HEARTS
IN THE AMERICAS

Agenda

Background

Explanation of key driver concept

Evidence for individual key drivers

Evidence and examples of key drivers at system level
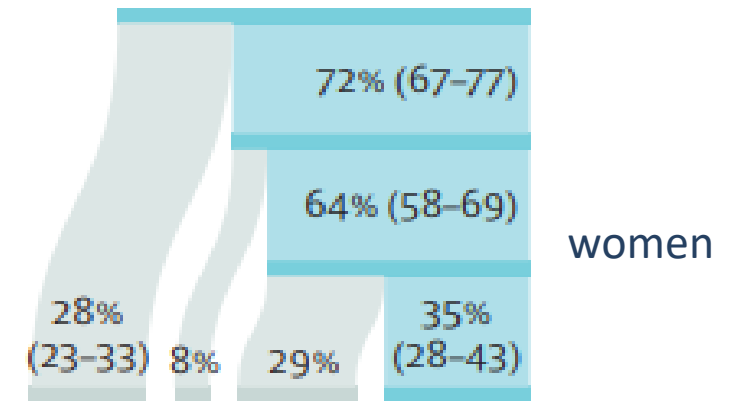
A Call to Action

Systolic BP continues to be the most modifiable risk factor for premature morbidity and mortality globally.
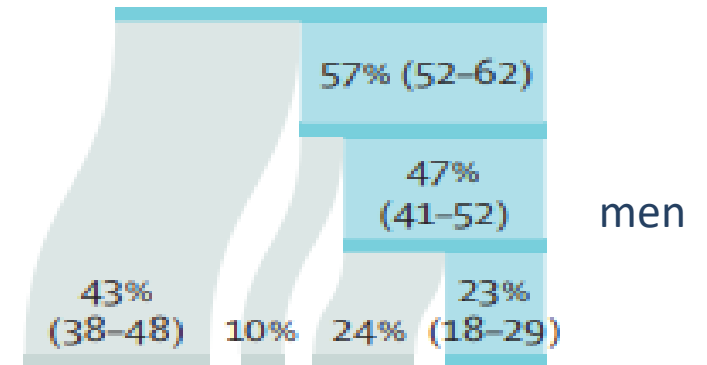
Latin America and the Caribbean:

- BP control: 35% of women, 23% of men
- CVD: 2 million deaths annually

Latin America and Caribbean

72% (67–77)

64% (58–69)   women

28% (23–33)   8%   29%   35% (28–43)

Latin America and Caribbean

57% (52–62)

47% (41–52)   men

43% (38–48)   10%   24%   23% (18–29)

Lancet 2021; 398: 957–80

Background

44564 / Region of the Americas / DALYs (Disability-Adjusted Life Years) / Cardiovascular diseases / Both: 4 Joinpoints

(A)

Observed
- 1990.0-1994.0 APC = -1.57*
- 1994.0-2003.0 APC = -2.37*
- 2003.0-2007.0 APC = -2.80*
- 2007.0-2013.0 APC = -1.83*
- 2013.0-2017.0 APC = -0.10

* Indicates that the Annual Percent Change (APC) is significantly different from zero at the alpha = 0.05 level.
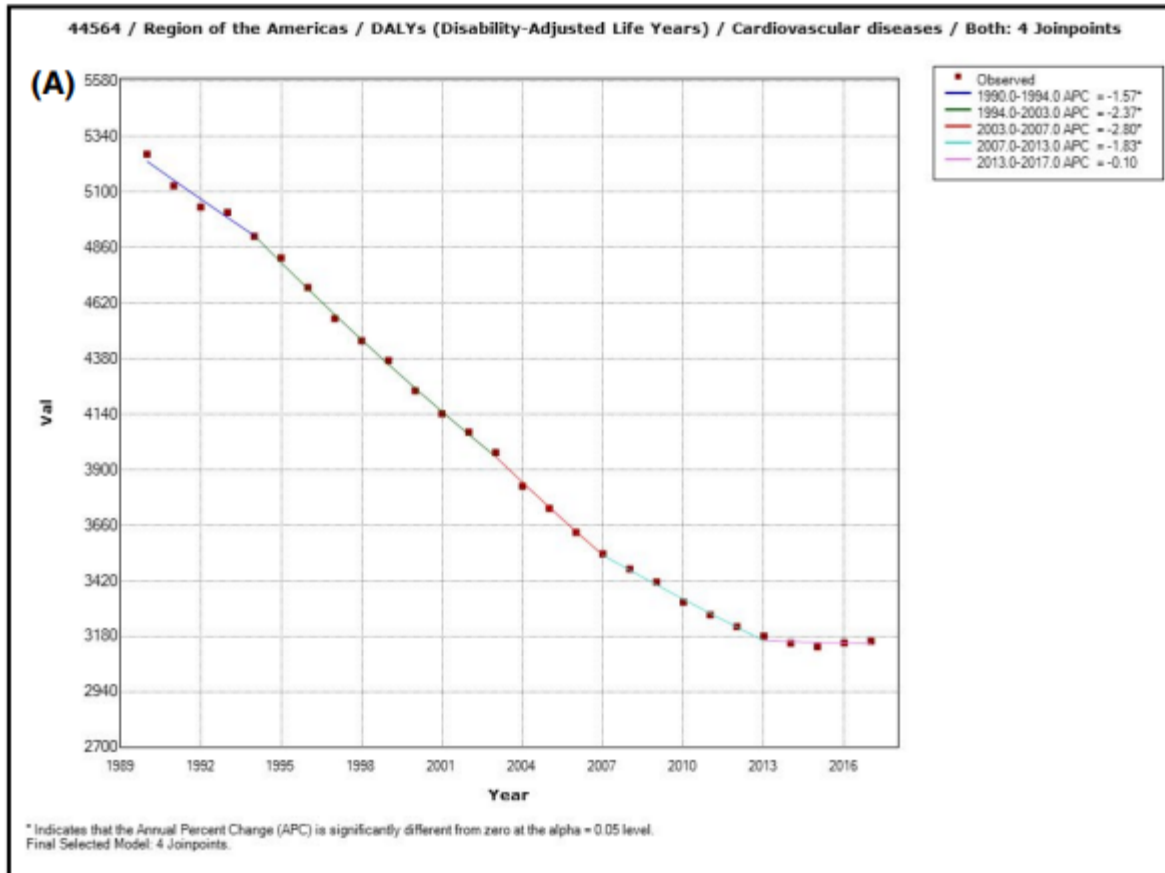Final Selected Model: 4 Joinpoints.

FIGURE 1 Trends in age-standardized rates of cardiovascular disease disability-adjusted life years per 100 000 populations by sex in the Region of the Americas, 1990-2017. A: Both sexes combined. B: Female. C: Male. Dots represent estimates of the age-standardized Cardiovascular diseases DALYs rate per 100 000 population, and the lines represent time series trend segments which slope, summarized by the annual percentage change (APC), are statistically different

11 countries in the Americas with stagnation or reversal of CVD burden decline

Martinez et al, JCH 2020

High BP control can be achieved

Kaiser SCAL HTN Control 2004 - 2010
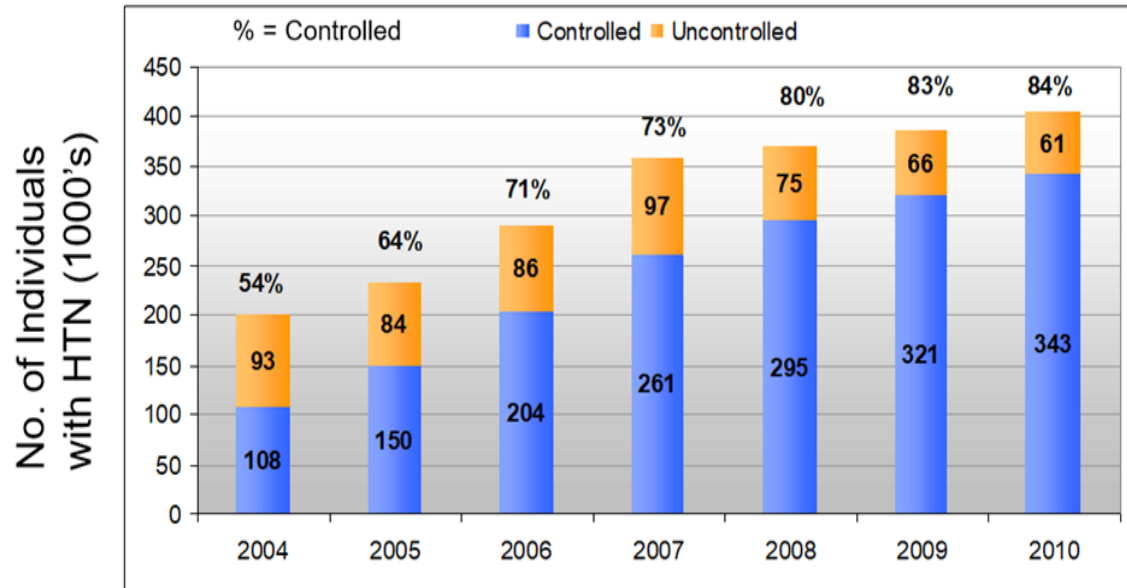
J Sim et al, Can J Cardiol. 2014;30(5):544-552

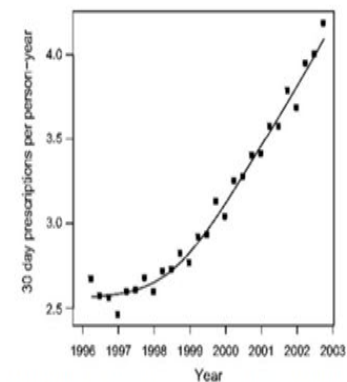Canadian Experience: BP Control 12% to 62% from 1992 to 2016

Figure 1. Total antihypertensive prescription sales (IMS Health-Canada) in Canada from 1996 to 2003. The prescription rates for 30-day prescriptions per person-year. The line is a nonparametrically modeled average, and the squares represent quarterly population-adjusted rates.
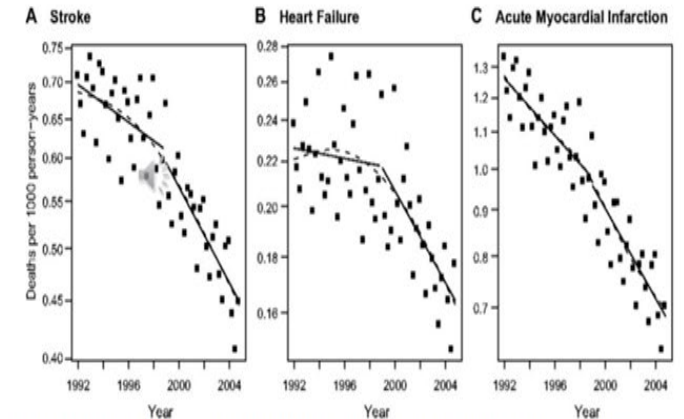
Figure 2. Mortality rates from stroke (A), HF (B), and AMI (C) in Canada from 1992 to 2003. The squares are quarterly rates adjusted for age and gender per 1000 population. The dark line is linear modeling for 1992–1998 and 1999–2003, and the dotted line is a nonparametrically modeled line.
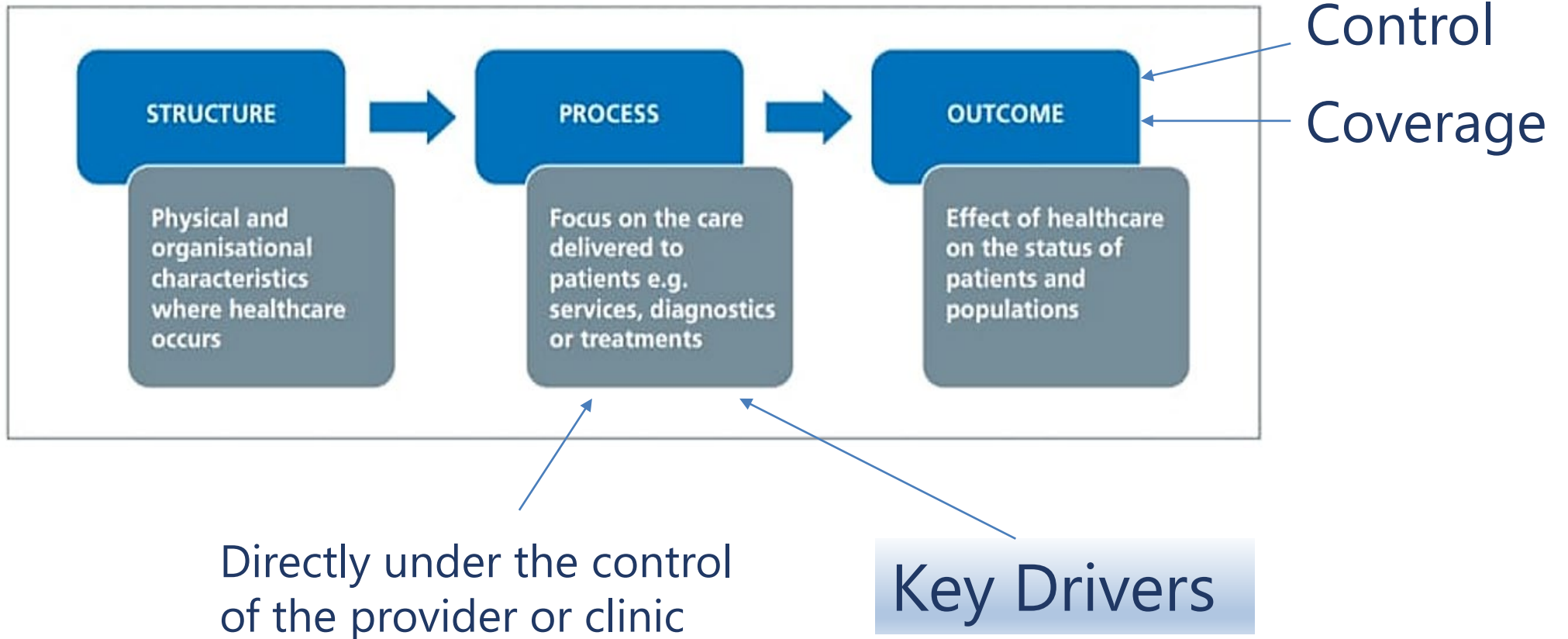
Campbell et al. Hypertension Feb 2009

Characteristics of High Performing Health Systems

In addition to focusing on outcome measures:

- Identify key drivers

- Translate key drivers into process measures

- Performance feedback to front-line clinicians and clinics

According to the Donabedian health care quality model, quality measures can be characterized as structure, process or outcome measures.

Control

Coverage

STRUCTURE

Physical and organisational characteristics where healthcare occurs

PROCESS

Focus on the care delivered to patients e.g. services, diagnostics or treatments

OUTCOME

Effect of healthcare on the status of patients and populations

Directly under the control of the provider or clinic

Key Drivers

Donabedian A. An Introduction to Quality Assurance in Health Care. New York, NY: Oxford University Press; 2003.

Guideline for the pharmacological treatment of hypertension in adults

World Health Organization

WHO – New Recommendations 2021

- Threshold for the initiation of pharmacological treatment
- Cardiovascular disease risk assessment
- Specific medication classes and use of FDC
- Target blood pressure
- Frequency of assessment
- Treatment by nonphysician professionals

Driver - Accurate BP Measurement

Recommendation: Repeat BP when initial BP elevated.

Evidence: Reliability of single office BP measurement:
- 34% of initially elevated BPs normalized with recheck
- In 24%, SBP dropped more than 10 mm.[1]

Opportunity: BP repeated only 23% of time when initial reading elevated[2]

Support: ACC/AHA 2017, ESC/ESH 2018, ISH 2020, AHA Scientific Statement Measurement of BP in Humans 2019

- [1]*Burkhard et al, Heart 2018 Jul 104 (14)*
- [2]*Cooper-DeHoff et al, J Am Heart Assoc. 2021: 10:e022224*

Driver – Standardized Treatment Protocol

Recommendation: Use established protocol with FDC

Evidence:

- Most patients require more than one medication.[1]
- FDCs improve adherence, control, and decrease length of time to achieve control.[2]

Opportunity: FDCs used in only 19% of patients in the US 2013-2016.[3]

Support: WHO 2021 HTN guideline, ISH 2020, ESC/ECH 2018, ACC/AHA 2017

- [1] *Whelton et al, JACC 2018; 71 (19)*
- [2] *Derrington et al, J Hum Hypertension 2020; 34 (9)*
- [3] *Derrington et al, Hypertension 2020; 75 (4)*

Hypertension   Sep 2022

ORIGINAL ARTICLE

Blood Pressure Intervention and Control in the SPRINT

William C. Cushman, Robert J. Ringer, Carlos J. Rodriguez, Gregory W. Evans, Jeffrey T. Bates, Jeffrey A. Cutler, Amret Hawfield, Dalane W. Kitzman, Ilya M. Nasrallah, Suzanne Oparil, John Nord, Vasilios Papademetriou, Karen Servilla, Peter Van Buren, Paul K. Whelton, Jeff Whittle, Jackson T. Wright Jr, for the SPRINT Research Group

SPRINT Lessons

Intensive group: 62% had SBP < 120, 80% < 130, 90% < 140.

- 2.8 meds needed (vs. 1.8 in standard group); higher dosage range usually needed
- ACEI/ARBs, CCBs, thiazide-type diuretic (chlorthalidone 88%)
- Monthly visits to monitor
- SBP of 120 in SPRINT (AOBP) = 130 in routine office practice. SPRINT patients – high-risk.

- Start treatment with 2 medications
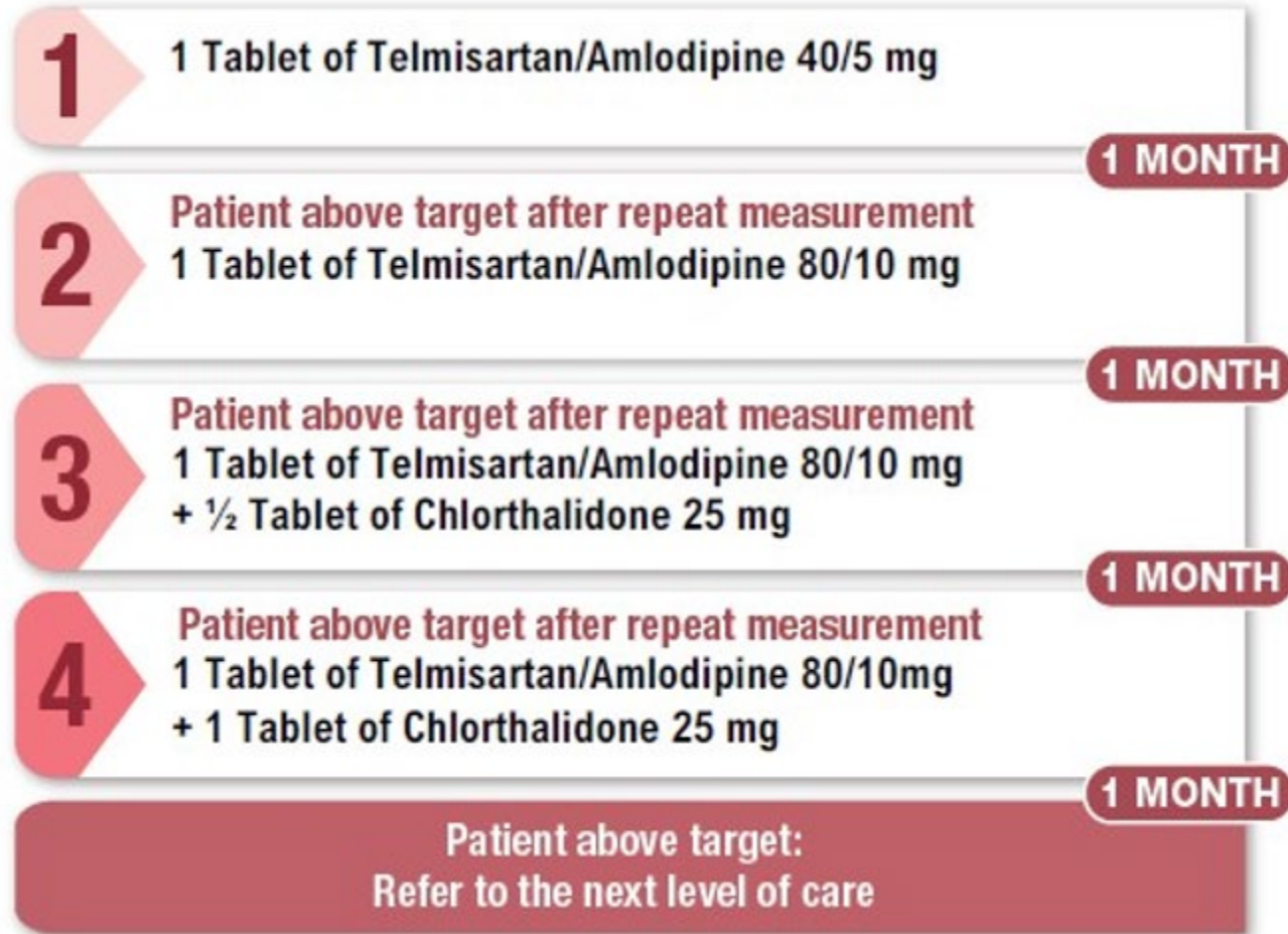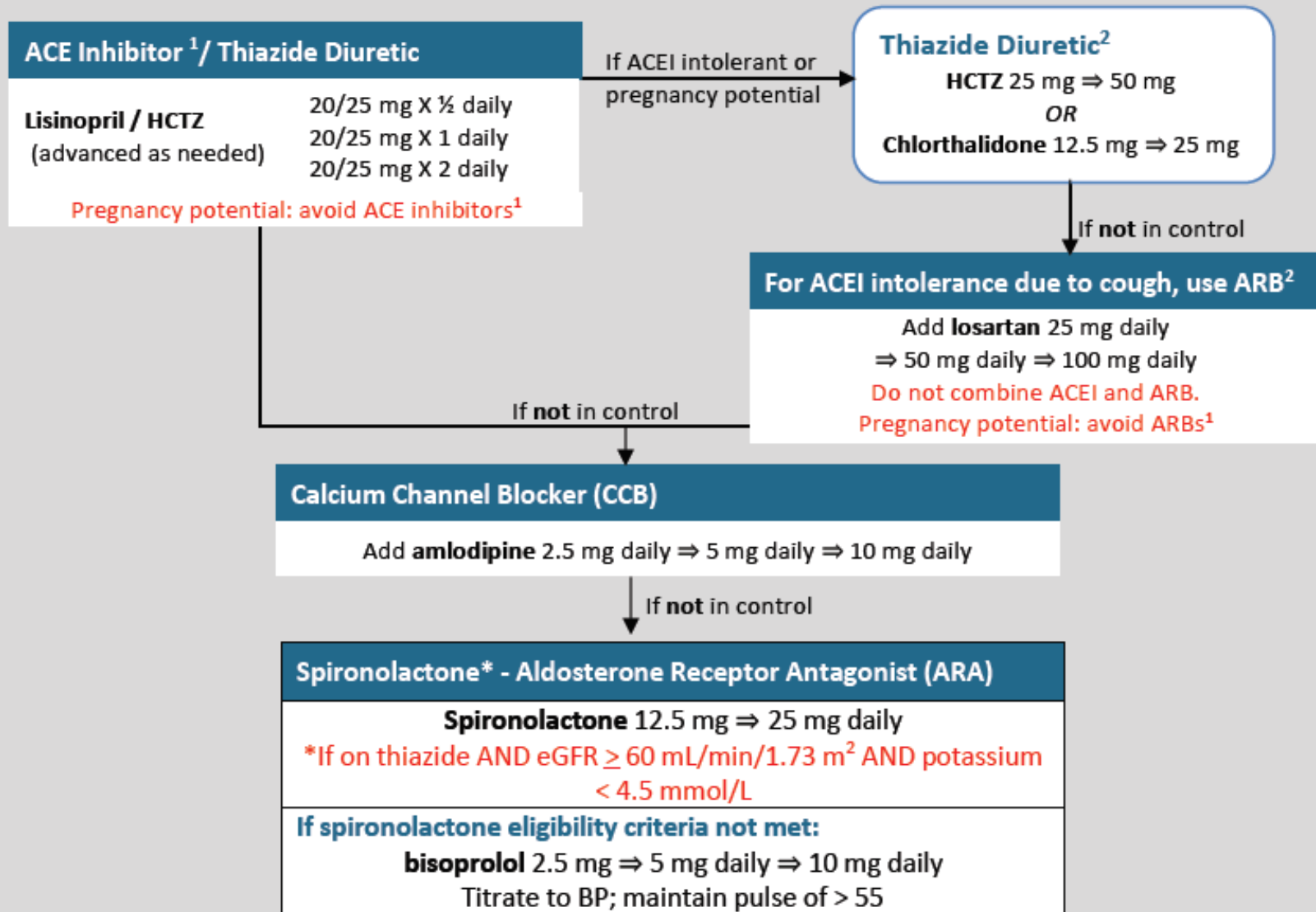- Use standard WHO recommended BP meds and titrate to higher end of dose range

1 1 Tablet of Telmisartan/Amlodipine 40/5 mg

1 MONTH

2 Patient above target after repeat measurement
1 Tablet of Telmisartan/Amlodipine 80/10 mg

1 MONTH

3 Patient above target after repeat measurement
1 Tablet of Telmisartan/Amlodipine 80/10 mg
+ ½ Tablet of Chlorthalidone 25 mg

1 MONTH

4 Patient above target after repeat measurement
1 Tablet of Telmisartan/Amlodipine 80/10mg
+ 1 Tablet of Chlorthalidone 25 mg

1 MONTH

Patient above target:
Refer to the next level of care

FIGURE 1: MANAGEMENT OF ADULT BLOOD PRESSURE (BP)

BP GOALS

▸ Treat adults with confirmed hypertension to a goal BP < 140/90 mm Hg.

▸ In adults with ASCVD, CKD, age ≥ 75 years, or 10-year ASCVD risk[3] ≥ 10%, consider treating to a goal SBP < 130 mm Hg.   (Exclude adults with eGFR<20 from this lower target.)

ACE Inhibitor [1]/ Thiazide Diuretic

Lisinopril / HCTZ
(advanced as needed)

20/25 mg X ½ daily
20/25 mg X 1 daily
20/25 mg X 2 daily

Pregnancy potential: avoid ACE inhibitors[1]

If ACEI intolerant or pregnancy potential →

Thiazide Diuretic[2]

HCTZ 25 mg ⇒ 50 mg
OR
Chlorthalidone 12.5 mg ⇒ 25 mg

*If **not** in control*

For ACEI intolerance due to cough, use ARB[2]

Add **losartan** 25 mg daily
⇒ 50 mg daily ⇒ 100 mg daily
Do not combine ACEI and ARB.
Pregnancy potential: avoid ARBs[1]

*If **not** in control*

Calcium Channel Blocker (CCB)

Add **amlodipine** 2.5 mg daily ⇒ 5 mg daily ⇒ 10 mg daily

*If **not** in control*

Spironolactone* - Aldosterone Receptor Antagonist (ARA)

Spironolactone 12.5 mg ⇒ 25 mg daily
*If on thiazide AND eGFR ≥ 60 mL/min/1.73 m² AND potassium < 4.5 mmol/L

If spironolactone eligibility criteria not met:
bisoprolol 2.5 mg ⇒ 5 mg daily ⇒ 10 mg daily
Titrate to BP; maintain pulse of > 55

Benefits of a Simplified Combination Medication Protocol

- Decreased daily pill burden

- Improved medication adherence

- Faster BP control; less time exposed to CVD-risk

- **Facilitates team-based care including titration by provider other than MD**

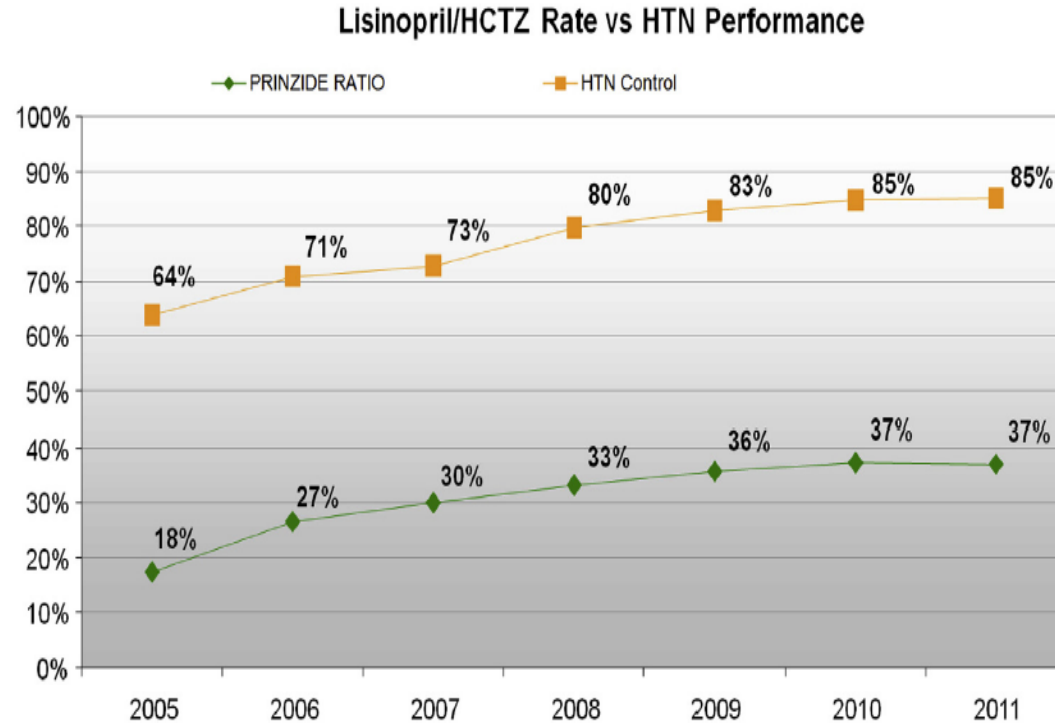# Combination Pill Use and BP Control – Kaiser SCAL

Lisinopril/HCTZ Rate vs HTN Performance

Figure legend: ◆ PRINZIDE RATIO   ■ HTN Control

HTN Control values: 64% (2005), 71% (2006), 73% (2007), 80% (2008), 83% (2009), 85% (2010), 85% (2011)

PRINZIDE RATIO values: 18% (2005), 27% (2006), 30% (2007), 33% (2008), 36% (2009), 37% (2010), 37% (2011)

Figure 4. Combination pill use and hypertension control at Kaiser Permanente Southern California. Since 2005, when the combination of lisinopril/ HCTZ was advocated, hypertension control rates have steadily increased, paralleling the proportion of those prescribed the lisinopril/HCTZ combination pill. HCTZ, hydrochlorothiazide; HTN, hypertension.

ANTIHYPERTENSIVE TREATMENT

Treatment Patterns and Blood Pressure Control With Initiation of Combination Versus Monotherapy Antihypertensive Regimens

Jaejin An (iD) , Tiffany Luong (iD) , Lei Qian, Rong Wei (iD) , Ran Liu, Paul Muntner (iD) , Jeffrey Brettler, Marc G. Jaffe, Andrew E. Moran, and Kristi Reynolds (iD)

- 43% initiated combination therapy (35% with ACEI-thiazide)
- Those who initiated combination therapy: more likely to achieve BP control; more likely to stay on medication

Treatment Intensification Driver

- In a recent study of 25 US health systems, when medication was added for uncontrolled BP:
- SBP decreased by 15 mm Hg

- Cooper-DeHoff et al, J Am Heart Assoc. 2021;10:e022224

Treatment Intensification over Time in US
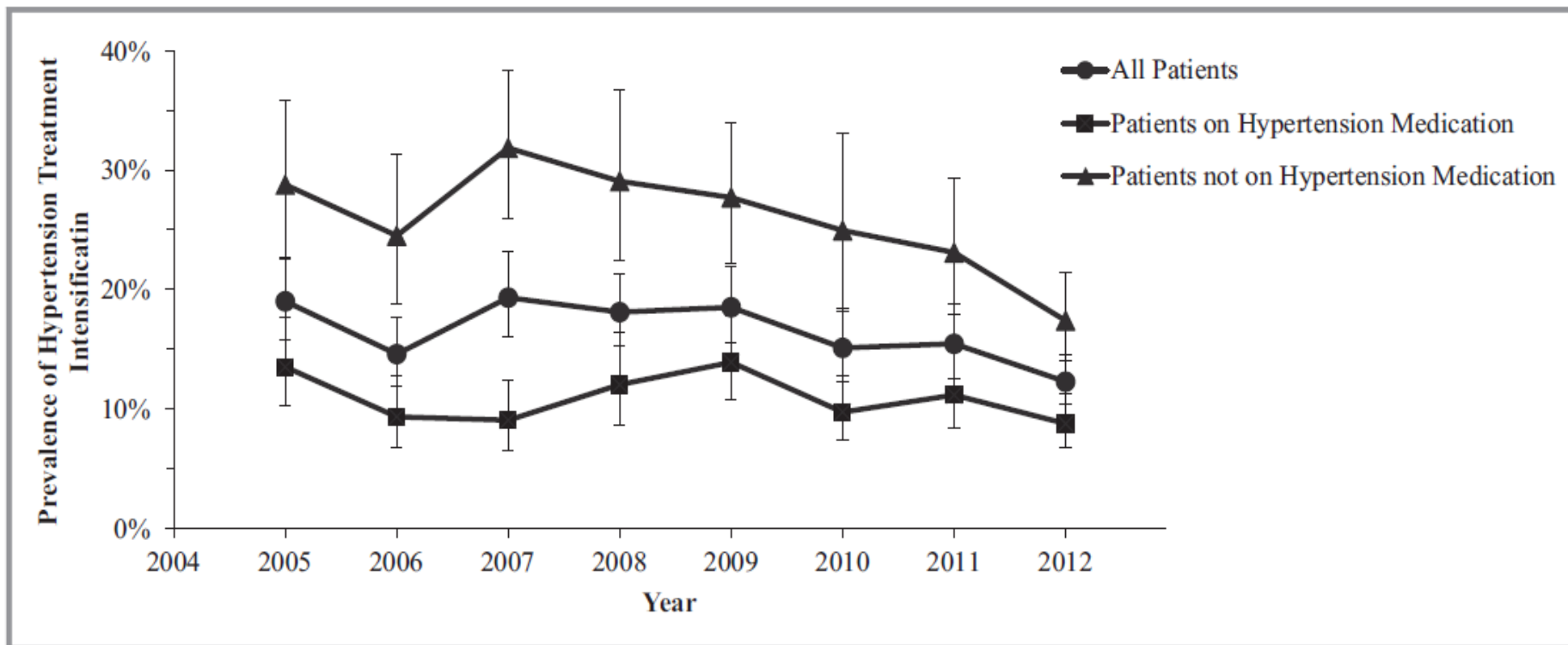
Figure 1. Prevalence of hypertension treatment intensification in the United States 2005–2012.

Lu, Min J Am Heart Assoc. 2016;5

Driver – Team-based Care

Recommendation: Medication Titration by non-MD

Evidence:

- Team-based care with titration by non-MD most effective implementation strategy
- Global shortage of MDs to treat HTN

Opportunity: difficult to quantitate but large

Support: WHO 2021 HTN guideline , ACC/AHA 2017 (IA recommendation)

- [1] *Whelton et al, JACC 2018; 71 (19)*
- [2] *Derrington et al, J Hum Hypertension 2020; 34 (9)*
- [3] *Derrington et al, Hypertension 2020; 75 (4)*

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Figure 2. Adjusted mean net reduction in BP associated with implementation strategies.

Implementation Strategy	Net Change in BP (95% CI), mm Hg	Studies, n
Systolic BP		
Team-based care with titration by nonphysician	−7.1 (−8.9 to −5.2)	10
Team-based care with titration by physician	−6.2 (−8.1 to −4.2)	19
Multilevel strategy without team-based care	−5.0 (−8.0 to −2.0)	8
Health coaching	−3.9 (−5.4 to −2.3)	38
Electronic decision-support systems	−3.7 (−5.2 to −2.2)	4
Home BP monitoring	−2.7 (−3.6 to −1.7)	26
Provider training	−1.4 (−3.6 to 0.7)	5
Audit and feedback	−0.8 (−2.1 to 0.5)	2
Diastolic BP		
Team-based care with titration by nonphysician	−3.1 (−4.1 to −2.2)	10
Multilevel strategy without team-based care	−2.9 (−5.4 to −0.4)	8
Team-based care with titration by physician	−2.7 (−3.8 to −1.5)	16
Health coaching	−2.1 (−2.9 to −1.3)	37
Home BP monitoring	−1.5 (−2.3 to −0.8)	27
Electronic decision-support systems	−1.5 (−1.9 to −1.1)	2
Provider training	−1.0 (−2.2 to 0.1)	5
Audit and feedback	−0.6 (−1.3 to 0.1)	2

Net Change in BP, mm Hg

Meta-Analysis of Implementation Strategies
Mills, et al. Annals of Int Med Dec 2017

Mean net reductions were estimated using generalized estimating equations and adjusted for sex, age, baseline systolic (or diastolic) BP, trial duration, type of control group, and all other intervention strategies. Boxes are weighted by sample size. BP = blood pressure.

PAHO
Pan American Health Organization
World Health Organization
Regional Office for the Americas

Global Gap in HTN Clinic Visits
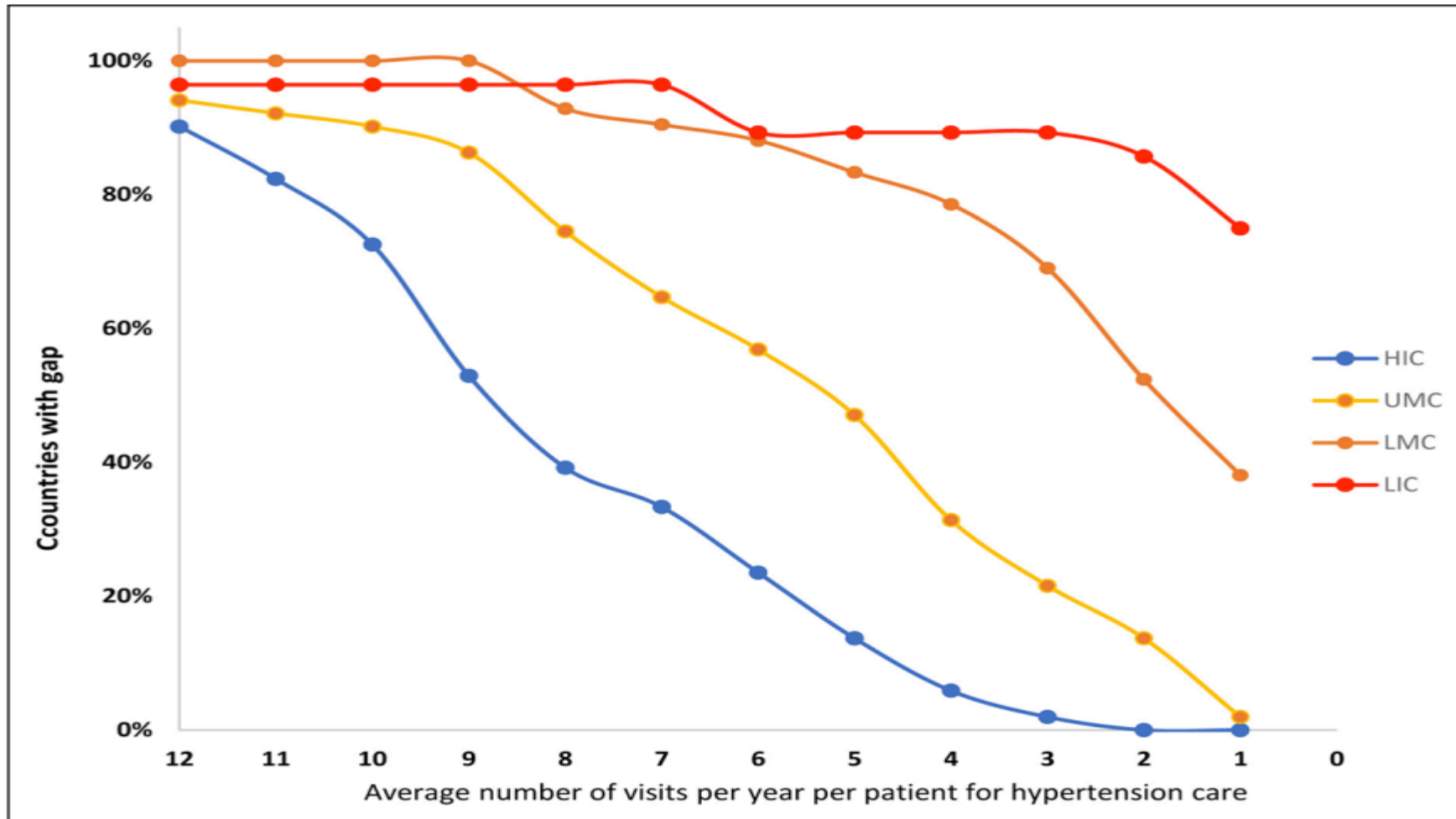
Figure 3. Percentage of countries with gap by number of visits per year, stratified by tier of income status (base scenario).

Neupane et al, Hypertension 2021; 78

Structured, Team-Based Care Interventions for Hypertension Control

COR	LOE	Recommendation for Structured, Team-Based Care Interventions for Hypertension Control
I	A	A team-based care approach is recommended for adults with hypertension.

WHO Hypertension Guideline 2021

8. RECOMMENDATION ON TREATMENT BY NONPHYSICIAN PROFESSIONALS

WHO suggests that pharmacological treatment of hypertension can be provided by nonphysician professionals such as pharmacists and nurses, as long as the following conditions are met: proper training, prescribing authority, specific management protocols and physician oversight.

Conditional recommendation, low-certainty evidence

Implementation remarks:

- Community health care workers (HCWs) may assist in tasks such as education, delivery of medications, blood pressure (BP) measurement and monitoring through an established collaborative care model. The scope of hypertension care practised by community HCWs depends on local regulations and currently varies by country.

- Telemonitoring and community or home-based self-care are encouraged to enhance the control of BP as a part of an integrated management system, when deemed appropriate by the treating medical team and found feasible and affordable by patients.

- Physician oversight can be done through innovative methods such as telemonitoring or similar to ensure access to treatment is not delayed.
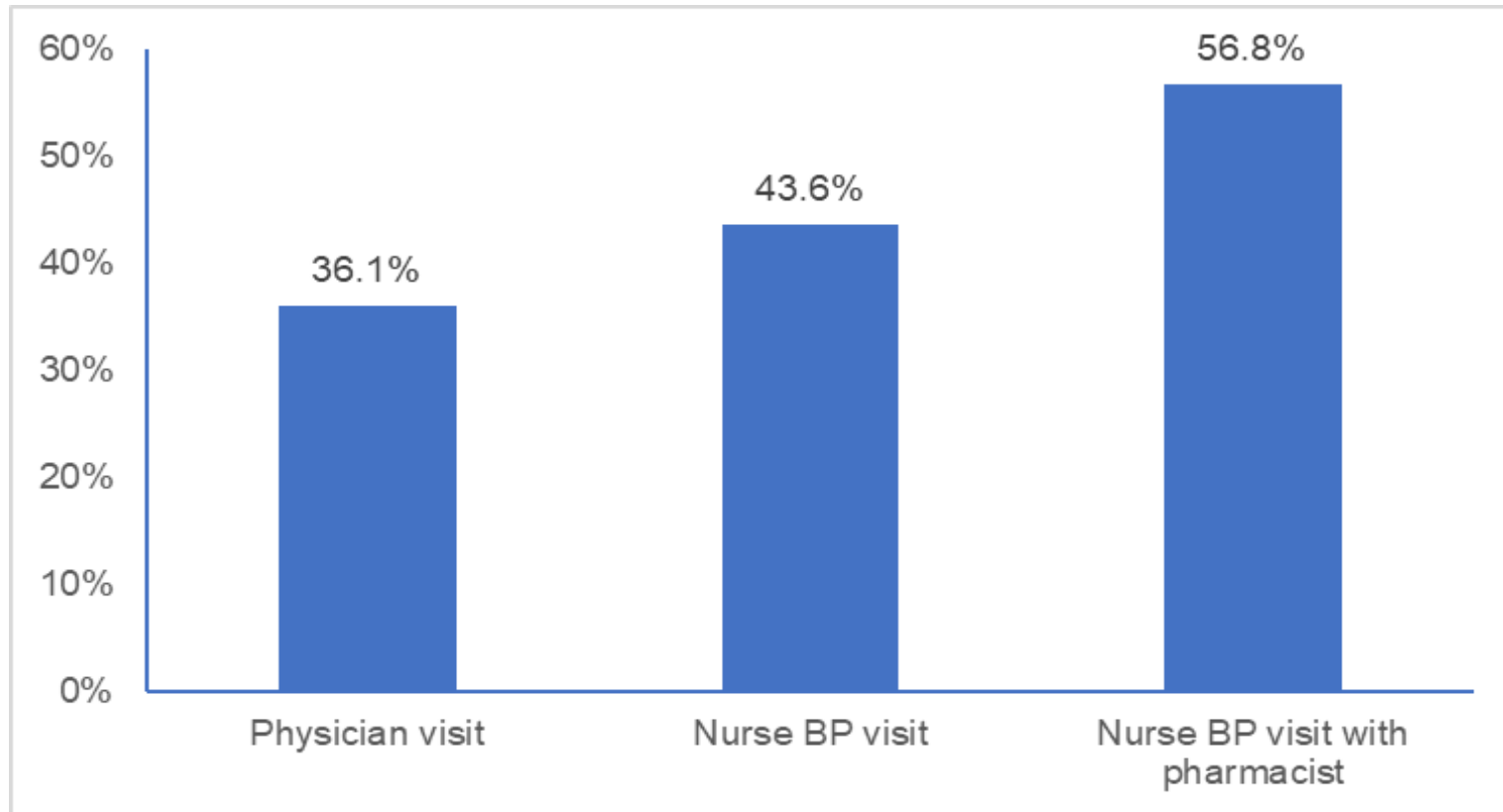
Treatment Intensification Rates by Visit Type KP SCAL data July 2021

Encounter Interval Driver - Improved Time to Control

Figure 1. Encounter Interval and Time to Blood Pressure Normalization
Kaplan-Meier curves for time to normalization of blood pressure during a period of continuously elevated blood pressure were plotted for different average encounter intervals. Distinct periods of elevated blood pressure (from the first elevated to the first normal blood pressure) for the same patient were analyzed separately.

- Retrospective cohort study of over 5,000 patients with diabetes and HTN in Massachusetts
- BP of patients with **average interval between encounters ≤ one month normalized at 1.5 months compared to 12.2 months for the encounter interval greater than one month** (p < 0.0001 for all).

Encounter Interval Driver – Improved Outcomes

Table 4 | Effects of characteristics of treatment strategy assessment period on overall mortality risk

Characteristic	No (%) or mean (SD)	Hazard ratio (95% CI)	P value
Fifths of mean time to intensification (months):			
0–1.406	16 233 (20.0)	1.00	—
1.407–4.646	16 238 (20.0)	1.11 (1.03 to 1.20)	0.009
4.647–8.684	16 236 (20.0)	1.24 (1.14 to 1.34)	< 0.001
8.685–15.350	16 238 (20.0)	1.20 (1.10 to 1.30)	< 0.001
≥ 15.351	16 233 (20.0)	1.30 (1.19 to 1.42)	< 0.001

Retrospective cohort study of primary care practices in the UK in 88K patients with HTN.
Delays in titration > 1.4 months associated with increased CV events or death
Xu et al, BMJ 2015;350

Randomized Controlled Trials Data

Reduction of CV outcomes with Renin Angiotensin System blockers-based therapies achieving early BP control trials					
Trial	Number of patients	Timeframe to reach BP <140/90 mmHg	Mean BP reduction (mm Hg)	CV outcomes	Reduction of CV outcomes in early BP response (%)
VALUE	14,400	6 months	12.3/6.1	Total CV events Stroke All cause death	12 17 10
ALLHAT	42,418	6 months	6.7/4.4	Total CV events Stroke All cause death HF	33 21 16 22
ASCOT-BPLA	19,342	1 year	21.9/11.7	Fatal and non-fatal Total CV events All-cause mortality	23 16 11
SCOPE	4,964	3 months	21.7/10.8	Fatal and non-fatal stroke	24

Volpe, *et al.* Int J of Cardiology 254, 2018

Medication Refill Interval

- 30 vs 90-day refill supply:
- Nonadherence was 40% less likely to occur in those patients who received 90-day supplies of chronic medications

- Hermes et al, Adherence to chronic medication therapy associated with 90-day supplies compared with 30-day supplies. J Manag Care Pharm. 2010;16:141-142.

CVD Risk Assessment

- SPRINT clinical trial: benefit of more intensive treatment in high risk

- Meta-analysis of individual participant data from 11 trials and 48K participants: CVD risk strategy avoided more CV events than BP strategy alone*

- WHO 2021: target SBP < 130 in high-risk patients (CVD, DM, CKD)

- *Karmali et al, PLOS Medicine 2018; 15(3)

CVD Risk Assessment
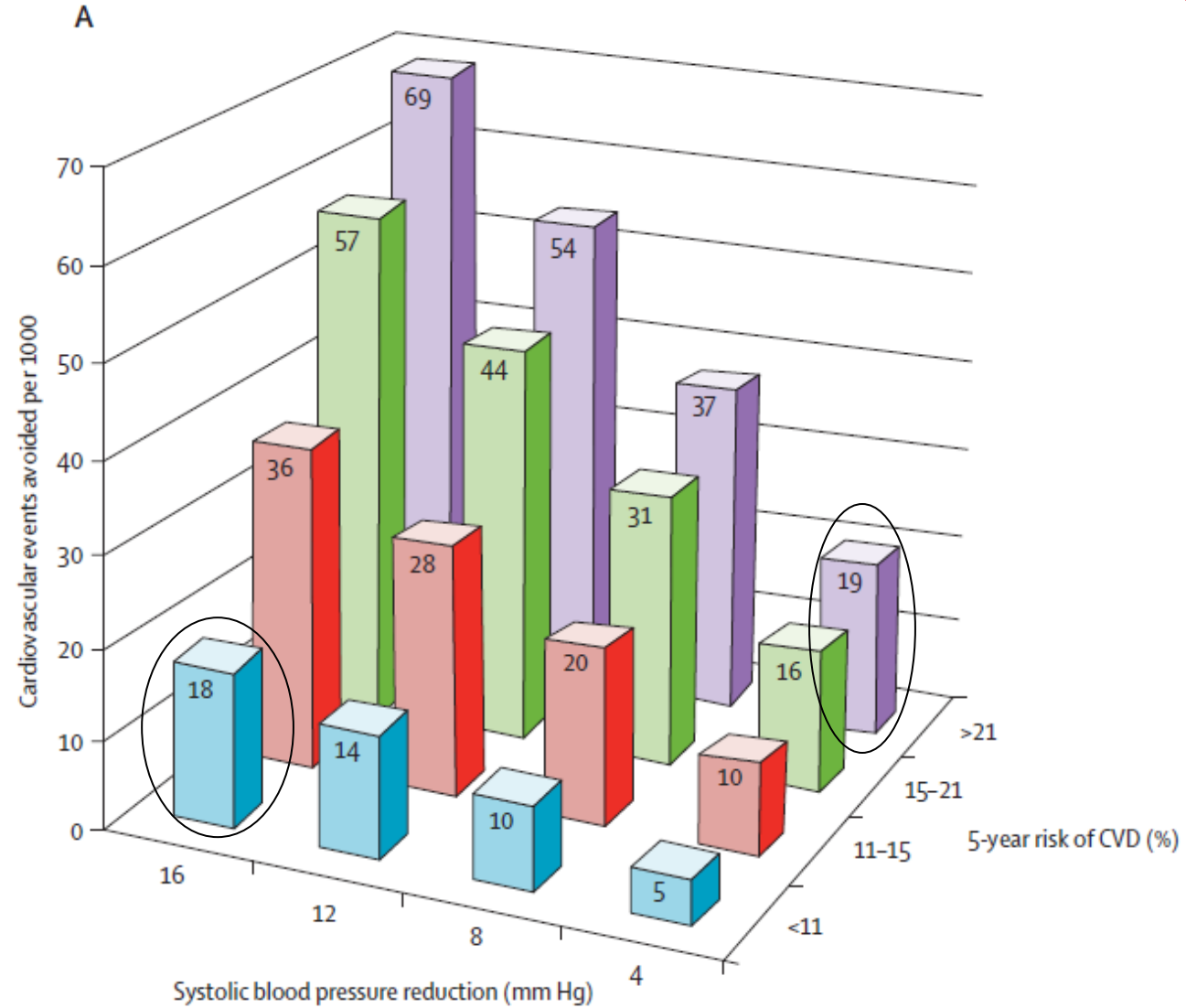
The Blood Pressure Lowering Treatment Trialists' Collaboration – Lancet 2014; 384

System for Performance Evaluation with Feedback

- Key finding of high-performing systems
- Only way to evaluate if key drivers implemented successfully.
- Feedback must be frequent and drilled down to individual physicians and staff

Scorecards – BP control
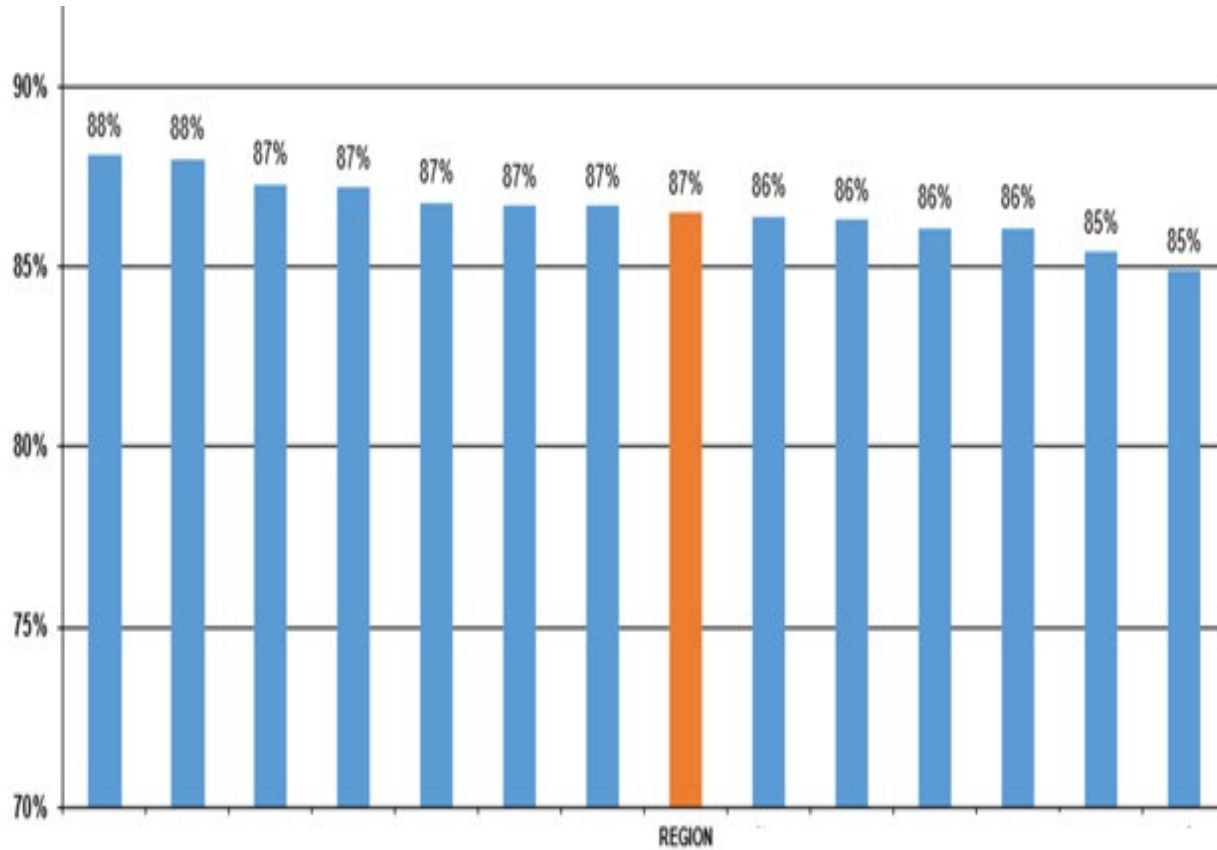
PCP	HTN Pts (age 18+)						
	Population	BP Controlled		BP Uncontrolled		No BP	
Pts	Pts	Pts	%	Pts	%	Pts	%
	288	255	88.5 %	20	6.9 %	13	4.5 %
	786	642	81.7 %	95	12.1 %	49	6.2 %
	583	493	84.6 %	64	11 %	26	4.5 %
	610	488	80 %	92	15.1 %	30	4.9 %
	277	213	76.9 %	35	12.6 %	29	10.5 %

Repeat BP Report – March 2022
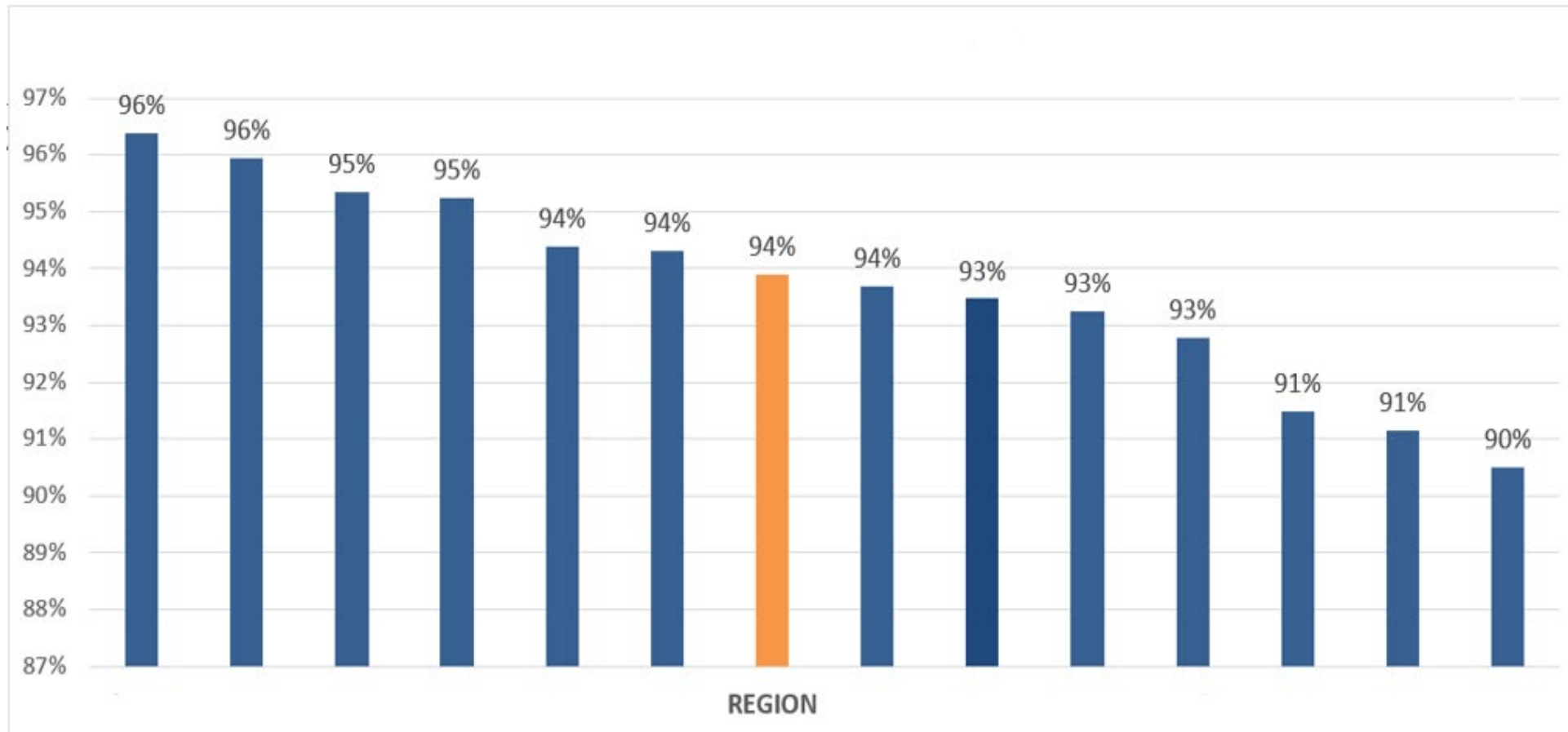
Repeat BP Report – March 2022

Urgent Care			
H	18	17	94%
B	15	15	100%
R	20	15	75%
A	10	7	70%
N	27	24	89%
S	3	3	100%
B	1	0	0%
R	15	15	100%
L	24	23	96%
G	1	1	100%
M	11	10	91%
C	43	40	93%
M	2	2	100%
L	4	4	100%
H	27	26	96%
H	2	2	100%
A	1	1	100%
C	1	1	100%
U	16	15	94%
M	5	4	80%
S	6	5	83%
T	2	1	50%
K	24	23	96%
M	42	40	95%
U	49	14	29%
G	26	26	100%
S	42	41	98%
C	21	17	81%
G	11	11	100%

Treatment Intensity Rates by Medical Center
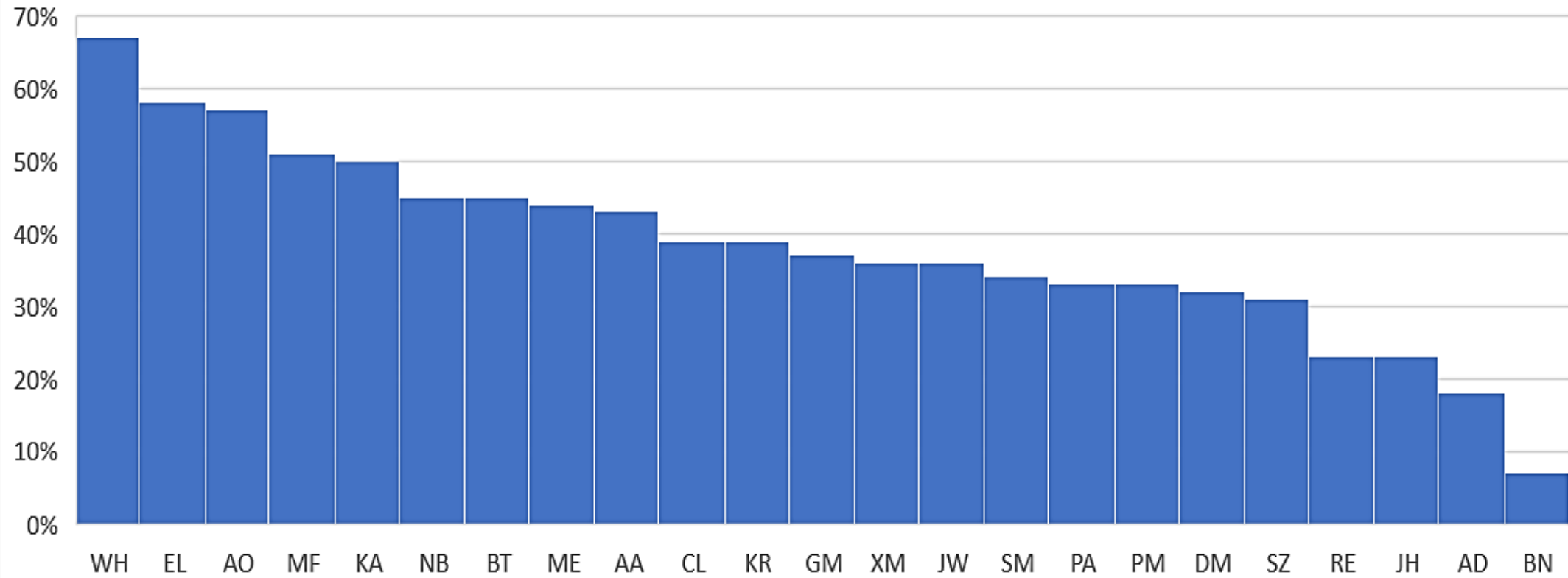
Individual physician TI rates at BHC clinic for 3-month period March – May 2021

HE RTS

ORIGINAL RESEARCH

Tracking Blood Pressure Control Performance and Process Metrics in 25 US Health Systems: The PCORnet Blood Pressure Control Laboratory

Rhonda M. Cooper-DeHoff (iD), PharmD, MS; Valy Fontil, MD, MAS; Thomas Carton, PhD;
Alanna M. Chamberlain (iD), PhD; Jonathan Todd, PhD; Emily C. O'Brien, PhD; Kathryn M. Shaw, MPH;
Myra Smith, MPH; Sujung Choi, PhD; Ester K. Nillis, PhD; Daniel Ford, MD, MPH; Kristen M. Tecson (iD), PhD;
Princess E. Dennar, MD; Faraz Ahmad (iD), MD, MS; Shenghui Wu, MD, PhD; James C. McClay (iD), MD, MS;
Kristen Azar (iD), RN, MSN/MPH; Rajbir Singh, MBBS; Madelaine Faulkner Modrow, MPH; Christina M. Shay, PhD;
Michael Rakotz (iD), MD; Gregory Wozniak, PhD; Mark J. Pletcher (iD), MD, MPH

Blood pressure control metrics		
No.	**Name (range)**	**Overall, weighted average[†] (range[‡])**
1	Blood pressure control, <140/<90 mm Hg, % of patients	62% (44%–74%)
2	Blood pressure control to *2017 Hypertension Clinical Practice Guidelines* goal, <130/<80 mm Hg, % of patients	30% (20%–38%)
3	Improvement in blood pressure, % of patients	29% (17%–41%)
4	Confirmatory repeated blood pressure measurement, % of visits	23% (0%–100%)
5	Medication intensification after uncontrolled blood pressure, % of visits	12% (0.6%–25%)
6	Repeat visit in 4 weeks after uncontrolled blood pressure, % of visits	35% (15%–47%)
7	Average SBP reduction after medication intensification, mm Hg±SD	15±20 (5–18)
8	Prescription of a CCB or thiazide or thiazide-like diuretic among Black patients prescribed at least one medication, % of patients	75% (32%–80%)
9	Prescription of fixed-dose combination product among patients prescribed at least 2 classes of medications, % of patients	25% (0%–90%)

Table 2. Blood Pressure Control Metrics in the Most Recent Measurement Period* Overall and by Race and Ethnicity

No.	Name (range)	Overall, weighted average[†] (range[‡])	By race/ethnicity, weighted average[†]					P value[§]
			Asian, not Hispanic	Black, not Hispanic	White, not Hispanic	Hispanic, any race	Other/ multiple/ missing	
1	Blood pressure control, <140/<90 mm Hg, % of patients	62% (44%–74%)	66%	57%	62%	62%	61%	<0.0001
2	Blood pressure control to *2017 Hypertension Clinical Practice Guidelines* goal, <130/<80 mm Hg, % of patients	30% (20%–38%)	33%	25%	31%	30%	29%	<0.0001
3	Improvement in blood pressure, % of patients	29% (17%–41%)	30%	29%	29%	29%	24%	<0.0001
4	Confirmatory repeated blood pressure measurement, % of visits	23% (0%–100%)	39%	20%	22%	33%	24%	<0.0001
5	Medication intensification after uncontrolled blood pressure, % of visits	12% (0.6%–25%)	14%	13%	11%	14%	14%	<0.0001
6	Repeat visit in 4 weeks after uncontrolled blood pressure, % of visits	35% (15%–47%)	30%	37%	35%	34%	32%	<0.0001
7	Average SBP reduction after medication intensification, mm Hg±SD	15±20 (5–18)	15±19	14±20	15±20	15±19	16±20	0.005
8	Prescription of a CCB or thiazide or thiazide-like diuretic among Black patients prescribed at least one medication, % of patients	75% (32%–80%)	N/A	75%	N/A	69%	N/A	<0.0001
9	Prescription of fixed-dose combination product among patients prescribed at least 2 classes of medications, % of patients	25% (0%–90%)	22%	26%	24%	25%	27%	0.082

HEARTS
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ORIGINAL ARTICLE

Clinic-Based Strategies to Reach United States Million Hearts 2022 Blood Pressure Control Goals

A Simulation Study

Bellows, Moran, Fontil. June 2019

HEARTS IN THE AMERICAS

Table 1. Comparison of Key Hypertension Process Inputs Across Simulated Interventions.

Variable	Usual Care	Best Observed Values	Perfect Care
Probability of Adhering to Last Antihypertensive Medication at One Year	57.0%[17-22]	75.6%[22]	100.0%
Probability of Intensifying Antihypertensive Medication When:			
Adding/titrating first antihypertensive medication during simulation			
Systolic blood pressure ≥160 mm Hg or blood pressure ≥140/90 mm Hg with diabetes or chronic kidney disease	33.3%[13-15]	44.0%[14]	100%
Systolic blood pressure is uncontrolled but <160 mm Hg or blood pressure is uncontrolled but <140/90 mm Hg with diabetes or chronic kidney disease	20.8%[11, 12]	31.0%[11]	100%
Adding/titrating additional antihypertensive medications	13.0%[16]	19.5%[16]	100%
Return Visit Interval When Blood Pressure Uncontrolled	~13.8 weeks[12]	1 week[12]	1 week

Notes: The table shows the model inputs for the key hypertension management processes, best observed values were preferentially derived from the highest reported mean or calculated using sample size or variance estimates as available. Perfect care values were based on the best input possible for each parameter.

PAHO
Pan American Health Organization
World Health Organization
Regional Office for the Americas

Measure Accurately, Act Rapidly, and Partner with Patients (2018) – a Classic QI and Key Driver Study

Egan et al, Hypertension. 2018;72:1320–1327

# Measure Accurately, Act Rapidly, and Partner with Patients

MAP implemented in 16 practices, 16,000+ hypertensive patients in South Carolina: BP measurement, treatment intensification, monthly dashboard

BP control improved from 64.4% at baseline to 74.3% (P<0.001) at 6 and 73.6% (P<.001) at 12 months

Among adults with uncontrolled baseline BP and no medication changes (n=3654), measure accurately resulted in 11.1/5.1 mm Hg lower BP

During the first 6 months of MAP, therapeutic inertia fell (52.0% versus 49.5%; P=0.01)

KPNC vs. National and California HTN Control
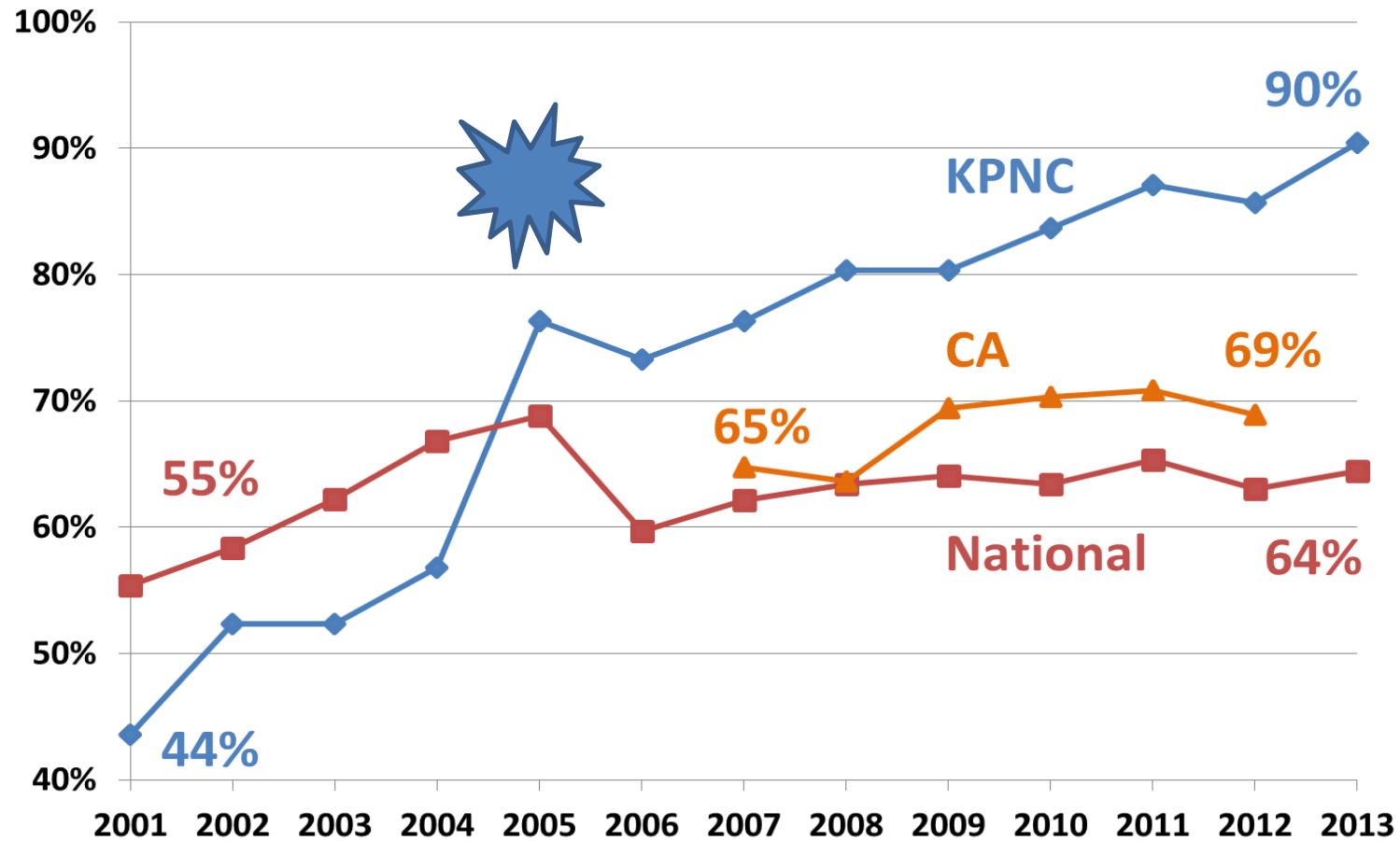
Kaiser Story - What Happened in 2005?

- **Combination therapy** with lisinopril-HCTZ FDC became 1st step of national KP algorithm

- Widespread implementation of **2-4 week follow-up BP checks** with medical assistant or LVN.
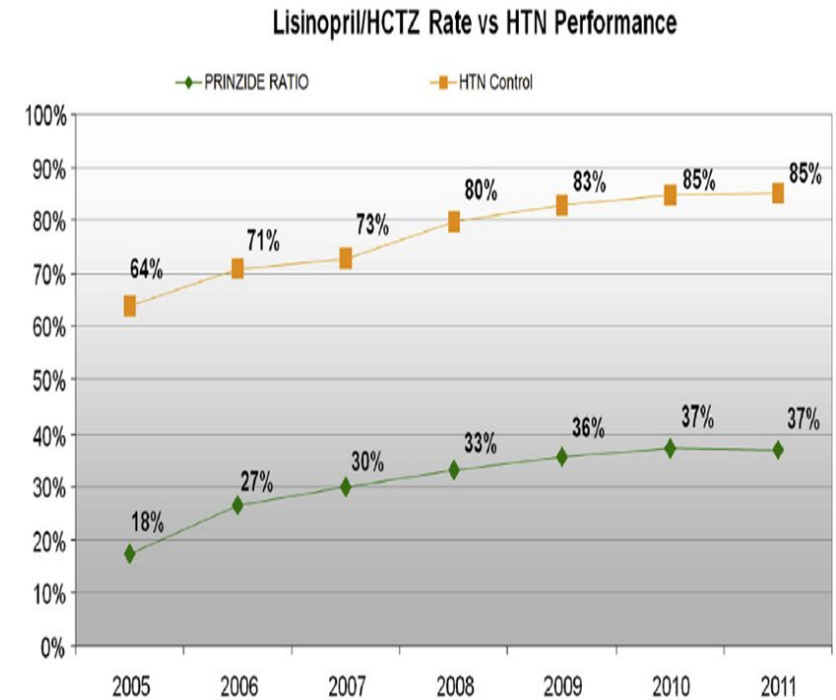

Lisinopril/HCTZ Rate vs HTN Performance

→ PRINZIDE RATIO → HTN Control

Figure 4. Combination pill use and hypertension control at Kaiser Permanente Southern California. Since 2005, when the combination of lisinopril/HCTZ was advocated, hypertension control rates have steadily increased, paralleling the proportion of those prescribed the lisinopril/HCTZ combination pill. HCTZ, hydrochlorothiazide; HTN, hypertension.

Sim, J et al. Canadian J of Cardiology 30 (2014)

Can Kaiser Model Work in Other Settings?

Adapting and evaluating a health system intervention from Kaiser Permanente to improve hypertension management and control in a large network of safety-net clinics

Valy Fontil, MD, MAS[1,3], Reena Gupta, MD[1], Nathalie Moise, MD,MS[4], Ellen Chen, MD[5], David Guzman, MS[1,3], Charles E McCulloch, PhD[2], and Kirsten Bibbins-Domingo, PhD, MD, MAS[1,2,3]

Key elements of the Kaiser Permanente Northern California (KPNC) hypertension program adopted in Bring it Down San Francisco

Program components	KPNC Hypertension Program	Bring it Down San Francisco
Evidence-based treatment protocol	Designed to accomplish • simple and fast titration of BP treatment to goal • emphasis on increased use of fixed-dose combination pharmacotherapy, and • guidance for management of resistant HTN	Protocol modified to account for: • drug coverage and affordability, • patient complexity, and provider preferences that are pertinent to safety-net patient populations • New evidence and clinical guidelines
BP check visits led by non-physician professional staff	• Led by medical assistants	• Led by nurses and pharmacists • The type of allied health professional or entry-level staff used varied by clinic site based on capacity.
Standard BP measurement protocol	• Kaiser Permanente already had standardized methods for BP measurement	• Partnered with nurse leaders to design a standardized BP measurement protocol
Hypertension patient registry	• Used to generate performance reports and highlight high-performing sites	• Used to generate performance reports
Performance reports	• Initially distributed every 3 months and then available by query at any time to authorized individuals.	• Clinic-level reports, stratified by race, shared with clinic leaders monthly • Hypertension registry available to clinic leaders to generate their own reports and monitor progress

Adjusted BP control by race over 18 months at 11 safety-net clinics (16K patients)
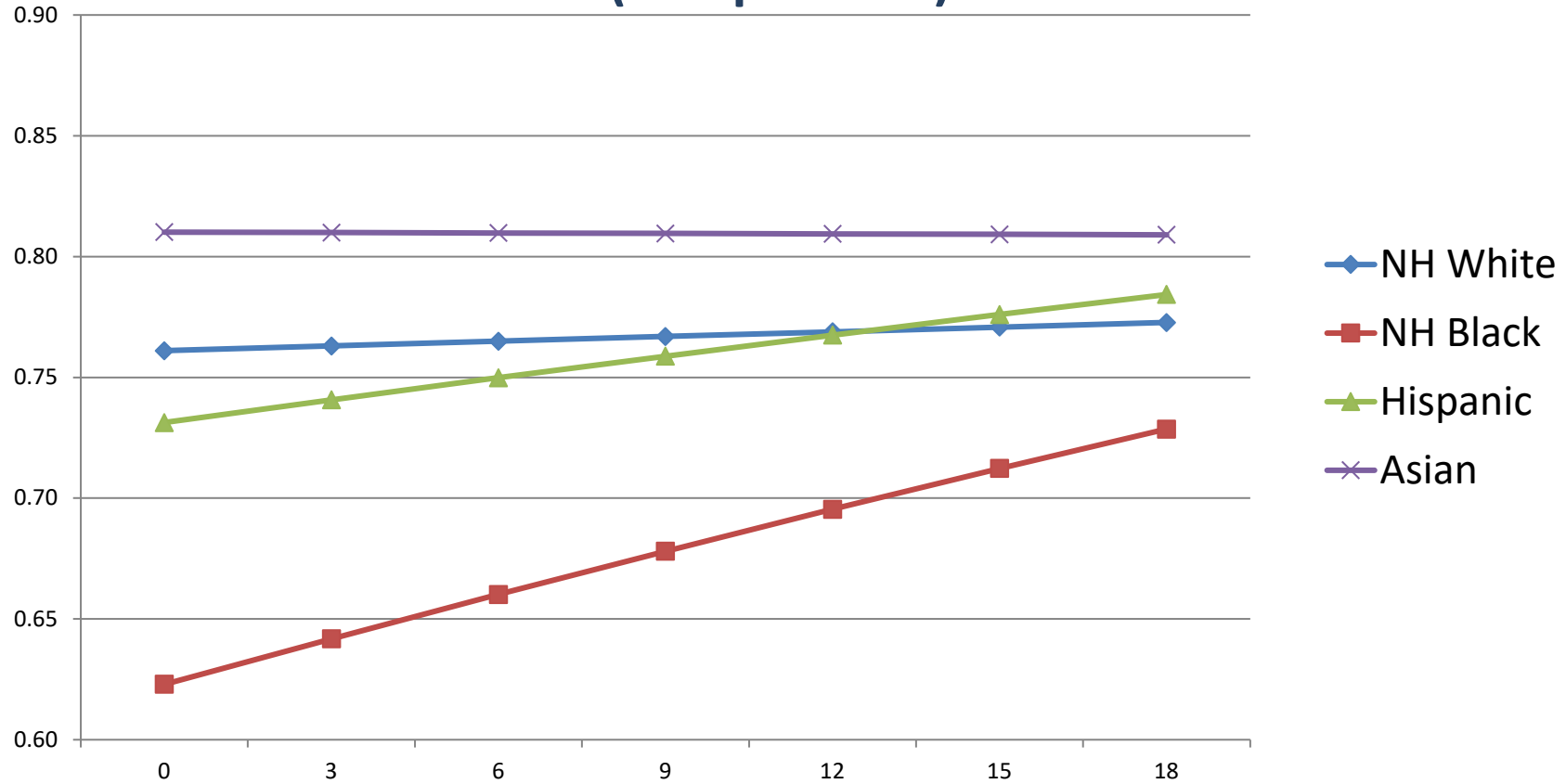
- Mixed effect logistic regression adjusted for age and gender

Eficacia de una estrategia estandarizada y simplificada para tratamiento de la hipertensión arterial en Chile: la Iniciativa HEARTS en las Américas

Luis Michea,[1] Luis Toro,[2] Natali Alban,[3] Daisy Contreras,[3] Patricia Morgado,[4] Melanie Paccot,[5] Maria Cristina Escobar,[6] y Eduardo Lorca[7]

FIGURA 2. Algoritmo de estandarización de la terapia farmacológica empleada en el Tratamiento Estandarizado de la Hipertensión Arterial.
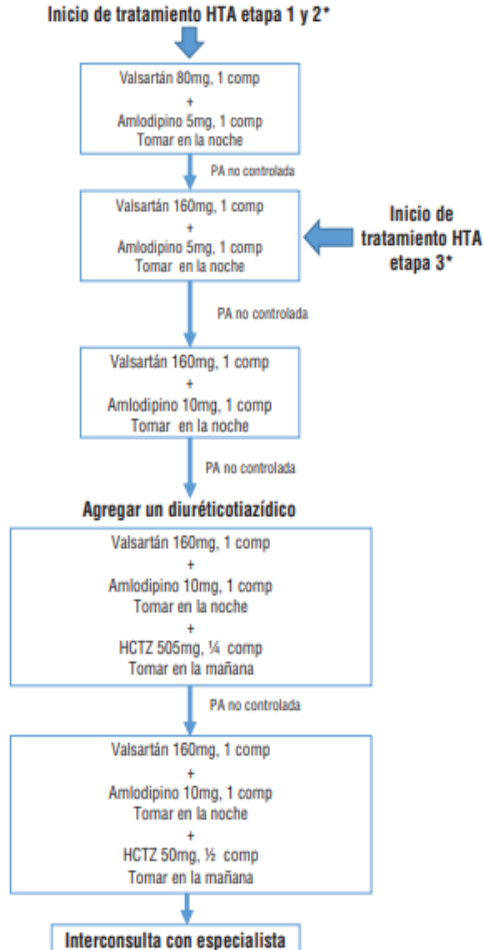
Metas de PA
- <140/90 mmHg en < de 80 años
- <130/80 mmHg en personas con albuminuria moderada o severa (RAC >30)
- <150/90 mmHg y > a 120/160 mmHg en >80 años

Inicio de tratamiento HTA etapa 1 y 2*

Valsartán 80mg, 1 comp
+
Amlodipino 5mg, 1 comp
Tomar en la noche

↓ PA no controlada

Valsartán 160mg, 1 comp
+
Amlodipino 5mg, 1 comp
Tomar en la noche

← **Inicio de tratamiento HTA etapa 3***

↓ PA no controlada

Valsartán 160mg, 1 comp
+
Amlodipino 10mg, 1 comp
Tomar en la noche

↓ PA no controlada

- Fomentar estilos de vida saludables.
- Evaluar ajuste de dosis cada **4 semanas**
- Evaluar la adherencia en cada ajuste de dosis (Test de Morisky-Green-Levine).
- Control de K+ y Creatinemia al aumentar dosis o modificación de terapia.

Agregar un diuréticotiazídico

Valsartán 160mg, 1 comp
+
Amlodipino 10mg, 1 comp
Tomar en la noche
+
HCTZ 505mg, ¼ comp
Tomar en la mañana

↓ PA no controlada

Valsartán 160mg, 1 comp
+
Amlodipino 10mg, 1 comp
Tomar en la noche
+
HCTZ 50mg, ½ comp
Tomar en la mañana

↓

Interconsulta con especialista

Considerar:
- No adherencia
- HTA secundaria
- Otros fármacos
- Síndrome de bata blanca

*Excepciones:
- Embarazo y mujer edad fértil
- ERC 4 y 5
- Insuficiencia hepática grave, cirrosis, colelitiasis
- <18 y ≥80 años
- Indicaciones perentoria (IAM, IC)
- Alergias conocidas a algún componente

HTA: hipertensión arterial
IC: insuficiencia cardiaca
IAM: infarto agudo al miocardio
ERC: enfermedad renal crónica
HCTZ: hidroclorotiazida
K+: potasio
PA: presión arterial

El algoritmo no reemplaza el criterio médico

Longitudinal observational study in 2 primary family health care centers in Santiago: standardized and simplified protocol versus the usual protocol

Standardized protocol: initiation of treatment immediately after confirming the diagnosis and standardized treatment with at least 2 BP meds in a single pill, taken daily.

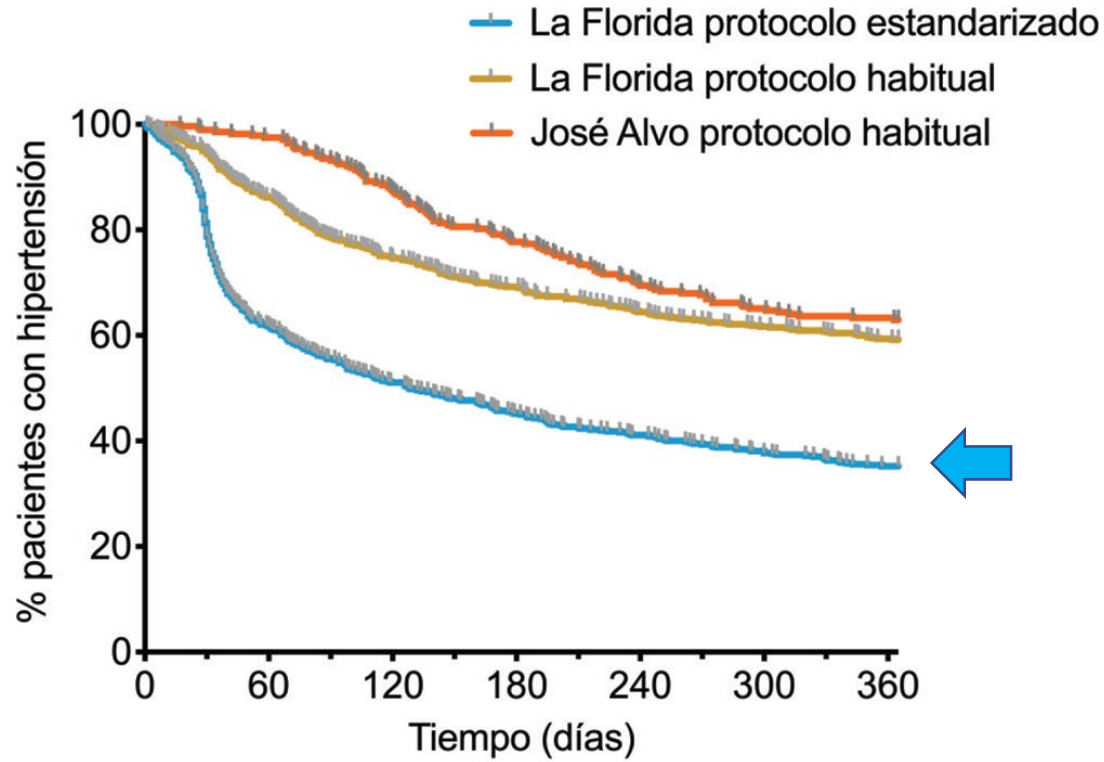Follow-up at 1 year: adherence to treatment and blood pressure control (goal < 140/90 mmHg).

Results of Implementation of Standardized Protocol in Chile

1,490 patients: 562 who used the standardized and simplified protocol, and 928 who were treated with the usual protocol (family health unit 1: 650, family health unit 2: 278).
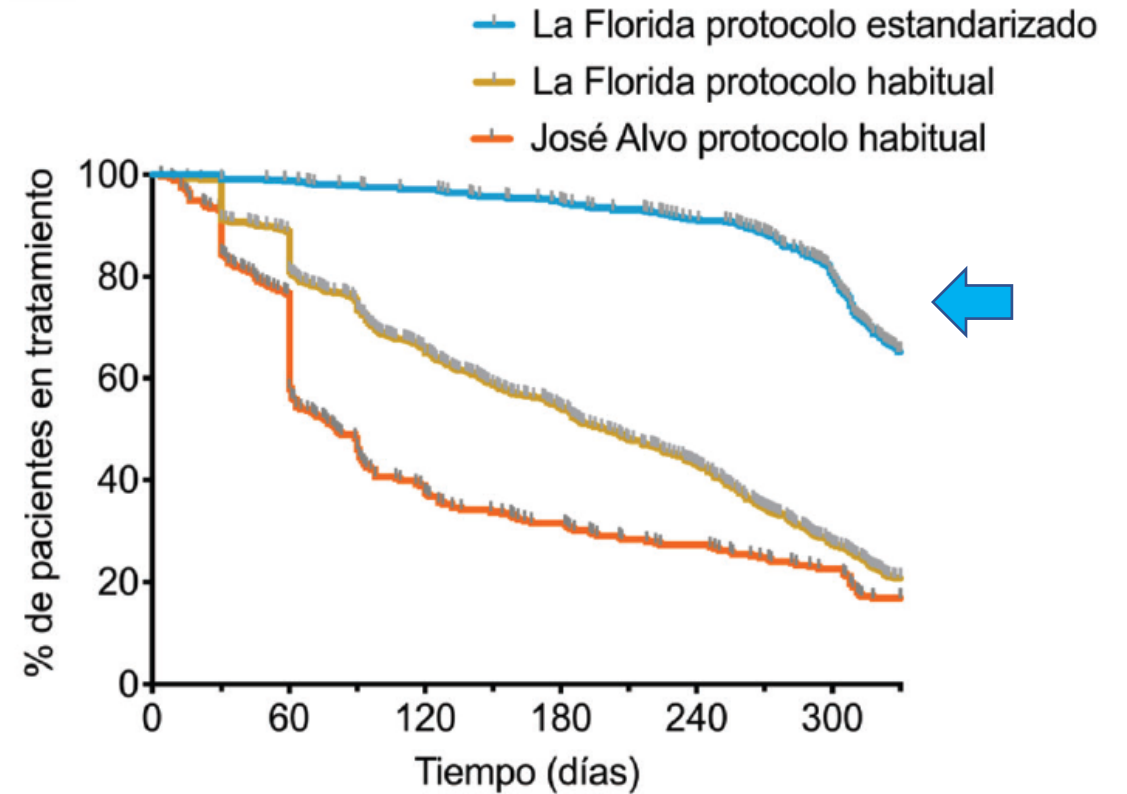
At 1 year of follow-up, patients in the standardized and simplified protocol group:
- Had a higher proportion BP control - **65% versus 37% and 41%**, p<0.001.
- Had a higher percentage of adherence to treatment, compared to those who used the usual protocol - **71% versus 18% and 23%**, p<0.001.

Michea L, et al. Efficacy of a standardized and simplified strategy for the treatment of high blood pressure in Chile: the HEARTS Initiative in the Americas. Rev Panam Salud Publica.2022;46:e138.

Conclusions

To improve BP control:

- Identify key drivers of BP control; translate those key drivers into process measures; use those process measures in a performance feedback system with front-line clinicians and clinics.

- *Key drivers are evidence-based and guideline-supported.*

- *Identifying key drivers and process measures is not an academic exercise. They are practical and essential tools for PHCs and systems to improve BP control rates.*

Drivers Part 2 Tomorrow:

Hearts as a quality improvement platform - implementing hypertension control drivers in primary health care settings.

- HEARTS in the Americas Innovation Group

- Scorecards – HEARTS Process Maturity and HEARTS Performance Indices

- Implementation and Audits

- Introduction/Overview of the Course. Key Hypertension Control Drivers Overview

- Module 1: Overview of quality improvement

- Module 2: Accurate BP Measurement

- Module 3: Medication Titration

- Module 4: Follow-Up Blood Pressure Check

- Module 5: Utilization of Scorecards for Quality Improvement

- Module 6: Community Outreach

- Module 7: Home Blood Pressure Monitoring

- Special module: COVID-19, Hypertension Control and Cardiovascular Disease

Thank you!

Questions:
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