

Law MR et al. BMJ 2009;338:b1665

SỰ TIẾN TRIỂN CỦA TĂNG HUYẾT ÁP

B. Williams. Lancet 2006

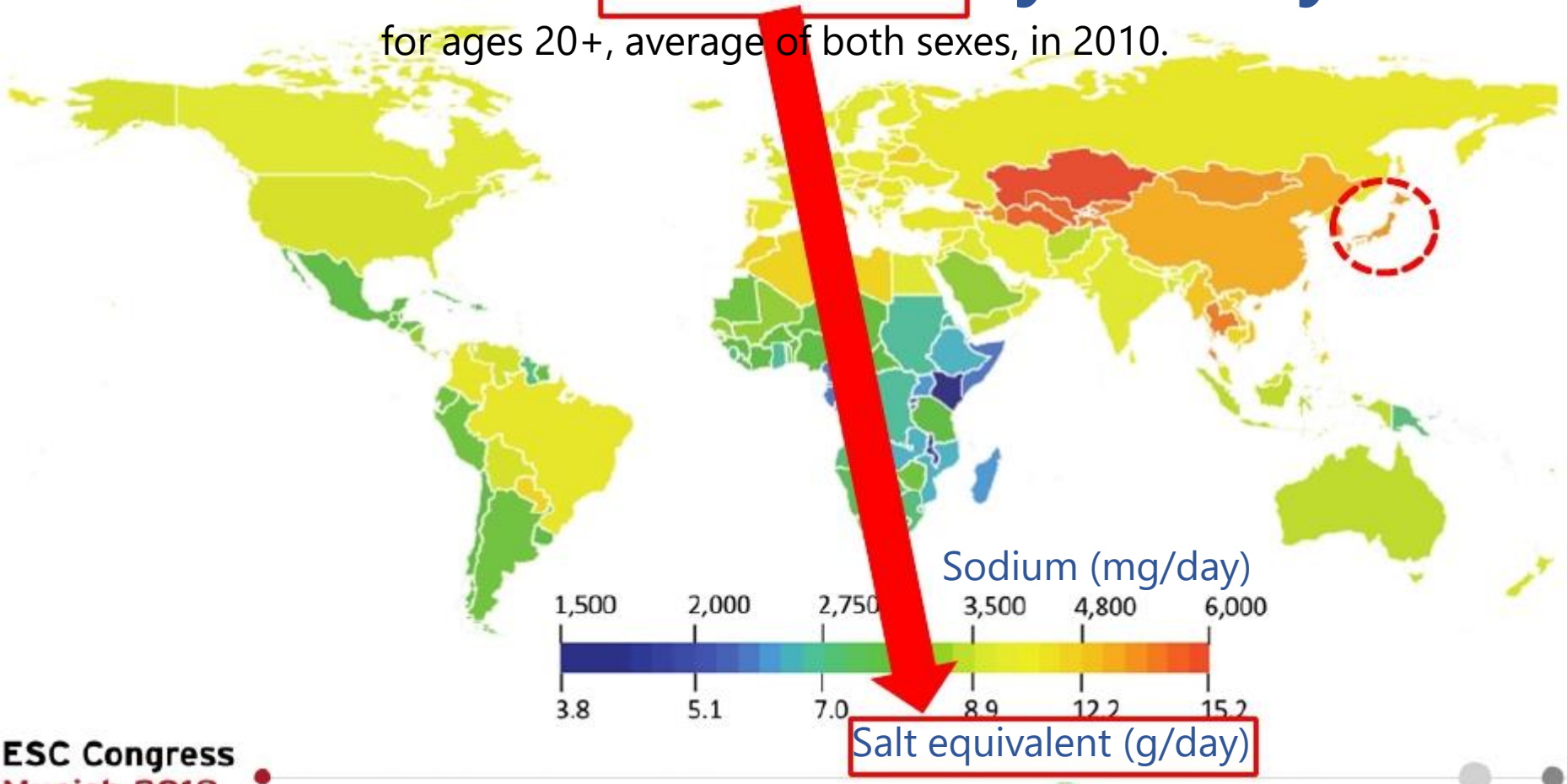
Reduction of Stroke in Elderly



JAMA 1991, Lancet 1997, NEJM 2008

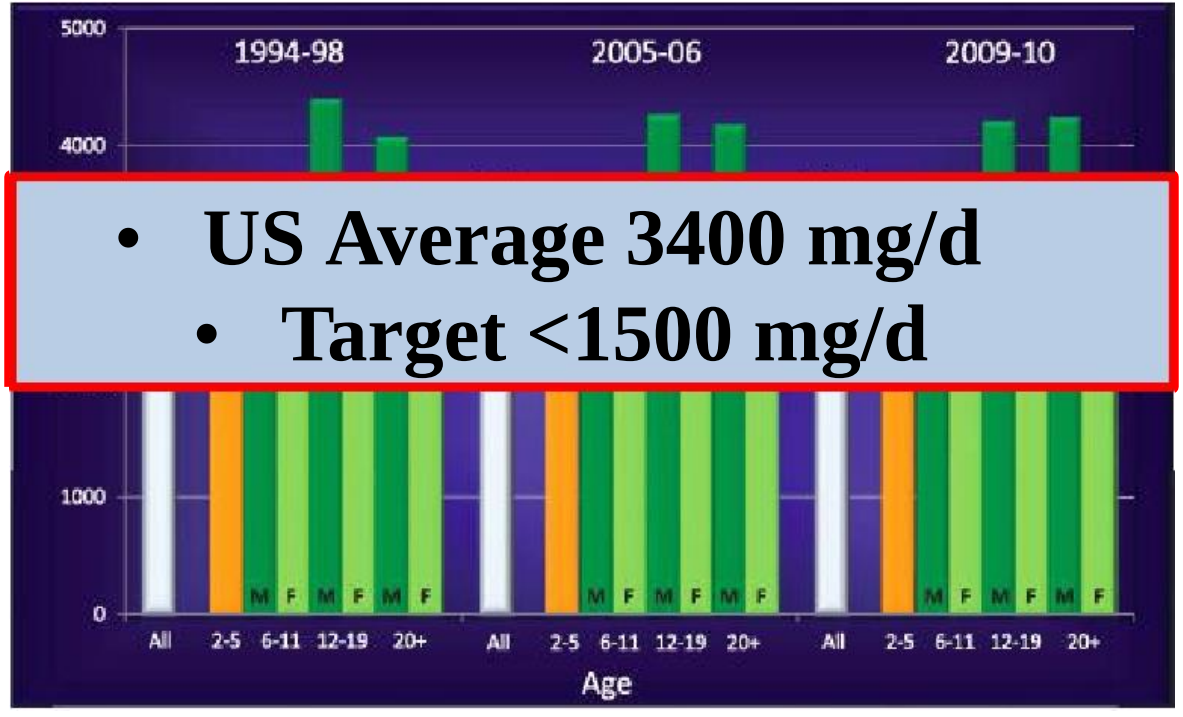
Amount of salt intake by country

for ages 20+, average of both sexes, in 2010.



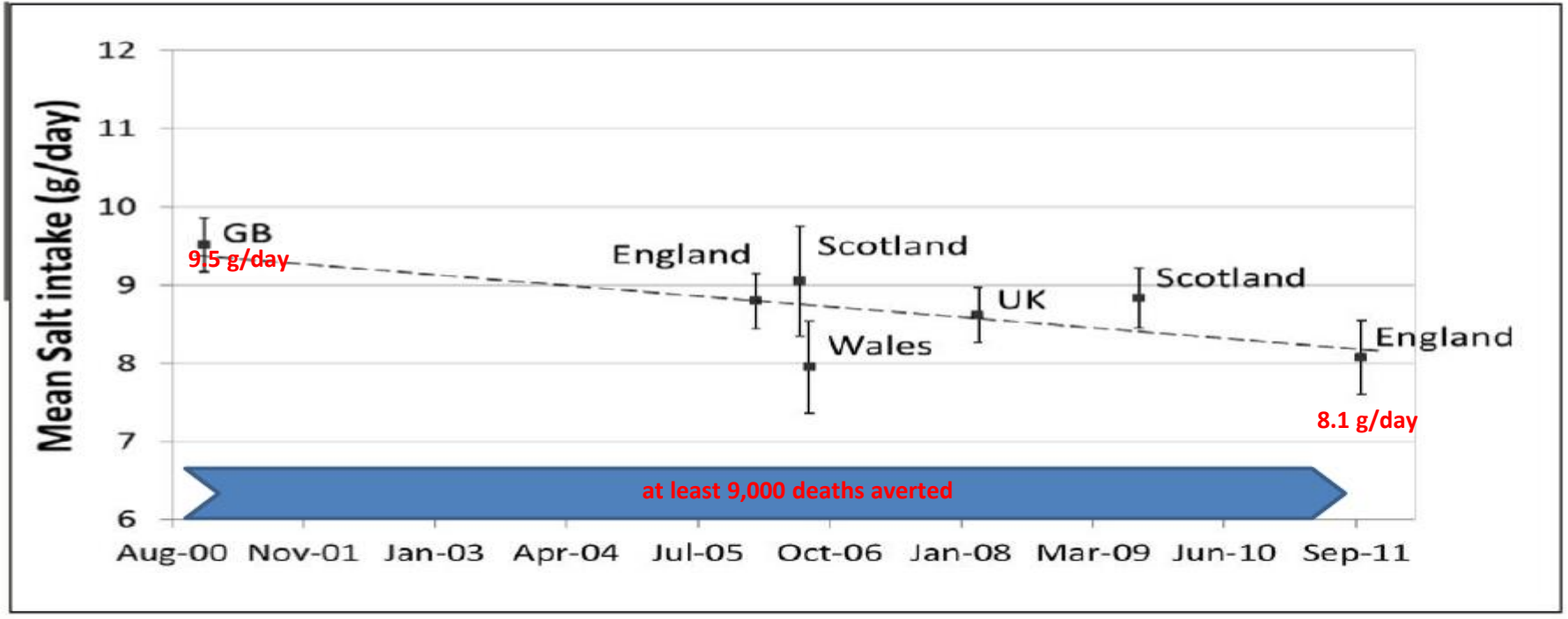
Powles J. et al. BMJ Open 2013; 3: e003733

US Sodium Intake



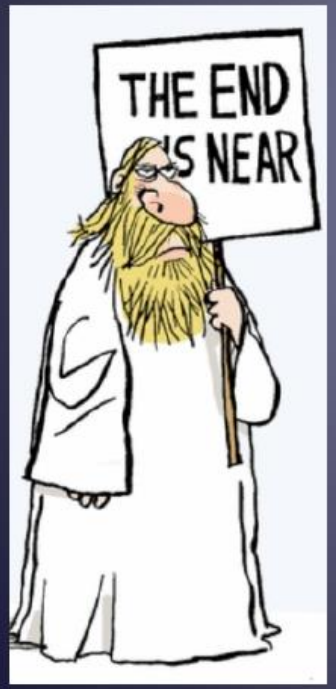
From Antman EM et al. Circulation 2014;129:e660-e679

Salt intake reduced by 1.4 g/day in the UK between 2000 and 2011



To stay on a low salt diet is feasible, if you either…

have the ascetism
of a religious zealot
(Pickering 1948)



get whipped
periodically
(Kempner 1997)

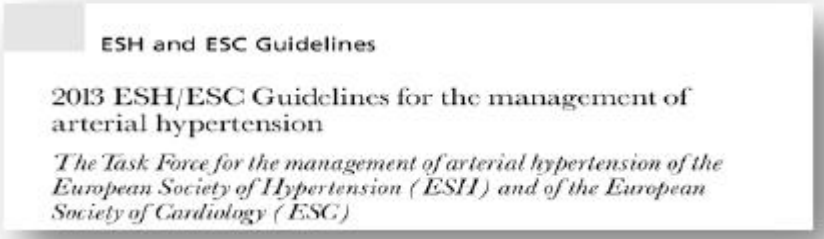
are an inmate
In Federal Prison
(Jones et al. 2018)

Characteristics of hypertension in Asians

High prevalence and low control rates

High sodium and low potassium intakes

High night-time BP and low dipping



…Diuretics have remained the cornerstone of antihypertensive treatment since at least the first Joint National Committee (JNC) report in 1977 [412] and the first WHO report in 1978 [413], and still, in 2003, they were classified as the only first-choice drug by which to start treatment, in both the JNC-7 [264] and the WHO/International Society of Hypertension Guidelines [55,264].

…It has also been argued that diuretics such as chlorthalidone or indapamide should be used in preference to conventional thiazide diuretics, such as hydrochlorothiazide [271].

…D: If diuretic treatment is to be initiated or changed, offer a Thiazide-like Diuretics like Chlortalidone (12.5-25 mg once daily) or Indapamide (1.5 modified-release or 2.5 once daily) in preference to a conventional thiazide diuretic such as Bendroflumethiazide or Hydrocholorothiazide.

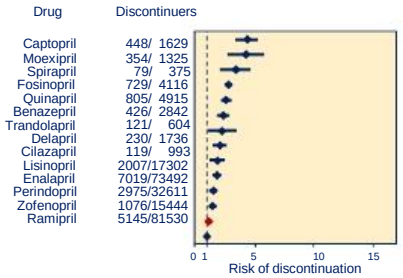
Lợi tiểu: bằng chứng với Indapamide

HYVET[1] 3845 elderly hypertensive patients indapamide SR vs placebo	Primary outcome: 30% ↓ in stroke vs placebo 64% ↓ heart failure 34% ↓ cardiovascular events (fatal and non-fatal) 21% ↓ all death
PROGRESS[2] 6105 patients with cerebrovascular disease: perindopril +/- indapamide vs placebo	Primary outcome: 28% ↓ in stroke vs placebo 38% ↓ non-fatal MI 26% ↓ major coronary events 26% ↓ congestive heart failure
ADVANCE[3] 11 140 HT patients with type 2 diabetes perindopril + indapamide vs placebo	Primary outcome: 9% ↓ Combined macrovascular + microvascular 14% ↓ coronary events 21% ↓ renal events 18% ↓ cardiovascular mortality 14% ↓ all death

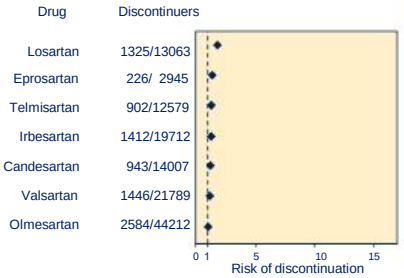
1. Beckett NS, Peters R, Fletcher AE, et al. *N Engl J Med.* 2008;358:1887-1898. 2. PROGRESS Collaborative Group. *Lancet.* 2001;358:1033-1041. 3. Patel A, Group AC, MacMahon S, et al. *Lancet.* 2007;370:829-840.

Relative Risk of Treatment Discontinuation according to the Drug Initially Prescribed within Any Given Class

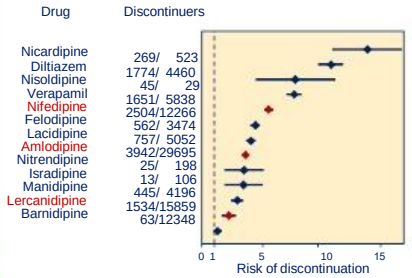
ACE Inhibitors



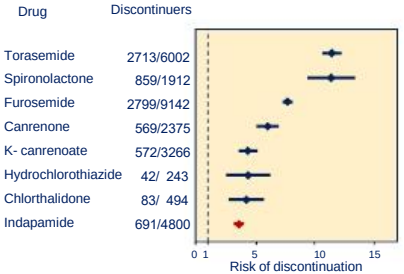
ARB'S



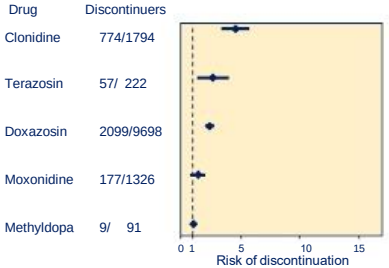
CCB's



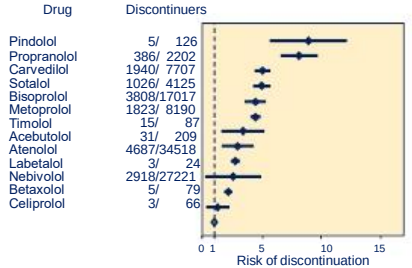
Diuretics



Antisympathetic Agents



Beta Blockers



Mancia G et al, J Hypertens 2010

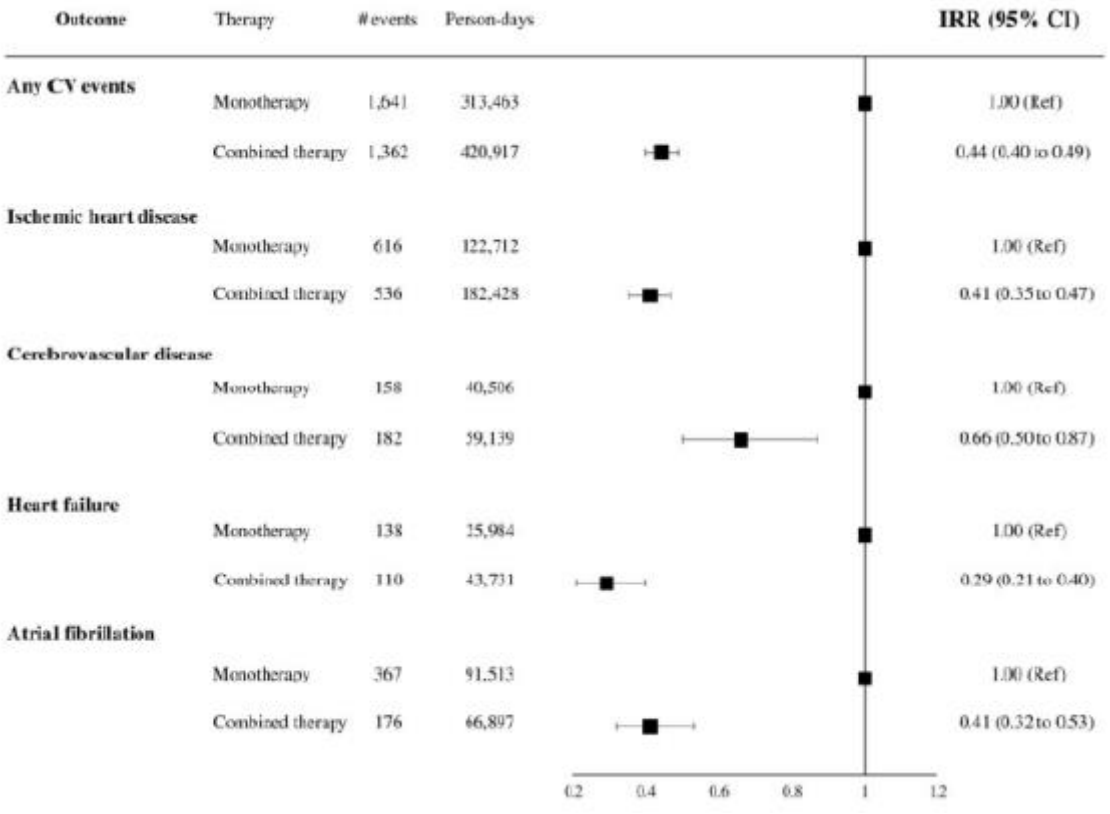
Thiazide (-Like) Diuretics

	Relative potency	**Oral bioavailability**	**T1/2**	**Ineffective GFR<30-40**
HCTZ	1	~70%	~2.5h	Yes
Chlorthalidone	2*	~65%	~47h	Yes
Indapamide	20	~93%	~14h	No
Metolazone	10	~65%	?	No

***Twice as potent in lowering BPon mg-per-mg basis as HCTZ.**

Goodman & Gilman's The Pharmacological Basis of Therapeutics, 12e . 2011
Pharmacotherapy:APathophysiologicApproach, 9e. 2014

Early Cardiovascular Protection by initial two-drug single pill combination versus monotherapy in hypertension



N = 37,078 monotherapy
N = 7,456 SPC
2,212 CV events at 1 year

The effect of starting treatment with a SPC versus Monotherapy on 1 year risk of CV outcomes

Outcome	HR[a] (95% CI)	P-value
Any CV event	0.85 (0.74–0.97)	0.02
Ischaemic heart disease	0.73 (0.56–0.95)	0.02
Cerebrovascular disease	0.83 (0.61–1.14)	0.26
Heart failure	0.90 (0.54–1.51)	0.69
Atrial fibrillation	0.63 (0.42–0.94)	0.02

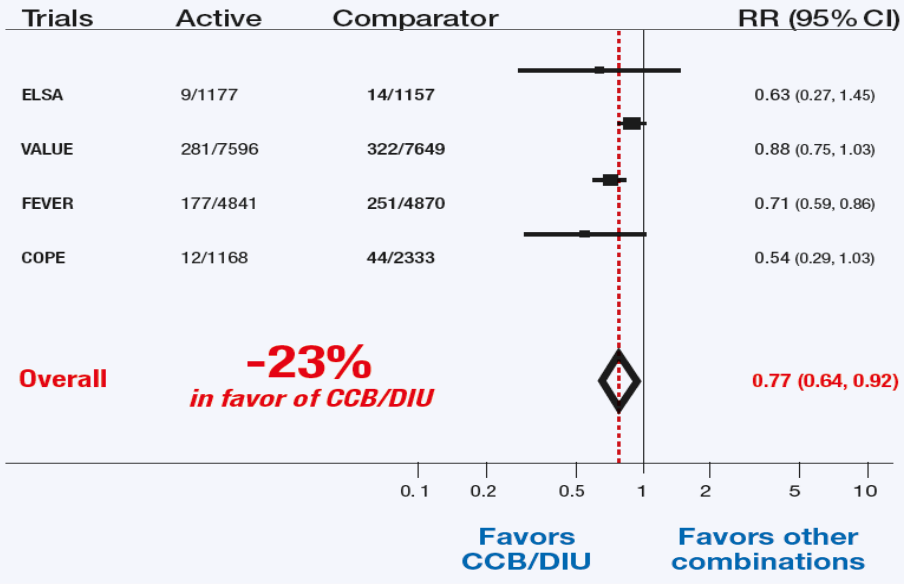
High dimensional propensity score matched in 2212 patients with events at 1 year

Rea F, et al. Eur Heart J, 2018

Healthcare utilization Database | Lombardi, Italy

Phối hợp chẹn calci/lợi tiểu thiazide giảm đột quỵ hiệu quả hơn vs các phối hợp khác

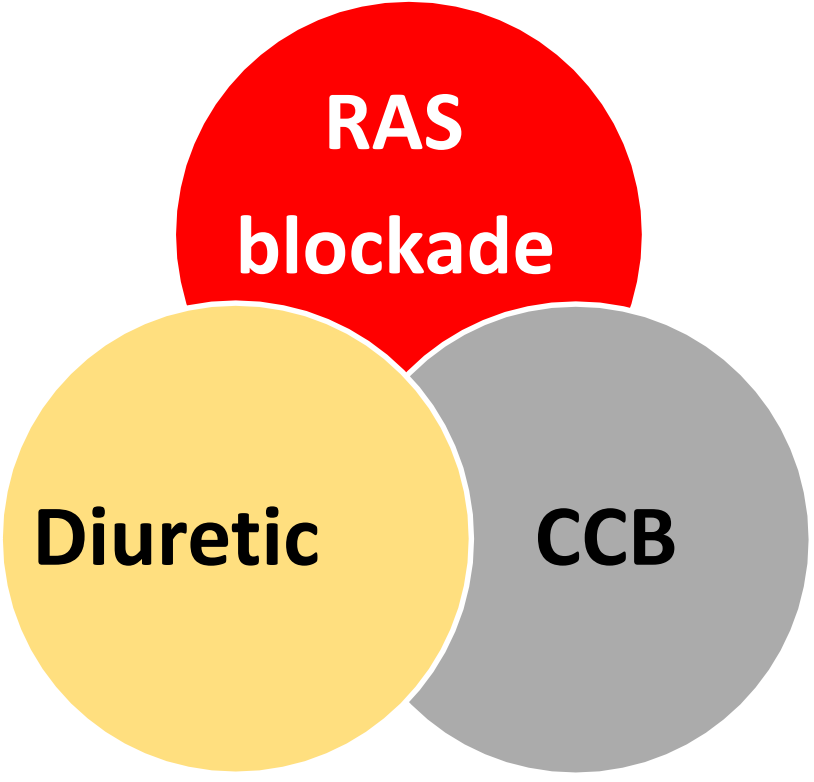
Risk ratios for stroke comparing treatment with combination CCB/thiazide-like diuretic vs other combinations



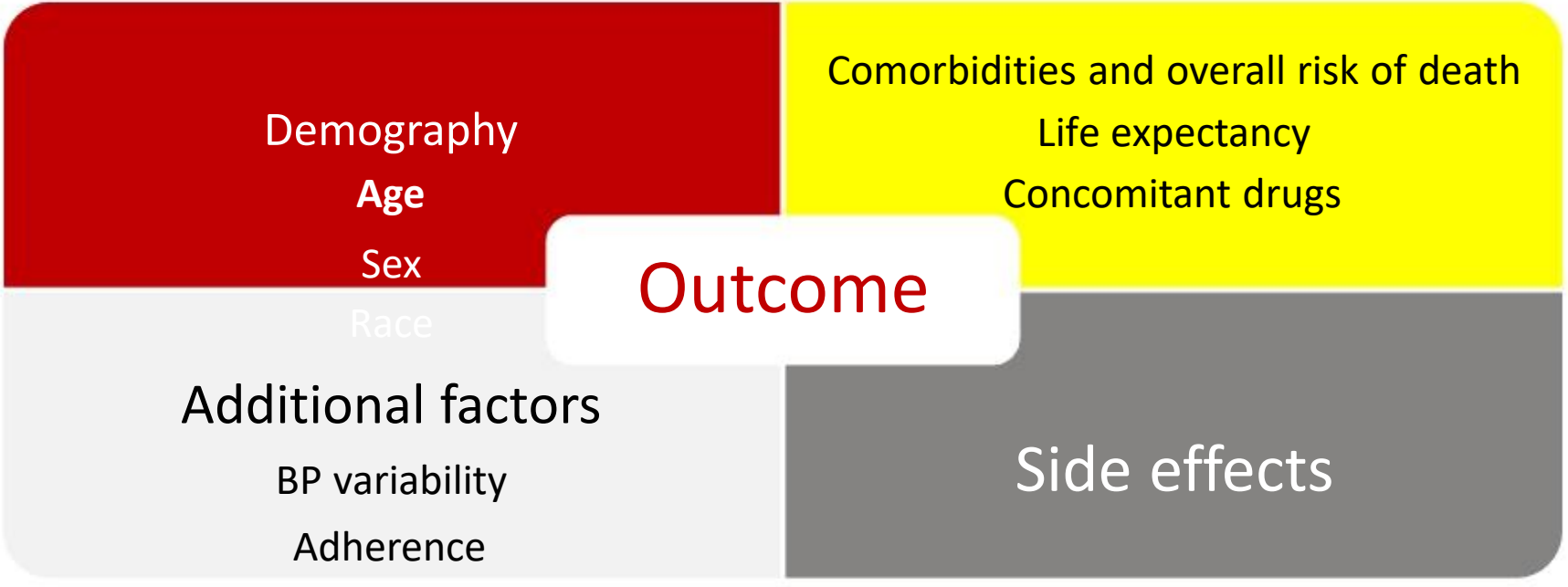
CCB, calcium channel blocker; CI, confidence interval, Diu, diuretic; RR, risk ratio.

1. Rimoldi SF et al. *J Clin Hypertens*. 2015;17:193-199.

Evidence-based combination therapy



Factors that can contribute to BP reduction outcome



Which Drug(s)?

Right Drug for Right Person

The objective of antihypertensive therapy should be to not only lower the blood pressure but to prevent the lethal and disabling cardiovascular sequelae.”