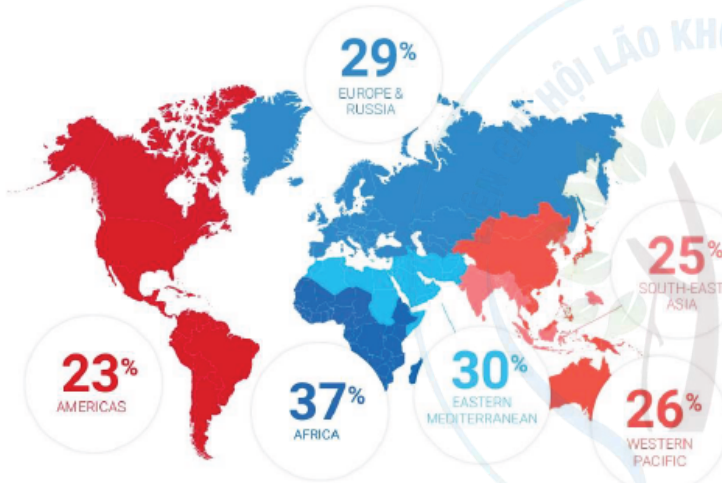


Tự đo Huyết áp tại nhà (HBPM): Xu hướng thời đại và khuyến cáo

GS.TS. Huỳnh Văn Minh
Đại học Y Dược Huế

Mở đầu

Tần suất Tăng huyết áp trên thế giới



Factsheet

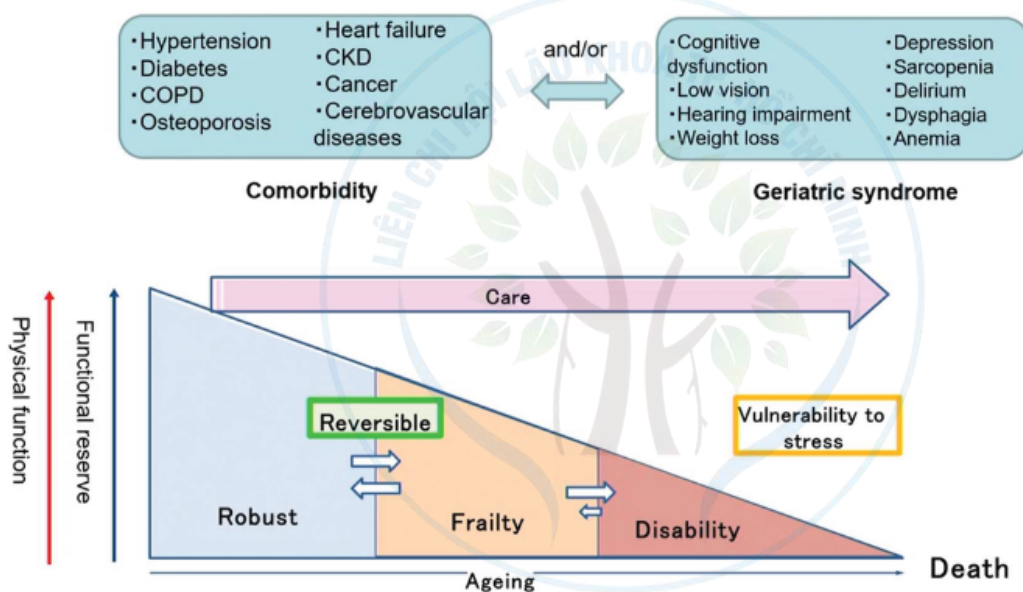
- Prevalence varies around the world.
- Between 23 and 37% (>1:4 to >1:3).
- Stable over the last 3 decades.
- However, number of people with hypertension increased from 648m (1990) to 1.28b (2019).
- Due to ageing and population growth.
- LMICs had the largest increase.

Hypertension defined as BP \geq 140 and/or 90 mmHg or on treatment

LMICs, low- or medium-income countries

NCD-RisC. Lancet 2021; 398: 957-80.

Bệnh đồng mắc và hội chứng lão khoa



Impact of sarcopenia and frailty on elderly health. M Kuzuya. Japanese journal of Geriatrics. 2009

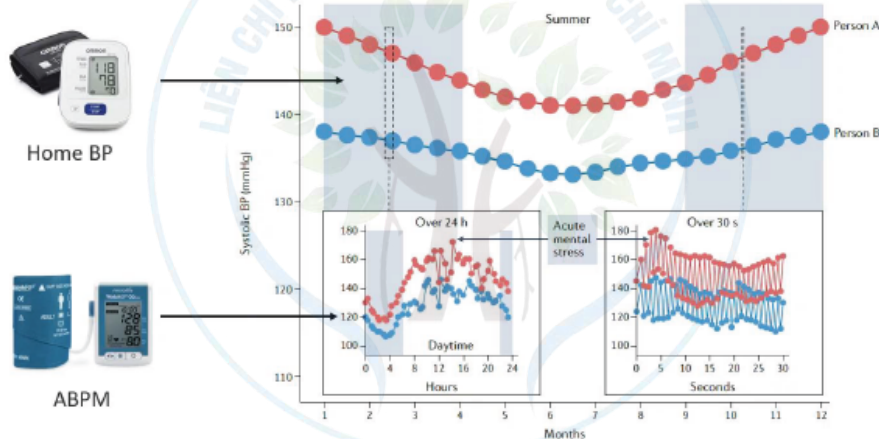
Bảy hành động cần thực hiện để kiểm soát THA của Châu Á – The HOPE Asia network



J of Clinical Hypertension, Volume: 24, Issue: 3, Pages: 213-223, First published: 16 February 2022, DOI: (10.1111/jch.14440)

Đo huyết áp ngoài phòng khám

Dynamic nature of blood pressure

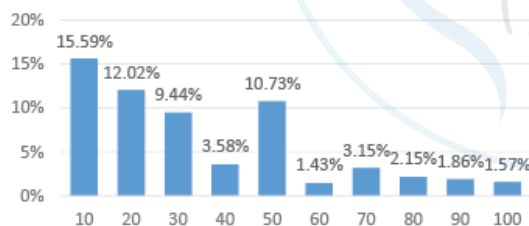


Tự đo huyết áp tại nhà

Các nghiên cứu

Lược sử

- First Trials in 1970s
- Initial work largely relied on manual anaeroid sphygmomanometers
- Not until advent of accurate automated sphygmomanometers did consumer market take off (2000s)

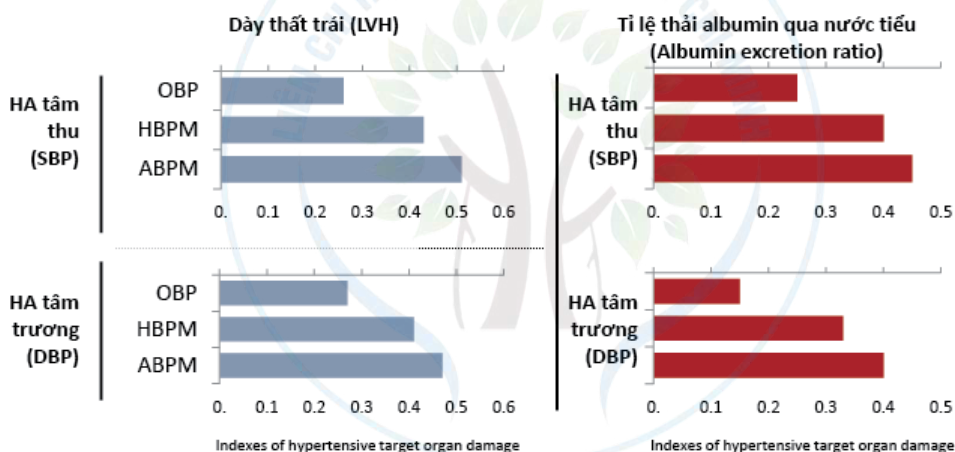


Tỉ lệ sử dụng HBPM

- Italy 75% (Cuspidi Blood Pressure 2005)
- Canada 46% (Bancej Can J Cardiol 2010)
- US 70% [working adults] (Breaux-Shropshire, WPHS 2012)
- China 19.8% (Huanhuan Hu, IJHyp 2012)
- UK 40% [hypertension], 21% [normotension] (McManus West Midlands 2011-12).

Khảo sát ASIA HBPM Survey 2020 (bộ câu hỏi, 699 BS Việt nam tham gia)

Đo HA ngoài phòng khám tương quan nhiều hơn với nguy cơ tổn thương cơ quan đích



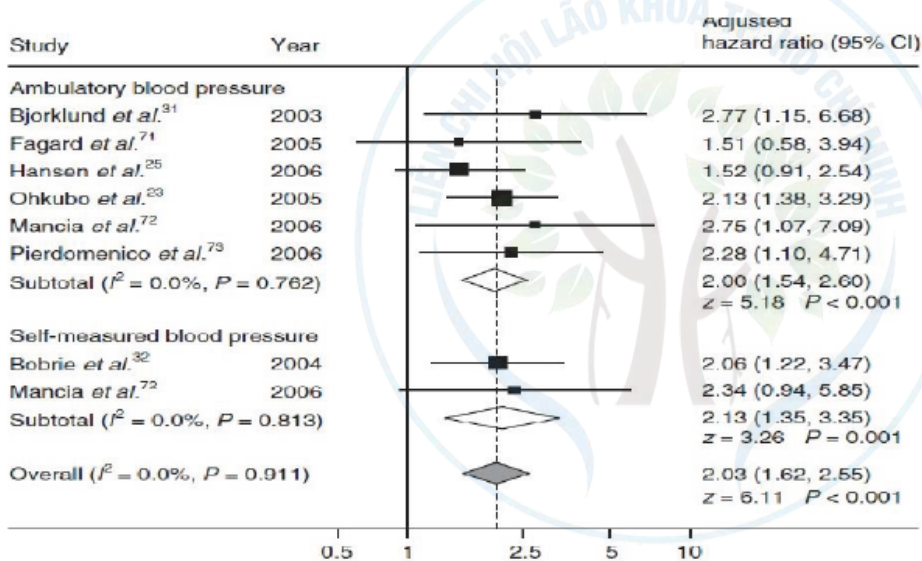
27/04/2023

OBP: HA phòng khám; HBPM: HA tại nhà; ABPM: HA lưu động.

Muler G, et al. *J Cardiovasc Risk* 2002;9:123-9.

9

Tổng phân tích nguy cơ THA ẩn giấu (*Masked Hypertension*) theo kỹ thuật ABPM và HBPM



The risk of major CV disease is about 2-time higher in patients with MH than in the normotensive subjects regardless of the definition of MH based on

self-measured BP (hazard ratio (HR) 2.13; 95% CI:

1.35-3.35; $P = 0.001$)

or **24-h ABP** (HR 2.00; 95% CI:

1.54-2.60; $P < 0.001$)

27/04/2023

Angeli F, Reboli G, Verdecchia P

Am J Hypertens 2010

10

TASMINH2



Telemonitoring and self-management in the control of hypertension (TASMINH2): a randomised controlled trial

Richard J McManus, Jonathan Mant, Emma P Bray, Roger Holder, Miren I Jones, Sheila Greenfield, Billingsley Kaambwa, Miriam Banting, Stirling Bryan, Paul Little, Bryan Williams, F D Richard Hobbs

Research

Original Investigation

Effect of Self-monitoring and Medication Self-titration on Systolic Blood Pressure in Hypertensive Patients at High Risk of Cardiovascular Disease The TASMIN-SR Randomized Clinical Trial

Richard J. McManus, FRCGP; Jonathan Mant, MD; M. Sayeed Haque, PhD; Emma P. Bray, PhD; Stirling Bryan, PhD; Sheila M. Greenfield, PhD; Miren I. Jones, PhD; Sue Jowett, PhD; Paul Little, MD; Cristina Penalzoza, MA; Claire Schwartz, PhD; Helen Shackelford, RGN; Claire Shovelton, PhD; Jinu Varghese, RGN; Bryan Williams, MD; F.D. Richard Hobbs, FMedSci

McManus et al
Lancet 2010 &
JAMA 2014

Results - primary outcome SBP

TASMINH2

	Mean blood pressure (mm Hg)			Effect size (mm Hg)	
	Baseline	6 months	12 months	Baseline to 6 months	Baseline to 12 months
Systolic blood pressure; unadjusted					
Intervention	152.1 (150.6 to 153.6)	139.0 (137.0 to 141.0)	134.9 (132.6 to 137.1)	3.7 (0.6 to 6.8)	5.5 (2.2 to 8.8)
Control	151.8 (150.3 to 153.3)	142.4 (140.2 to 144.6)	140.1 (138.0 to 142.2)
Systolic blood pressure; adjusted*					
Intervention	151.9 (150.8 to 153.1)	138.8 (136.6 to 141.0)	134.7 (132.3 to 137.0)	3.7 (0.8 to 6.6)	5.4 (2.4 to 8.5)
Control	152.0 (150.9 to 153.2)	142.6 (140.5 to 144.8)	140.3 (138.0 to 142.6)

HT

High Risk

Lancet 2010 & JAMA 2014

	Blood Pressure, mm Hg						Difference ^b	
	Baseline		6 Month		12 Month		6 Month	12 Month
	No. of Patients	Mean (95% CI) ^a	No. of Patients	Mean (95% CI) ^a	No. of Patients	Mean (95% CI) ^a		
Systolic Blood Pressure Complete Case								
Usual care	230	143.6 (141.9-145.4)	225 ^c	138.1 (136.0-140.3)	230	137.8 (135.4-140.3)	6.1 (2.9-9.3)	9.2 (5.7-12.7)
Intervention	220	143.1 (141.4-144.9)	215	131.8 (129.6-134.1)	220	128.2 (125.9-130.4)		
Systolic Blood Pressure With Multiple Imputation for Missing Values								
Usual care	276	144.2 (142.3-146.1)	276	138.4 (136.3-140.5)	276	138.2 (136.1-140.2)	5.5 (1.6-9.5)	8.8 (4.9-12.7)
Intervention	276	143.5 (141.6-145.4)	276	132.1 (129.8-134.4)	276	128.6 (126.5-130.7)		

Original Investigation

Effect of Home Blood Pressure Telemonitoring and Pharmacist Management on Blood Pressure Control A Cluster Randomized Clinical Trial

Karen L. Margolis, MD, MPH; Stephen E. Asche, MA; Anna R. Bergdall, MPH; Steven P. Dehmer, PhD; Sarah E. Groen, PharmD; Holly M. Kadmas, PharmD; Tessa J. Kerby, MPH; Krissa J. Klotzle, PharmD; Michael V. Maciosek, PhD; Ryan D. Michels, PharmD; Patrick J. O'Connor, MD, MPH; Rachel A. Pritchard, BA; Jaime L. Sekenski, BS; JoAnn M. Sperl-Hillen, MD; Nicole K. Trower, BA

Table 2. Composite and Blood Pressure (BP) Control

	Telemonitoring Intervention		Usual Care		Differential Change From Baseline, % (95% CI)	P Value ^a
	No. of Patients	% (95% CI)	No. of Patients	% (95% CI)		
Composite BP control						
At 6 and 12 mo	113	57.2 (44.8-68.7)	58	30.0 (23.2-37.8)	27.2 (13.4-40.0)	.001
At 6, 12, and 18 mo	96	50.9 (36.9-64.8)	42	21.3 (14.4-30.4)	29.6 (13.1-46.0)	.002
BP control						
At 6 mo	148	71.8 (65.6-77.3)	89	45.2 (39.2-51.3)	26.6 (19.1-33.1)	<.001
At 12 mo	141	71.2 (62.0-78.9)	102	52.8 (45.4-60.2)	18.4 (7.9-27.0)	.005
At 18 mo	135	71.8 (65.0-77.8)	104	57.1 (51.5-62.6)	14.7 (7.0-21.4)	.003

^a Study group difference for composite BP control and at each individual time point.

JAMA. 2013;310(1):46-56. doi:10.1001/jama.2013.6549

Results – BP reduction

Table 3. Blood Pressure (BP) Reduction From Baseline

	Telemonitoring Intervention		Usual Care		Differential Change From Baseline, Mean (95% CI)	P Value ^a
	Mean (95% CI)	Reduction From Baseline, Mean (95% CI)	Mean (95% CI)	Reduction From Baseline, Mean (95% CI)		
Systolic BP, mm Hg						
At baseline	148.2 (146.3 to 150.0)		147.7 (145.8 to 149.5)			
At 6 mo	126.7 (124.4 to 129.0)	-21.5 (-23.9 to -19.1)	136.9 (134.6 to 139.2)	-10.8 (-13.3 to -8.3)	-10.7 (-14.3 to -7.3)	<.001
At 12 mo	125.7 (123.4 to 128.0)	-22.5 (-25.1 to -19.9)	134.8 (132.5 to 137.2)	-12.9 (-15.5 to -10.2)	-9.7 (-13.4 to -6.0)	<.001
At 18 mo	126.9 (124.3 to 129.4)	-21.3 (-24.2 to -18.4)	133.0 (130.4 to 135.5)	-14.7 (-17.6 to -11.8)	-6.6 (-10.7 to -2.5)	.004
Diastolic BP, mm Hg						
At baseline	84.4 (82.3 to 86.6)		85.1 (82.9 to 87.3)			
At 6 mo	75.0 (72.9 to 77.2)	-9.4 (-11.1 to -7.6)	81.7 (79.5 to 84.0)	-3.4 (-5.2 to -1.5)	-6.0 (-8.6 to -3.4)	<.001
At 12 mo	75.1 (72.8 to 77.4)	-9.3 (-11.0 to -7.7)	80.8 (78.5 to 83.2)	-4.3 (-5.9 to -2.7)	-5.1 (-7.4 to -2.8)	<.001
At 18 mo	75.1 (73.0 to 77.2)	-9.3 (-11.7 to -7.0)	78.7 (76.6 to 80.9)	-6.4 (-8.7 to -3.9)	-3.0 (-6.3 to 0.3)	.07

^a Calculated using time × study group interaction term, indicating differential reduction from baseline by study group.

Table 4. Other Study Outcomes^a

	Telemonitoring Intervention				Usual Care			
	At Baseline (n = 228)	At 6 mo (n = 206)	At 12 mo (n = 197)	At 18 mo (n = 186)	At Baseline (n = 222)	At 6 mo (n = 197)	At 12 mo (n = 191)	At 18 mo (n = 182)
Medical history								
No. of hypertension medication classes ^b	1.6 (1.4 to 1.8)	2.2 (2.0 to 2.4)	2.2 (2.0 to 2.4)	2.2 (2.0 to 2.4)	1.4 (1.2 to 1.6)	1.6 (1.4 to 1.8)	1.6 (1.4 to 1.8)	1.7 (1.5 to 1.9)
Change from baseline ^b		0.66 (0.55 to 0.78) ^c	0.63 (0.49 to 0.77) ^c	0.62 (0.46 to 0.77) ^d		0.16 (0.04 to 0.29)	0.22 (0.07 to 0.36)	0.26 (0.10 to 0.42)
Prescribed any hypertension medications ^e	76.8 (56.1 to 84.9)	94.5 (88.9 to 97.4)	94.6 (89.2 to 97.4)	94.9 (89.4 to 97.6)	73.0 (61.2 to 82.1)	79.3 (68.6 to 87.0)	80.3 (70.6 to 87.3)	81.1 (71.2 to 88.1)
Change from baseline ^e		17.7 (13.0 to 20.3) ^f	17.8 (13.3 to 20.7) ^f	18.1 (13.5 to 20.8) ^f		6.3 (-2.1 to 12.7)	7.3 (-0.8 to 13.8)	8.1 (-0.3 to 14.2)
Perfect self-reported adherence to hypertension medication ^{g,h}	66.7 (58.5 to 74.0)	77.4 (70.2 to 83.3)	68.6 (60.6 to 75.6)	71.6 (63.3 to 78.6)	66.9 (58.1 to 74.6)	61.0 (51.9 to 69.4)	63.7 (54.8 to 71.7)	62.6 (53.1 to 71.3)

JAMA. 2013;310(1):46-56. doi:10.1001/jama.2013.6549

Effect of Home Blood Pressure Monitoring on Patient's Awareness and Goal Attainment Under Antihypertensive Therapy: The Factors Influencing Results in Anti-Hypertensive Treatment (FIRST) Study

David Spirk^a Sarah Noll^b Michel Burnier^c Stefano Rimoldi^d Georg Noll^{b,e}
Isabella Sudano^{b,f}

- Widely available (>500 online)
- Increase awareness and control?
- Encourage patient engagement?

chlorthiazide. **Methods:** In total, 1,268 patients with arterial hypertension were enrolled in the Factors Influencing Results in anti-hypertensive Treatment (FIRST) study by 348 general practitioners and internal medicine specialists across Switzerland. Patients selected for HBPM received detailed information and training on BP self-management. The study endpoints included patient's awareness and attainment of BP goals, and the efficacy and tolerability of antihypertensive treatment at 3 months. **Results:** Overall, the mean age was 61±13 years (3.0%) patients discontinued antihypertensive therapy. **Conclusion:** In a large Swiss cohort of patients with arterial hypertension, information and training with on BP self-measurement and direct involvement of patients by using HBPM led to improvement in BP control. Treatment with irbesartan alone or in combination with hydrochlorothiazide was well tolerated and markedly reduced BP.

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Published by S. Karger AG, Basel

Self-monitoring of blood pressure in hypertension: A systematic review and individual patient data meta-analysis

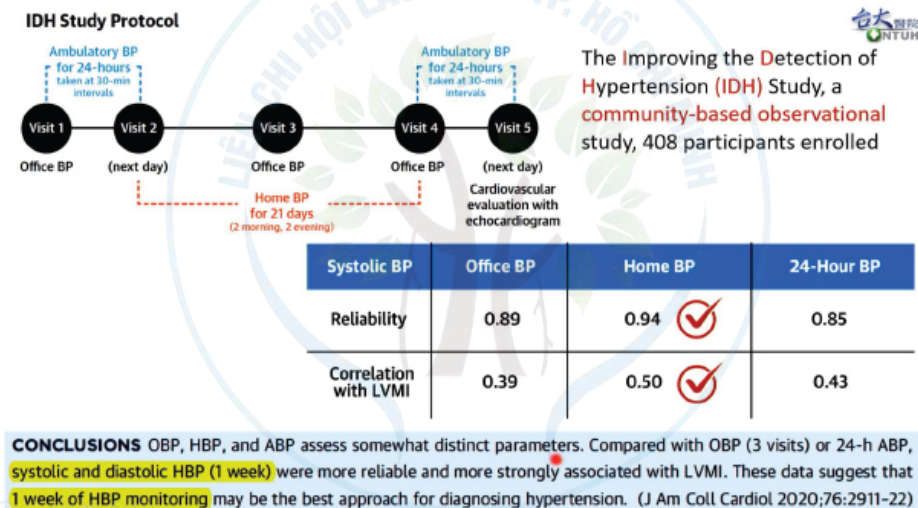
Katherine L. Tucker¹, James P. Sheppard¹, Richard Stevens¹, Hayden B. Bosworth², Alfred Bove³, Emma P. Bray⁴, Kenneth Earle⁵, Johnson George⁶, Marshall Godwin⁷, Beverly B. Green⁸, Paul Hebert⁹, F. D. Richard Hobbs¹, Ilkka Kantola¹⁰, Sally M. Kerry¹¹, Alfonso Leiva¹², David J. Magid¹³, Jonathan Mant¹⁴, Karen L. Margolis¹⁵, Brian McKinstry¹⁶, Mary Ann McLaughlin¹⁷, Stefano Omboni¹⁸, Olugbenga Ogedegbe¹⁹, Gianfranco Parati^{20,21}, Nashat Qamar²², Bahman P. Tabaei²³, Juha Varis¹⁰, Willem J. Verberk²⁴, Bonnie J. Wakefield²⁵, Richard J. McManus^{1*}

PLoS Med 14(9): e1002389.

- Widely available (>500 online)
- Increase awareness and control?
- Encourage patient engagement?

pants). Overall, self-monitoring was associated with reduced clinic systolic blood pressure (sBP) compared to usual care at 12 months (-3.2 mmHg, [95% CI -4.9, -1.6 mmHg]). However, this effect was strongly influenced by the intensity of co-intervention ranging from no effect with self-monitoring alone (-1.0 mmHg [-3.3, 1.2]), to a 6.1 mmHg (-9.0, -3.2) reduction when monitoring was combined with intensive support. Self-monitoring was most effective in those with fewer antihypertensive medications and higher baseline sBP up to 170 mmHg. No differences in efficacy were seen by sex or by most comorbidities. Ambulatory

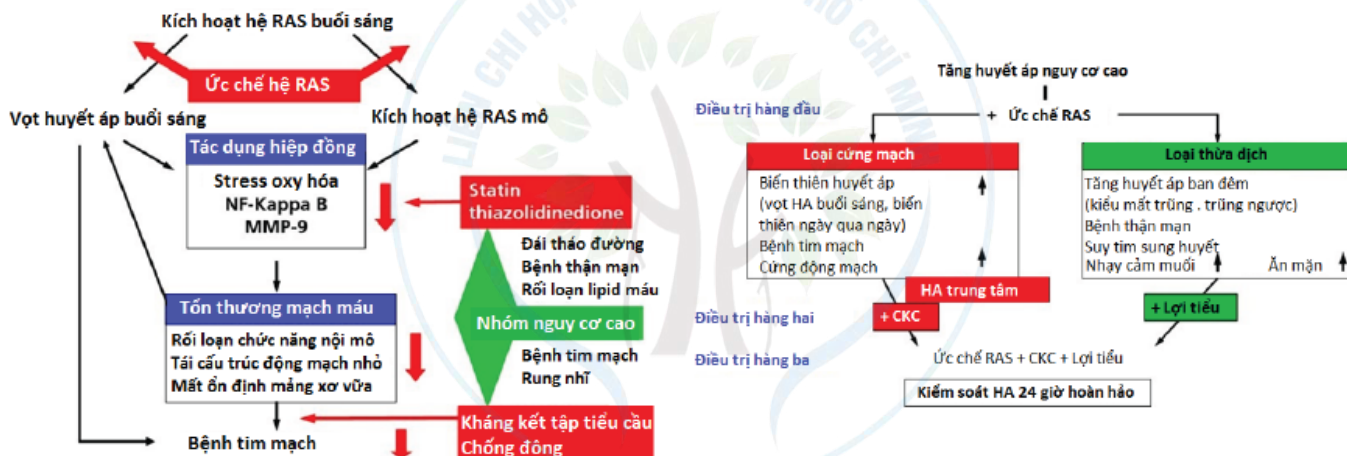
Nghiên cứu IDH



Vai trò HATN trong điều trị

Quản lý tăng huyết áp kháng trị dựa trên huyết áp lưu động và huyết áp tại nhà. *điều trị với chẹn kênh canxi, ức chế hệ RAS (chẹn thụ thể angiotensin, ức chế men chuyển), lợi tiểu (thiazide, thiazide-like).

Tác dụng bảo vệ tim mạch của thuốc ức chế hệ RAS buổi sáng ở bệnh nhân tăng huyết áp nguy cơ cao.



Kario K, *Essential Manual of 24-hour Blood Pressure Management from Morning to Nocturnal Hypertension*, Wiley-Blackwell, 2015

Tự đo huyết áp tại nhà

Các khuyến cáo

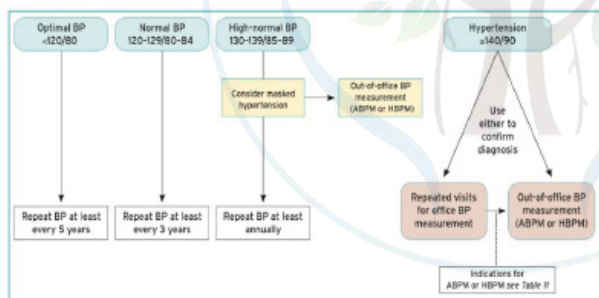
Consensus Document

Home blood pressure monitoring: methodology, clinical relevance and practical application: a 2021 position paper by the Working Group on Blood Pressure Monitoring and Cardiovascular Variability of the European Society of Hypertension

Gianfranco Parati^{1,2}, George S. Stergachis³, Grzegorz Bilo^{4,5}, Anastasios Kollias⁶, Martino Pengo⁷, Juan Eugenio Ochoa⁸, Rajiv Agarwal⁹, Kai Asayama^{10,11}, Roland Altmann¹², Michel Burnier¹³, Alejandro De La Sierra¹⁴, Cristina Guazzarato¹⁵, Philippe Gosse¹⁶, Geoffrey Heaver¹⁷, Satoshi Hoshida¹⁸, Yutaka Imai¹⁹, Kazuomi Kario²⁰, Yan Li²¹, Efstathios Manolis²², Jonathan Mann²³, Richard S. Meigs²⁴, Thomas Messerli²⁵, Anastasia S. Mikhailidou²⁶, Paul Munter²⁷, Martin Nkomo²⁸, Teemu Niiranen²⁹, Angeliki Ntani³⁰, Eoin O'Brien³¹, José Andrés Octavio³², Takayoshi Ohkubo³³, Stefano Orshov³⁴, Paul Padfield³⁵, Paolo Palatini³⁶, Dario Pellegrini³⁷, Nicolas Potte³⁸, Vincent Agostino J. Ramires³⁹, James E. Shannon⁴⁰, Andrew Shunmugan⁴¹, Egle Silva⁴², Iwan Topouchian⁴³, Camilla Torlacca⁴⁴, Ji Guang Wang⁴⁵, Michael A. Weber⁴⁶, Paul K. Whelton⁴⁷, William B. White⁴⁸, and Giuseppe Mancia⁴⁹, on behalf of the Working Group on Blood Pressure Monitoring and Cardiovascular Variability of the European Society of Hypertension

J Hypertens 38:1742–1767 Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved. **FREE ACCESS**
DOI: 10.1097/HJT.0000000000002922

Clinical use	Office	Home	24h ambulatory	Pharmacy	Public space
Screening	+++	+	-	++	+
Initial diagnosis	+	++	+++	-	-
Treatment titration	+	++	++	-	-
Follow-up	++	+++	+	+	-
Main indication	Screening of untreated individuals. Follow-up of treated patients	Long-term follow-up of treated patients (preferred method)	Initial diagnosis (preferred method)	Screening of untreated individuals. Follow-up of treated patients	Opportunistic screening
Hypertension (mmHg)	≥140/90	≥135/85	≥130/80	≥135/85 (?)	?



ESC CONGRESS 2021
THE DIGITAL EXPERIENCE

HỘI NGHỊ KHOA HỌC THƯỜNG NIÊN 2023 LIÊN CHI HỘI LÃO KHOA TP. HỒ CHÍ MINH

722 Protocol for Diagnosis and Management of Hypertension

722 Protocol for Diagnosis and Management of Hypertension

Office/home blood pressure

- <120/80 mmHg: Every year
- 120-129/80-89 mmHg: Every 6 months
- ≥130/80 mmHg: For confirming the diagnosis of hypertension: Before clinic visit; Initiation or adjustment of medications: 2 weeks later; Uncontrolled hypertension: Every month; Controlled hypertension: Every 3 months

NEW Target hierarchy: HBPM → HMOD → ABPM

Adjustment strategies:

1. Longer-acting drug
2. Bedtime dosing
3. Escalation (class/dose)

"722" protocol	Timing of HBP monitoring
"7"	7 (at least 4) consecutive days
"2"	2 times per day in the morning (taken within 1 hour after awakening, after voiding, and before taking food and medications) and in the evening (within 1 hour before bedtime)
"2"	2 or more BP readings, 1 minute apart, taken per occasion (≥3 BP readings if atrial fibrillation)

2022 Taiwan Hypertension Guidelines
HBPM-Guided Management Flowchart
Wang TD, et al. Acta Cardiol Sin 2022;38:225-325.

Sơ đồ chẩn đoán THA ở người lớn của VSH/VNHA 2022

HỘI TIM MẠCH HỌC QUỐC GIA VIỆT NAM
KHIẾT LƯƠNG - HUYỀN - THỊ KHUÊ

KHUYẾN CÁO CỦA PHÂN HỘI TĂNG HUYẾT ÁP - HỘI TIM MẠCH QUỐC GIA VIỆT NAM (VSH/VNHA) VỀ CHẨN ĐOÁN & ĐIỀU TRỊ TĂNG HUYẾT ÁP 2022

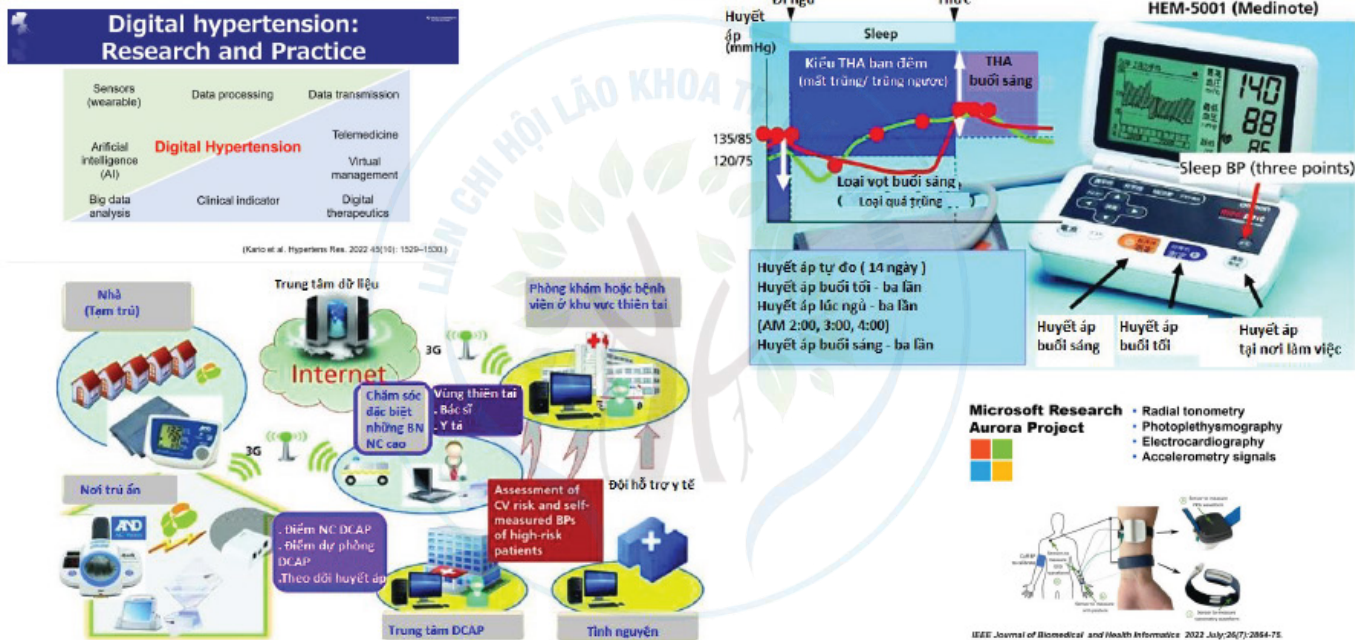
THIẾT YẾU **TỐI ƯU**

Đo HA PK lần 1: HA ≥ 180/120 mmHg

- Có → Có THA?
- Không → Đo HAPK lần 2: HA = 140-179/90-109 mmHg
- Có → THA
- Không →
 - Khám HAPK lần 3 (mmHg)
 - < 130/85 → HA bình thường
 - 130-139/85=89 → HA bình thường-cao
 - ≥ 140/90 → THA
 - HA Tại Nhà (HATN) (mmHg)
 - < 135/85 → THA ảo cholang trắng**/HABT
 - ≥ 135/85 → THA/THA ẩn giấu*
 - HA Liên Tục 24h (ABPM) (mmHg)
 - HA ban ngày < 135/85 hoặc HA 24h < 130/80 → THA ảo cholang trắng/HABT**
 - HA ban ngày ≥ 135/85 hoặc HA 24h ≥ 130/80 → THA/THA ẩn giấu*

* THA ẩn giấu nếu HAPK lần 2 HA < 140/90 mmHg ** THA ảo cholang trắng nếu HAPK lần 2 > 140/90 mmHg; HA bình thường nếu HAPK lần 1 & 2 HA < 140/90 mmHg
ABPM = ambulatory blood pressure monitoring; HBPM = home blood pressure monitoring

Xu hướng mới trong theo dõi HATN



27/04/2023

Kario K, *Essential Manual of 24-hour Blood Pressure Management from Morning to Nocturnal Hypertension*, Wiley-Blackwell, 2018

23

KẾT LUẬN

- THA vẫn là thách thức cho chúng ta do tần suất và nguy cơ cao .
- Chẩn đoán THA tùy vào tối ưu hoặc thiết yếu để áp dụng kỹ thuật đo HA thông thường hoặc HBPM/ABPM.
- Việc thực hiện 7 bước quản lý THA theo HOPE-Asia qua tuyên bố OKINAWA cho khu vực Châu Á là định hướng của Hội THA Việt nam trong thời gian đến.
- Áp dụng kỹ thuật Đo huyết áp tại nhà (HBPM) là phương pháp không thể thiếu được trong xu hướng hiện nay./.

27/04/2023

24