Tratamiento de hipertensión arterial

Dr. Chih Hao Chen Ku, FACE

Servicio de Endocrinología, Hospital San Juan de Dios

Departamento de Farmacología y Toxicología Clínica, Universidad de Costa Rica

Conflictos de interés

- Conferencista: Astra Zeneca, Abbott Nutrición, Novartis Oncology, Novo Nordisk, Merck Sharp & Dohme, Roche, Glaxo SmithKline, Sanofi Aventis, Bayer, Janssen, Boehringer-Ingelheim, Pfizer
- Advisory Board: Novartis Oncology, Sanofi, Astra Zeneca, Novo Nordisk, Stendhal, Pfizer, Janssen
- Investigación clínica: Astra Zeneca, Novartis Pharma Logistics Inc., Merck Sharp & Dohme, Glaxo SmithKline, Organon, Boehringer Ingelheim, Roche, Novo Nordisk

EndoDrChen.com

Mi situación laboral actual es:

- laboro en el sector público
- laboro sólo en el sector privado
- trabajo tanto a nivel privado como público
- no estoy trabajando
- no me he graduado

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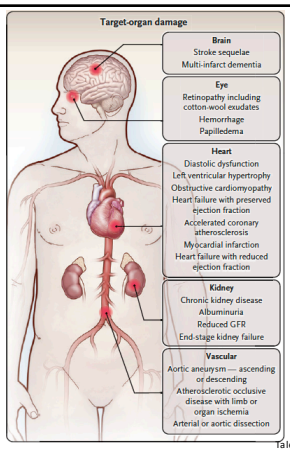
Objetivos

- Hay alguna diferencia entre la eficacia de diferentes antihipertensivos?
- Cuál es la justificación de nuevas guías y metas de tratamiento?
- Nuevas guías
- Grupos especiales:
  - HTA resistente
  - Adultos mayores
  - Insuficiencia renal crónica
  - embarazadas

Por qué tratar HTA?

- Uno de los factores de riesgo para muerte y discapacidad
  - Ictus
  - Enfermedad coronaria
  - Aterosclerosis sistémica
  - Falla cardíaca
  - Enfermedad renal crónica
  - Muerte cardiovascular

Taler SJ. N Engl J Med. 2018;378:636



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Modificación de estilos de vida

- Restringir sodio a menos de 1500 mg por día
- Pérdida de peso
- Ejercicio de resistencia o aeróbico 90-150 minutos por semana
- Consumo moderado de alcohol
- Aumentar consumo de potasio
- Minimizar uso de AINEs, descongestionantes, y anfetaminas
- Cese de tabaquismo

Taler SJ. N Engl J Med. 2018;378:636

El reto para el médico de atención primaria

En primera línea de tratamiento, hay alguna diferencia entre clases de antihipertensivos?

Agentes 1ra línea

- Agentes que han mostrado reducción de eventos cardiovasculares:
  - IECA
  - ARAs
  - Bloqueadores de canales de calcio
  - Tiazidas
- Selección basado en características individuales, comorbilidades, estilos de vida

Taler SJ. N Engl J Med. 2018;378:636

RAS inhibitors compared to CCBs for hypertension

Patient or population: people with hypertension
Settings: outpatients or inpatients
Intervention: RAS inhibitors
Comparison: CCBs

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	CCBs	RAS inhibitors				
All-cause death Follow-up: mean 4.5 years	**124 per 1000**	**127 per 1000** (121 to 135)	**RR 1.03** (0.98 to 1.09)	35226 (5)	⊕⊕⊕○ **moderate**[1]	
Total cardiovascular events Follow-up: mean 4.5 years	**178 per 1000**	**174 per 1000** (166 to 182)	**RR 0.98** (0.93 to 1.02)	35223 (6)	⊕⊕⊕○ **moderate**[1]	
Total heart failure Follow-up: mean 4.5 years	**72 per 1000**	**60 per 1000** (55 to 65)	**RR 0.83** (0.77 to 0.90)	35143 (5)	⊕⊕⊕○ **moderate**[1]	RAS inhibitors decrease death or hospitalization for HF by 1.2% NNTB = 83
Total myocardial infarction Follow-up: mean 4.5 years	**68 per 1000**	**69 per 1000** (63 to 74)	**RR 1.01** (0.93 to 1.09)	35043 (5)	⊕⊕⊕○ **moderate**[1]	
Total stroke Follow-up: mean 4.5 years	**39 per 1000**	**46 per 1000** (42 to 52)	**RR 1.19** (1.08 to 1.32)	34673 (4)	⊕⊕⊕○ **moderate**[1]	RAS inhibitors increase stroke by 0.7% NNTH = 143
End stage renal failure Follow-up: mean 4.7 years	**25 per 1000**	**22 per 1000** (19 to 26)	**RR 0.88** (0.74 to 1.05)	19551 (4)	⊕⊕○○ **low**[1,2]	

Xue H. Coch Datab Syst Rev. 2015

RAS inhibitors compared to thiazides for hypertension

Patient or population: people with hypertension
Settings: outpatients or inpatients
Intervention: RAS inhibitors vs thiazides

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Thiazides	RAS inhibitors				
All-cause death Follow-up: mean 4.9 years	**144 per 1000**	**144 per 1000** (135 to 154)	**RR 1.00** (0.94 to 1.07)	24309 (1)	⊕⊕⊕○ **moderate**[1]	
Total cardiovascular events Follow-up: mean 4.9 years	**194 per 1000**	**204 per 1000** (194 to 215)	**RR 1.05** (1.00 to 1.11)	24379 (2)	⊕⊕⊕○ **moderate**[1]	
Total heart failure Follow-up: mean 4.9 years	**57 per 1000**	**68 per 1000** (61 to 75)	**RR 1.19** (1.07 to 1.31)	24309 (1)	⊕⊕⊕○ **moderate**[1]	RAS inhibitors increase death or hospitalization for HF by 1.1% NNTH = 91
Total myocardial infarction Follow-up: mean 4.9 years	**93 per 1000**	**86 per 1000** (80 to 94)	**RR 0.93** (0.86 to 1.01)	24379 (2)	⊕⊕⊕○ **moderate**[1]	
Total stroke Follow-up: mean 4.9 years	**44 per 1000**	**50 per 1000** (45 to 56)	**RR 1.14** (1.02 to 1.28)	24309 (1)	⊕⊕⊕○ **moderate**[1]	RAS inhibitors increase stroke by 0.6% NNTH = 167
End stage renal failure Follow-up: mean 4.9 years	**13 per 1000**	**14 per 1000** (11 to 18)	**RR 1.10** (0.88 to 1.37)	24309 (1)	⊕⊕○○ **low**[1,2]	

Xue H. Coch Datab Syst Rev. 2015

RAS inhibitors compared to beta-blockers for hypertension

Patient or population: people with hypertension
Settings: outpatients or inpatients
Intervention: RAS inhibitors
Comparison: beta-blockers

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	ß-blockers	RAS inhibitors				
All cause death Follow-up mean 4.8 years	**94 per 1000**	**84 per 1000** (73 to 95)	**RR 0.89** (0.78 to 1.01)	9193 (1)	⊕⊕○○ **low**[1,2]	
Total cardiovascular events Follow-up mean 4.8 years	**143 per 1000**	**126 per 1000** (114 to 140)	**RR 0.88** (0.8 to 0.98)	9239 (2)	⊕⊕○○ **low**[1,2]	RAS inhibitors decrease total CV events by 1.7% NNTB = 59
Total heart failure Follow-up mean 4.8 years	**35 per 1000**	**33 per 1000** (27 to 41)	**RR 0.95** (0.76 to 1.18)	9193 (1)	⊕⊕○○ **low**[1,2]	
Total myocardial infarction Follow-up mean 4.8 years	**41 per 1000**	**43 per 1000** (35 to 52)	**RR 1.05** (0.86 to 1.27)	9239 (2)	⊕⊕○○ **low**[1,2]	
Total stroke Follow-up mean 4.8 years	**67 per 1000**	**50 per 1000** (42 to 59)	**RR 0.75** (0.63 to 0.88)	9193 (1)	⊕⊕○○ **low**[1,2]	RAS inhibitors decrease total stroke by 1.7% NNTB = 59

Xue H. Coch Databb Syst Rev. 2015

Comorbilidades que inciden en escogencia de agente

- DM ó IRC: IECA, ARAs
- Arritmias ventriculares o supraventriculares: beta bloqueadores
- Falla cardíaca: IECA, ARAs, beta bloqueadores, espironolactona
- IAM previo: beta bloqueadores
- Hipertiroidismo, migraña, tremor esencial: beta bloqueadores
- Si se escoge BB, evitar atenolol

Por qué nuevas metas de tratamiento?

SPRINT Research Question

Examine effect of more intensive high blood pressure treatment than is currently recommended

Randomized Controlled Trial
Target Systolic BP

Intensive Treatment
Goal SBP < 120 mm Hg

Standard Treatment
Goal SBP < 140 mm Hg

SPRINT design details available at:
- ClinicalTrials.gov (NCT01206062)
- Ambrosius WT et al. Clin. Trials. 2014;11:532-546.

SPRINT

Major Inclusion Criteria

- ≥50 years old
- Systolic blood pressure : 130 – 180 mm Hg (treated or untreated)
- Additional cardiovascular disease (CVD) risk
  - Clinical or subclinical CVD (excluding stroke)
  - Chronic kidney disease (CKD), defined as eGFR 20 – <60 ml/min/1.73m²
  - Framingham Risk Score for 10-year CVD risk ≥ 15%
  - Age ≥ 75 years

At least one

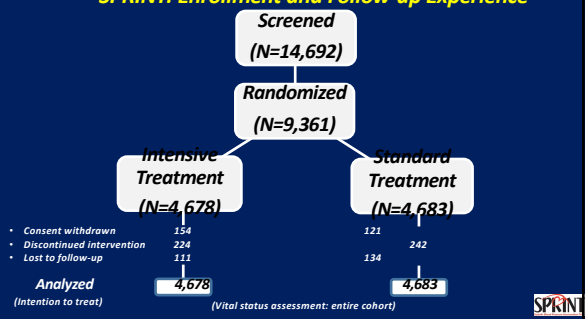
SPRINT

Major Exclusion Criteria

- Stroke
- Diabetes mellitus
- Polycystic kidney disease
- Congestive heart failure (symptoms or EF < 35%)
- Proteinuria >1g/d
- CKD with eGFR < 20 mL/min/1.73m^2 (MDRD)
- Adherence concerns

SPRINT

SPRINT: Enrollment and Follow-up Experience



Demographic and Baseline Characteristics

	Total N=9361	Intensive N=4678	Standard N=4683
Mean (SD) age, years	67.9 (9.4)	67.9 (9.4)	67.9 (9.5)
% ≥75 years	28.2%	28.2%	28.2%
Female, %	35.6%	36.0%	35.2%
White, %	57.7%	57.7%	57.7%
African-American, %	29.9%	29.5%	30.4%
Hispanic, %	10.5%	10.8%	10.3%
Prior CVD, %	20.1%	20.1%	20.0%
Mean 10-year Framingham CVD risk, %	20.1%	20.1%	20.1%
Taking antihypertensive meds, %	90.6%	90.8%	90.4%
Mean (SD) number of antihypertensive meds	1.8 (1.0)	1.8 (1.0)	1.8 (1.0)
Mean (SD) Baseline BP, mm Hg			
Systolic	139.7 (15.6)	139.7 (15.8)	139.7 (15.4)
Diastolic	78.1 (11.9)	78.2 (11.9)	78.0 (12.0)

Selected Baseline Laboratory Characteristics

	Total N=9361	Intensive N=4678	Standard N=4683
Mean (SD) eGFR, mL/min/1.73 m²	71.7 (20.6)	71.8 (20.7)	71.7 (20.5)
% with eGFR<60 mL/min/1.73m²	28.3	28.4	28.1
Mean (SD) Urine albumin/creatinine, mg/g	42.6 (166.3)	44.1 (178.7)	41.1 (152.9)
Mean (SD) Total cholesterol, mg/dL	190.1 (41.2)	190.2 (41.4)	190.0 (40.9)
Mean (SD) Fasting plasma glucose, mg/dL	98.8 (13.5)	98.8 (13.7)	98.8 (13.4)

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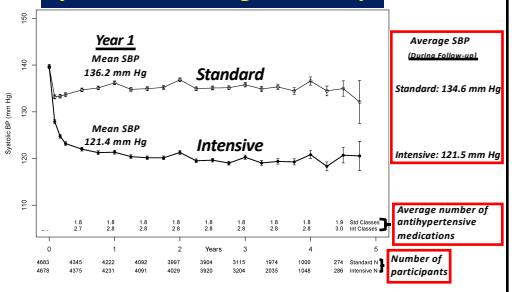
Systolic BP During Follow-up



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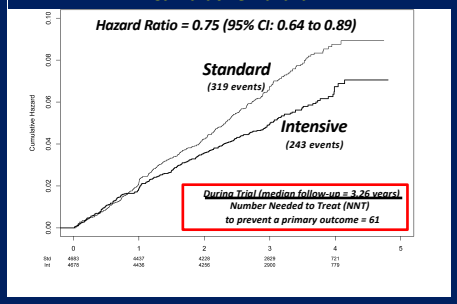
SPRINT Primary Outcome
Cumulative Hazard



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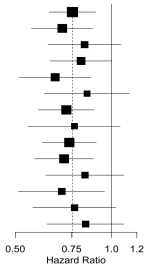
SPRINT Primary Outcome and its Components
Event Rates and Hazard Ratios

	Intensive		Standard			
	No. of Events	Rate, %/year	No. of Events	Rate, %/year	HR (95% CI)	P value
Primary Outcome	243	1.65	319	2.19	0.75 (0.64, 0.89)	<0.001
All MI	97	0.65	116	0.78	0.83 (0.64, 1.09)	0.19
Non-MI ACS	40	0.27	40	0.27	1.00 (0.64, 1.55)	0.99
All Stroke	62	0.41	70	0.47	0.89 (0.63, 1.25)	0.50
All HF	62	0.41	100	0.67	0.62 (0.45, 0.84)	0.002
CVD Death	37	0.25	65	0.43	0.57 (0.38, 0.85)	0.005

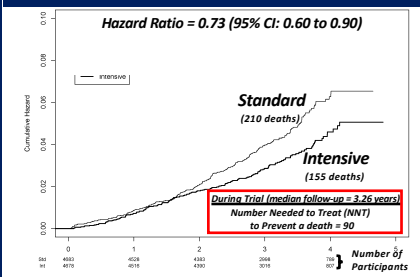
Primary Outcome Experience in the Six Pre-specified Subgroups of Interest

Subgroup	HR	P*
Overall	0.75 (0.64,0.89)	
No Prior CKD	0.70 (0.56,0.87)	0.36
Prior CKD	0.82 (0.63,1.07)	
Age < 75	0.80 (0.64,1.00)	0.32
Age ≥ 75	0.67 (0.51,0.86)	
Female	0.84 (0.62,1.14)	0.45
Male	0.72 (0.59,0.88)	
African−American	0.77 (0.55,1.06)	0.83
Non African−American	0.74 (0.61,0.90)	
No Prior CVD	0.71 (0.57,0.88)	0.39
Prior CVD	0.83 (0.62,1.09)	
SBP ≤ 132	0.70 (0.51,0.95)	0.77
132 < SBP < 145	0.77 (0.57,1.03)	
SBP ≥ 145	0.83 (0.63,1.09)	

*Treatment by subgroup interaction
*Unadjusted for multiplicity



All-cause Mortality
Cumulative Hazard



Serious Adverse Events* (SAE) During Follow-up

	Number (%) of Participants		
	Intensive	Standard	HR (P Value)
All SAE reports	1793 (38.3)	1736 (37.1)	1.04 (0.25)
SAEs associated with Specific Conditions of Interest			
Hypotension	110 (2.4)	66 (1.4)	1.67 (0.001)
Syncope	107 (2.3)	80 (1.7)	1.33 (0.05)
Injurious fall	105 (2.2)	110 (2.3)	0.95 (0.71)
Bradycardia	87 (1.9)	73 (1.6)	1.19 (0.28)
Electrolyte abnormality	144 (3.1)	107 (2.3)	1.35 (0.020)
Acute kidney injury or acute renal failure	193 (4.1)	117 (2.5)	1.66 (<0.001)

*Fatal or life threatening event, resulting in significant or persistent disability, requiring or prolonging hospitalization, or judged important medical event.

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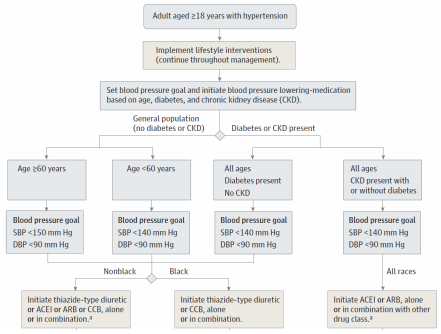
Number (%) of Participants with a Monitored Clinical Measure During Follow-up

	Number (%) of Participants		
	Intensive	Standard	HR (P Value)
Laboratory Measures[1]			
Sodium <130 mmol/L	180 (3.9)	100 (2.2)	1.76 (<0.001)
Potassium <3.0 mmol/L	114 (2.5)	74 (1.6)	1.50 (0.006)
Potassium >5.5 mmol/l	176 (3.8)	171 (3.7)	1.00 (0.97)
Signs and Symptoms			
Orthostatic hypotension[2]	777 (16.6)	857 (18.3)	0.88 (0.013)
Orthostatic hypotension with dizziness	62 (1.3)	71 (1.5)	0.85 (0.35)

1. Detected on routine or PRN labs; routine labs drawn quarterly for first year, then q 6 months
2. Drop in SBP ≥20 mmHg or DBP ≥10 mmHg 1 minute after standing (measured at 1, 6, and 12 months and yearly thereafter)

Nuevas guías

JNC 8



James PA et al. JAMA 2014

Sociedad Europea de Cardiología 2018

- 130-139/85-89 mm Hg: normal alto
- Meta menor a 140 mm Hg PAS pero incluso a menos de 130 mm Hg PAS en pacientes <65 años que lo toleren
- PAS no menor a 120 mm Hg en <65 años y no menor a 130 mm Hg en >65 años
- PAD menor a 80 mm Hg para todos
- Empezar con terapia combinada en tableta única para la mayoría de pacientes
- IECA/ARA + BCC ó tiazida

2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

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Categories of BP in Adults*

BP Category	SBP		DBP
Normal	<120 mm Hg	and	<80 mm Hg
Elevated	120–129 mm Hg	and	<80 mm Hg
Hypertension			
Stage 1	130–139 mm Hg	or	80–89 mm Hg
Stage 2	≥140 mm Hg	or	≥90 mm Hg

*Individuals with SBP and DBP in 2 categories should be designated to the higher BP category.
BP indicates blood pressure (based on an average of ≥2 careful readings obtained on ≥2 occasions, as detailed in DBP, diastolic blood pressure; and SBP systolic blood pressure.

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Corresponding Values of SBP/DBP for Clinic, HBPM, Daytime, Nighttime, and 24-Hour ABPM Measurements

Clinic	HBPM	Daytime ABPM	Nighttime ABPM	24-Hour ABPM
120/80	120/80	120/80	100/65	115/75
130/80	130/80	130/80	110/65	125/75
140/90	135/85	135/85	120/70	130/80
160/100	145/90	145/90	140/85	145/90

ABPM indicates ambulatory blood pressure monitoring; BP, blood pressure; DBP diastolic blood pressure; HBPM, home blood pressure monitoring; and SBP, systolic blood pressure.

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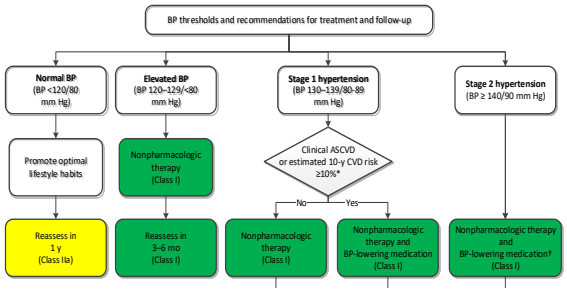
Blood Pressure (BP) Thresholds and Recommendations for Treatment and Follow-Up (continued on next slide)



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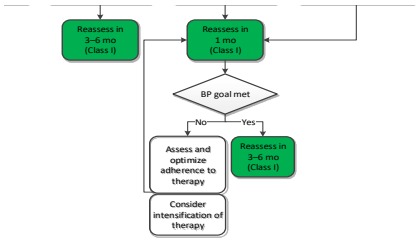

Colors correspond to Class of Recommendation in Table 1.
*Using the ACC/AHA Pooled Cohort Equations. Note that patients with DM or CKD are automatically placed in the high-risk category. For initiation of RAS inhibitor or diuretic therapy, assess blood tests for electrolytes and renal function 2 to 4 weeks after initiating therapy.
†Consider initiation of pharmacological therapy for stage 2 hypertension with 2 antihypertensive agents of different classes. Patients with stage 2 hypertension and BP ≥160/100 mm Hg should be promptly treated, carefully monitored, and subject to upward medication dose adjustment as necessary to control BP. Reassessment includes BP measurement, detection of orthostatic hypotension in selected patients (e.g., older or with postural symptoms), identification of white coat hypertension or a white coat effect, documentation of adherence, monitoring of the response to therapy, reinforcement of the importance of adherence, reinforcement of the importance of treatment, and assistance with treatment to achieve BP target.

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BP Goal for Patients With Hypertension

COR	LOE	Recommendations for BP Goal for Patients With Hypertension
I	SBP: B-R[SR]	For adults with confirmed hypertension and known CVD or 10-year ASCVD event risk of 10% or higher a BP target of less than 130/80 mm Hg is recommended.
	DBP: C-EO	
IIb	SBP: B-NR	For adults with confirmed hypertension, without additional markers of increased CVD risk, a BP target of less than 130/80 mm Hg may be reasonable.
	DBP: C-EO	

SR indicates systematic review.

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Choice of Initial Medication

COR	LOE	Recommendation for Choice of Initial Medication
I	A[SR]	For initiation of antihypertensive drug therapy, first-line agents include thiazide diuretics, CCBs, and ACE inhibitors or ARBs.

SR indicates systematic review.

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Choice of Initial Monotherapy Versus Initial Combination Drug Therapy

COR	LOE	Recommendations for Choice of Initial Monotherapy Versus Initial Combination Drug Therapy*
I	C-EO	Initiation of antihypertensive drug therapy with 2 first-line agents of different classes, either as separate agents or in a fixed-dose combination, is recommended in adults with stage 2 hypertension and an average BP more than 20/10 mm Hg above their BP target.
IIa	C-EO	Initiation of antihypertensive drug therapy with a single antihypertensive drug is reasonable in adults with stage 1 hypertension and BP goal <130/80 mm Hg with dosage titration and sequential addition of other agents to achieve the BP target.

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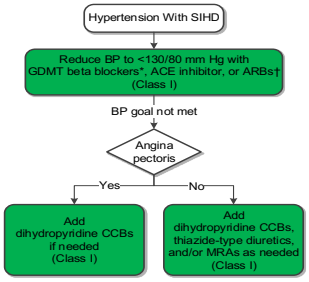
Management of Hypertension in Patients With SIHD



Colors correspond to Class of Recommendation in Table 1.

*GDMT beta blockers for BP control or relief of angina include carvedilol, metoprolol tartrate, metoprolol succinate, nadolol, bisoprolol, propranolol, and timolol. Avoid beta blockers with intrinsic sympathomimetic activity. The beta blocker atenolol should not be used because it is less effective than placebo in reducing cardiovascular events.

†If needed for BP control.

•ACE indicates angiotensin-converting enzyme; ARB, angiotensin receptor blocker; BP, blood pressure; CCB, calcium channel blocker; GDMT, guideline-directed management and therapy; and SIHD, stable ischemic heart disease.

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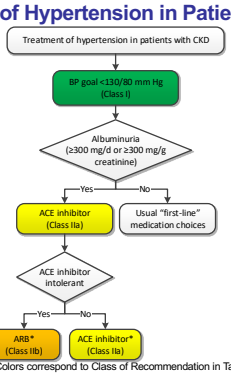
Management of Hypertension in Patients With CKD



•Colors correspond to Class of Recommendation in Table 1.

•*CKD stage 3 or higher or stage 1 or 2 with albuminuria ≥300 mg/d or ≥300 mg/g creatinine.

•ACE indicates angiotensin-converting enzyme; ARB, angiotensin receptor blocker; BP, blood pressure; and CKD, chronic kidney disease.

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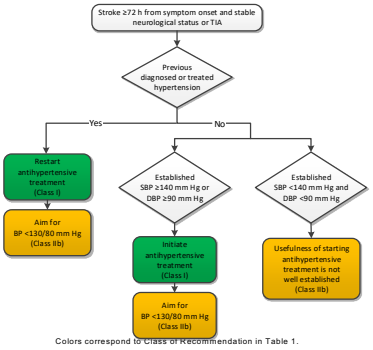
Management of Hypertension in Patients With a Previous History of Stroke (Secondary Stroke Prevention)



Colors correspond to Class of Recommendation in Table 1.
DBP indicates diastolic blood pressure; SBP, systolic blood pressure; and TIA, transient ischemic attack.

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Diabetes Mellitus

COR	LOE	Recommendations for Treatment of Hypertension in Patients With DM
I	SBP: B-R[SR] DBP: C-EO	In adults with DM and hypertension, antihypertensive drug treatment should be initiated at a BP of 130/80 mm Hg or higher with a treatment goal of less than 130/80 mm Hg.
I	A[SR]	In adults with DM and hypertension, all first-line classes of antihypertensive agents (i.e., diuretics, ACE inhibitors, ARBs, and CCBs) are useful and effective.
IIb	B-NR	In adults with DM and hypertension, ACE inhibitors or ARBs may be considered in the presence of albuminuria.

SR indicates systematic review.

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Racial and Ethnic Differences in Treatment

COR	LOE	Recommendations for Race and Ethnicity
I	B-R	In black adults with hypertension but without HF or CKD, including those with DM, initial antihypertensive treatment should include a thiazide-type diuretic or CCB.
I	C-LD	Two or more antihypertensive medications are recommended to achieve a BP target of less than 130/80 mm Hg in most adults with hypertension, especially in black adults with hypertension.

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Pregnancy

COR	LOE	Recommendations for Treatment of Hypertension in Pregnancy
I	C-LD	Women with hypertension who become pregnant, or are planning to become pregnant, should be transitioned to methyldopa, nifedipine, and/or labetalol during pregnancy.
III: Harm	C-LD	Women with hypertension who become pregnant should not be treated with ACE inhibitors, ARBs, or direct renin inhibitors.

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Age-Related Issues

COR	LOE	Recommendations for Treatment of Hypertension in Older Persons
I	A	Treatment of hypertension with a SBP treatment goal of less than 130 mm Hg is recommended for noninstitutionalized ambulatory community-dwelling adults (≥65 years of age) with an average SBP of 130 mm Hg or higher.
IIa	C-EO	For older adults (≥65 years of age) with hypertension and a high burden of comorbidity and limited life expectancy, clinical judgment, patient preference, and a team-based approach to assess risk/benefit is reasonable for decisions regarding intensity of BP lowering and choice of antihypertensive drugs.

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Cognitive Decline and Dementia

COR	LOE	Recommendation for Prevention of Cognitive Decline and Dementia
IIa	B-R	In adults with hypertension, BP lowering is reasonable to prevent cognitive decline and dementia.

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Clinician's Sequential Flow Chart for the Management of Hypertension

Clinician's Sequential Flow Chart for the Management of Hypertension
Measure office BP accurately
Detect white coat hypertension or masked hypertension by using ABPM and HBPM
Evaluate for secondary hypertension
Identify target organ damage
Introduce lifestyle interventions
Identify and discuss treatment goals
Use ASCVD risk estimation to guide BP threshold for drug therapy
Align treatment options with comorbidities
Account for age, race, ethnicity, sex, and special circumstances in antihypertensive treatment
Initiate antihypertensive pharmacological therapy
Insure appropriate follow-up
Use team-based care
Connect patient to clinician via telehealth
Detect and reverse nonadherence
Detect white coat effect or masked uncontrolled hypertension
Use health information technology for remote monitoring and self-monitoring of BP

ASCVD indicates atherosclerotic cardiovascular disease; BP, blood pressure; CVD, cardiovascular disease; and SBP, systolic blood pressure.

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BP Thresholds for and Goals of Pharmacological Therapy in Patients With Hypertension According to Clinical Conditions

Clinical Condition(s)	BP Threshold, mm Hg	BP Goal, mm Hg
General		
Clinical CVD or 10-year ASCVD risk ≥10%	≥130/80	<130/80
No clinical CVD and 10-year ASCVD risk <10%	≥140/90	<130/80
Older persons (≥65 years of age; noninstitutionalized, ambulatory, community-living adults)	≥130 (SBP)	<130 (SBP)
Specific comorbidities		
Diabetes mellitus	≥130/80	<130/80
Chronic kidney disease	≥130/80	<130/80
Chronic kidney disease after renal transplantation	≥130/80	<130/80
Heart failure	≥130/80	<130/80
Stable ischemic heart disease	≥130/80	<130/80
Secondary stroke prevention	≥140/90	<130/80
Secondary stroke prevention (lacunar)	≥130/80	<130/80
Peripheral arterial disease	≥130/80	<130/80

ASCVD indicates atherosclerotic cardiovascular disease; BP, blood pressure; CVD, cardiovascular disease; and SBP, systolic blood pressure.

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Poblaciones especiales

DM

Metas de PA en DM

Guideline/society	Target (mmHg)	First drug class recommendation
UK NICE [18][a]	130/80	ACEI/ARB
CHEP [21]	130/80	ACEI/ARB
WHO [22]	130/80	ACEI/ARB
IDF [23][b]	130/80	ACEI/ARB
JSH [24]	130/80	ACEI/ARB
IGH [25]	140/80	ACEI/ARB
ESC/ESH [19]	140/85	ACEI/ARB
ADA [4][c]	140/90	ACEI/ARB
JNC-8P [20]	140/90	ACEI/ARB
ASH/ISH [26, 27]	140/90	ACEI/ARB
AHA/ACC/ASH [26]	140/90	ACEI/ARB

Shaikh A. Diabetes Ther. 2017;8:891

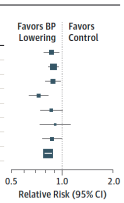
Metas en DM

Medical Society	BP Target
ADA 2018	< 140/90 mmHg
ESC/ESH Diabetes guideline 2013	< 140/85 mmHg
JNC 8 2014	< 140/90 mmHg
NICE (UK 2013)	< 140/80 mmHg, but if retinopathy, cerebrovascular disease, or microalbuminuria is present: < 130/80 mmHg

Metanálisis: reducción de PA en DM

Figure 2. Standardized Associations Between 10-mm Hg Lower Systolic BP and All-Cause Mortality, Macrovascular Outcomes, and Microvascular Outcomes in Diabetic Patients

Outcome	No. of Studies	BP Lowering Events	BP Lowering Participants	Control Events	Control Participants	Relative Risk (95% CI)
Mortality	20	2334	27693	2319	25864	0.87 (0.78-0.96)
Cardiovascular disease	17	3230	25756	3280	24862	0.89 (0.83-0.95)
Coronary heart disease	17	1390	26150	1449	24761	0.88 (0.80-0.98)
Stroke	19	1350	27614	1475	26447	0.73 (0.64-0.83)
Heart failure	13	1235	21684	1348	20791	0.86 (0.74-1.00)
Renal failure	9	596	19835	560	18912	0.91 (0.74-1.12)
Retinopathy	7	844	9781	905	9566	0.87 (0.76-0.99)
Albuminuria	7	2799	13804	3163	12821	0.83 (0.79-0.87)



Emdin CA. JAMA. 2015;313:603

Reducción de eventos según PA inicial

Outcome	No. of Studies	Baseline SBP, Mean, mm Hg	BP Lowering, No. Events	BP Lowering, No. Participants	Control, No. Events	Control, No. Participants	Relative Risk (95% CI)	P for Interaction
Mortality, mm Hg								
≥140[16, 18, 19, 27-30, 35, 39-41, 51, 55, 56, 64, 65, 77-80]	13	149	1614	16418	1626	14580	0.73 (0.64-0.84)	
<140[17, 31, 36-38, 58-60, 80, 81]	7	137	720	1275	693	11284	1.07 (0.92-1.26)	P<.001
Overall							0.87 (0.78-0.96)	
Cardiovascular disease, mm Hg								
≥140[16, 18, 19, 27-30, 35, 39-41, 46, 47, 51-55]	11	148	1861	14976	1918	14068	0.74 (0.65-0.85)	
<140[17, 31, 36-38, 58-60, 80, 81]	6	137	1369	10780	1362	10794	0.96 (0.88-1.05)	P = .001
Overall							0.89 (0.83-0.95)	
Coronary heart disease, mm Hg								
≥140[16, 18, 27, 29, 30, 35, 39-41, 47, 51, 64, 65]	10	148	858	14875	931	13477	0.73 (0.61-0.87)	
<140[17, 31, 36-38, 43, 58-60, 80, 81]	7	137	532	11275	518	11284	0.97 (0.86-1.10)	P = .01
Overall							0.88 (0.80-0.98)	
Stroke, mm Hg								
≥140[16, 18, 19, 27, 29, 30, 35, 39-41, 46-47, 51, 55, 56, 63-65]	14	148	1129	19066	1245	17868	0.74 (0.64-0.86)	
<140[31, 36-38, 58-60, 80, 81]	5	137	221	8548	230	8579	0.69 (0.52-0.92)	P = .70
Overall							0.73 (0.64-0.83)	
Heart failure, mm Hg								
≥140[16, 18, 29, 30, 35, 39-41, 46, 47, 64, 65]	8	146	774	13592	814	12676	0.75 (0.59-0.94)	
<140[17, 42, 43, 58-60, 80, 81]	5	137	461	8092	534	8115	0.97 (0.79-1.19)	P = .09
Overall							0.86 (0.74-1.00)	
Renal failure, mm Hg								
≥140[16, 18, 29, 30, 35, 40, 41, 64, 65]	6	147	389	12475	346	11530	0.75 (0.52-1.08)	
<140[31, 58-60]	3	138	207	7360	214	7382	1.00 (0.77-1.29)	P = .21
Overall							0.91 (0.74-1.12)	
Retinopathy, mm Hg								
≥140[16, 29, 30, 64, 65, 77-80]	4	146	564	7946	586	7753	0.86 (0.70-1.04)	
<140[36-38, 59, 60, 80, 81]	3	137	280	1835	319	1813	0.88 (0.74-1.05)	P = .85
Overall							0.87 (0.76-0.99)	
Albuminuria, mm Hg								
≥140[16, 18-19, 40, 64]	4	146	1681	8447	1898	7647	0.71 (0.63-0.79)	
<140[17, 38-38, 59, 60]	3	137	1118	5357	1265	5174	0.86 (0.81-0.90)	P = .002
Overall							0.83 (0.79-0.87)	

Emdin CA. JAMA. 2015;313:603

Adultos >75 años

Introducción

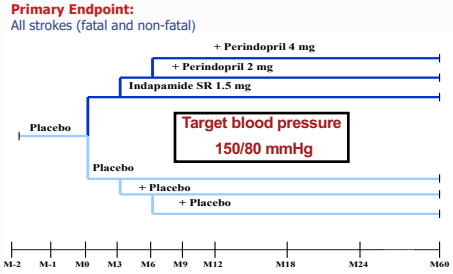
- Prevalencia de HTA en mayores de 65 años
  - 64% en hombres
  - 78% en mujeres
- Población diferente
  - Comorbilidades
  - Polifarmacia
  - Interacciones medicamentosas
  - Costos de fármacos

The Trial:
International, multi-centre, randomised double-blind placebo controlled

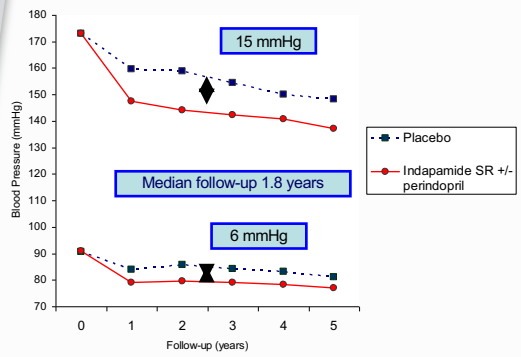
Inclusion Criteria:
Aged 80 or more,
Systolic BP; 160 -199mmHg
+ diastolic BP; <110 mmHg,
Informed consent

Exclusion Criteria:
Standing SBP < 140mmHg
Stroke in last 6 months
Dementia
Need daily nursing care

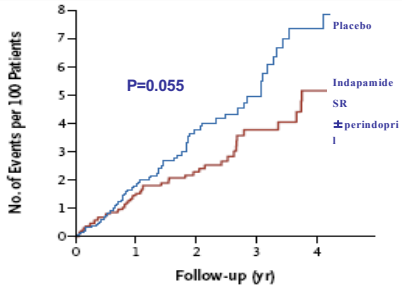
Primary Endpoint:
All strokes (fatal and non-fatal)



Blood pressure separation

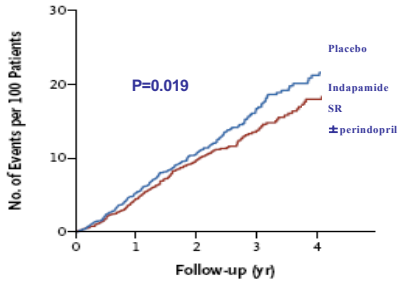


All stroke (30% reduction)



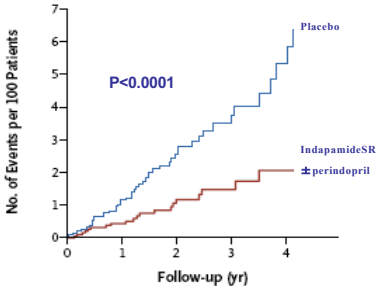
No. at Risk					
Placebo	1912	1484	807	374	194
IndapamideSR ±perindopril	1933	1557	873	417	229

Total Mortality (21% reduction)



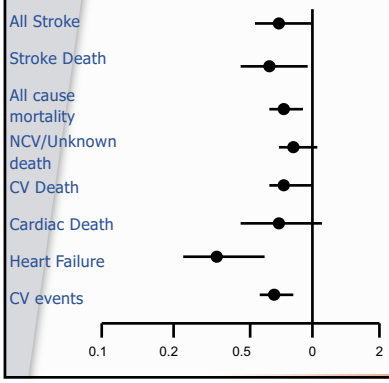
No. at Risk					
Placebo	1912	1492	814	379	202
IndapamideSR ±perindopril	1933	1565	877	420	231

Heart Failure (64% reduction)



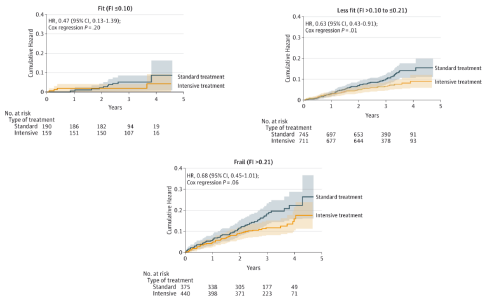
No. at Risk					
Placebo	1912	1480	794	367	188
IndapamideSR ±perindopril	1933	1559	872	416	228

ITT – Summary



	HR	95% CI
All Stroke	0.70	(0.49, 1.01)
Stroke Death	0.61	(0.38, 0.99)
All cause mortality	0.79	(0.65, 0.95)
NCV/Unknown death	0.81	(0.62, 1.06)
CV Death	0.77	(0.60, 1.01)
Cardiac Death	0.71	(0.42, 1.19)
Heart Failure	0.36	(0.22, 0.58)
CV events	0.66	(0.53, 0.82)

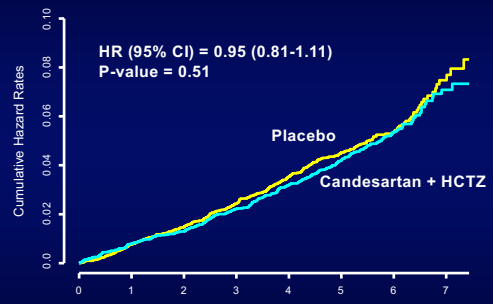
SPRINT



Williamson JD. JAMA. 2016;315:2673

Hope-3

CV Death, MI, Stroke, Cardiac Arrest, Revascularization, Heart Failure



No. at Risk								
Cand + HCTZ	6356	6272	6200	6103	5968	4969	2076	522
Placebo	6349	6270	6198	6096	5967	4970	2075	488

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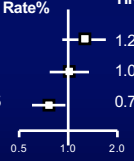
Prespecified Subgroups: By Thirds of SBP

CV Death, MI, Stroke, Cardiac Arrest, Revasc, HF

Cutoffs	SBP Mean	Diff	Placebo Event Rate%	HR (95% CI)	P Trend
≤131.5	122	6.1	3.5	1.25 (0.92-1.70)	0.009
131.6-143.5	138	5.6	4.6	1.02 (0.77-1.34)	
>143.5	154	5.8	7.5	0.76 (0.60-0.96)	



Candesartan + HCTZ Better Placebo Better

17

BP Lowering Arm: Conclusions

- Fixed dose combination of Candesartan 16 mg + HCTZ 12.5 mg/day reduced BP by 6.0/3.0 mmHg, but did not reduce CV events
- CV events were significantly reduced in the highest third of SBP
  - SBP >143.5 mmHg, mean 154 mmHg
- Results were neutral in the middle third, and trended towards harm in the lowest third of SBP
- Treatment increased lightheadedness, but not syncope or renal dysfunction

19

Por qué estas diferencias?

- Participantes de HOPE 3 tenían menor riesgo cardiovascular
- Menor diferencia de PA entre grupos
- Clortalidona vs HCTZ?

Cuál debe ser la meta?

- 150/90 mm Hg?
- 130/80 mm Hg?
  - En la medida en que no hagan hipotensión postural o eventos adversos

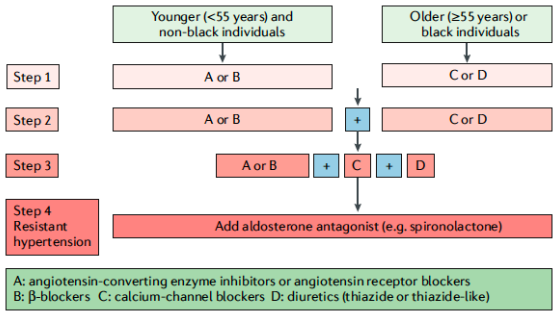
HTA resistente

Introducción

- Prevalencia de 9 a 18%
- Uso de 3 ó más antihipertensivos a dosis máximas incluyendo un diurético
- Excluir potenciales causas:
  - Causas secundarias
  - Pobre adherencia
  - Efecto bata blanca
- Gold standard para diagnóstico es MAPA
  - Registro español mostró 12.2% vs 7.6%

Principios de manejo

- ADHERENCIA!
- Combinaciones adecudas de fármacos
- Usar agentes con vida media larga
- Titulación de antihipertensivos a la dosis máxima tolerada
- Incluir un diurético (diuréticos de asa sólo si AEC <30 cc/min)
- Combinaciones en tabletas fijas para mejorar adherencia



Esprinolactona

- En pacientes con HTA resistente, hiperaldosteronismo primario es común
- Riesgo bajo de hiperkalemia
- Más efectivo que bisoprolol, doxazosin o su combinación (PATHWAY)
  - Excluyeron pacientes con AEC <45 cc/min

Amiloride

- Como alternativa si hacen ginecomastia con espironolactona
- Bloqueo de canales de sodio epitelial distal
- Bloqueador débil del receptor de mineralocorticoides

Enfermedad renal crónica

Consideraciones

- Bajar mucho la presión disminuirá la filtración glomerular?
  - Es un efecto agudo que no lleva a mayor riesgo de enfermedad renal terminal
- Mayor riesgo de insuficiencia renal aguda?
- Pacientes con IRC tienen mayor frecuencia de non dippers o variabilidad de presión arterial

Mortalidad: más vs menos intenso

Source	Odds Ratio (95% CI)	Score	No. of Deaths/Total No. More Intensive BP	No. of Deaths/Total No. Less Intensive BP	P Value
Wright et al,[14] 2002	0.674 (0.554-1.380)	-0.578	37/540	43/554	.56
Estacio et al,[24] 2003	0.575 (0.182-1.820)	-0.941	5/62	9/68	.35
Schrier et al,[16] 2002	1.227 (0.398-3.865)	0.349	6/57	7/80	.73
Cushman et al,[32] 2010	1.271 (0.685-2.360)	0.791	26/208	20/198	.45
Heerspink et al,[27] 2010	0.862 (0.662-1.123)	-1.102	117/1010	135/1023	.27
Lonn et al,[37] 2016	0.993 (0.699-1.410)	-0.039	49/1220	97/2399	.97
Beckett et al,[30] 2008	0.676 (0.502-0.911)	-2.570	83/788	121/816	.01
Klahr et al,[13] 1994	1.366 (0.681-2.742)	0.873	20/432	14/408	.38
Marti et al,[34] 2016	3.588 (0.140-91.945)	0.772	1/26	0/30	.44
Fuggeronti et al,[22] 2005	0.667 (0.110-4.042)	-0.441	2/167	3/168	.66
Schrier et al,[15] 2002	0.825 (0.050-13.701)	-0.134	1/41	1/34	.89
SHEP Cooperative Research Group,[28] 1991	0.900 (0.670-1.209)	-0.730	66/879	103/859	.48
Wright et al,[17] 2015	0.714 (0.519-0.982)	-2.072	70/1330	95/1316	.04
Benavente et al,[33] 2013	0.850 (0.468-1.544)	-0.534	24/216	25/195	.59
Staessen et al,[29] 1997	0.826 (0.470-1.451)	-0.655	26/242	29/228	.51
Toto et al,[12] 1995	2.566 (0.101-64.993)	0.572	1/42	0/55	.57
UK Prospective Diabetes Study Group,[31] 1998	1.667 (0.626-4.435)	1.023	20/68	7/35	.31
Overall	0.859 (0.764-0.965)	-2.550	584/7451	709/8473	.01

Heterogeneity: $\chi^2 = 0\%$; $P = .77$; $I^2 = 0\%$

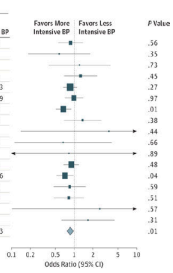


Figure 2. Effect of Intensive Blood Pressure (BP) Lowering on Risk of Mortality in Hypertensive Trial Participants With Chronic Kidney Disease

Malhopra R. JAMA Intern Med. 2017;177:1498

Subgrupos y mortalidad

Subgroup		No. of Trials	No. of Deaths/Total No. More Intensive BP	No. of Deaths/Total No. Less Intensive BP	Odds Ratio (95% CI)	P Value for Heterogeneity
Drug vs placebo		5	328/2976	395/3006	0.819 (0.700-0.957)	.06
Defined BP arms		13	256/4375	314/5467	1.020 (0.860-1.209)	
Follow-up	<3 y	4	112/1223	153/1242	0.718 (0.555-0.928)	.38
	≥3 y	14	472/6128	556/7231	1.002 (0.882-1.138)	
Diabetes	Yes	6	174/1428	178/1431	0.977 (0.781-1.221)	
	No	6	131/2552	156/2515	0.818 (0.644-1.039)	.29
Severe renal dysfunction	Yes	10	307/4960	403/6051	0.925 (0.793-1.078)	
	No	8	277/2468	305/2195	0.863 (0.726-1.026)	
Baseline SBP	<140 mm Hg	6	55/929	44/916	1.247 (0.830-1.874)	.56
	140-150 mm Hg	8	275/3293	315/3225	0.842 (0.710-0.997)	
	>150 mm Hg	4	254/3129	350/4302	0.998 (0.843-1.181)	.14
Achieved SBP	<125 mm Hg	4	97/1602	116/1575	0.811 (0.613-1.072)	
	125-135 mm Hg	8	96/1542	101/1538	0.945 (0.708-1.261)	
	>135 mm Hg	5	391/4207	492/5360	1.014 (0.882-1.165)	.37
SBP difference	≥6 mm Hg	7	173/2550	244/3150	1.059 (0.866-1.294)	
	>6 to <12 mm Hg	7	229/2434	228/2359	0.971 (0.800-1.177)	.06
	≥12 mm Hg	4	180/2367	237/2364	0.761 (0.621-0.931)	

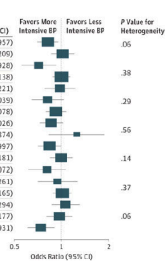


Figure 4. Effect of More Intensive Blood Pressure (BP) Lowering on Risk of Mortality in Patients With Chronic Kidney Disease Stratified by Subgroups

Malhopra R. JAMA Intern Med. 2017;177:1498

Reducción de PA: CCB vs IECA

Study or Subgroup	CCB Mean	CCB SD	CCB Total	ACEI Mean	ACEI SD	ACEI Total	Weight	Std. Mean Difference IV, Random, 95% CI
1.1.1 MBP (change, CCB vs ACEI) in CKD stage 3								
Campo et al 1997	-20.19	5.80638	11	-18.5867	12.16915	13	1.8%	-0.16 [-0.96, 0.65]
Fogari et al 1996	-14.6	1.752776	20	-17.3	1.851126	20	2.3%	1.36 [0.66, 2.05]
Subtotal (95% CI)			31			33	4.1%	0.61 [-0.87, 2.10]
Heterogeneity: Tau² = 1.00; Chi² = 7.83, df = 1 (P = 0.005); I² = 87%								
Test for overall effect: Z = 0.81 (P = 0.42)								
1.1.2 MBP (change, CCB vs ACEI) in CKD stage 3 or 4								
Del Vecchio et al 2004	-14.9	7.99585	67	-18.1	7.900583	64	7.1%	0.40 [0.06, 0.75]
Rahman et al 2005	-10.5333	11.81623	1516	-10.8	12.86459	1533	19.8%	0.02 [-0.05, 0.09]
Rahman et al 2012	-8.86667	12.35988	1479	-8.1	13.14471	1501	19.8%	-0.06 [-0.13, 0.01]
Wright et al 2002	-15	18.78829	217	-15	18.35756	436	14.8%	0.00 [-0.16, 0.16]
Subtotal (95% CI)			3279			3534	61.5%	0.01 [-0.08, 0.11]
Heterogeneity: Tau² = 0.01; Chi² = 8.06, df = 3 (P = 0.04); I² = 63%								
Test for overall effect: Z = 0.25 (P = 0.80)								
1.1.3 MBP (change, CCB vs ACEI) in ESRD								
Shibasaki et al 2002	-11	2.789298	10	-11.1	3.420526	10	1.5%	0.03 [-0.85, 0.91]
Shibasaki et al 2005	-10.7	2.607681	13	-11.1	2.692582	13	2.0%	0.15 [-0.62, 0.92]
Yilmaz et al 2010	-25	32.55764	47	-28	33.24154	45	5.6%	0.09 [-0.32, 0.50]
Subtotal (95% CI)			70			68	9.1%	0.09 [-0.24, 0.43]
Heterogeneity: Tau² = 0.00; Chi² = 0.04, df = 2 (P = 0.98); I² = 0%								
Test for overall effect: Z = 0.54 (P = 0.59)								
1.1.4 MBP (change, CCB vs ACEI) in undefined stage of CKD								
MacGregor et al 2005	1.5	11.08472	28	-3.06667	13.07806	28	3.8%	0.37 [-0.16, 0.90]
Marti et al 2001	-143.5	30.10399	112	-135.2	25.94533	129	10.3%	-0.30 [-0.55, -0.04]
Petersen et al 2001	1.1	16.90118	20	1	21.32159	20	2.9%	0.01 [-0.61, 0.62]
Rose et al 2001	-23.6667	2.687419	10	-22.6667	1.914854	10	1.5%	-0.41 [-1.30, 0.48]
Zucchelli et al 1992	-17.6667	14.40679	61	-19.6667	13.82831	60	6.8%	0.14 [-0.22, 0.50]
Subtotal (95% CI)			231			247	25.2%	-0.03 [-0.31, 0.26]
Heterogeneity: Tau² = 0.05; Chi² = 7.64, df = 4 (P = 0.11); I² = 48%								
Test for overall effect: Z = 0.20 (P = 0.84)								
Total (95% CI)			**3611**			**3882**	**100.0%**	**0.05 [-0.07, 0.16]**
Heterogeneity: Tau² = 0.02; Chi² = 31.82, df = 13 (P = 0.003); I² = 59%								
Test for overall effect: Z = 0.79 (P = 0.43)								
Test for subgroup differences: Chi² = 0.93, df = 3 (P = 0.82), I² = 0%								

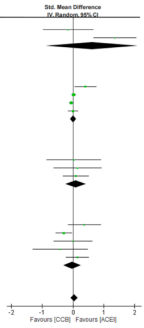


Fig 2. Forest plot of the meta-analysis for MBP changes between CCB and ACEI groups.

Lin YC. PLoS One. 2017;12:e0188975

Eventos: CCB vs IECA

Table 3. Mortality and renal outcome summary.

Outcomes	Studies(n)	CCB(n)	ACEI(n)	Effect size	95% CI	I^2
Mortality[a]						
Mixed CKD stages 3 and 4	3	792/1828	773/2068	1.11	[0.96–1.28]	0%
Undefined CKD stage	4	92/768	96/796	0.98	[0.72–1.34]	0%
Total	7	884/2596	869/2864	1.09	[0.96–1.24]	0%
CVD mortality[b]						
Mixed CKD stages 3 and 4	3	903/3212	903/3470	1.01	[0.94–1.09]	0%
Undefined CKD stage	2	38/679	54/708	0.72	[0.48–1.08]	0%
Total	5	941/3891	956/4178	1.00	[0.93–1.08]	0%
Heart failure[b]						
Mixed CKD stages 3 and 4	2	378/2995	385/3034	0.99	[0.86–1.14]	9%
Undefined CKD stage	1	93/567	60/579	1.58	[1.17–2.14]	NE
Total	3	471/3562	446/3613	1.13	[0.87–1.47]	77%
Stroke/CVA[b]						
Mixed CKD stages 3 and 4	2	165/2995	158/3034	1.06	[0.86–1.31]	0%
Undefined CKD stage	2	17/679	29/708	0.69	[0.24–1.98]	24%
Total	4	182/3674	187/3742	0.96	[0.72–1.28]	34%
Dialysis[b]						
Mixed CKD stages 3 and 4	3	217/2575	235/2765	1.02	[0.84–1.26]	22%
Undefined CKD stage	3	167/656	207/667	1.25	[1.00–1.56]	6%
Total	6	354/3231	343/3432	1.12	[0.95–1.31]	25%
GFR[c]						
Mixed CKD stages 3 and 4	2	57/1733	80/1969	1.03	[0.62–1.72]	59%
Undefined CKD stage	2	127/595	109/607	1.19	[0.95–1.49]	0%
Total	4	184/2328	189/2576	1.14	[0.95–1.37]	0%
Urinary protein excretion changes[d]						
Mixed CKD stages 3 and 4	1	67	64	0.17	[-0.17–0.51]	NE
Undefined CKD stage	2	71	70	0.83	[-0.82–2.47]	88%
Total	3	138	134	0.84	[0.65–1.15]	77%

Lin YC. PLoS One. 2017;12:e0188975

	2017 ACC/AHA [13]	2013 ESH/ESC [14]	2018 ADA [16••]	2012 NKF KDOQI [3, 7]
Type of CKD considered	Albuminuria ≥ 300 mg/d or ≥ 300 mg/g creatinine	Overt proteinuria	Urinary albumin-to-creatinine ratio ≥ 300 mg/g creatinine or 30–299 mg/g creatinine	Urine albumin excretion of 30 to 300 mg or > 300 mg per 24 h
Recommended BP target (mm Hg)	Lowering < 130/80	Lowering SBP to < 140 Lowering < 130/80 mmHg in individuals with overt proteinuria	Lowering < 140/90 Lowering < 130/80 mmHg, for individuals at high risk of cardiovascular disease	Lowering ≤ 130/80
Recommended initial antihypertensive treatment	ACE inhibitor or ARB if ACE inhibitor is not tolerated	ACE inhibitor or ARB	ACE inhibitor or ARB If one class is not tolerated, the other should be substituted	ACE inhibitor or ARB
Other comments	A 10 to 25% increase in serum creatinine may occur in some patients with CKD as a result of RAAS therapy	RAS blockade is more effective in reducing albuminuria than other antihypertensive agents and is also effective in preventing incident microalbuminuria	Patients and clinicians should engage in a shared decision-making process to determine individual BP targets Bedtime dosing: moving at least one antihypertensive medication to bedtime.	The antihypertensive and antialbuminuric effects ACE inhibitor or ARB are complemented by dietary sodium restriction or administration of diuretics.

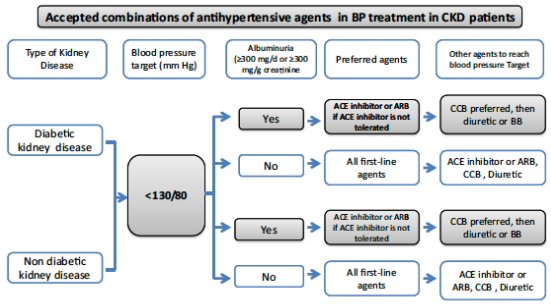
ACC/AHA American College of Cardiology/American Heart Association; ACE inhibitors, angiotensin-converting enzyme inhibitors; *ADA*, American Diabetes Association; *ARBs*, angiotensin II receptor blockers; *CKD*, chronic kidney disease; *ESH/ESC*, European Society of Hypertension/European Society of Cardiology; *RAS*, renin angiotensin system; *NKF*, National Kidney Foundation

Kalaitzidis RG. Curr Hypertension Rep. 2018;20:64

Albuminuria

- Sólo los pacientes con proteinuria se benefician de usar IECA ó ARA como primera línea de tratamiento
- IRC sin proteinuria no hay beneficio de un grupo específico de fármacos
- Diuréticos de asa sobre todo si AEC menor a 30 cc/min

Kalaitzidis RG. Curr Hypertension Rep. 2018;20:64



Kalaitzidis RG. Curr Hypertension Rep. 2018;20:64

Embarazo/preclampsia

Consideraciones

- Todos los antihipertensivos tienen el potencial de cruzar la placenta
- Efecto sobre flujo placentario que puede comprometer el bienestar fetal
  - El major estudiado que no lo afecta es labetalol
- Inicio de ación es relevante para preclampsia
- Es preferible nifedipina de liberación prolongada ya que la de acción corta puede reducir flujo placentario por caída de presión arterial
- Los antihipertensivos no previenen convulsiones (eclampsia)

Odigboegwu O. Front Cardiovasc Med. 2018;5:50

Drugs	Indication	Dose	Comment
First line			
Methyldopa	PE with severe symptoms Hypertension in pregnancy	0.5–3 g/day PO in 2 divided doses	Established long term safety. Breast milk compatible Mild hypertensive effect and slow onset of action, hence may not be used alone
Labetalol	PE with severe symptoms, usually IV formulation	Start with 20 mg IV bolus Mayrequiredouble dose 10 min later	Rapid onset of action Studies confirm safety in pregnancy May cause maternal hepatotoxicity
Hydralazine	PE with severe symptoms, usually IV formulation.	5 mg IV slowly over 1 to 2 min	Usually breast milk compatible. More adverse effect than labetalol
Long-acting nifedipine		30–90 mg once daily. May be increased at 7- to 14-day intervals, to maximum dose of 120 mg a day.	Hypotensive effect is less predictable
Nefidipine	PE with severe symptoms, immediate release oral formulation	Start with 10 mg PO May repeat dose 30 min later	Use particularly when IV access is not available. May cause rapid drops in BP. Concern of serious side effects when used simultaneous with magnesium sulfate.

Odigboegwu O. Front Cardiovasc Med. 2018;5:50

Second line			
Nicardipine	Resistant acute-onset severe hypertension when first line has failed	Give as IV infusion of 3 to 9 mg/hour	Delay onset of action (5–15 min). Titrate slowly to avoid overdose
Sodium Nitroprusside	Acute life threatening hypertension associated with PE	Start with 0.24 μg/kg/min. May titrate to maximum dose of 5 μg/kg/min	Rarely used in dire emergency. Give for shortest amount of time to avoid toxicity (cyanide & thiocyanate)

Odigboegwu O. Front Cardiovasc Med. 2018;5:50

Conclusiones

- Como agente de primera línea, los agentes son similares
  - Las tiazidas son levemente superiors
  - Escogencia basado en condiciones de cada paciente
  - La mayoría van a requerir terapia combinada
- Nuevas guías se basan en resultados del SPRINT
  - Consideraciones en extrapolación de datos
- La evidencia está para una meta de menos de 140/90 mm Hg para la mayoría de pacientes

Puede descargar la presentación en:

Preguntas…

chenku2409@gmail.com

www.EndoDrChen.com

Discusión de casos

Caso #1

- Masculino de 43 años de edad
- Consulta por chequeo de rutina, asintomático
- Se encuentra presión arterial en 154/96 mm Hg, confirmado en controles subsecuentes
- IMC 29.7 kg/m2
- Laboratorios:
  - Glicemia 97 mg/dl
  - Creatinina 0.9 mg/dl
  - K 4.1 mEq/dl
  - Colesterol total 221 mg/dl, HDL 34 mg/dl, triglicéridos 170 mg/dl, LDL 153 mg/dl

Este paciente…

- requiere iniciar tratamiento inmediatamente
- puede iniciar con modificación de estilos de vida por 3 meses
- tiene hipertensión de bata blanca
- se deja todo igual y se controla en un año

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La meta de presión arterial para este paciente sería:

- menos de 140/90 mm Hg
- menos de 120/80 mm Hg
- Lo más bajo que el paciente tolere

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A este paciente le empezaría:

- un antihipertensivo
- combinación de 2 antihipertensivos
- 3 antihipertensivos

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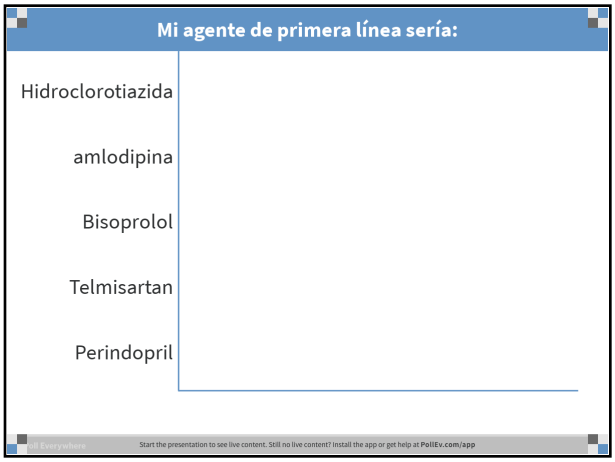

Caso #2

- Femenina de 63 años, vecina de Siquirres, raza negra
- Tuvo isquemia cerebral transitoria hace 1 año
- Tratamiento actual con atenolol 100 mg por día, aspirina 100 mg por día, atorvastatina 10 mg por día
- Presión arterial 144/92 mm Hg, sin ortostatismo
- Peso 104 kg, talla 160 cm. IMC 40.3 kg/m2

Caso #2

- Laboratorios:
  - Glicemia 108 mg/dl
  - Creatinina 1.1 mg/dl
  - K 3.5 mEq/L
  - Colesterol total 160 mg/dl, HDL 38 mg/dl, triglicéridos 140 mg/dl, LDL 94 mg/dl

La meta de presión arterial para esta paciente sería:

- menos de 140/90 mm Hg
- menos de 130/80 mm Hg
- menos de 120/80 mm Hg

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El esquema antihipertensivo para esta paciente sería

- suspender atenolol, cambiar por amlodipina + HCTZ
- dejar atenolol, agregar HCTZ
- dejar atenolo, agregar HCTZ + verapamilo
- suspender atenolol, cambiar por enalapril + HCTZ

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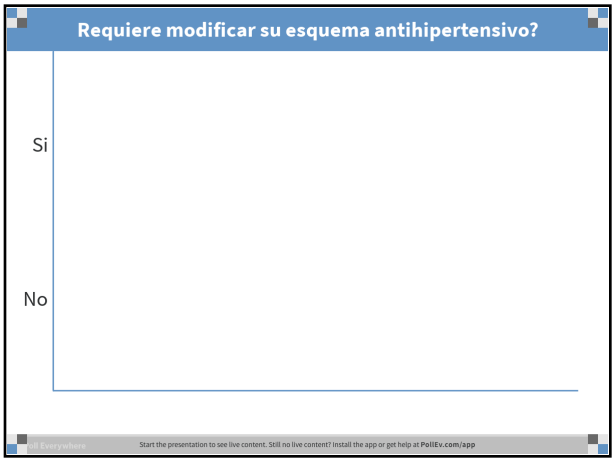
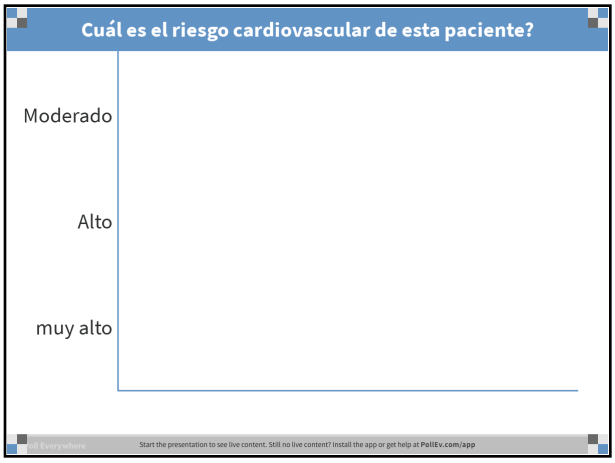
Caso #3

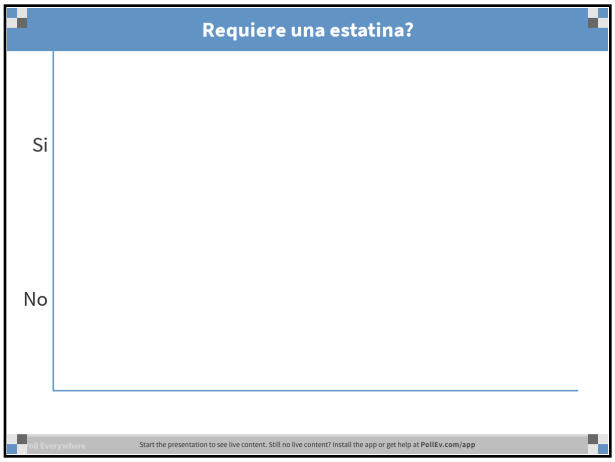
- Femenina de 70 años, HTA de 40 años de evolución, en tratamiento con enalapril 20 mg por día, amlodipine 5 mg por día
- No es portadora de enfermedad cardiovascular ni DM
- Acude a control de hipertensión arterial
- Examen físico
  - Presión arterial 134/80 mm Hg
  - IMC 26 kg/m2

Caso #3

- Laboratorios:
  - Creatinina 1.7 mg/dl (AEC 30 cc/min)
  - Glicemia 104 mg/dl
  - Colesterol total 190 mg/dl, HDL 30 mg/dl, triglicéridos 128 mg/dl, LDL 134 mg/dl
  - K 4.9 mEq/L
  - Proteinuria 120 mg/24 horas

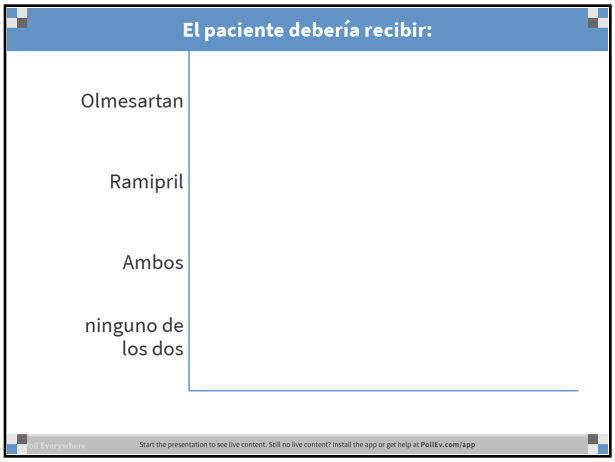






Caso #4

- Masculino de 55 años
- DM-2 diagnosticado hace un año, tratamiento con metformin 500 mg bid y sitagliptina 100 mg por día
- No usa otros fármacos en estos momentos
- Presión arterial 124/80 mm Hg
- IMC 32 kg/m2
- Hba1c 6.2%
- Microalbuminuria negativo. Creatinina 1.1 mg/dl.



Caso #5

- Paciente masculino de 65 años, tuvo IAM hace un mes para lo cual se hizo angioplastía y colocación de 2 stents. Tiene ahora disnea de medianos esfuerzos. No tiene edemas.
- Eco muestra hipoquinesia anterior con fracción de eyección de 35%
- Tiene presión arterial en 146/94 mm Hg tomando atenolol 50 mg por día, AAS 100 mg por día, clopidogrel 75 mg por día, rosuvastatina 20 mg por día

El esquema antihipertensivo:

- está bien y lo dejaría igual
- debería suspender atenolol y cambiarlo por enalapril + carvedilol
- suspendería atenolol y cambiaría por enalapril + furosemida
- suspendería atenolol y cambiaría por enalapril + digoxina

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Caso #6

- Femenina de 80 años, hipertensa de 30 años de evolución.
- Tuvo fractura de cadera hace 6 meses por caída de su propia altura
- Su tratamiento actual es alendronato 70 mg/semana, hidroclorotiazida 25 mg por día, alfametildopa 500 mg bid
- La paciente refiere que se marea cuando se pone de pie y pasa somnolienta
- Su presión actual está en 140/90 mm Hg

La presión meta para esta paciente sería:

- menos de 150/90 mm Hg
- menos de 140/90 mm Hg
- menos de 130/80 mm Hg
- menos de 120/80 mm Hg

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El esquema antihipertensivo que usaría sería:

- dejarla igual (HCTZ + alfalmetildopa)
- cambiar por indapamida + perindopril
- cambiar por indapamida monoterapia
- dejar HCTZ y suspender alfametildopa

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