Hypertension updates Clinical Practice Guidelines

By

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Global Hypertension Facts

PREVALANCE

1 Billion

Estimated people worldwide have hypertension[1]

GLOBAL INCIDENCE

60%

Expected increase in the global incidence of hypertension by 2025[1]

CURRENT TREATMENTS

10 Million

~~Estimated people worldwide who have high blood pressure despite taking 2 or more medications[1]~~

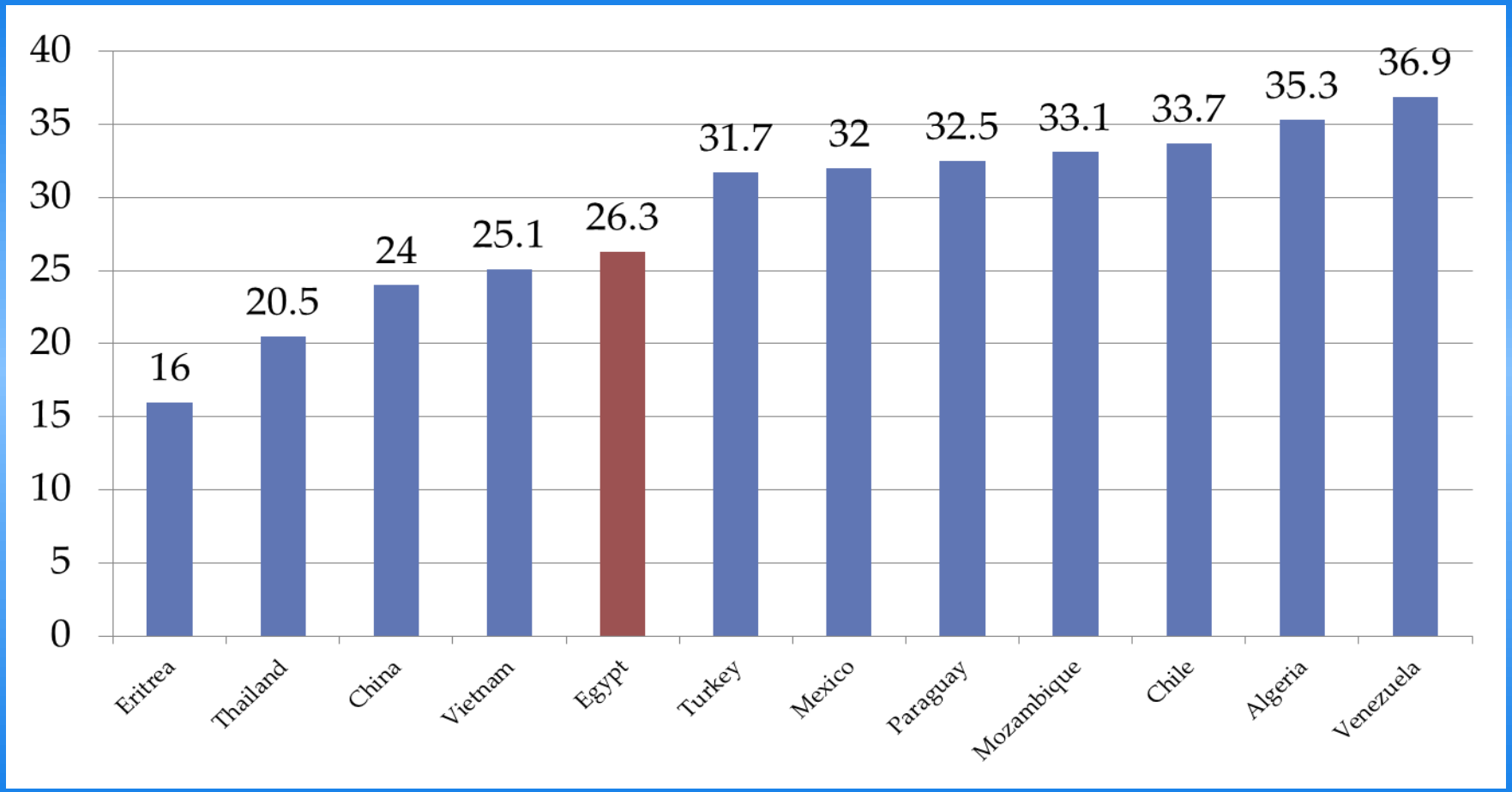
COST

~10% of all global healthcare spending is attributable to high blood pressure[2]

1.Kearney PM, Whelton M, Reynolds K, Muntner P, Whelton PK, He J. Global burden of hypertension: analysis of worldwide data. Lancet. 2005 Jan 15 21;365(9455):217 23.

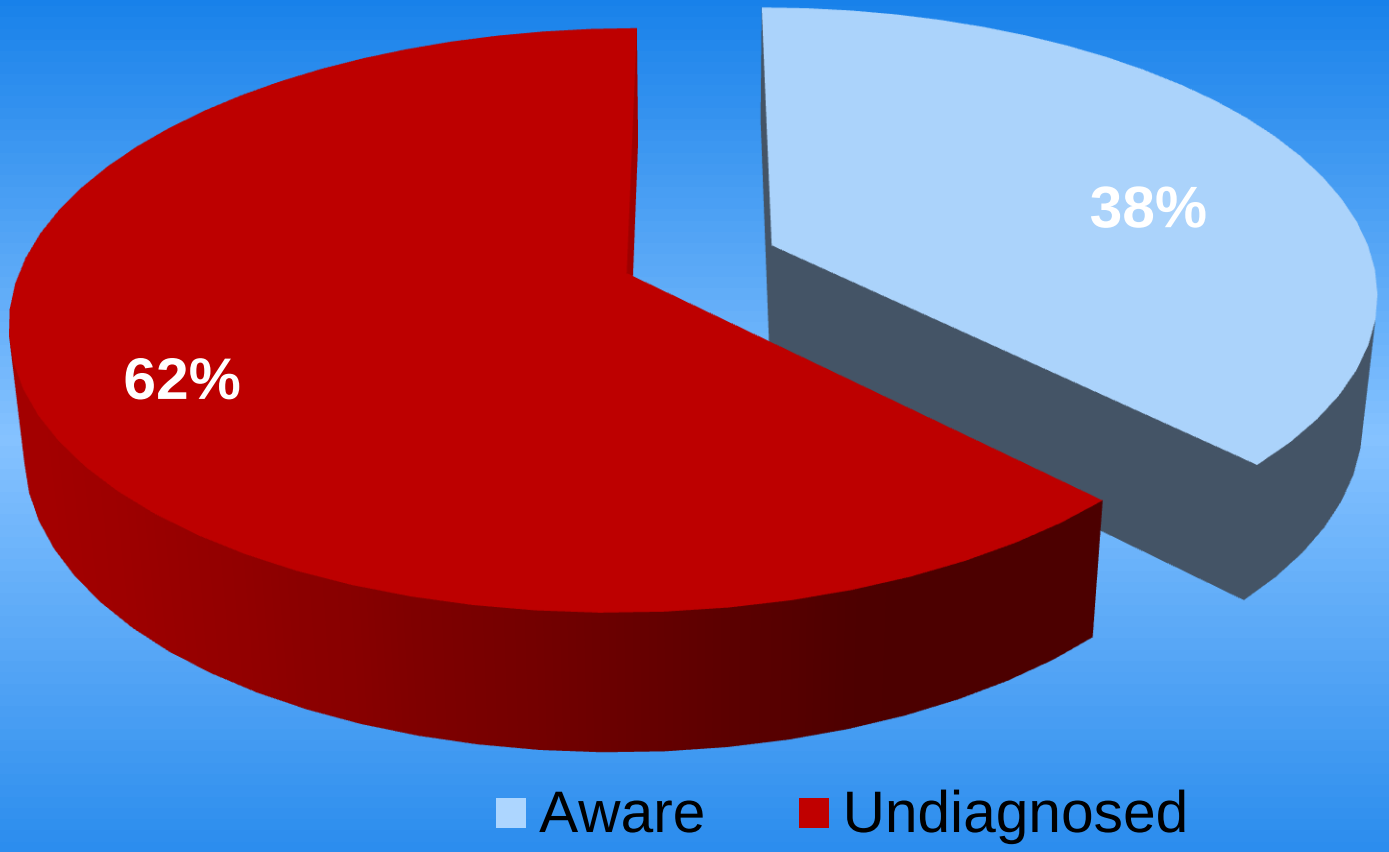
2. Gaziano TA, Asaf B, S Anand, et.al. The global cost of nonoptimal blood pressure. J Hypertens 2009; 27(7): 1472-1477.

Prevalence of hypertension in developing countries



M Mohsen Ibrahim, Albertino Damasceno ; www.thelancet.com ***Vol 380 August 11, 2012***

Only 38% of hypertensive Egyptians are aware of their high BP



M Mohsen Ibrahim, Albertino Damasceno ; www.thelancet.com ***Vol 380 August 11, 2012***

CASE SCENARIO

- M. A. is a 62-year-old man with type 2 diabetes first diagnosed 3 years ago. Other medical problems include obesity and hypothyroidism. He presents now for routine follow-up and is noted to have a blood pressure of 148/87 mmHg. He is asymptomatic.

- Physical exam reveals; B.P.150/93 mmHg, P. 84/m. There is no retinopathy or thyromegaly. There is no clinical evidence of CHF or PVD.

CASE SCENARIO

- M. A. is a 62-year-old man with type 2 diabetes first diagnosed 3 years ago. Other medical problems include obesity and hypothyroidism. He presents now for routine follow-up and is noted to have a blood pressure of 148/87 mmHg. He is asymptomatic.

- Physical exam reveals; B.P.150/93 mmHg, P. 84/m. There is no retinopathy or thyromegaly. There is no clinical evidence of CHF or PVD.

- Laboratory evaluation reveals trace protein on urinalysis, blood urea nitrogen of 14 mg/dl, serum creatinine of 1.2 mg/dl, random serum glucose of 169 mg/dl, normal electrolytes, and normal thyroid-stimulating hormone levels. A 24-h urine collection reveals a urinary albumin excretion rate of 250 mg/day.

Questions

- **Does this patient have renal disease?**
- **Should his blood pressure be treated?**
- **What is the treatment target?**
- **What treatment strategy should be used?**

CURRENT CHRONIC KIDNEY DISEASE (CKD) NOMENCLATURE USED BY KDIGO

- CKD is defined as abnormalities of kidney structure or function, present for >3 months, with implications for health and CKD is classified based on cause, GFR category, and albuminuria category (CGA).

Prognosis of CKD by GFR and Albuminuria Categories: KDIGO 2012

GFR categories (ml/min/1.73 m²) Description and range			Persistent albuminuria categories Description and range		
			A1	A2	A3
			Normal to mildly increased	Moderately increased	Severely increased
			<30 mg/g <3 mg/mmol	30-3[illegible]g/g 3-3[illegible]mol	>300 >30 m[illegible]ol
G1	Normal or high	≥90			
G2	Mildly decreased	60-89			
G3a	Mildly to moderately decreased	45-59			
G3b	Moderately to severely decreased	30-44			
G4	Severely decreased	15-29			
G5	Kidney failure	<15			

Previously micro-albuminuria

Previously macro-albuminuria

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red, very high risk.

KDIGO Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int Suppl. 2013;3:136-150. http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf Accessed February 26, 2013

Risk stratification

Other risk factors, asymptomatic organ damage or disease	Blood Pressure (mmHg)			
	High normal SBP 130–139 or DBP 85–89	Grade 1 HT SBP 140–159 or DBP 90–99	Grade 2 HT SBP 160–179 or DBP 100–109	Grade 3 HT SBP ≥180 or DBP ≥110
No other RF		Low risk	Moderate risk	High risk
1–2 RF	Low risk	Moderate risk	Moderate to high risk	High risk
≥3 RF	Low to Moderate risk	Moderate to high risk	High Risk	High risk
OD, CKD stage 3 or diabetes	Moderate to high risk	High risk	High risk	High to very high risk
Symptomatic CVD, CKD stage ≥4 or diabetes with OD/RFs	Very high risk	Very high risk	Very high risk	Very high risk

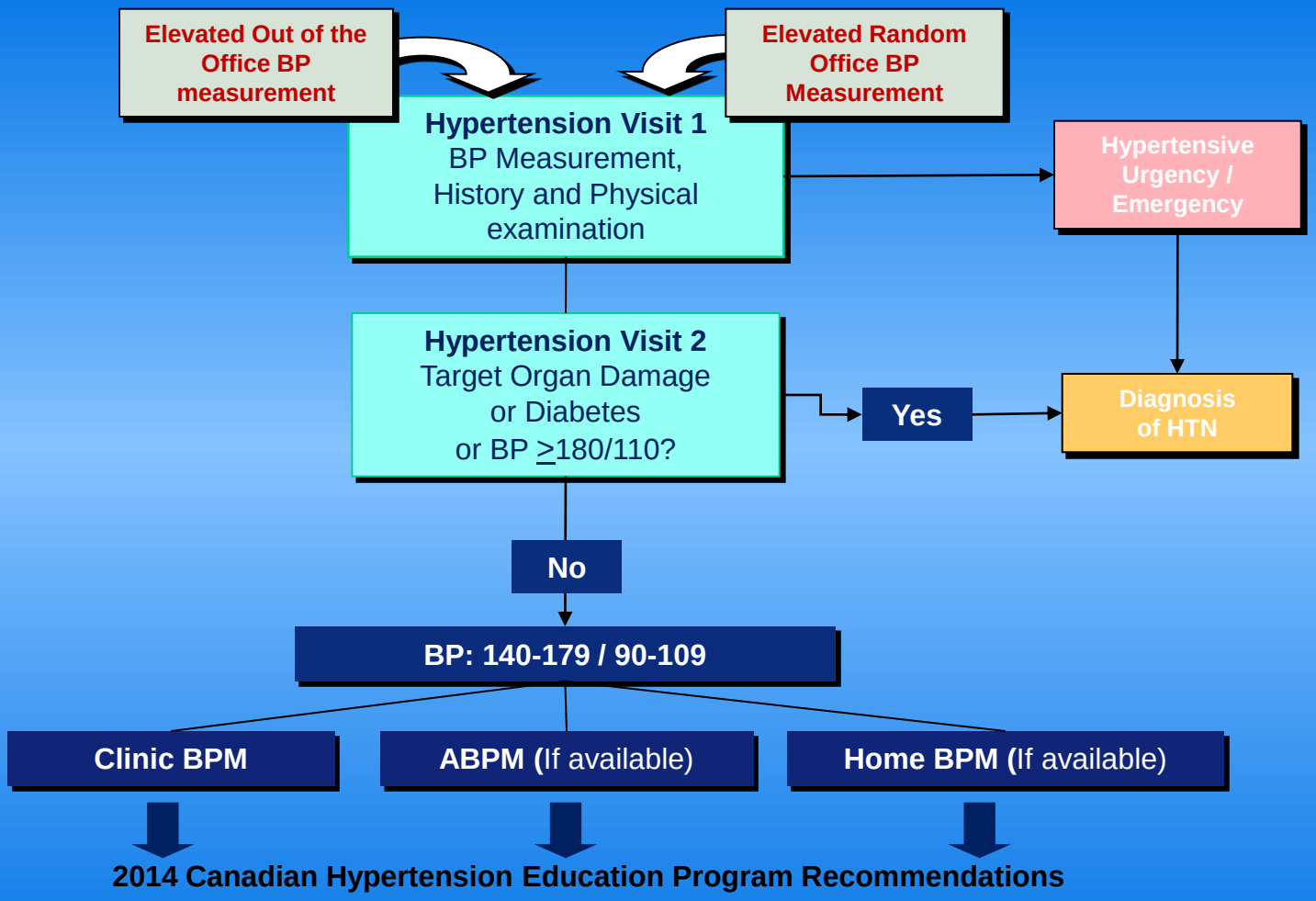
BP = blood pressure; CKD = chronic kidney disease; CV = cardiovascular; CVD = cardiovascular disease; DBP = diastolic blood pressure; HT = hypertension; OD = organ damage; RF = risk factor; SBP = systolic blood pressure.

ESC/ESH 2013 guidelines

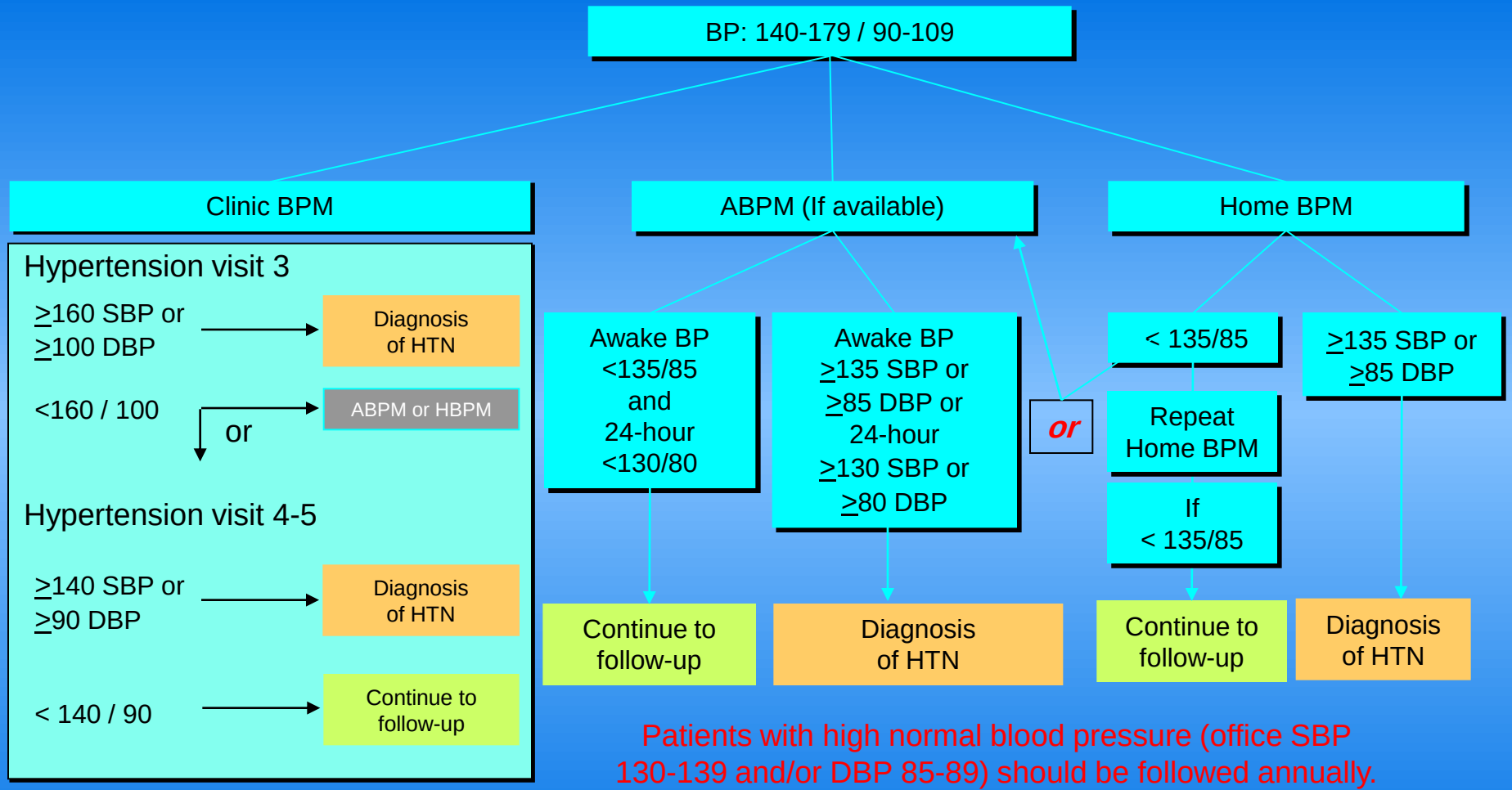
Recommendations for Hypertension Diagnosis, Assessment, and Follow-up

2014 **C**anadian **H**ypertension **E**ducation **P**rogram

Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up



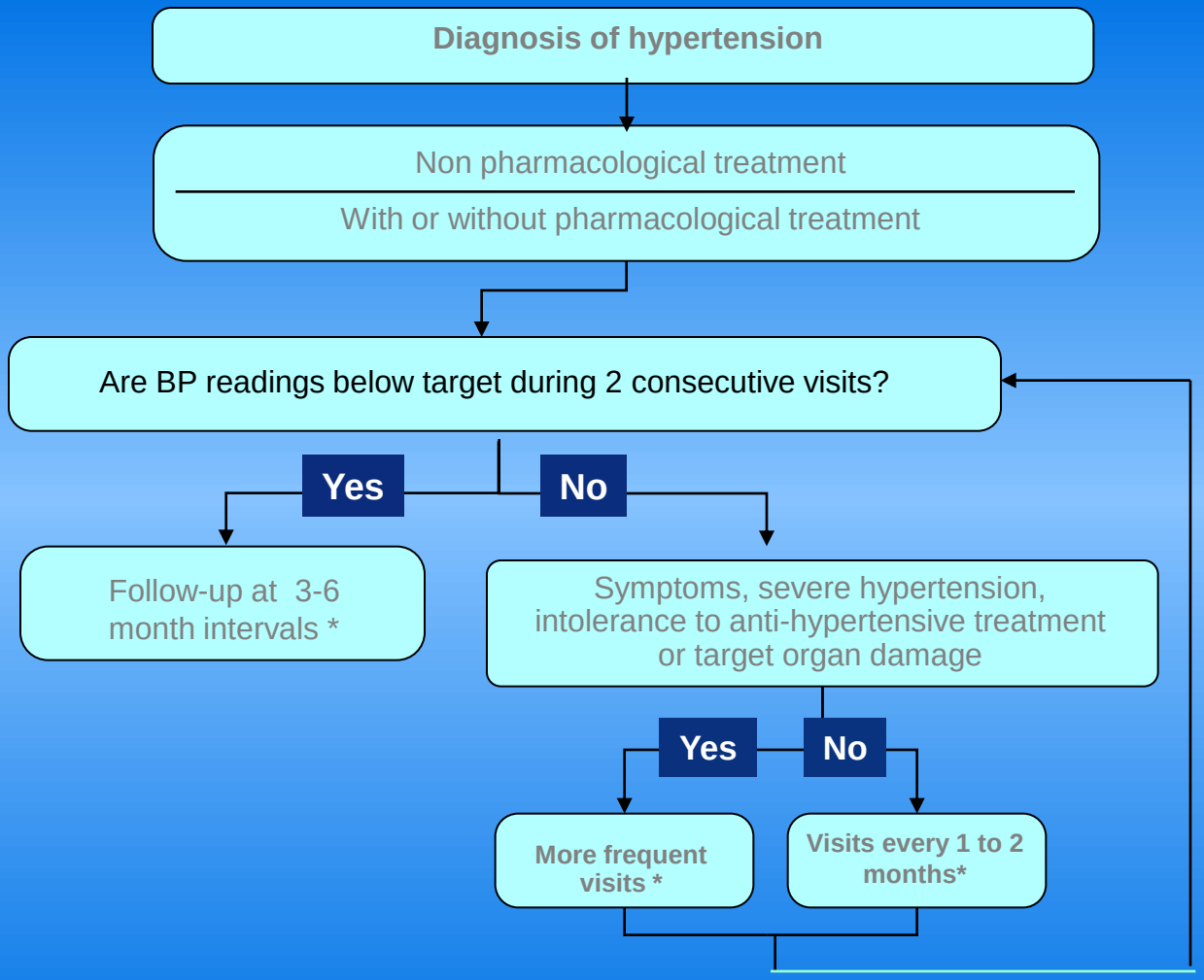
Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up



Patients with high normal blood pressure (office SBP 130-139 and/or DBP 85-89) should be followed annually.

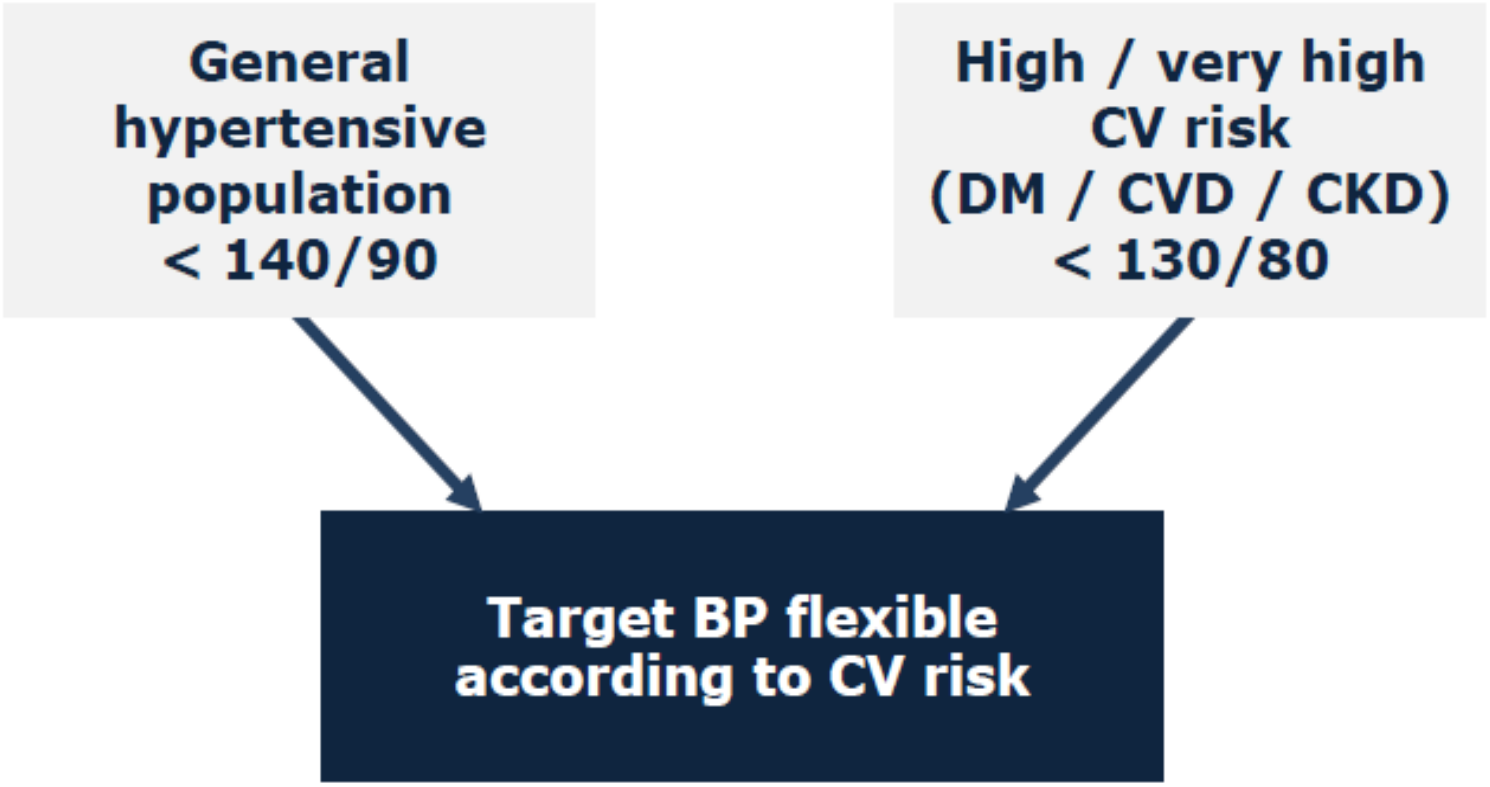
Criteria for the Diagnosis of Hypertension and Recommendations for Follow-up

***Consider home blood pressure measurement for follow-up readings, to assess for the presence of masked hypertension or white coat effect and to enhance adherence.**



New BP goals

2007 ESC/ESH hypertension guidelines



2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults.

Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8)

Recommendations

	BP thresholds	Goals
✓ *Recommendation* **1** *(Strong recommendation)* General population **≥60 years**	SBP **≥150 mm Hg** or DBP **≥90 mm Hg**	SBP **<150 mm Hg** and DBP **<90 mm Hg**
✓ *Recommendation* **2** *(Strong recommendation)* General population **<60 years**	DBP **≥90 mm Hg**	DBP **<90 mm Hg**
✓ *Recommendation* **3** *(Expert opinion)* General population **<60 years**	SBP **≥140 mm Hg**	SBP **<140 mm Hg**

JAMA. doi:10.1001/jama.2013.284427. Published online December 18, 2013.

Recommendations

	BP thresholds	Goals
✓ *Recommendation 4* *(Expert opinion)*		
Population **with CKD** ≥18 years	SBP **≥140 mm Hg** or DBP **≥90 mm Hg**	SBP **<140 mm Hg** and DBP **<90 mm Hg**
✓ *Recommendation 5* *(Expert opinion)*		
Population **with diabetes** ≥18 years	SBP **≥140 mm Hg** or DBP **≥90 mm Hg**	SBP **<140 mm Hg** and DBP **<90 mm Hg**

	Initial treatment
✓ *Recommendation 6* *(Moderate recommendation)*	
General **nonblack** population *(with diabetes)*	**Thiazide-type diuretic**, **calcium channel blocker** (CCB), **angiotensin-converting enzyme inhibitor** (ACEI), or **angiotensin receptor blocker** (ARB)

JAMA. doi:10.1001/jama.2013.284427. Published online December 18, 2013.

Recommendations

✓ *Recommendation* **7**

(Moderate recommendation)

General *(non diabetes)*
black population

Initial treatments

Thiazide-type diuretic,
or **calcium channel blocker** (CCB)

✓ *Recommendation* **8**

(Moderate recommendation)

Population **with CKD**
≥18 years

Initial or add-on treatments

Angiotensin-converting enzyme inhibitor (ACEI),
or **angiotensin receptor blocker** (ARB)

✓ *Recommendation* **9**

(Expert opinion)

Goal BP not reached
within **a month** of treatment

Goal BP **not reached**
with 2 drugs

Non control strategies

Increase the dose of the initial drug,
or **add a second drug** *(from the list provided)*

Add and titrate a third drug *(from the list provided)*
Do **not use an ACEI and an ARB together** in the same patient

JAMA. doi:10.1001/jama.2013.284427. Published online December 18, 2013.

SPRINT Research Question

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

↓

Randomized Controlled Trial
Target Systolic BP

nsive Treatment	Standard Treatm
SBP < 120 mm Hg	Goal SBP < 140 m

SPRINT design details available at:

- ClinicalTrials.gov (NCT01206062)
- Ambrosius WT et al. Clin. Trials. 2014;11:532-546.

ADA 2013[39]	Diabetes	<140/80

Systolic Blood Pressure Intervention Trial

- SPRINT is an unmasked open-label randomized controlled clinical trial examining the effect of a high blood pressure treatment strategy aimed at reducing systolic blood pressure (SBP) to a lower goal than is currently recommended.
- It was sponsored by **NIH**

Preliminary Results

- Intensive management of SBP to a target of <120 mm Hg **reduced rates of complications of high blood pressure** (including heart attacks, heart failure, and stroke) by **30%** and **lowered the risk of death** by almost **25%** as compared to a systolic blood pressure target of <140 mm Hg.

- The interim analyses indicate these results are consistent for the overall study population.

- The subgroup analysis is going on & when completed, the final results will be published in a peer – reviewed journal.

Take Home Message

- SPRINT is a randomized clinical trial of systolic blood pressure lowering from usual goal to lower-than-usual goal in 9250 participants with 88.7% power to detect a 20% reduction in the primary composite CVD outcome

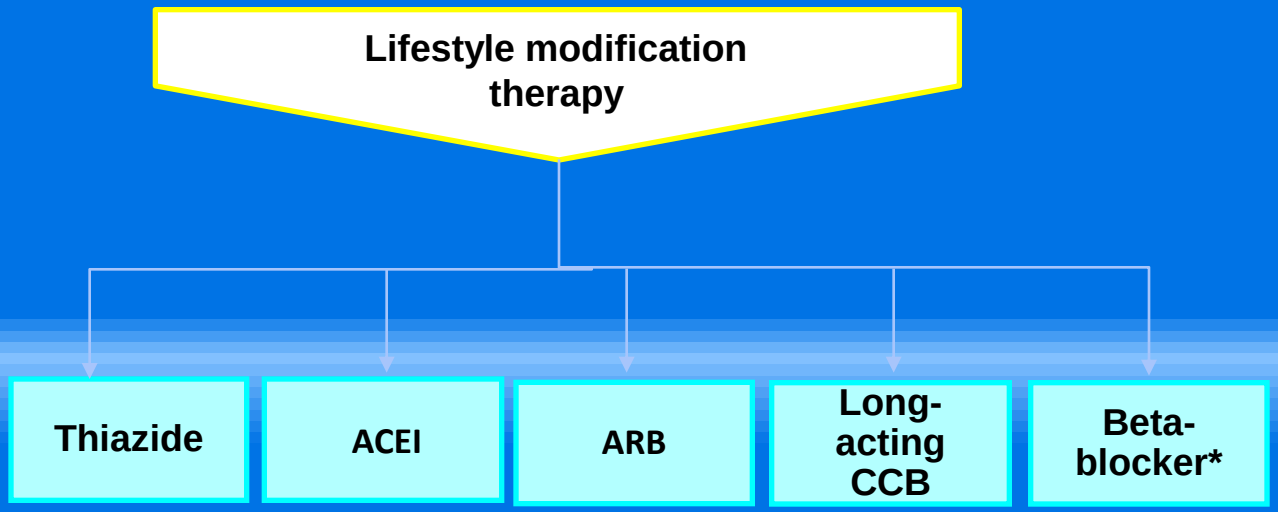
SPRINT
stolic Blood Pressure Intervention Trial

National Heart Lung and Blood Institute
NIDDK
National Institute on Aging

Treatment of Adults with Systolic/Diastolic Hypertension without Other Compelling Indications

TARGET <140/90 mmHg

INITIAL TREATMENT AND MONOTHERAPY



A combination of 2 first line drugs may be considered as initial therapy if the blood pressure is ≥20 mmHg systolic or ≥10 mmHg diastolic above target

***BBs are not indicated as first line therapy for age 60 and above**

ACEI, ARB and direct renin inhibitors are contraindicated in pregnancy and caution is required in prescribing to women of child bearing potential

Treatment of Hypertension in association with Diabetic Nephropathy

Treatment of Hypertension in association with Diabetic Nephropathy

If Creatinine over 150 µmol/L or creatinine clearance below 30 ml/min (0.5 ml/sec), a loop diuretic should be substituted for a thiazide diuretic if control of volume is desired

DIABETES
<u>with</u>
Nephropathy

→ **ACE Inhibitor or ARB**

→ **Addition of one or more of** Long-acting CCB or Thiazide diuretic

3 - 4 drugs combination may be needed

IF ACEI and ARB are contraindicated or not tolerated, SUBSTITUTE
- **Long-acting CCB or**
- **Thiazide diuretic**

Monitor serum potassium and creatinine carefully in patients with CKD prescribed an ACEI or ARB

ESC/ESH 2013, Therapeutic strategies in HTN patients with nephropathy

Recommendations	Class[a]	Level[b]
Lowering SBP to <140 mmHg should be considered.	IIa	B
When overt proteinuria is present, SBP values <130 mmHg may be considered, provided that changes in eGFR are monitored.	IIb	B
RAS blockers are more effective in reducing albuminuria than other antihypertensive agents, and are indicated in hypertensive patients in the presence of microalbuminuria or overt proteinuria.	I	A
Reaching BP goals usually requires combination therapy, and it is recommended to combine RAS blockers with other antihypertensive agents.	I	A

2013 ESH/ESC Guidelines for the management of arterial hypertension


American
Diabetes
Association.

ADA 2014 Recommendations: Nephropathy

Treatment

- ACE inhibitor, ARB not recommended in diabetic patients with normal blood pressure, albumin excretion <30 mg/24 h for primary prevention of diabetic kidney disease

- Non pregnant patient with modestly elevated (30–299 mg/day) or higher levels (>300 mg/day) of urinary albumin excretion
  - ***Use either ACE inhibitors or ARBs (not both)***

ADA. VI. Prevention, Management of Complications. Diabetes Care 2014;37(suppl 1):S42

ADA 2014 Recommendations: Nephropathy

Treatment

- For people with diabetes and diabetic kidney disease (albuminuria >30 mg/24 h), reducing dietary protein below usual intake not recommended
  - When ACE inhibitors, ARBs, or diuretics are used, monitor serum creatinine, potassium levels for increased creatinine or changes in potassium

ADA. VI. Prevention, Management of Complications. Diabetes Care 2014;37(suppl 1):S42–S43


KIDNEY DISEASE
IMPROVING GLOBAL OUTCOMES
KDIGO

BP and RAAS interruption

- Individualize BP targets and agents.
- Inquire about postural dizziness and check for postural hypotension regularly when treating CKD patients with BP-lowering drugs.
- We recommend that in both diabetic and non-diabetic adults with CKD and urine albumin excretion ≥30 mg/ 24 hours whose office BP is consistently >140/90mm Hg be treated with BP-lowering drugs to maintain a BP that is consistently ≤140/90mm Hg

KDIGO Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int Suppl. 2013;3:136-150.
http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf Accessed February 26, 2013

BP and RAAS interruption

- We suggest that an ARB or ACE-I be used in diabetic adults with CKD and urine albumin excretion 30–300 mg/ 24 hours.
- We recommend that an ARB or ACE-I be used in both diabetic and non-diabetic adults with CKD and urine albumin excretion >300 mg/24 hours even with normal BP
- There is insufficient evidence to recommend combining an ACE-I with ARBs to prevent progression of CKD.
- We suggest that an ARB or ACE-I be used in children with CKD in whom treatment with BP-lowering drugs is indicated, irrespective of the level of proteinuria.

KDIGO Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. Kidney Int Suppl. 2013;3:136-150.
http://www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf Accessed February 26, 2013

RAAS System Blockers in DKD

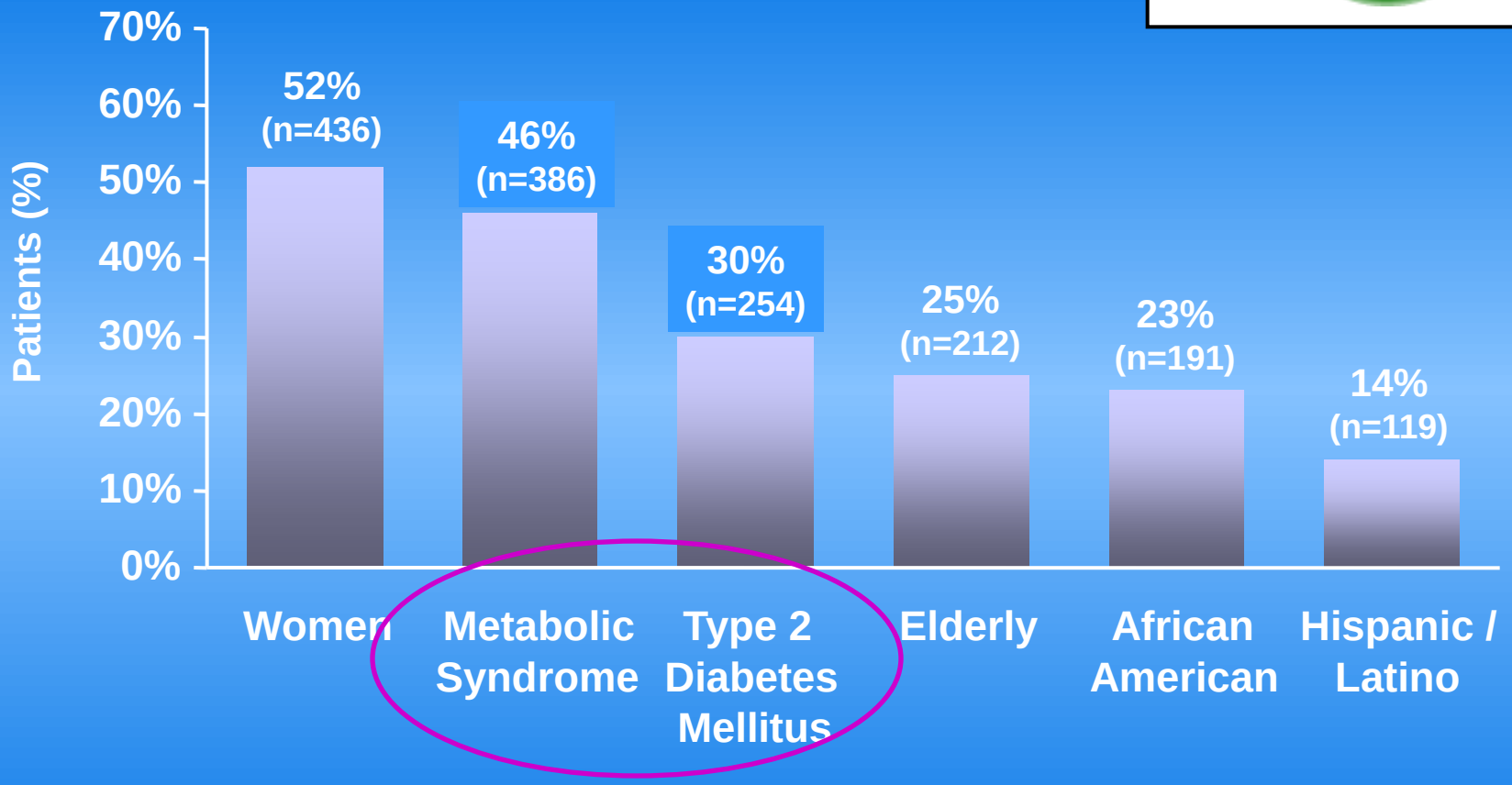
6.1: We recommend not using an angiotensin-converting enzyme inhibitor (ACE-I) or an angiotensin receptor blocker (ARB) for the primary prevention of DKD in normotensive normoalbuminuric patients with diabetes. (*1A*)

6.2: We suggest using an ACE-I or an ARB in normotensive patients with diabetes and albuminuria levels ≥30 mg/g who are at high risk of DKD or its progression. (*2C*)

National Kidney Foundation. KDOQI Clinical Practice Guideline for Diabetes and CKD: 2012 update. *Am J Kidney Dis*. 2012;60(5):850-886.

National Kidney Foundation®
KDOQI

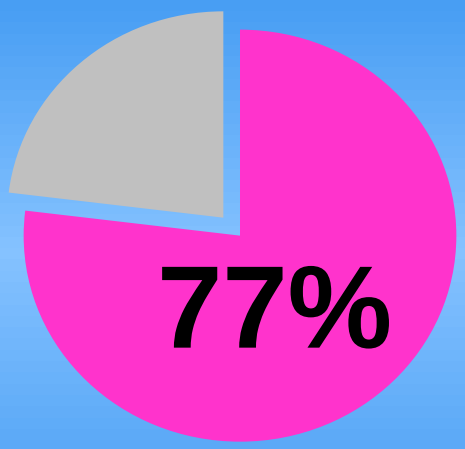
INCLUSIVE Patient Demographic



1. *Neuteol JM, et al. J Clin Hypertens. 2005;7(10):578-86*

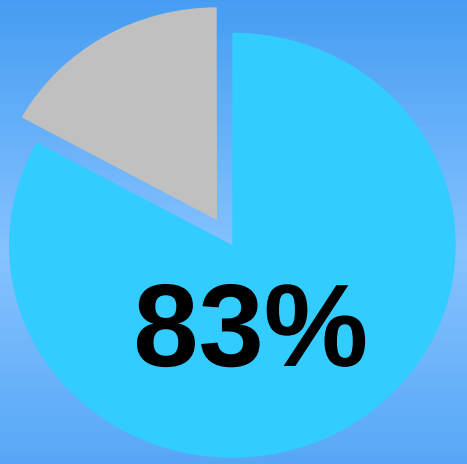
INCLUSIVE Results: goal attainment at week 18 [1]

SBP goal attained



Irbesartan/HCTZ 300/25 mg

DBP goal attained



Irbesartan /HCTZ 300/25 mg

Intent-to-treat (ITT) population, n = 736.
Week 18 aggregate data for irbesartan/HCTZ 150/12.5 mg and 300/25 mg include all patients whose BP was controlled from baseline.

1. *Neuteol JM, et al. J Clin Hypertens. 2005;7(10):578-86*

INCLUSIVE Conclusion [1]

- Irbesartan in combination with HCTZ enabled nearly 8 out of 10 patients to achieve BP goal
- INCLUSIVE (Irbesartan 300/25 mg) featured difficult to *get to goal* patient populations
- The combination was well tolerated
- Results consistent across diverse patient populations

1. *Neuteol JM, et al. J Clin Hypertens. 2005;7(10):578-86*

When to judge the efficacy of the treatment?

JNC 8 & ESC/ESH 2013

After the initiation of antihypertensive drug therapy, it is important to see the patient at 2- to 4-week intervals to evaluate the effects on BP and to assess possible side-effects.

Blood Pressure control,
is it a matter of blood pressure reduction only?

- **When choosing an antihypertensive, consider the full aspects of TRUE BP control:**
  - Powerful BP reduction.
  - 24 hr BP control.
  - Reducing BP variability
  - Provide CV protection stroke prevention and mortality reduction
  - Have safety metabolic profile
  - Cost effective

TAKE HOME MESSAGE

- Hypertension and Diabetes are the most common causes of CV events and ESRD.

- Lowering B.P alone is the corner stone factor for end organ protection.
- ➢ Irbesartan/HCTZ allows 8 out of 10 of hard to treat hypertensive patients to reach to B.P goal.
  INCLUSIVE trial.

- Micro albuminuria is a critical risk factor for both CV and Kidney diseases.
- ➢ Irbesartan provides early and late stage renal protection to hypertensive patients.
  IRMA II & IDNT trials.

- Hypertension is the main cause of LVH
- ➢ Irbesartan has proved data at Regression of LVMI.
  SILVHIA & GAUDIO trials


Thank You