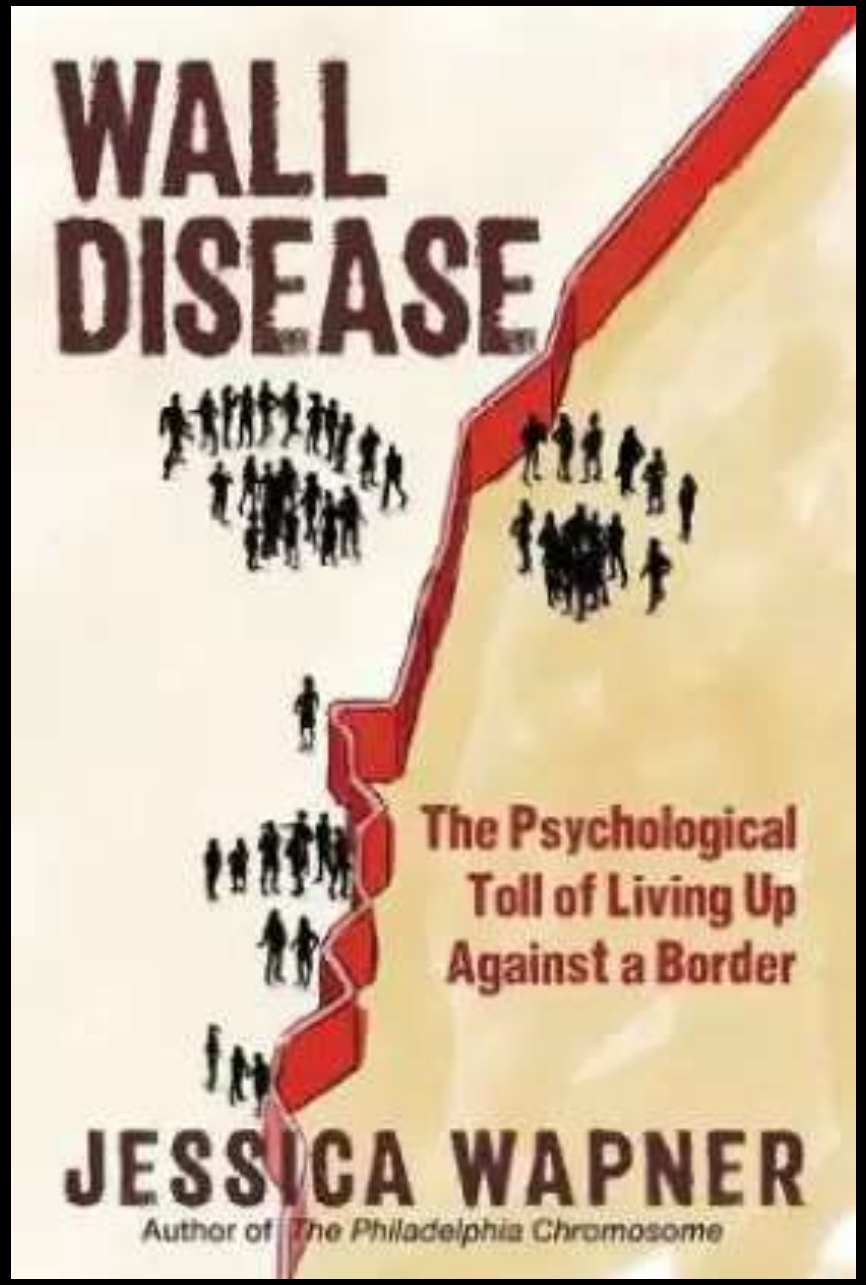
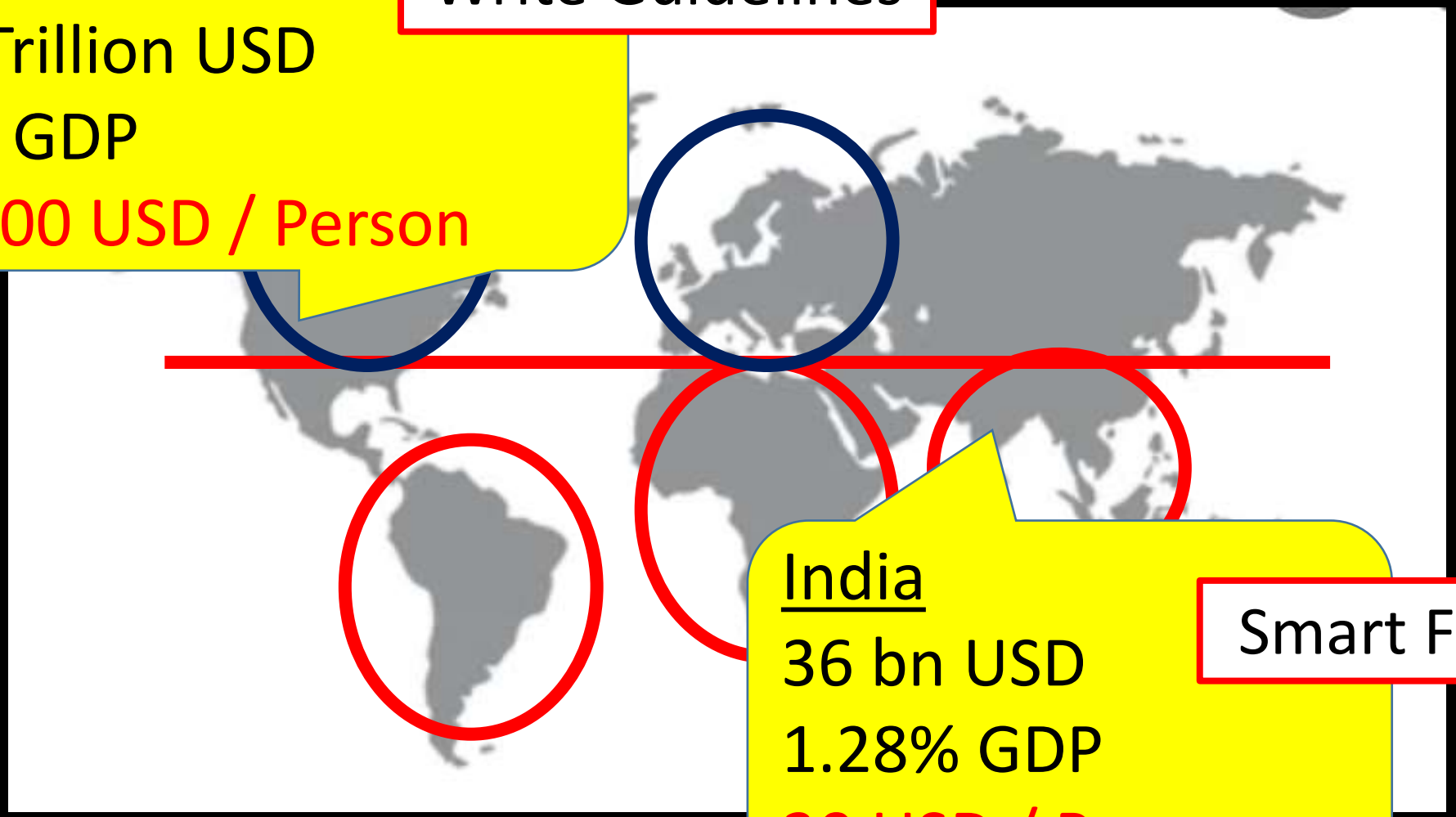

WALL
DISEASE
The Psychological
Toll of Living Up
Against a Border
JESSICA WAPNER
Author of The Philadelphia Chromosome

Evidence Based Medicine



US
3.3 Trillion USD
18% GDP
11,000 USD / Person

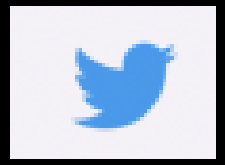
Write Guidelines

India
36 bn USD
1.28% GDP
30 USD / Person

Smart Followers

Tips & Tricks

tinynair@gmail.com



@tinynair

#1

‘Out of Office’ BP

Ambulatory BP Monitoring

Home BP Monitoring

Journal of Human Hypertension
https://doi.org/10.1038/s41371-019-0243-6

ARTICLE

Usefulness of ambulatory blood pressure measurement for hypertension management in India: the India ABPM study

Upendra Kaul[1] · Priyadarshini Arambam[1] · Srinivas Rao[2] · Sunil Kapoor[3] · J. P. S. Swahney[4] · Kamal Sharma[5] · Tiny Nair[6] · Manoj Chopda[7] · Jagdish Hiremath[8] · C. K. Ponde[9] · Abraham Oomman[10] · B. C. Srinivas[11] · Viraj Suvarna[12] · Sanjiv Jasuja[13] · Eric Borges[14] · Willem J. Verberk[15]

Received: 1 July 2019 / Revised: 23 July 2019 / Accepted: 2 August 2019

Abstract

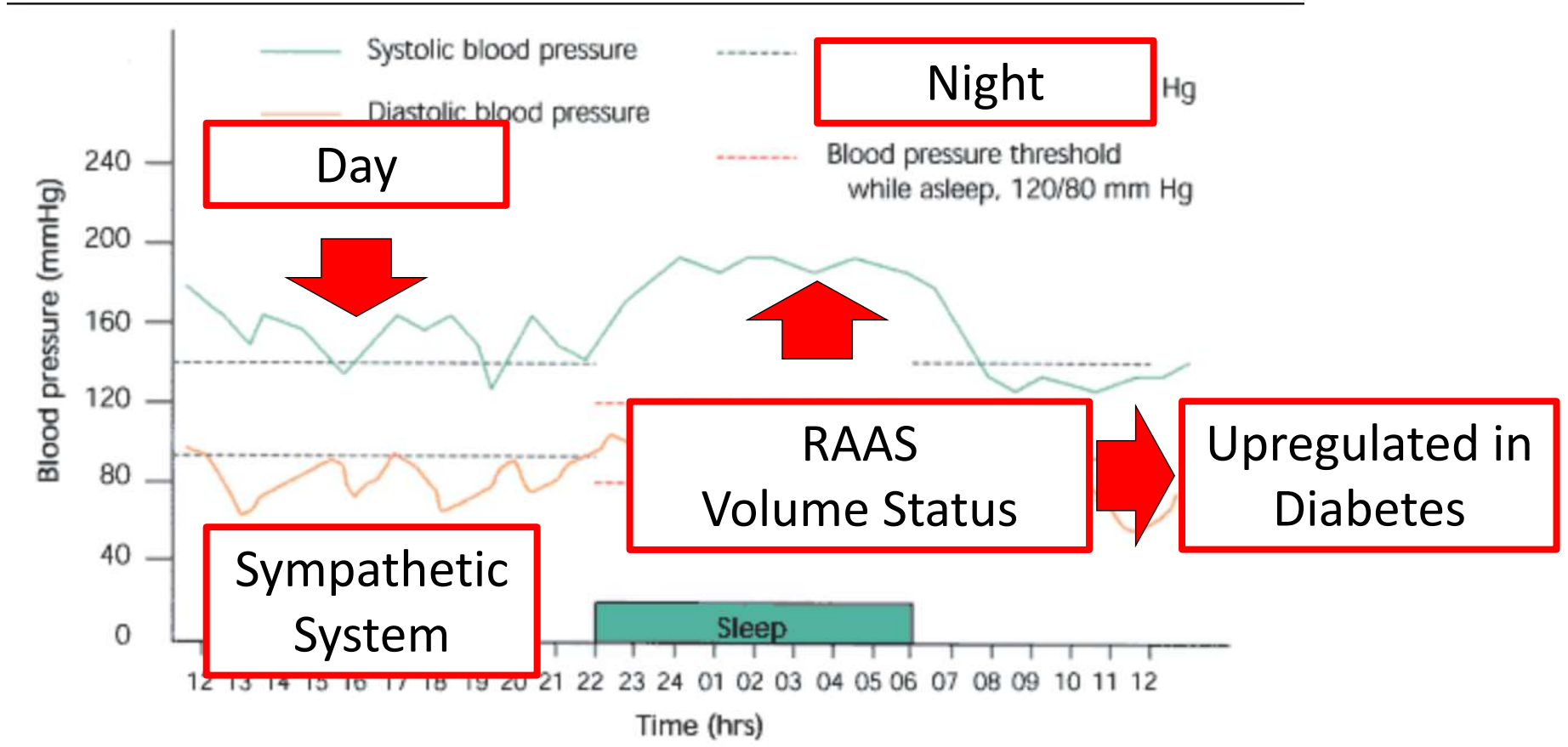
The present paper reports differences between office blood pressure (BP) measurement (OBPM) and ambulatory blood pressure measurement (ABPM) in a large multi-centre Indian all comers' population visiting primary care physicians. ABPM and OBPM data from 27,472 subjects (aged 51 ± 14 years, males 68.2%, treated 45.5%) were analysed and compared. Patients [illegible] or diastolic BP (DBP) ≥90 mmH[illegible] /or DBP ≥ 70 mmHg for night[illegible] White coat

n=27,472

Largest ABPM Database From India

Masked Hypertension 19.3%

Masked Hypertension



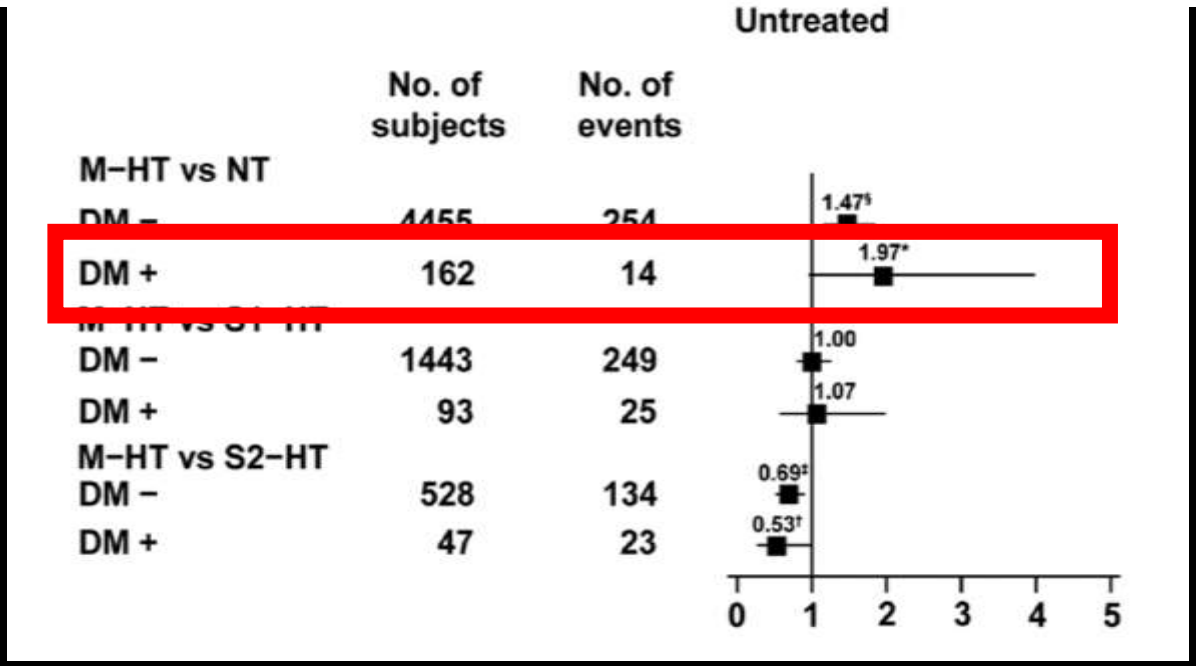
Epidemiology/Population Science

CME Available

Masked Hypertension in Diabetes Mellitus

Treatment Implications for Clinical Practice

Stanley S. Franklin, Lutgarde Thijs, Yan Li, Tine W. Hansen, José Boggia, Yanping Liu, Kei Asayama, Kristina Björklund-Bodegård, Takayoshi Ohkubo, Jørgen Jeppesen, Christian Torp-Pedersen, Eamon Dolan, Tatiana Kuznetsova, Katarzyna Stolarz-Skrzypek, Valérie Tikhonoff, Sofia Malyutina, Edoardo Casiglia, Yuri Nikitin, Lars Lind, Edgardo Sandoya, Kalina Kawecka-Jaszcz, Jan Filipovský, Yutaka Imai, Jiguang Wang, Hans Ibsen, Eoin O'Brien, Jan A. Staessen, on behalf of the International Database on ACO) Investigators



JHH; May, 2019

Uncontrolled Night BP

Journal of Human Hypertension
https://doi.org/10.1038/s41371-019-0205-z

COMMENT

Challenges of hypertension and dementia in the Indian subcontinent: a review

Tiny Nair[1]

Received: 31 December 2018 / Revised: 30 March 2019 / Accepted: 1 April 2019

Abstract
Hypertension is regarded as a major contributor to vascular disease. Vascular disease is a fairly common denominator in a large percentage of cases of dementia. Despite this strong connecting link, dementia is often not considered as a mainstream problem consequent to hypertension, though there is an alarming increase in the number of cases of dementia. While established dementia has very few treatment options, prevention of development and slowing of progression of dementia by proper treatment of hypertension could be an important strategy, especially so, in a financially challenged Indian subcontinent with inhomogeneous health coverage.

What Can we Do?

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY
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PUBLISHED BY ELSEVIER

VOL. 67, NO. 4, 2016
ISSN 0735-1097/$36.00
http://dx.doi.org/10.1016/j.jacc.2015.10.083

Efficacy of Low-Dose Chlorthalidone and Hydrochlorothiazide as Assessed by 24-h Ambulatory Blood Pressure Monitoring

Anil K. Pareek, MD,[a] Franz H. Messerli, MD,[b,c] Nitin B. Chandurkar, MPharma,[d] Shruti K. Dharmadhikari, MSc,[d] Anil V. Godbole, MD,[e] Prasita P. Kshirsagar, MD,[f] Manish A. Agarwal, MD,[g] Kamal H. Sharma, MD, DNB, DM,[h] Shyam L. Mathur, MD,[i] Mukund M. Kumbla, MD, DM[j]

Problem of a Short-Acting Drug on Night BP

European Heart Journal (2017) 38, 1112–1118
doi:10.1093/eurheartj/ehw502

Clinical update

Masked hypertension: understanding its complexity

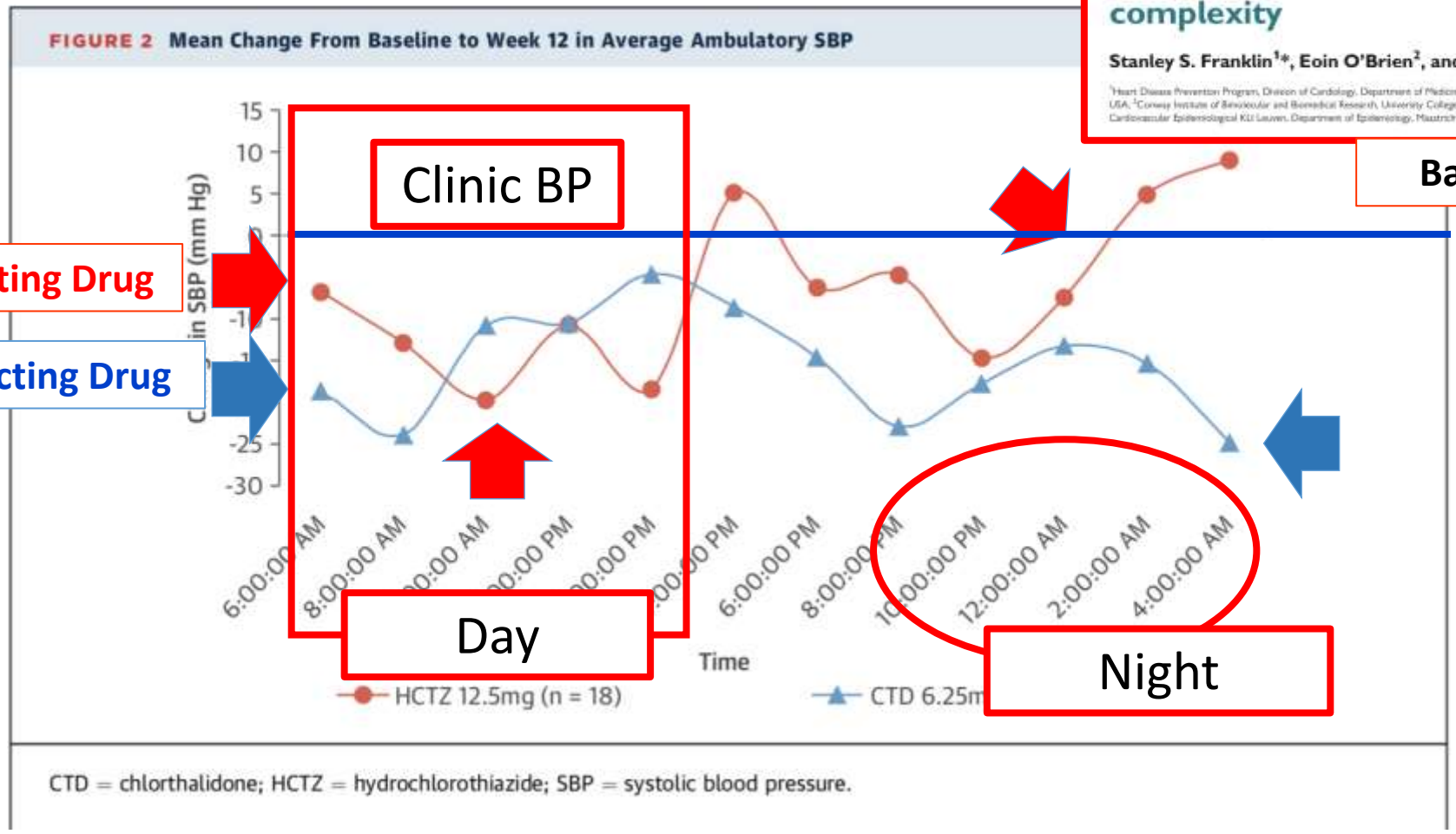
Stanley S. Franklin[1]*, Eoin O'Brien[2], and Jan A. Staessen[3]

[1]Heart Disease Prevention Program, Division of Cardiology, Department of Medicine, C240 Medical Sciences (Office C140A-B), University of California, USA; [2]Conway Institute of Biomolecular and Biomedical Research, University College, Dublin, Dublin, Ireland; and [3]Studies Coordinating Centre, Research Unit Cardiovascular Epidemiological KU Leuven, Department of Epidemiology, Maastricht University, Maastricht, The Netherlands

Bad Outcome

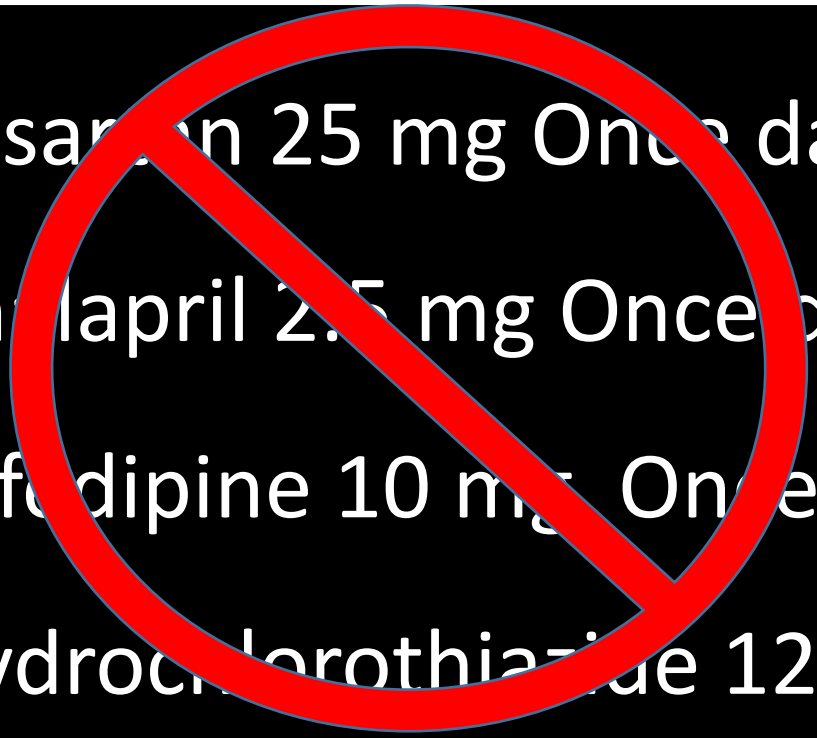
Short Acting Drug

Long Acting Drug



#1 ‘Low-Dose’ ‘Short-Acting’ Drugs

Common Indian Prescription



- Losartan 25 mg Once daily
- Enalapril 2.5 mg Once daily
- Nifedipine 10 mg Once daily
- Hydrochlorothiazide 12.5 mg OD

- Telmisartan
- Perindopril
- Amlodipine
- Chlorthalidone

The Association Between Blood Pressure Control and Well-being in Primary Care Practice: An Observational Study

Tiny Nair, Nigel Beckett[1]

Department of Cardiology, PRS Hospital, Trivandrum, Kerala, India, [1]Department of Ageing and Health, Guy and St. Thomas NHS Foundation Trust, St. Thomas Hospital, London SE1 7NH, UK

Abstract

assess the effect of indapamide sustained release (SR) 1.5 mg in the treatment of hypertensive erapy with different antihypertensive agents, on blood pressure (BP) reduction and well-being. lticenter study from 32 cities across India, 1545 patients between 40 and 70 years of age with >140/90 mmHg) received indapamide SR 1.5 mg once daily as monotherapy, or in addition to ngham general health questionnaire was used to assess the changes in well-being. **Results:** In ndard deviation) age (56.86 years, 64.1% being men. Of those recruited, 29% were treatment ypertensive medicati terms of a sense of well-being, a lack of energy was reported in sturbed sleep in 58.1% o ts. On an intention to treat basis, 842 patients (54.5%; 95% BP control. The patients wh control (compared to those who did not) felt more energetic by 6.3% (8.2–4.5; 001), emotionally better by 5% (6), and had improved sleep by 5.6% (7.4–4.1, $P < 0.001$). **Conclusion:** In hypertens atients, untreated or uncontrolled of the major drug classes, the addition of indapamide SR 1.5 mg is effective in reducing BP and i

Key words: Diastolic blood pressure, hypertension, inda systolic blood pressure

n = 1545
32 centers
Indapamide 1.5 mg

Safe
Effective
Minimal electrolyte, Metabolic Dist.

Tiny Nair, Nigel Bec

#2

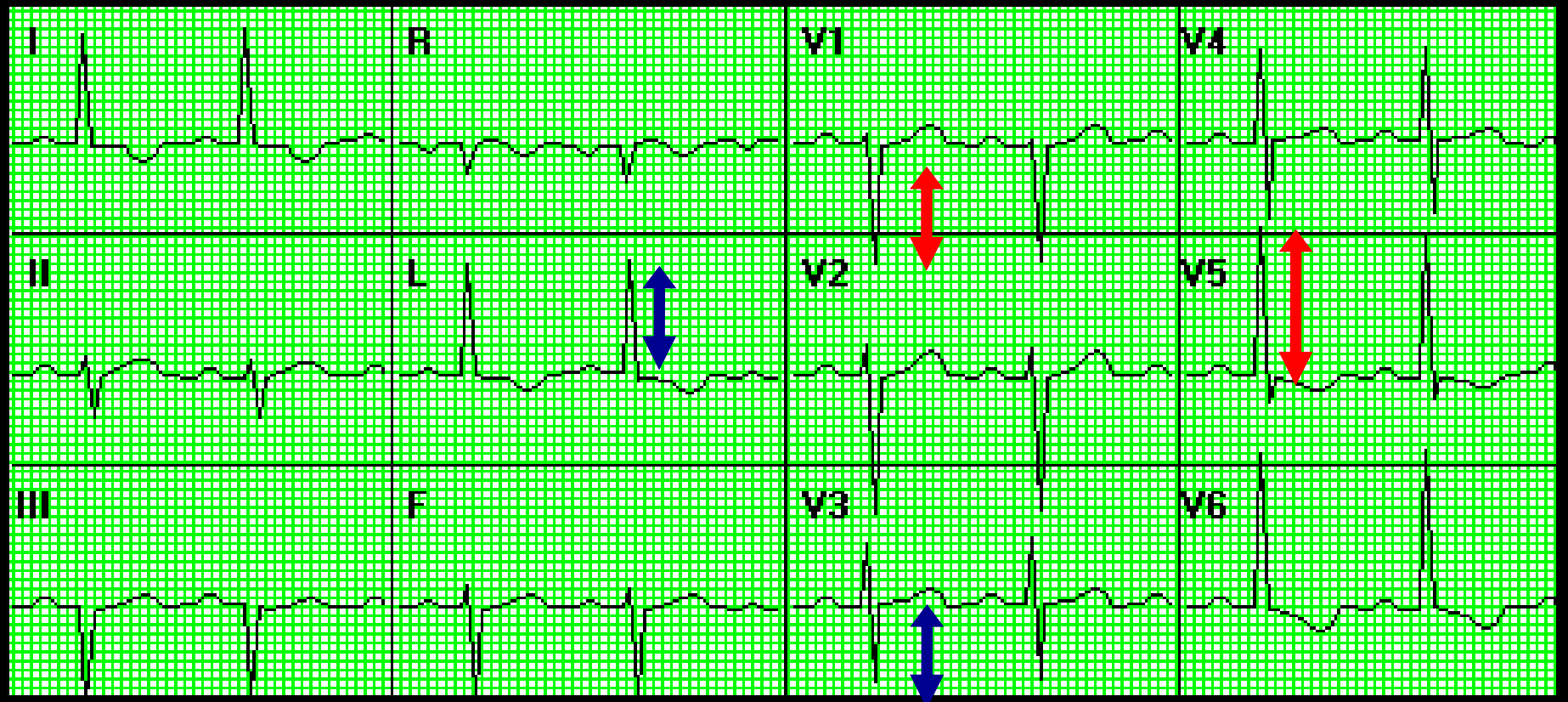
A Look at The EKG

'Cost Effective' Risk Stratification

LVH by EKG

Cornell

Soklow-Lyon



Cardiovascular Risk
ECG-LVH: Framingham

Age-adjusted risk-ratio

Cardiovascular outcome	Men	Women
Coronary heart disease	3.0*	4.6*
Stroke	5.8*	6.2*
Peripheral arterial disaese	2.7	5.3*
Cardiac failure	15.0*	12.8*

*P<0.0001

Kannel. Eur Heart J 1992; 13 (suppl D): 82-88

#2

EKG LVH

- Despite Low Sensitivity, EKG LVH is a Simple, Cost effective ‘Prognostic’ Marker

European Heart Journal – Cardiovascular Imaging (2017) **18**, 441–450
doi:10.1093/ehjci/jew117

ECG strain pattern in hypertension is associated with myocardial cellular expansion and diffuse interstitial fibrosis: a multi-parametric cardiac magnetic resonance study

Jonathan C.L. Rodrigues[1,2], Antonio Matteo Amadu[1,3], Amardeep Ghosh Dastidar[1,4], Bethannie McIntyre[5], Gergley V. Szantho[1,6], Stephen Lyen[1,7], Cattleya Godsave[8], Laura E.K. Ratcliffe[9], Amy E. Burchell[9], Emma C. Hart[2,9], Mark C.K. Hamilton[1,7], Angus K. Nightingale[1,4,9], Julian F.R. Paton[2,9], Nathan E. Manghat[1,7]*, and Chiara Bucciarelli-Ducci[1,4,10]*

#3

Relook at the ‘EKG’

Fragmented QRS Complex

Original Article

Fragmented QRS for Risk Stratification in Patients Undergoing First Diagnostic Coronary Angiography

Original Articles

The relationship between fragmented QRS and non-dipper status in hypertensive patients without left

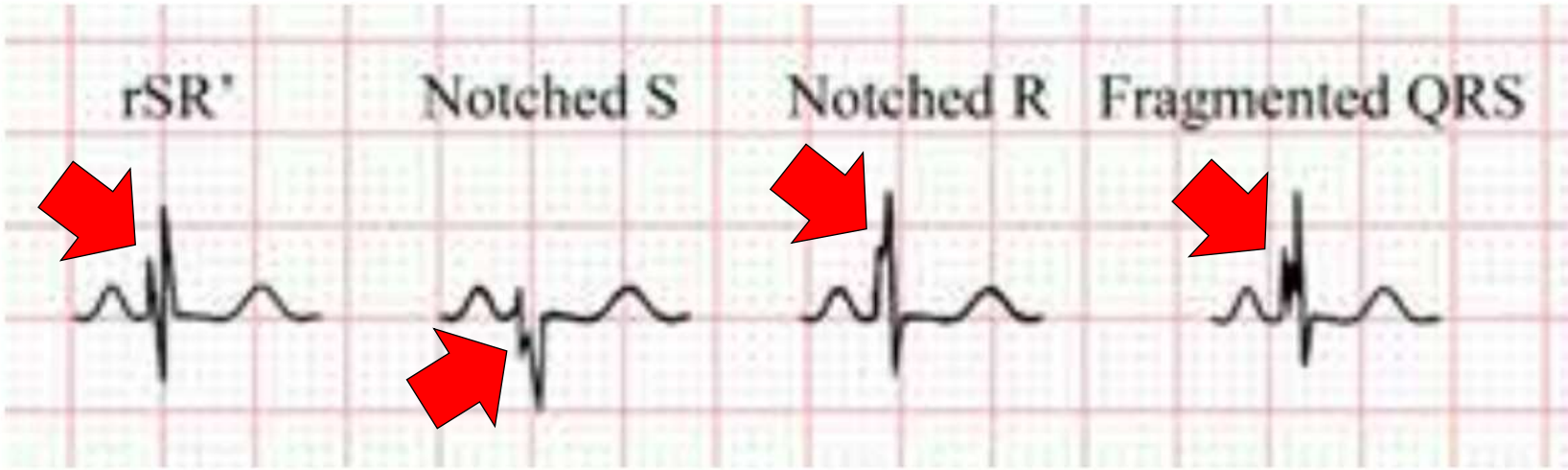


Figure 1. Fragmented QRS patterns.

Fragmented QRS complexes are a marker of myocardial fibrosis in hypertensive heart disease

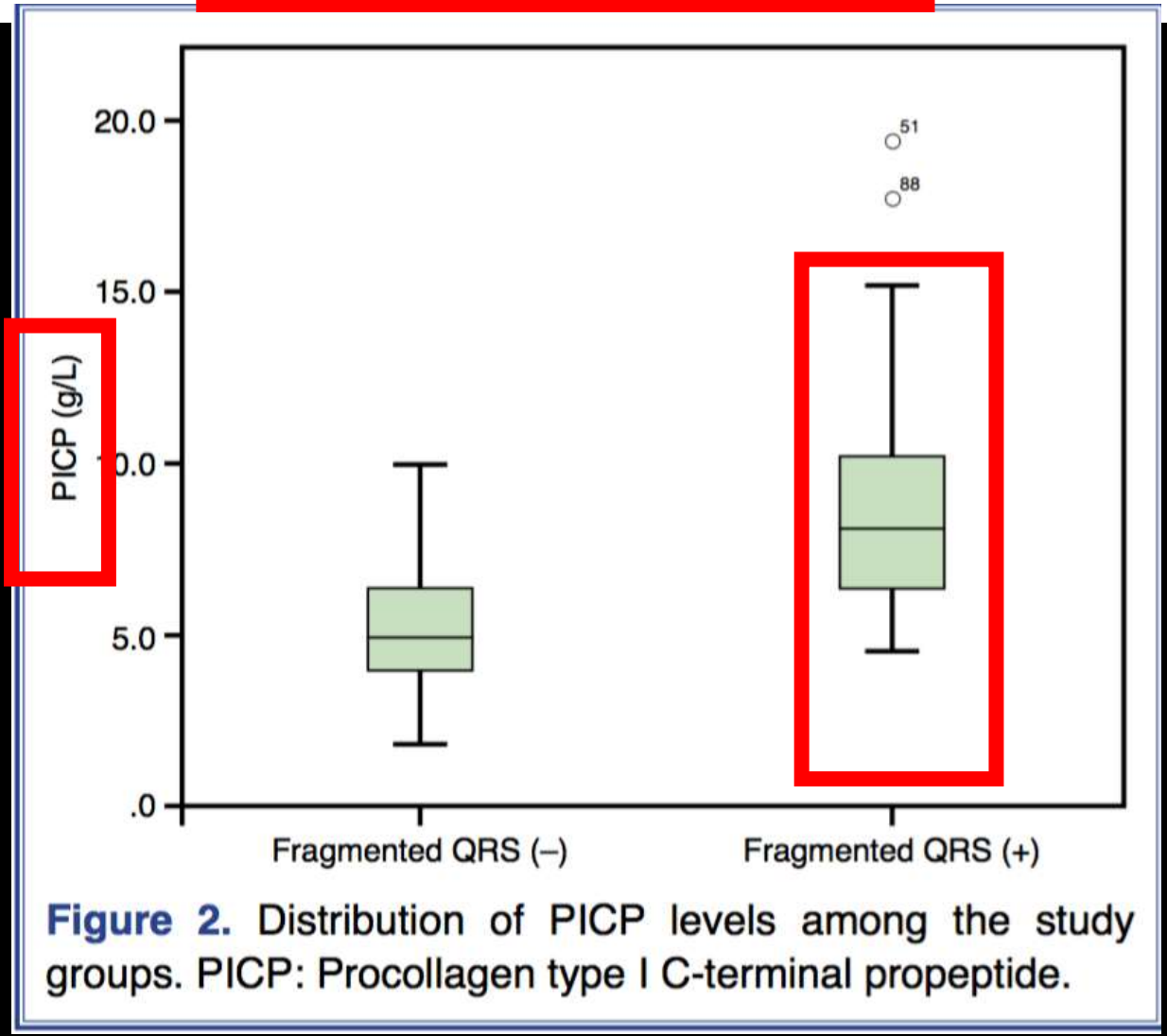


Figure 2. Distribution of PICP levels among the study groups. PICP: Procollagen type I C-terminal propeptide.

#3

LVH & Myocardial Fibrosis
Subset of hypertension

- Fragmented QRS in ECG is a marker of

  Myocardial fibrosis in Hypertension

#4

Brown

Response To RAASi?

nature publishing group

ORIGINAL CONTRIBUTIONS

See EDITORIAL pages 926 and 929

Ethnic Differences in Blood Pressure Response to First and Second-Line Antihypertensive Therapies in Patients Randomized in the ASCOT Trial

Ajay K. Gupta[1], Neil R. Poulter[1], Joanna David Collier[2], J. Kennedy Cruickshank

Table 4 | Systolic blood pressure difference, among the ethnic groups, on adding thiazide or perindopril, as a second-line agent to respective monotherapy (atenolol and amlodipine) in the three regression models: per-protocol analyses

SBP difference[a] (95% CI)	Whites	African-origin blacks	South-Asians	Interaction of treatment and ethnicity
Dual therapy[b] ($n = 2,794$)	$n = 2,583$	$n = 129$	$n = 82$	P value[c]
Model 1[d]				
Addition of diuretic on atenolol therapy ($n = 1,424$)	Referent	−1.5 (−4.8 to 1.9)	+2.9 (−1.6 to 7.4)	0.005
Addition of perindopril on amlodipine therapy ($n = 1,370$)	−3.4 (−4.6 to −2.3)	+1.4 (−2.3 to +5.3)	−6.7 (−11.3 to −2.2)	
Model 2[e]				
Addition of d… atenolol the…		…7 to 1…	+2.8 (−1.1 to 6.8)	0.004
Addition of … amlodipine …		…o 4.2)	−6.2 (−10.2 to −2.2)	

CI, confidence int… [a]Blood pressure (… …agents. [b]Although 3,385 (A = 147, SA = 105) of 4,683 had valid BP and received allocated dual therapy, but … …cated dual therapy. [c]Likelihood ratio test for interaction between ethnicity and treatment received, overall i… …onfounders: BMI, age, sex, and years of education (model 1). [e]Adjusting for model 1 plus other independent p… …nt, presence of diabetes, and diastolic BP at the start of dual therapy.

Long Acting CCB+ ACEi

#5

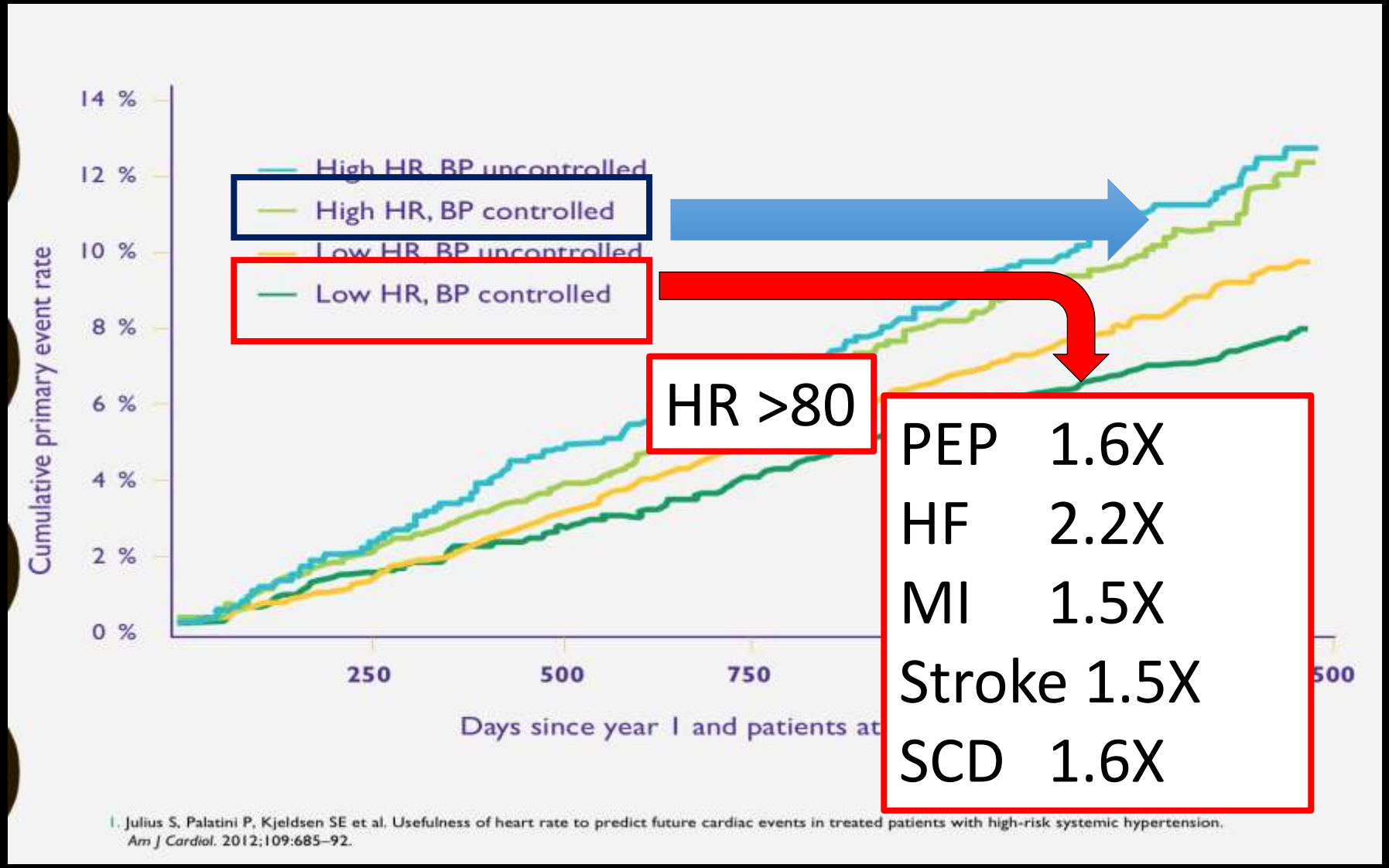
Usefulness of Heart Rate to Predict Cardiac Events in Treated Patients With High-Risk Systemic Hypertension

Stevo Julius, MD, ScD[a,*], Paolo Palatini, MD[b], Sverre E. Kjeldsen, MD, PhD[a,c], Alberto Zanchetti, MD[d], Lars H. Lindholm, MD, PhD[e], Gordon T. McInnes, MD[f], Hans R. Brunner, MD[g], Eoin O'Brien, MD, PhD[h], M. Anthony Schork, PhD[a], Tsushung A. Hua, PhD[i], Bjorn Dahlöf, MD, PhD[j], Peter Zappe, PhD[i], Silja Majahalme, MD, PhD[k], Kenneth Lederballe-Pedersen, MD[l], Nevres Koylan, MD[l]

(HR ... lar events. We explored the predictive

VALUE Trial
n = 15, 173
FU 5 years

Heart Rate
- <50
- 50 – 60
- 60 – 70
- 70 – 80
- > 80



1. Julius S, Palatini P, Kjeldsen SE et al. Usefulness of heart rate to predict future cardiac events in treated patients with high-risk systemic hypertension. *Am J Cardiol.* 2012;109:685–92.

Original Article

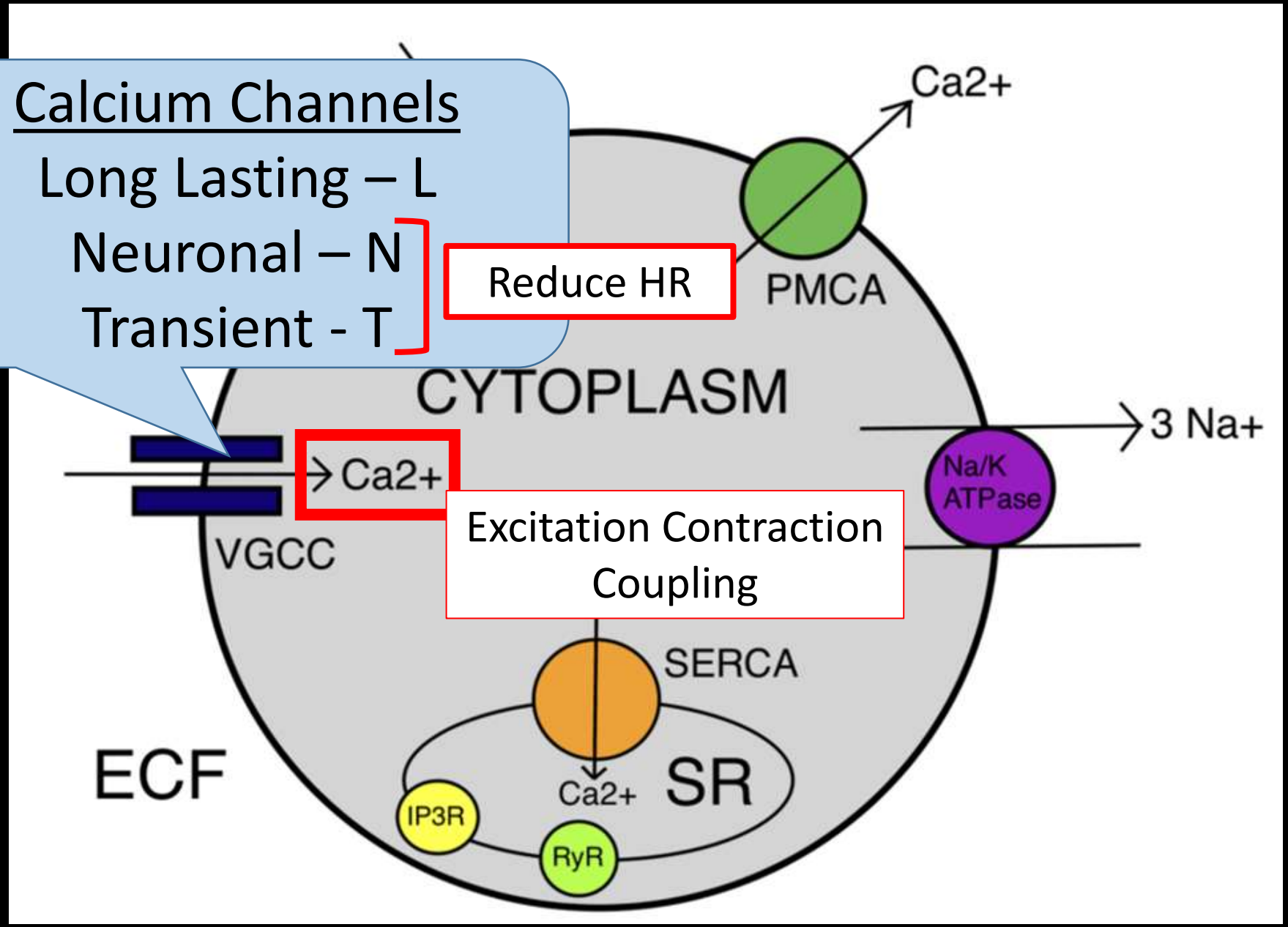
Self-blood pressure measurement as compared to office blood pressure measurement in a large Indian population; the India Heart Study

Upendra Kaul[a], G.S. Wander[b], Nakul Sinha[c], Jagdish C. Mohan[d], Soumitra Kumar[e], Sameer Dani[f], Chandrashekhar K. Ponde[g], Brian Pinto[h], Jamshed Dalal[i], Jagdish Hiremath[j], Sunil Kapoor[k], D.K. Baruah[l], Tiny Nair[m], Thomas Alexander[n], Viswanathan Mohan[o], Shashank Joshi[p], N. Sivakadaksham[q], Stefano Omboni[r], Priyadarshini Arambam[a], Viraj Suvarna[s], and Willem J. Verberk[t]

- n=18,918
- RHR 83 bpm

Indian Hypertensives Have A Fast Resting Heart Rate

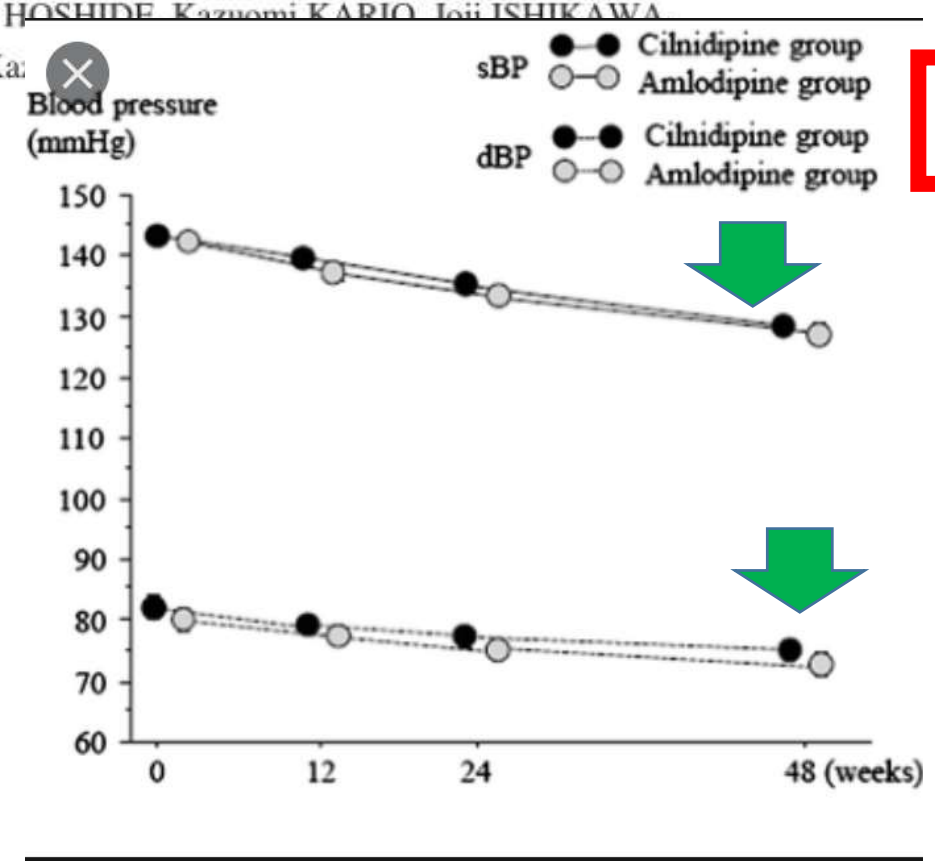
HR Control
is Complimentary to
BP Control


Calcium Channels
Long Lasting – L
Neuronal – N
Transient - T
Reduce HR
Ca2+
PMCA
CYTOPLASM
3 Na+
Na/K ATPase
Ca2+
VGCC
Excitation Contraction Coupling
SERCA
ECF
Ca2+
SR
IP3R
RyR

Original Article

Comparison of the Effects of Cilnidipine and Amlodipine on Ambulatory Blood Pressure

Satoshi HOSHIDE, Kazuomi KARIO, Joji ISHIKAWA



India Strategy

#5

- Consider Newer ‘Rate Friendly’ CCBs

INDIAN SOCIETY OF HYPERTENSION
World Hypertension League
CURRENT MEDICAL CONCEPTS
HTNJ
CrossMark

Review Article

Common but Underrated – Are we Neglecting these Hypertensive Subsets in India?

Tiny Nair

Department of Cardiology, PRS Hospital, Trivandrum, Kerala, India

Abstract

Unusual subsets of hypertension need different strategies for detection, treatment and follow up. Isolated systolic hypertension of the young (ISH-Y), metabolic nocturnal hypertension (MNH) and white coat 'Alarm' are subsets which are found in India, but

#6

ISH

ISH - Y

Subset # 6

PERSPECTIVE

ISOLATED SYSTOLIC HYPERTENSION (ISH) OF THE YOUNG - SHIFTING FOCUS FROM FATHER TO SON

Tiny Nair
Department Of Cardiology, PRS Hospital, Trivandrum, Kerala, India
Correspondence to: tinynair@gmail.com

#6 Isolated Systolic Hypertension of the young

- Age < 40 years
- IT Professionals
- Isolated Systolic Hypertension
- Normal Diastolic BP
- Tachycardia
- Stress, Anxiety
- Good Symptom Relief with Beta blockers

#7

RAASi + CCB + Diuretics

Still High.

What Next?

Compliance

Compliance

#7

Admit

Forced Compliance

Correct BP Check

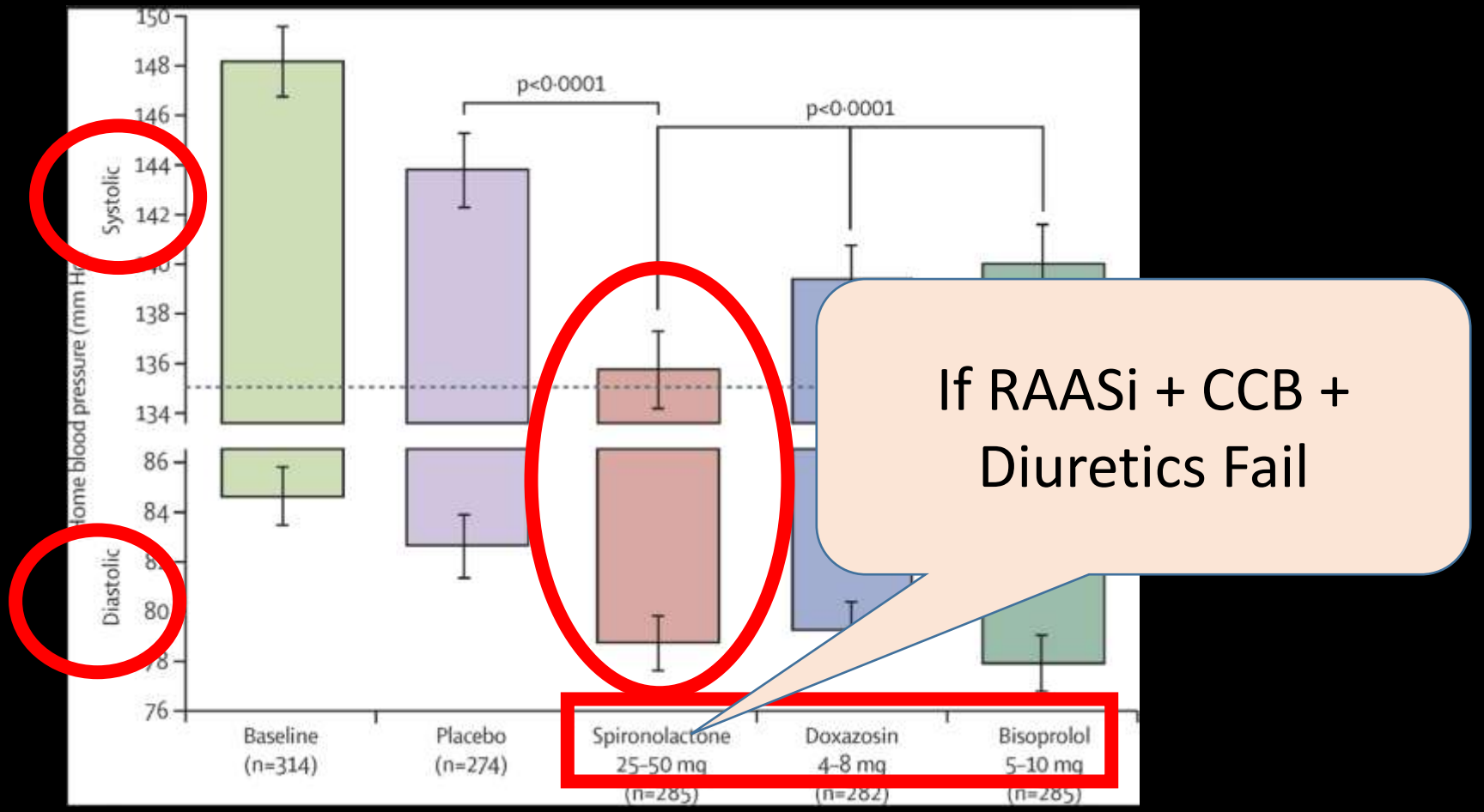
OSA

White Coat Effect

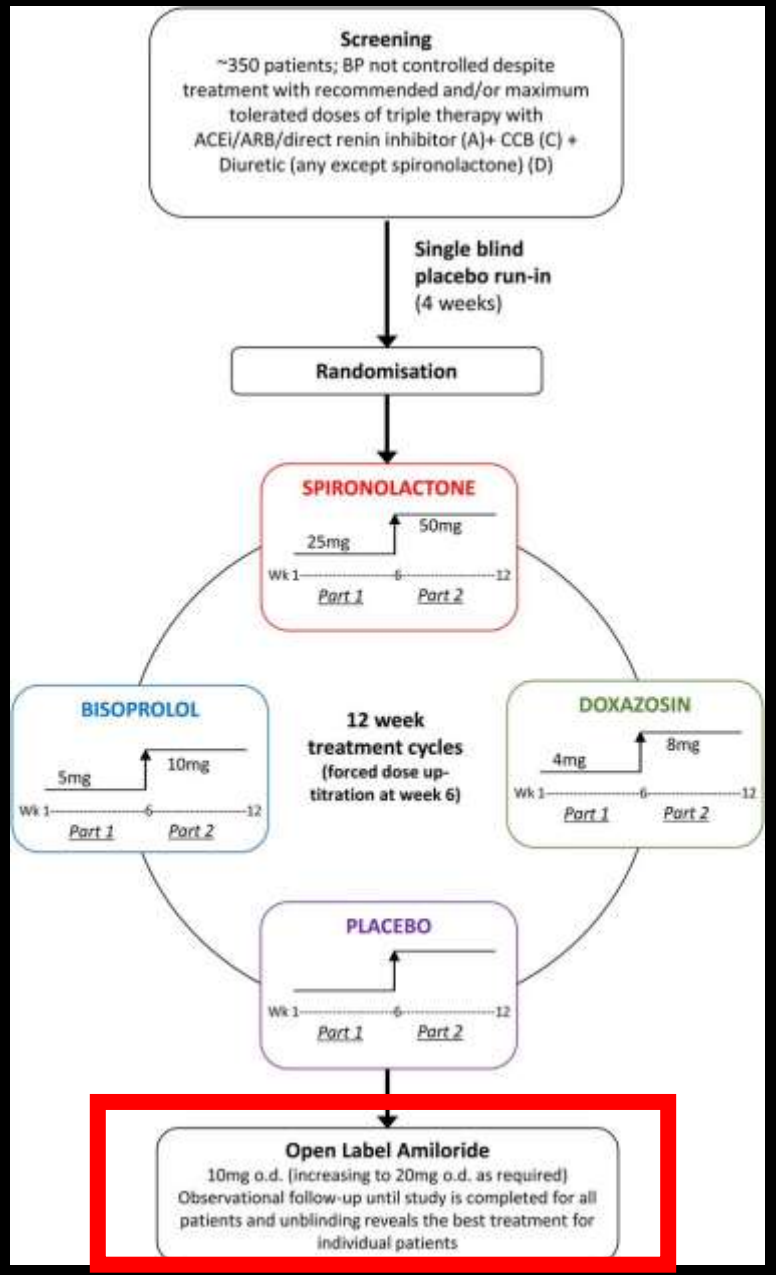
Response To medications

PATHWAY II
If 3 Drugs Fail

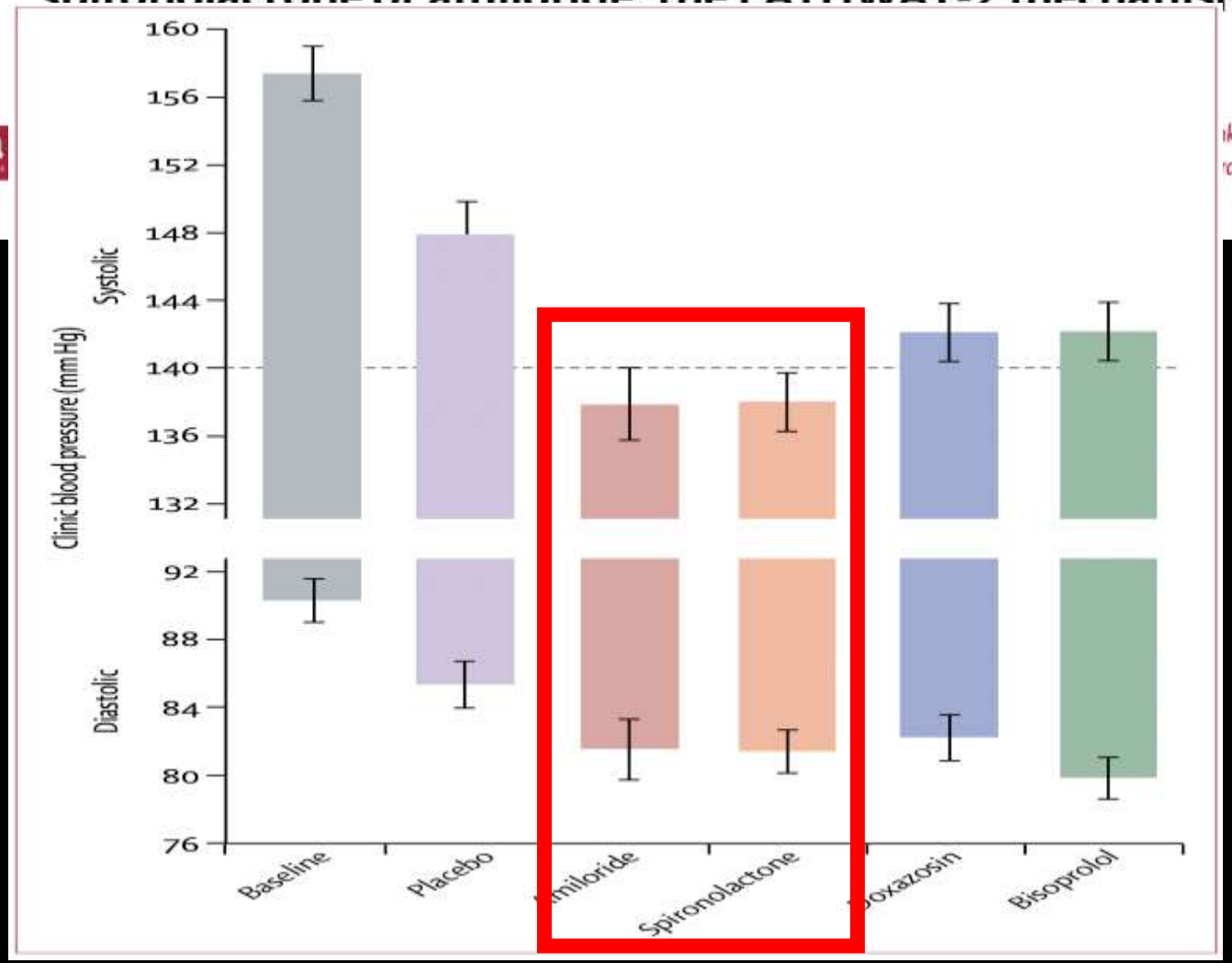
#8



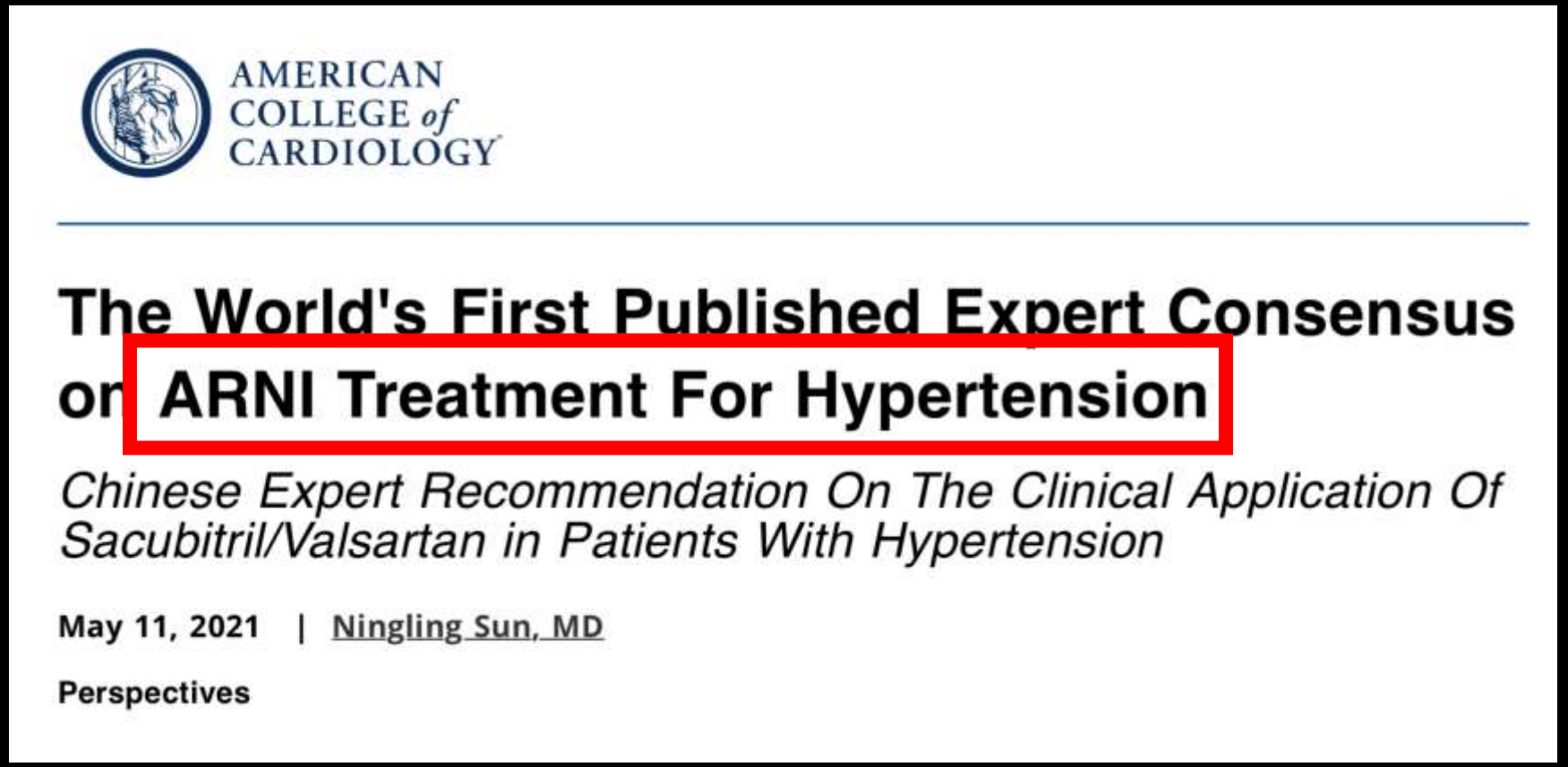
If RAASi + CCB + Diuretics Fail


Screening
~350 patients; BP not controlled despite treatment with recommended and/or maximum tolerated doses of triple therapy with ACEi/ARB/direct renin inhibitor (A)+ CCB (C) + Diuretic (any except spironolactone) (D)
Single blind placebo run-in (4 weeks)
Randomisation
SPIRONOLACTONE
25mg
50mg
Wk 1
6
12
Part 1
Part 2
BISOPROLOL
5mg
10mg
Wk 1
6
12
Part 1
Part 2
12 week treatment cycles
(forced dose up-titration at week 6)
DOXAZOSIN
4mg
8mg
Wk 1
6
12
Part 1
Part 2
PLACEBO
Wk 1
6
12
Part 1
Part 2
Open Label Amiloride
10mg o.d. (increasing to 20mg o.d. as required)
Observational follow-up until study is completed for all patients and unblinding reveals the best treatment for individual patients

Endocrine and haemodynamic changes in resistant hypertension, and blood pressure responses to spironolactone or amiloride: the PATHWAY-2 mechanisms



ARNI



AMERICAN COLLEGE of CARDIOLOGY

The World's First Published Expert Consensus on ARNI Treatment For Hypertension

Chinese Expert Recommendation On The Clinical Application Of Sacubitril/Valsartan in Patients With Hypertension

May 11, 2021 | Ningling Sun, MD

Perspectives

ARNI

Clinical update

Role of neprilysin inhibitor combinations in hypertension: insights from hypertension and heart failure trials

Chirag Bavishi[1], Franz H. Messerli[2,3]*, Bernard Kadosh[1], Luis M. Ruilope[4], and Kazuomi Kario[5]

[1]Mount Sinai St Luke's & Roosevelt Hospitals, New York, NY, USA; [2]Division of Cardiology, Mount Sinai Medical Center, Icahn School of Medicine, 1 Gustave L. Levy Pl, New York, NY 10029, USA; [3]Department of Cardiology, Bern University Hospital, Bern, Switzerland; [4]Hospital 12 de Octubre, Madrid, Spain; and [5]Jichi Medical University School of Medicine, Tochigi, Japan

Ongoing Trials of ARNI in Hypertension

Table 1 **On-going clinical trials of LCZ696 in hypertension[a]**

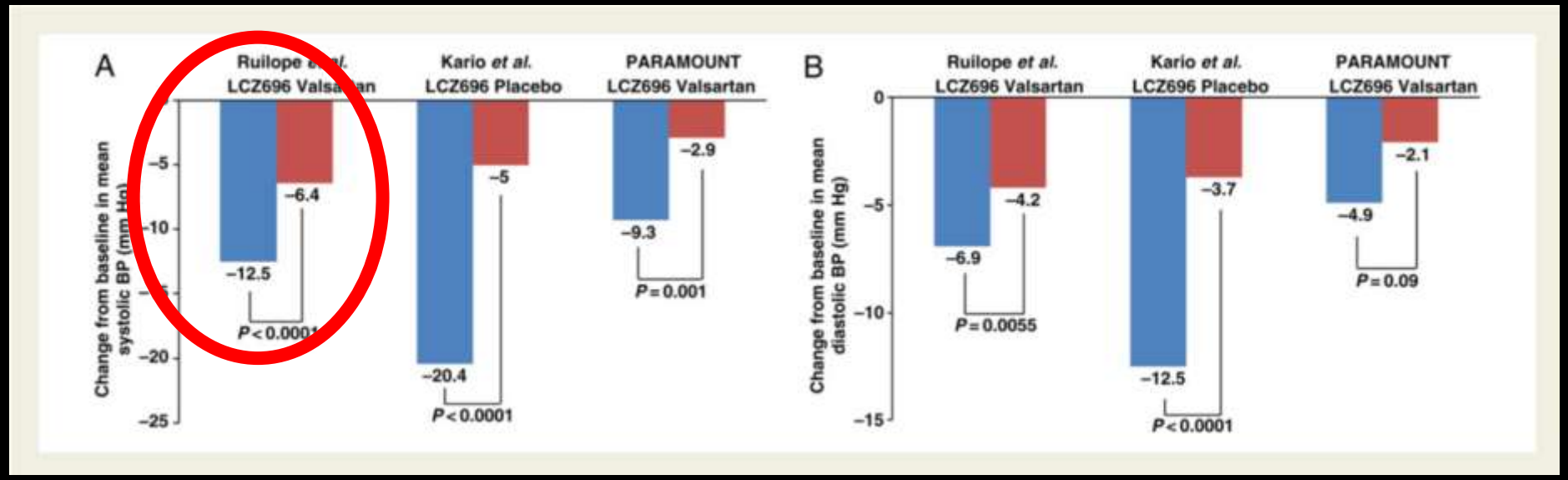
Trial number	Patient population	Brief title	Comparator
NCT01785472	Essential hypertension	Efficacy and Safety of LCZ696 in Comparison to Olmesartan in Asian Patients With Essential Hypertension	Olmesartan
NCT01599104	Essential hypertension	Efficacy and Safety of LCZ696 in Comparison to Olmesartan in Japanese Patients With Essential Hypertension	Olmesartan
NCT01870739	Essential hypertension	A Study to Evaluate the Effect of LCZ696 on Aortic Stiffness in Subjects With Hypertension	Olmesartan
NCT01615198	Essential hypertension	Efficacy and Safety of LCZ696 in Comparison to Olmesartan in Elderly Patients With Essential Hypertension	Olmesartan
NCT01681576	Salt-sensitive hypertension	Assessment of LCZ696 and Valsartan in Asian Patients With Salt-sensitive Hypertension	Valsartan
NCT01256411	Essential hypertension	A Long-term (12 Months) Safety, Tolerability and Efficacy Study of LCZ696 in Patients With Essential Hypertension	NA
NCT01601470	Mild-to-moderate hypertension	Evaluation of Drug-drug Interaction Between LCZ696 and Sildenafil in Subjects With Mild to Moderate Hypertension	Sildenafil
NCT01353508	Hypertension; heart failure and healthy volunteers	Sodium Excretion of LCZ696 in Patients With Hypertension; Heart Failure and Healthy Volunteers	Valsartan
NCT01692301	Hypertension	Study of the Safety and Efficacy of LCZ696 on Arterial Stiffness in Elderly Patients With Hypertension	Olmesartan, Amlodipine, Hydrochlorthiazide
NCT01663233	Essential hypertension	Efficacy and Safety of LCZ696 200 mg + Amlodipine 5 mg in Comparison With Amlodipine 5 mg in Hypertensive Patients Not Responding to Amlodipine	Amlodipine
NCT01646671	Severe hypertension	Safety and Tolerability and Efficacy of LCZ696 in Japanese Severe Hypertensive Patients	NA
NCT01631864	Hypertension, concurrent obesity	Evaluation of the Metabolic Effects of LCZ696 and Amlodipine in Obese Hypertensive Subjects	Amlodipine
ISRCTN11958993	Chronic kidney disease	Randomized multicentre pilot study of LCZ696 vs. Irbesartan in patients with chronic kidney disease: UK Heart And Renal Protection (HARP)-III	Irbesartan

[a]From ClinicalTrials.gov and International Standard Randomized Controlled Trials Number (ISRCTN) Register, NA, not applicable.

ARNI

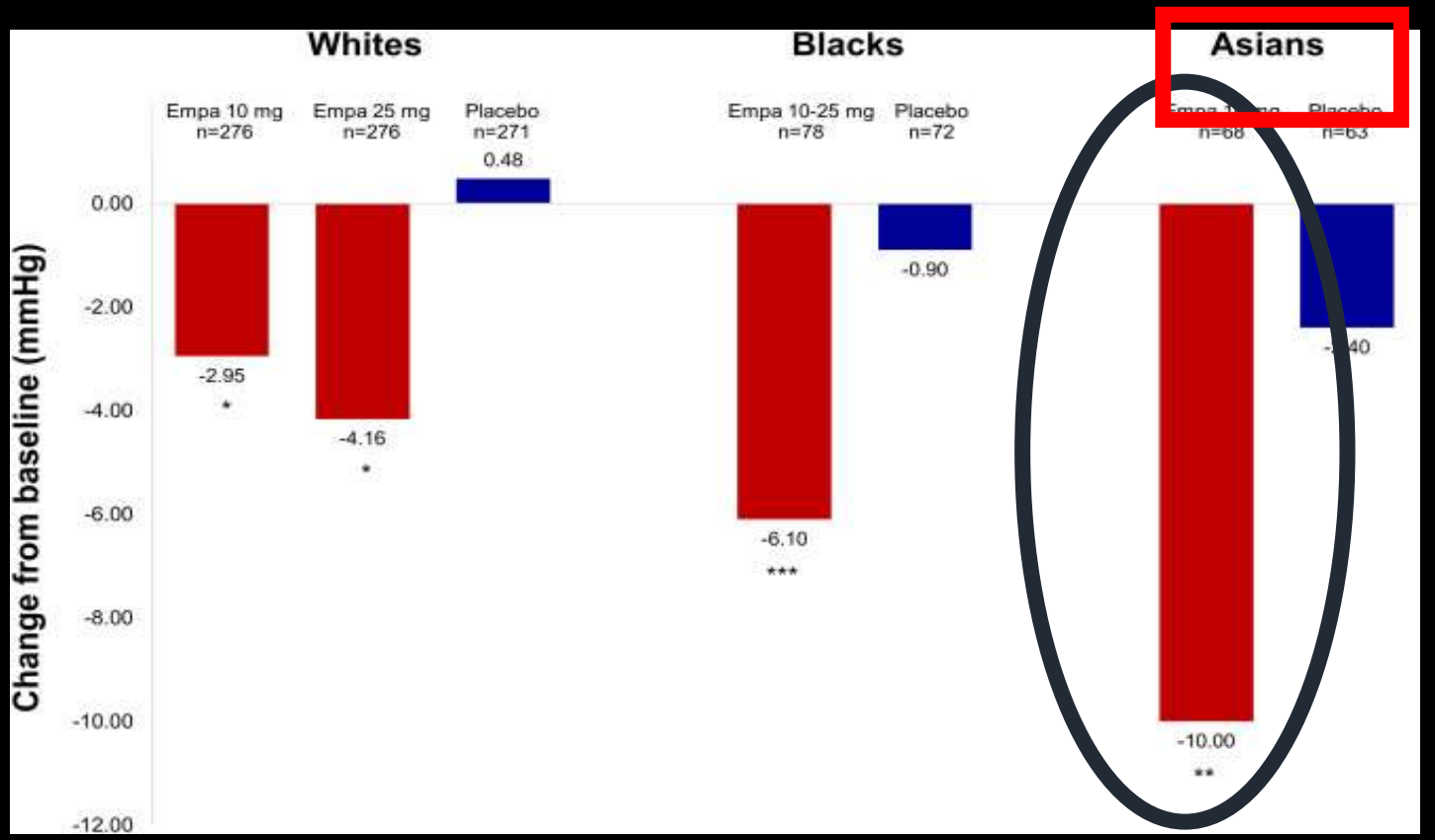
SBP

DBP

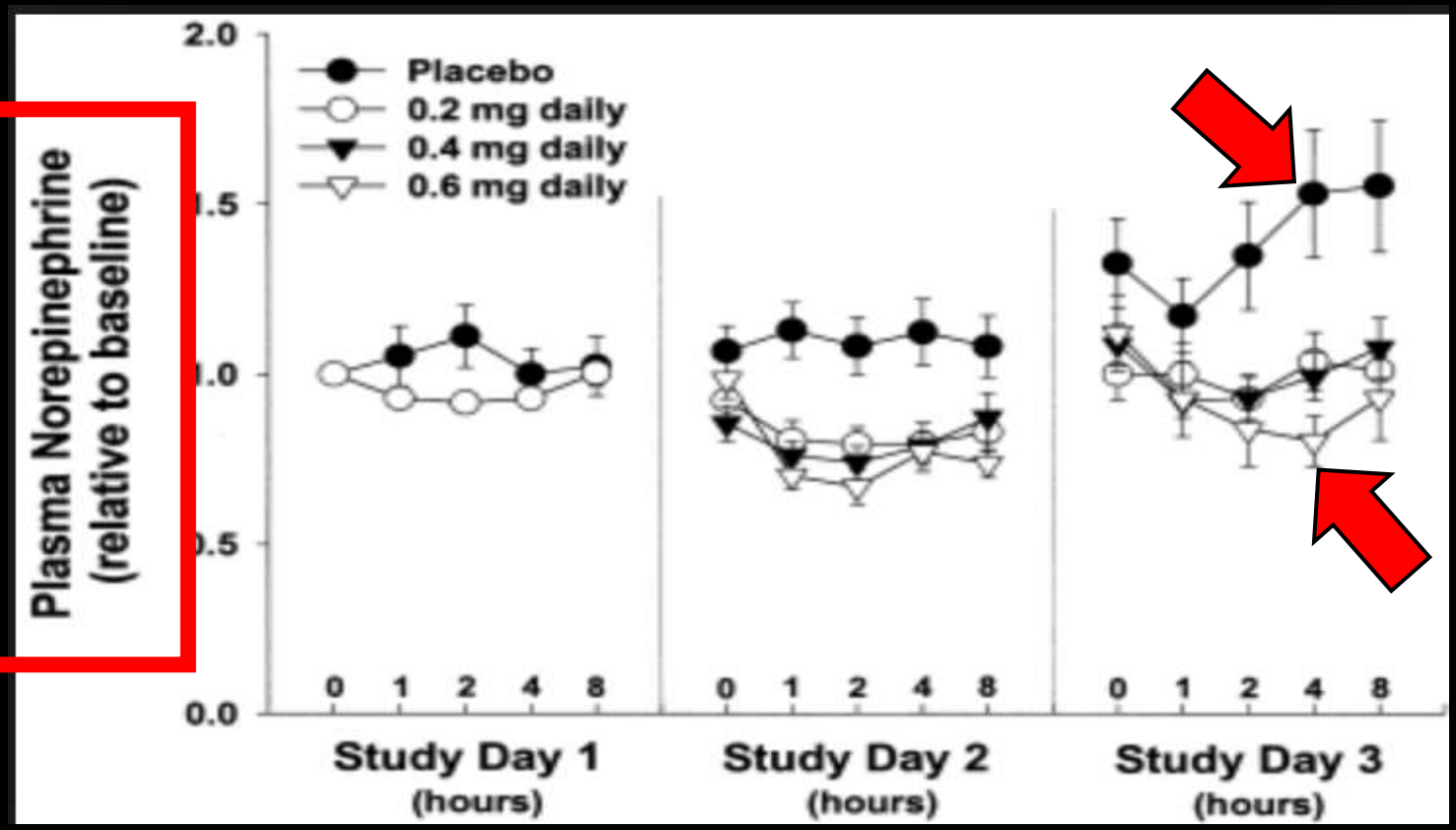

A
Ruilope et al.
LCZ696 Valsartan
Kario et al.
LCZ696 Placebo
PARAMOUNT
LCZ696 Valsartan
Change from baseline in mean systolic BP (mm Hg)
-5
-10
-20
-25
-12.5
-6.4
P < 0.0001
-20.4
-5
P < 0.0001
-9.3
-2.9
P = 0.001
B
Ruilope et al.
LCZ696 Valsartan
Kario et al.
LCZ696 Placebo
PARAMOUNT
LCZ696 Valsartan
Change from baseline in mean diastolic BP (mm Hg)
0
-5
-10
-15
-6.9
-4.2
P = 0.0055
-12.5
-3.7
P < 0.0001
-4.9
-2.1
P = 0.09

SGLT2i


Circulation
EDITORIAL
Are SGLT2 Inhibitors New Hypertension Drugs?


Whites
Blacks
Asians
Empa 10 mg
n=276
Empa 25 mg
n=276
Placebo
n=271
Empa 10-25 mg
n=78
Placebo
n=72
n=68
n=63
0.48
-0.90
-2.95
*
-4.16
*
-6.10
***
-10.00
**
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
-12.00
Change from baseline (mmHg)

Moxonidine


Plasma Norepinephrine (relative to baseline)
2.0
1.5
1.0
0.5
0.0
Placebo
0.2 mg daily
0.4 mg daily
0.6 mg daily
0 1 2 4 8
0 1 2 4 8
0 1 2 4 8
Study Day 1 (hours)
Study Day 2 (hours)
Study Day 3 (hours)

HR Change with Moxonidine

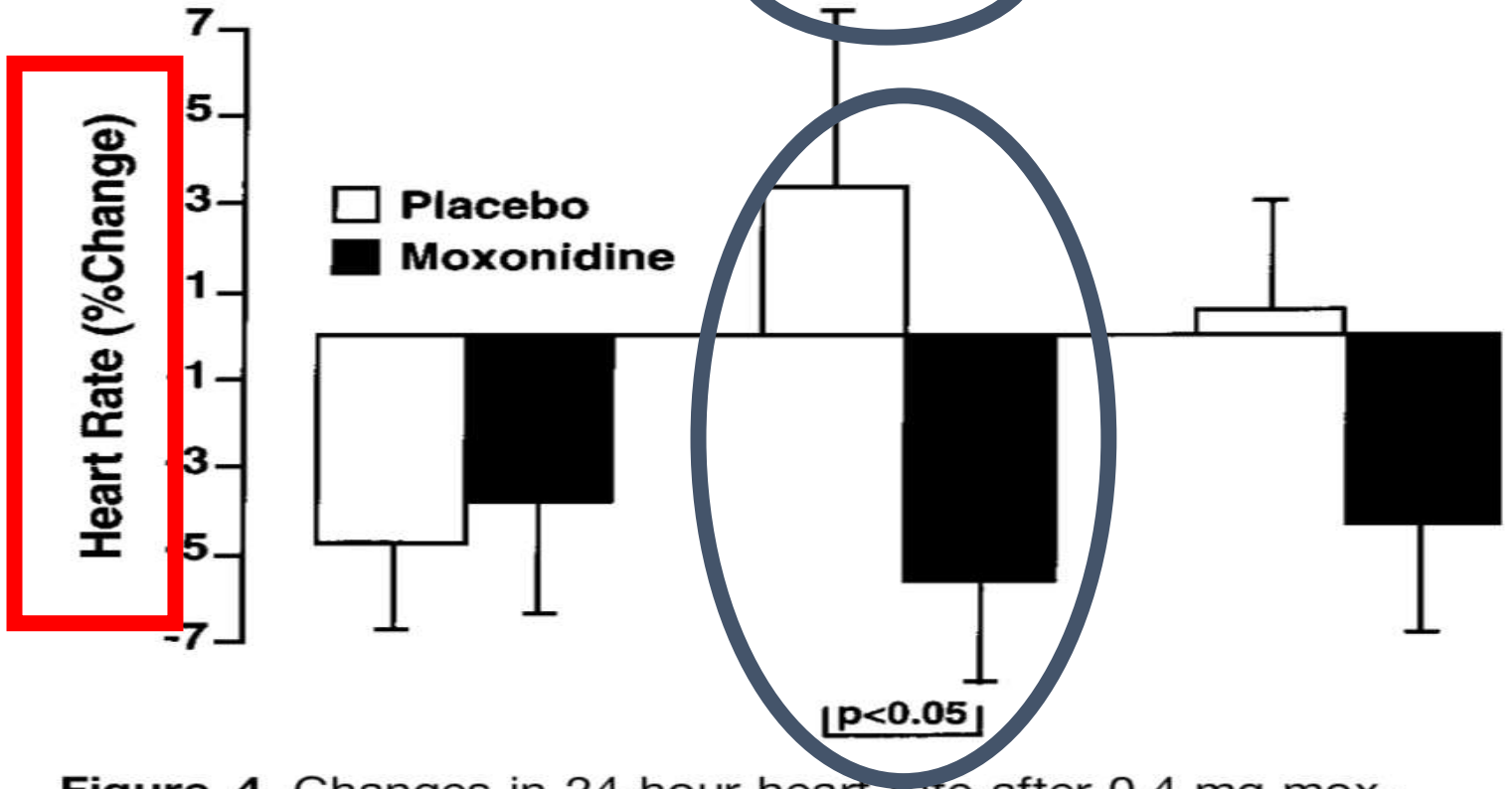


Figure 4. Changes in 24-hour heart rate after 0.4 mg moxonidine or placebo in untreated hypertensives. Heart rate decreased after moxonidine during nighttime but not during daytime.

If 4 Drugs Fail

#8

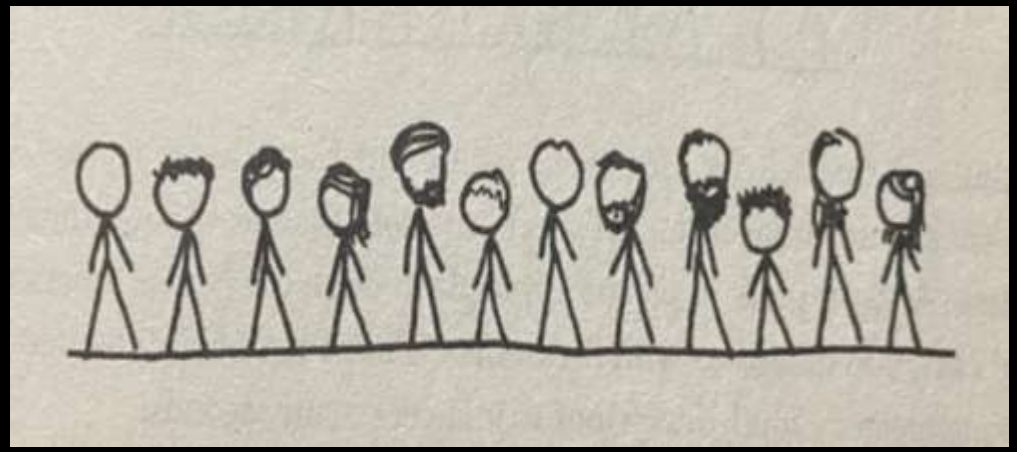
- Amiloride
- ARNI
- SGLT2i
- Moxonidine

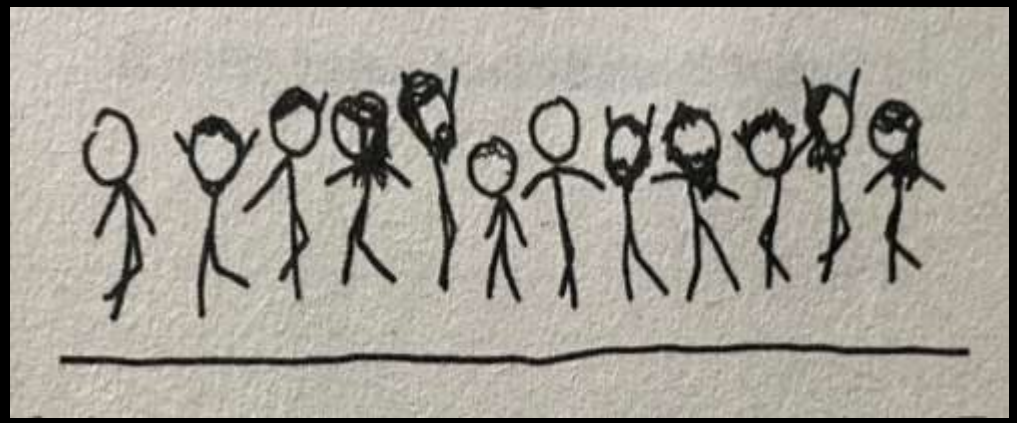
What Would Happen?

- Everyone on Earth Stood

  Shoulder- to-shoulder

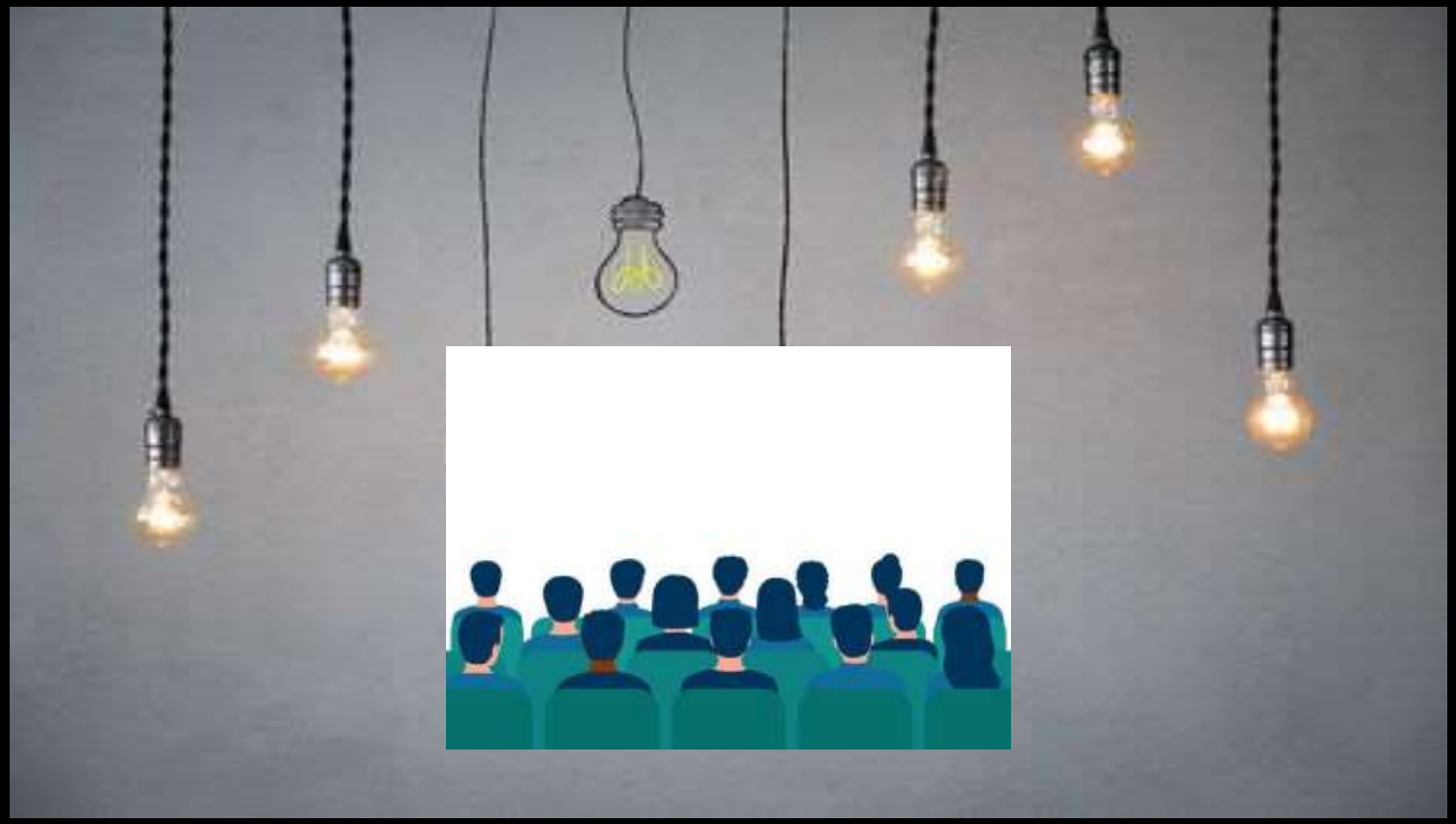
- At one location on Earth
- Jumped up at the same moment
- Landing at the same instant





Nothing

A Good Concept



Could Make A Difference!!!

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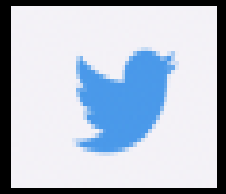

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