

HYPERTENSION!!!

Drs. Mariam Inuwa & Iseko Iseko

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Cardiocare (Limi) Multispecialty Hospital,
Abuja-Nigeria.

Everyone does not
need to go abroad for
advanced
Cardiovascular
healthcare.

World Class Healthcare.
All Subspecialties. All Day, Every Day.

Outline- What, Why, How, When...

1. What?

- What is it?

2. Why?

- Why should we care?

3. How to See?

- How we recognize and evaluate

4. When & How to Treat/Refer?

- Appropriate Care

- **36yr old doctor** after a routine night call,
 - complained of generalized body weakness.
 - She is not a known hypertensive but
 - Her colleague checked her BP before going home and it was 183/90mmhg.
- Her colleague who saw her felt it was **“stress-related”** and went home to **“rest”**
- Woke up the next day with **hemiparesis and slurred speech**
- **What could he have done differently?**



FOUNDED
SINCE 1982



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Since 1982

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KPC/NDIC, CBI, Abuja.

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 **Limi Children's
Hospital**

 39, Ademola Adetokunbo Crescent,
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www.limihospital.net



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A MEMBER OF THE LIMI GROUP

 Giza Close, Opp PCDA/Ecobank, Area 11, Garki, Abuja

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**TO SUPPORT
& SERVE**

- Hypertension is defined as the level of blood pressure at which
 - the benefits of treatment unequivocally outweigh the risks of treatment:
 - the **office systolic BP values are ≥ 140 mmHg and/or diastolic BP values are ≥ 90 mmHg**

- **Persistently high BP in systemic arteries** is the hallmark of hypertension,
- It is the most important modifiable risk factor for all-cause and CVD morbidity and mortality globally.
- Hypertension may be:
 1. **Primary** -a variety of environmental or genetic causes (90-95% of adult cases)
 2. **Secondary**- due to renal, vascular and endocrine causes. (2-10% of adult cases)

- The overall prevalence of hypertension was 38.1%
- According to the report, about 62% of hypertensive Nigerians were aware of their status
- 33% of them were receiving treatment, out of whom only about 13% had controlled blood pressure

- 46yr old Banker account presented with BP 141/80mmhg during a routine check.
- She has no complains, both parents are hypertensive and diabetic
- Obese, not pale, anicteric, acyanosed, nil pedal oedema
- ECG- normal sinus rhythm

- a) **She is definitely Hypertensive**
- b) **She is not hypertensive**
- c) **I don't know jare**

2. How is Blood Pressure Properly Measured?



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2.1 Pre-Conditions for BP Measurement

- Seated for at least 5mins in a Quiet room-
 - No talking to, about, or by subject
- No exercise, emotional excitement nor caffeine in the last 30-60mins
- **Resting and supported** position of back, arms, legs
 - Muscle contraction to support arm can raise BP
- Cuff at the level of the heart
- No crossed legs
- No clothing under cuff
- **Appropriately sized & placed cuff**

2.2 Appropriate Cuff

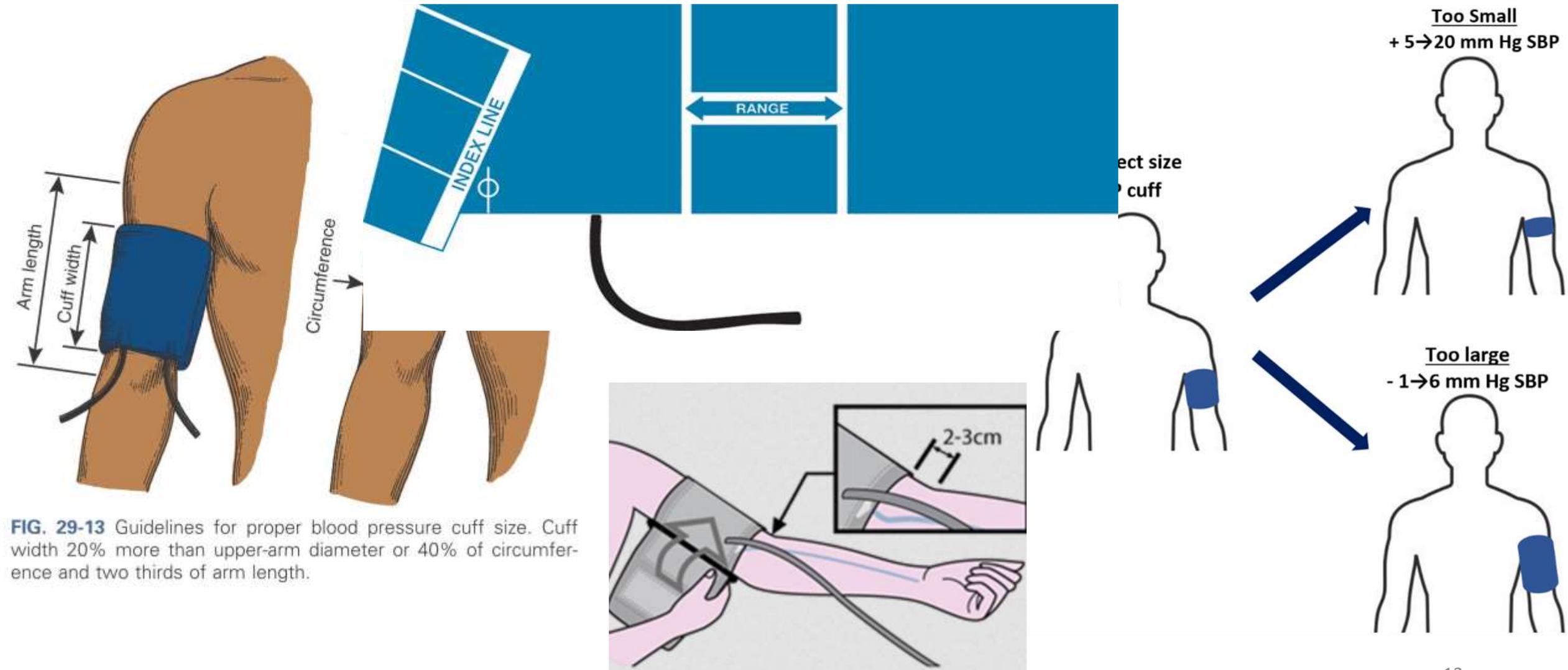


FIG. 29-13 Guidelines for proper blood pressure cuff size. Cuff width 20% more than upper-arm diameter or 40% of circumference and two thirds of arm length.

HOW TO USE THE CUFF CORRECTLY



Point 1

Please use the same arm for every measurement.



Point 2

Keep the Lower edge of the cuff 0.8"-1.2" (2-3cm) from the inner elbow.



Point 3

Keep a certain space between the cuff and arm. Ensure that one finger can be inserted.



Point 4

The air tube is on the inside of your arm and aligned with your middle finger.

2.4 Measuring Blood Pressure

- Use either:
 1. **Mercury sphygmomanometer:**
 - *The diastolic reading is taken at the level when sounds disappear (Korotkoff phase V).*
 2. **Validated Professional Electronic Device**
 3. **Aneroid manometer-** recently calibrated
- Two or 3 measurements should be taken at each visit
 - Average of last two (2)
 - At least 1-2 minutes should be allowed between readings.
- **Wrist-based sphygs largely not recommended**

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What are the Cardiocare Multispecialty Hospital's services?



We provide **24/7 world-class healthcare solutions** for patients, hospitals, and their doctors in:

- ✓ Interventional Cardiology (Cathlab)
- ✓ Endocrinology, Diabetology & Metabolic Medicine
- ✓ Cardiology
- ✓ Nephrology, Transplant & Dialysis
- ✓ Neurology
- ✓ Rheumatology
- ✓ Pulmonology
- ✓ Critical Care
- ✓ Cardiothoracic Surgery
- ✓ General Internal Medicine
- ✓ Comprehensive Medical Checkups



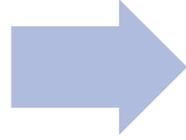
- Check that Pulse is Regular
- No digital preference, nor rounding up/down
- BP values obtained outside the clinical setting are lower and correlate better with target organ damage than BP measurements by healthcare personnel.

3. Diagnosing Hypertension?

8 Cs of Hypertension Care

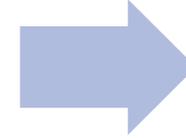
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- **>2 office readings**
- **And/Or Ambulatory Blood Pressure**
 - High normal
 - Suspected Masked HTN or
 - Control



2. CHECK

- History
- Examination
- Investigations
- Other CV Risk
- Hypertension Mediated/Associated Organ Dysfunction (HMOD)
- ASCVD Score



3. CALCULATE RISK

- Blood Pressure Grade
- Co-Morbidities
- HMOD
 - Absent/ Present
 - Asymptomatic
 - Established

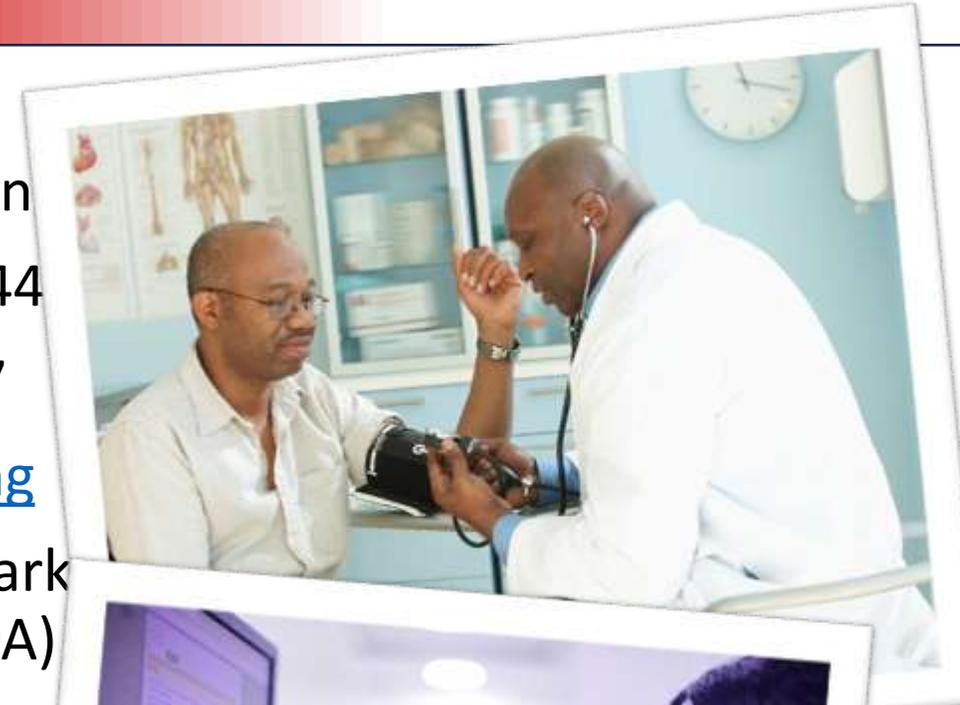
3.1 Definitions of Hypertension according to Office, ambulatory and home BP levels

	SYSTOLIC		DIASTOLIC
<u>Office BP</u>	≥ 140	AND/OR	≥ 90
<u>Home BP Mean</u>	≥ 135	AND/OR	≥ 85
<u>Ambulatory BP</u>			
Daytime Mean	≥ 135	AND/OR	≥ 85
Night-time Mean	≥ 120	AND/OR	≥ 70
24-H Mean	≥ 130	AND/OR	≥ 80

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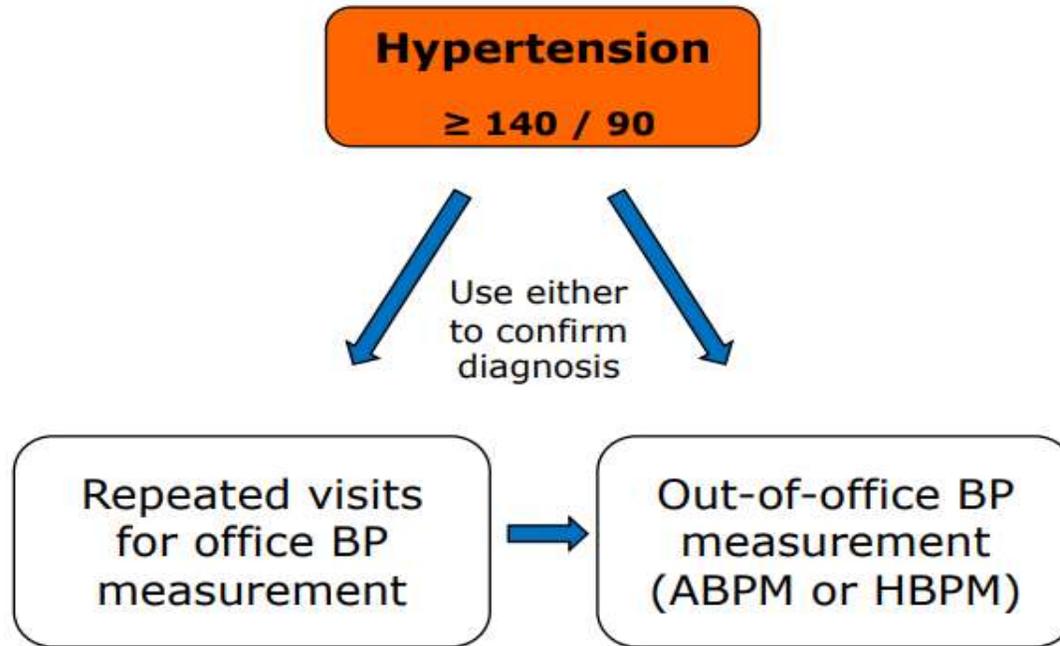
How to refer patients to Consider Cardiocare Multispecialty Hospital?

1. Give a standard referral letter & preferably attach an
2. **Call:** 0908-331-7777, 0817 444
3. **WhatsApp:** 0908-331-7777, 0806-530-1797
4. **Email:** frontdesk@cardiocare.ng
5. **Visit:** 5, Giza Close Area 11, Gark
Dunukofia Str- near FCDA)
6. Kindly indicate Doctor's name, & email/phone number
receive a medical report afterwards.



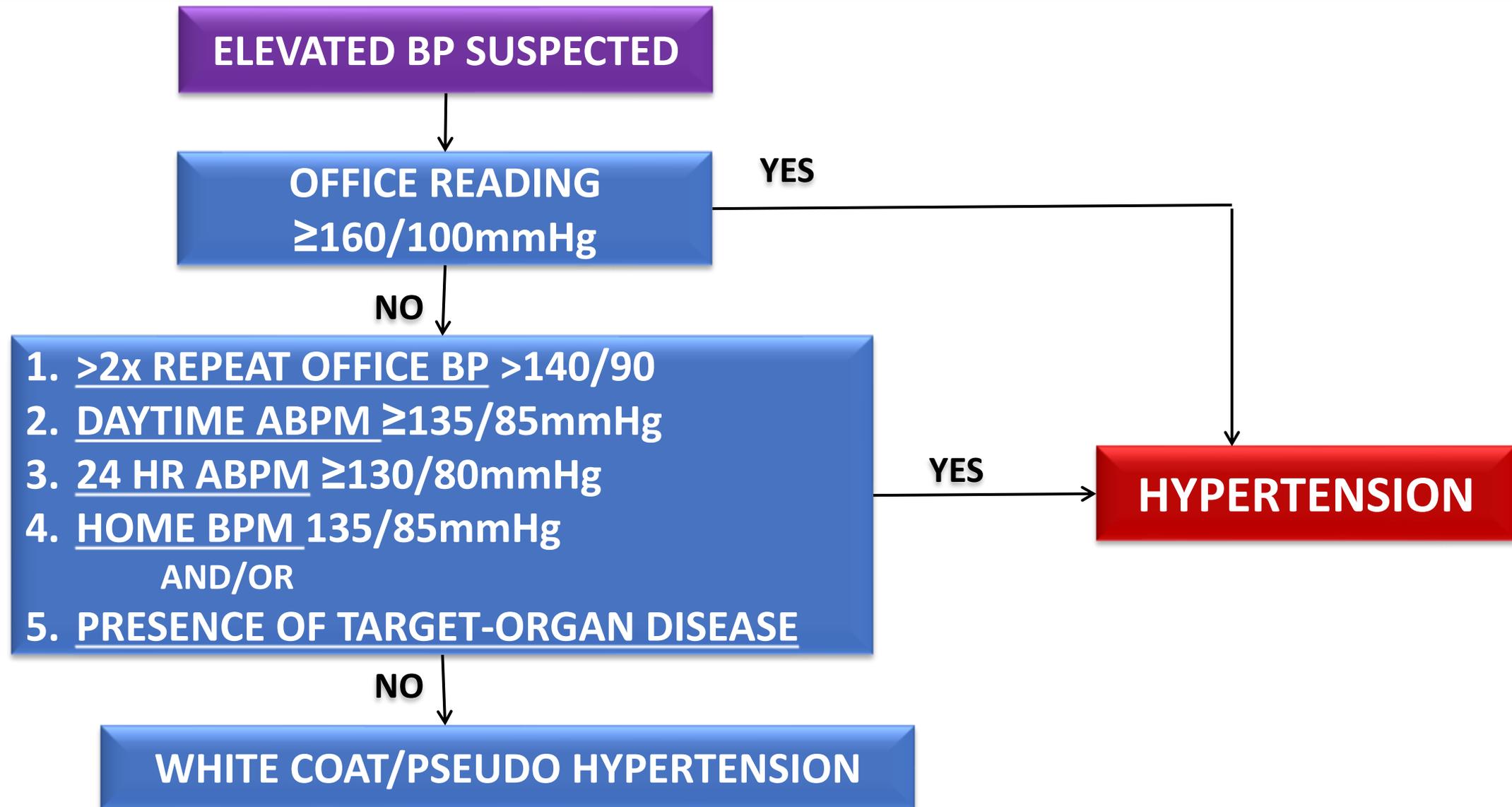
3.2 DIAGNOSIS

Screening and diagnosis of hypertension



- *Repeated Office BP Measurements- at least 3 measurements*
- OR**
- *Out-of-office BPmMeasurements with ABPM or HBPM*
- BUT**
- *Except in Severe Hypertension*

3.3 HYPERTENSION: Clinic Diagnosis



3.4 Hypertension cut-offs

CATEGORY	SYSTOLIC (mmHg)		DIASTOLIC (mmHg)
Optimal/Normal	<130	and	<85
High Normal	130-139	and/or	85-89
Grade 1 Hypertension	140-159	and/or	90-99
Grade 2 Hypertension	160-179	and/or	100-109
Grade 3 Hypertension	≥180	and/or	≥110



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•Clinical & Interventional Cardiology •Endocrinology & Diabetology •Neurology •Nephrology and Dialysis •Hepatology •Critical and Intensive Care •Internal Medicine

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WHITE COAT HYPERTENSION



1. ELEVATED OFFICE BLOOD PRESSURE
AND
2. NORMAL AMBULATORY / HOME BLOOD PRESSURE

MASKED HYPERTENSION



1. NORMAL OFFICE BLOOD PRESSURE
AND
2. ELEVATED AMBULATORY / HOME BLOOD PRESSURE

3.5. Some Terms

	<u>NORMAL OFFICE BLOOD PRESSURE</u>	<u>ABNORMAL OFFICE BLOOD PRESSURE</u>
<u>NORMAL OUT-OF-OFFICE BLOOD PRESSURE</u> (<u>ABPM, HBPM</u>)	True Normotension	White Coat Uncontrolled Hypertension (<u>WUCH</u>)
<u>ABNORMAL OUT-OF-OFFICE BLOOD PRESSURE</u> (<u>ABPM, HBPM</u>)	Masked Uncontrolled Hypertension (<u>MUCH</u>)	Sustained Uncontrolled Hypertension (<u>SUCH</u>)

3.6 When to do Ambulatory Blood Pressure-?

Diagnosis

High normal/Borderline

Suspected White Coat Hypertension

Unstable and/or variable BP on office or home measurements

Suspected Masked HTN – eg Target Organ Damage with normal BP

Control

Control of Very High-Risk Hypertension

Advanced TOD- previous stroke, aortic dissection, etc

Secondary hypertension

Drug-resistant hypertension

To monitor antihypertensive drug therapy

3.6 Secondary Hypertension

- Obstructive Sleep Apnea
- Renal Parenchymal Disease
- Renovascular Disease
 - Atherosclerotic Renovascular disease
 - Fibromuscular Dysplasia (more in young women)
- Primary Aldosteronism
- Pheochromocytoma
- Cushing's Syndrome
- Thyroid Disease
- Hyperparathyroidism
- Coarctation of the Aorta
- Others:
 - Liddle's Syndrome (Low K)
 - Apparent Mineralocorticoid Excess (Low K)
 - Gordon's Syndrome (High K)
 - Geller Syndrome (Pregnancy)
 - Glucocorticoid Remediable Hypertension (Low K)

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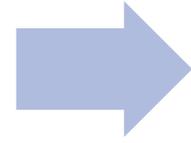


- ▶ **CARDIOCARE MULTI-SPECIALTY HOSPITAL** is an arm of the limi hospital group located at **No 5 giza close, area 11 Garki Abuja**
- ▶ Premier institution wholly dedicated to **comprehensive cardiovascular and Internal Medicine specialty.**
- ▶ Award winning healthcare institution - remarkable for ***“Excellence in cardiovascular care”***
- ▶ Dedicated to **reversing medical tourism in Nigeria.**
- ▶ A **Support Hospital and National Referral Centre** to hospitals, doctors and training institutions.
- ▶ Under the system of the **>40yr old Limi Hospitals** founded in 1982.

8 Cs of Hypertension Care

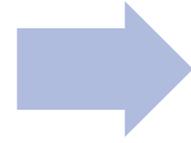
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- **>2 office readings**
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 - High normal
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2. CHECK & EVALUATE

- History
- Examination
- Investigations
- Other CV Risk
- Hypertension Mediated/Associated Organ Dysfunction (HMOD)
- ASCVD Score



3. CALCULATE RISK

- Blood Pressure Grade
- Co-Morbidities
- HMOD
 - Absent/ Present
 - Asymptomatic
 - Established

EVERYONE
WITH ELEVATED BLOOD
PRESSURE (no matter how transient)

MUST BE
EVALUATED FULLY!

No Exceptions.

So, How do we Evaluate Someone
with an Elevated Blood Pressure?

4. Evaluation by History

OUR FOCUS

❖ We aim to provide the best possible care with respect to

SAFETY

EFFECTIVENESS

PATIENT CENTEREDNESS

INTERNATIONAL STANDARDS

4.1 History of Risk

1. Family History

- Hypertension
- Heart Disease
- Dyslipidemia
- Stroke
- Kidney Disease

2. Lifestyle

- Smoking
- Excessive Alcohol
- Sedentary Life/Lack of Exercise
- Diet

3. Personal History

- Erectile Dysfunction
- Previous Pre-eclampsia/Eclampsia

4. Sleep History

- Sleep Apnea
- Snoring

5. Drugs

- NSAID abuse
- Steroids
- OCPs

4.2 History of Complications

1. Brain

- Headache
- Vertigo
- Syncope
- T.I.A
- Stroke

2. Eyes

- Visual Impairment
- T.I.A

3. Heart

- Chest Pain or Previous MI
- Breathlessness
- Leg Swelling
- Palpitations Arrhythmias

4. Kidney

- Nocturia
- Polyuria
- Proteinuria
- Hematuria
- Patient or Family History of Kidney Disease

5. Peripheral Arteries

- Cold extremities
- Intermittent Pain on Exertion
- Non-healing Ulcers

4.3 History of Possible Cause/ Secondary Hypertension

Drugs

- NSAID abuse
- Steroids
- OCPs
- Recreational Drugs
- Chemotherapy
- Nasal Vasoconstrictors

Repetitive Episodes of:

- Sweating
- Anxiety
- Palpitations
- Headaches
- ?PHAEO-CYTOMA

Secondary

- Young onset of Grade 2 or 3 hypertension
- Sudden Development
- Worsening BP
- Renal Dysfunction/ Disease
- Pregnancy
- Sleep Apnea

Hyper-Aldosteronism

- Hypokalemia
- Muscle weakness episodes
- Tetany

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The Limi Hospitals
Since 1982

Our Offered Services



We provide advanced solution to all aspect of Cardiovascular Medicine and Surgeries.

- ✓ **Cardiology**
- ✓ **Interventional Cardiology (Cathlab)**
- ✓ **Endocrinology, Diabetology &**
- ✓ **Nephrology, Transplant & Dialysis**
- ✓ **Neurology**
- ✓ **Rheumatology**
- ✓ **Pulmonology**
- ✓ **Critical Care**
- ✓ **Cardiothoracic Surgery**
- ✓ **General Internal Medicine**
- ✓ **Comprehensive Medical Checkups**

4.4 History of Treatment Course

- Antihypertensive Drugs
 - Current/Past
 - Side Effects
 - Intolerance
- Adherence to Therapy

5. Evaluation by Examination

✓ **Habitus**

- Weight, Height, and BMI
- Waist Circumference

✓ **Signs of Hypertension Mediated Organ Damage**

- Neurological & Cognitive Status
- Fundoscopic Exam
- Auscultation of Heart
- Carotid Artery palpation
- Peripheral Artery palpation
- Blood Pressure check in both Arms (at least once)

ADVANCED CARE

Use links to go to a different page inside your presentation.



- 1 CORONARY ANGIOGRAPHY & INTERVENTIONS-** For patients presenting with chest pains, acute coronary syndrome
- 2 PERIPHERAL ANGIOGRAPHY & INTERVENTIONS-** For patients presenting with Peripheral vascular diseases causing tissue loss or gangrene
- 3 CARDIAC DEVICE IMPLANTATION & PROGRAMMING** such as Pacemakers, ICDs, CRTs for patients presenting with heart failure & Cardiac rhythm abnormalities
- 4 STRUCTURAL HEART INTERVENTIONS –** for patients presenting with ASD, VSD, PDA etc..
- 5 THROMBOEMBOLIC THERAPIES such as IVC Filters,** for VTE (Venous Thromboembolic) treatment and management
- 6 CARDIAC SURGERY –** Open Heart Surgery
- 7 KIDNEY TRANSPLANT & DIALYSIS**
- 8 CRITICAL CARE**
- 9 ADVANCED CARDIAC INVESTIGATIONS**

- **Skin**
 - Café-au-lait patches
- **Kidney**
 - Palpation for enlargement
 - Renal Artery Bruits
- **Pulses**
 - Compare Radial and Femoral Pulse- Coarctation of aorta
- **Hormonal Disease Signs**
 - Signs of Acromegaly
 - Signs of Cushing's Disease
 - Signs of Thyroid Disease

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6. Evaluation by Investigations

- 40 yr old man with complains of headache, no chest pain or dyspnea. Home blood pressure is 130/80mmhg.
- O/E young man, not pale, anicteric, acyanosed, nil pedal oedema
- PR 92bpm
- BP 150/90mmhg
- HS S1S2

What is the appropriate investigation

- a) Brain CT scan
- b) ABPM
- c) Holter ECG
- d) Chest Xray
- e) EEG

Our Non-Invasive Assessment services



- HOTLERS
- SPIROMETRY
- STRESS
- EEG
- ECG

6.1. Why Investigate?

1. Find and alleviate Target Organ Damage or **Hypertension Mediated Organ Damage/Dysfunction- HMOD** (*Hypertension Mediated Organ Dysfunction*).
 - *ECG, Echocardiography, Kidney Function, Lipids, Glycemic Profile, Uric Acid, History, Examination*
 - *Confirm/Exclude Established Cardiovascular Disease and Secondary Causes.*
2. **Risk stratification**
3. Identify other cardiovascular risk factors
4. Exclude secondary hypertension
5. Compelling Indications for certain drug therapy

First Line (FOR ALL)

- Urinalysis
- Serum Creatinine, Urea & Electrolytes, Uric Acid
- FBS, and/or HbA1C
- Lipid profile
- PCV or Full Blood count
- ECG- Electrocardiography
- Echocardiography and/or CXR

Second Line (FOR SOME)

- Renal Artery Doppler +/- abdominal ultrasound
- Uric Acid
- Renin Levels
- 24hr Ambulatory Blood Pressure
- Thyroid function tests
- Urine microscopy
- Cortisol Screening

6.3 Hypertension Mediated Organ Damage (HMOD)

- Left Ventricular Hypertrophy- by ECG/ECHO
 - Abnormal Strain, Tissue, and Transmitral Doppler
 - Left Atrial Enlargement
- Proteinuria or Microalbuminuria
- Elevated Creatinine- eGFR 30-59 ml/min
- Radiologic or Ultrasound evidence of atherosclerotic plaques
- Retinal Hemorrhages or exudates by fundoscopy

NOW AVAILABLE

Cardiac Thoracic Surgery

Pediatric Interventional Cardiology

Structural Heart Interventions



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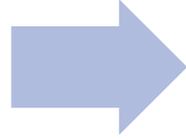


7. Risk Stratification

8 Cs of Hypertension Care

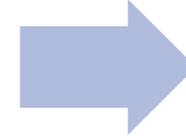
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7.1 Risk Assessment- Stage 1: No HMOD

	Other Risk Factors or HMOD	High Normal BP (130-139/ 80-89)	Grade 1 (150-159/ 90-99)	Grade 2 (160-179/ 100-109)	Grade 3 (≥180/ ≥110)
Stage 1 (No HMOD)	<i>No other risk factor</i>	Low	Low	Moderate	High
	<i>1 or 2 risk factors</i>	Low	Moderate	Moderate-to-High	High
	<i>3 or more risk factors</i>	Low –to- Moderate Treat Risk	Moderate-to-High	High	High

OUR FACILITIES



24



BED SPACE

VIP SUITES,
PRIVATE SUITES,
GENERAL SUITES etc

2

INTENSIVE CARE UNIT

HDU&ICU

3

THEATERS

ULTRAMORDEN
CATHLAB,
CARDIAC
OPERATION
THEATER

1

DIALYSIS
SUITE
PHYSIOLOGY
LAB
RADIOLOGY
SIUTE

7.2 Risk Assessment- Stage2: Asymptomatic HMOD

	Other Risk Factors or HMOD	High Normal BP (130-139/ 80-89)	Grade 1 (150-159/ 90-99)	Grade 2 (160-179/ 100-109)	Grade 3 (≥180/ ≥110)
Stage 2 (Asymptomatic HMOD)	<i>HMOD, CKD Grade 3, or DM without Organ Damage</i>	Moderate-to-High	High	High	High-to-Very High

7.3 Risk Assessment- Stage3: Established HMOD

	Other Risk Factors or HMOD	High Normal BP (130-139/80-89)	Grade 1 (150-159/90-99)	Grade 2 (160-179/100-109)	Grade 3 (≥180/≥110)
<p>Stage 3 (Established HMOD)</p>	<p><i>Established CVD, CKD ≥ Grade 4, or DM with Organ Damage</i></p>	<p>Very High</p>	<p>Very High</p>	<p>Very High</p>	<p>Very High</p>

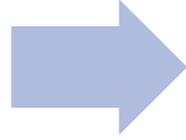
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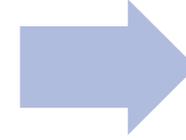
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9th ACS
2025



Endocrinologist

Our Clinic Management Team



Interventional Cardiologists



Clinical Cardiologists



Cardiothoracic Surgeon



Neurologist



Nephrologist



Cardiac Physiologists



Radiologist and Certified Cath
lab Technicians



Dietician



Nurses

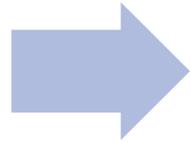


Pharmacists

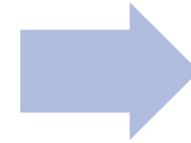
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4. CONVEY EDUCATION

- Diet,
- Weight Control,
- Salt Reduction,
- Exercise,
- Stop Smoking
- Stop Excessive Alcohol,
- Follow up adherence,



5. COMMENCE TREATMENT



6. CONTROL

8. Education

The Most Important Component
and Bedrock of Hypertension
Treatment in Nigeria is _____

EDUCATION, EDUCATION, EDUCATION!!!

- Disease nature
- Cardiovascular Disease NOT JUST NUMBERS!
- Risk Profile
- Investigations
- Hypertension-Mediated/Associated Organ Damager (HMOD)
- Diet
- Salt Intake
- Lifestyle Modifications
- Other medications (eg NSAIDs) and Herbs
- Targets
- Expectations
- Red flags
- Medication adherence
- Follow up

OUR EDUCATIONAL SYMPOSIA



1	1st – 9th Annual Abuja Cardiovascular Symposia
2	1st National Interventional Cardiology Symposium
3	Peripheral Vascular Disease Seminar
4	Monthly Webinars since March 2020.
5	Hospital Presentations at Govt healthcare Facilities
6	Inhouse 1Weekly CPD's and Routine BLS Training

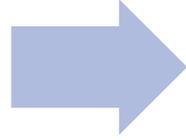
8.2 Lifestyle modification

- ❖ Lifestyle changes is still the *cornerstone!*
- ❖ Low sodium diet-
 - ❖ Reducing salt intake (to less than 5g daily).
- ❖ Weight loss
- ❖ Healthy eating
- ❖ Exercise
 - ❖ Being physically active on a regular basis.
- ❖ Eating more fruit and vegetables.
- ❖ Avoiding use of tobacco.
- ❖ Reducing alcohol consumption.
- ❖ Limiting the intake of foods high in saturated fats.
- ❖ Eliminating/reducing trans fats in diet.

8 Cs of Hypertension Care

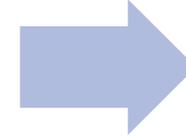
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 - Control



2. CHECK

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- **Examination**
- **Investigations**
- **Other CV Risk**
- **Hypertension Mediated/Associated Organ Dysfunction (HMOD)**
- **ASCVD Score**



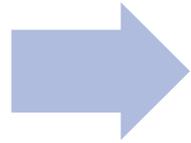
3. CALCULATE RISK

- **Blood Pressure Grade**
- **Co-Morbidities**
- **HMOD**
 - Absent/
Present
 - Asymptomatic
 - Established

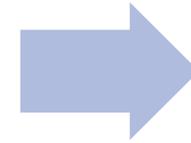
8 Cs of Hypertension Care

4. CONVEY EDUCATION

- Diet,
- Weight Control,
- Salt Reduction,
- Exercise,
- Stop Smoking
- Stop Excessive Alcohol,
- Follow up adherence,



5. COMMENCE TREATMENT



6. CONTROL

9. Treatment (to target) + maintenance

Don't Just Treat

Our Milestones

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9.1 Starting Pharmacologic Treatment?

	HIGH NORMAL (130-139/85-89)	GRADE 1 WITH LOW TO MODERATE RISK (140-159/90-99)	GRADE 1 WITH HIGH OR VERY HIGH RISK (140-159/90-99)	GRADE 2 HYPERTENSION (160-179/100-109)	GRADE 3 HYPERTENSION (≥180/110)
LIFESTYLE TREATMENT	YES, YES, YES!!!!				
DRUG THERAPY	NOT YET EXCEPT IN VERY HIGH RISK WITH CVD	DRUG TREATMENT IF NO CONTROL AFTER 3 MONTHS OF LIFESTLYE	DRUG TREATMENT ESP IF EXISTING CVD, RENAL DISEASE OR HMOD	IMMEDIATE DRUG TREATMENT IN ALL PATIENTS	
TARGET BLOOD PRESSURE	AIM FOR <130/70-79 systolic within 3 months Consider ABPM in high and very risk patients to assess control				

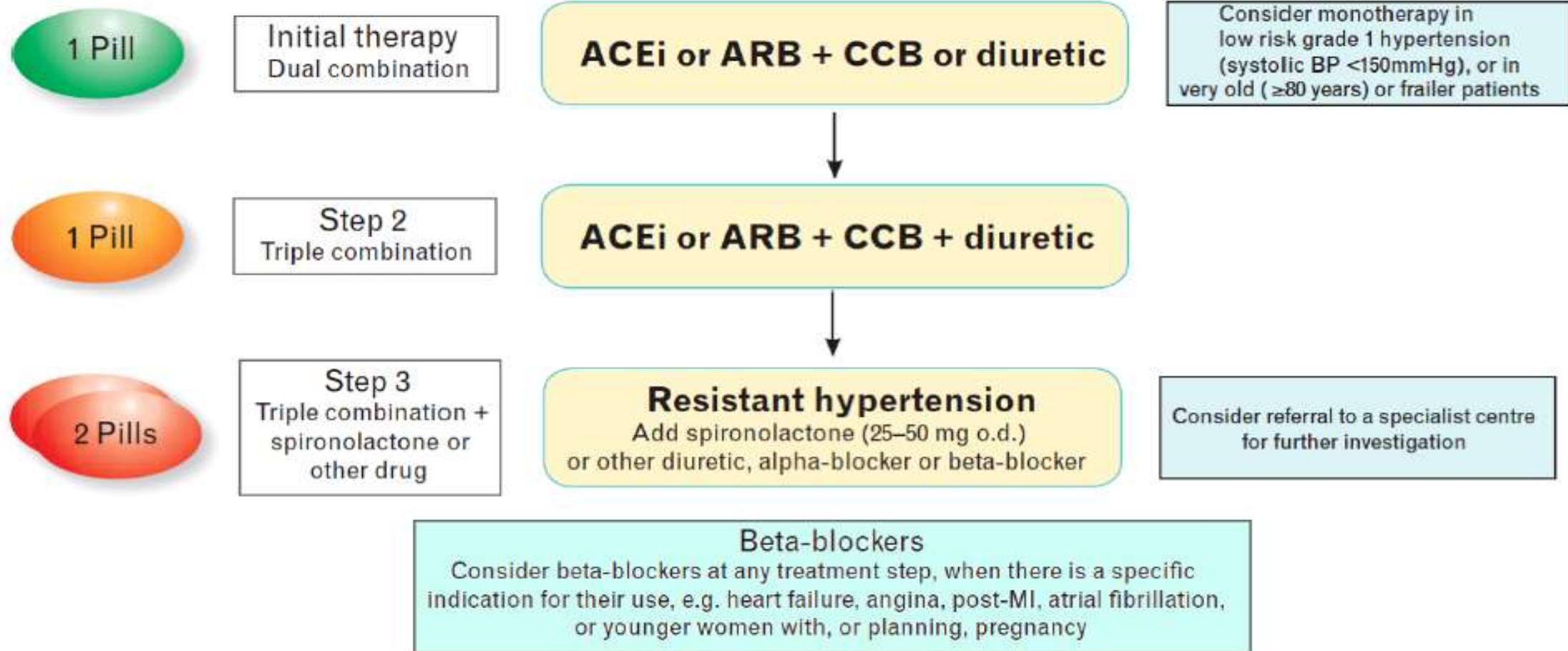
- **36yr old doctor** after a routine night call,
 - complained of generalized body weakness.
 - She is not a known hypertensive but
 - Her colleague checked her BP before going home and it was 183/90mmhg.
- Her colleague who saw her felt it was **“stress-related”** and went home to **“rest”**
- Woke up the next day with **hemiparesis and slurred speech**
- **What could he have done differently?**



9.2 Escalation of Drugs

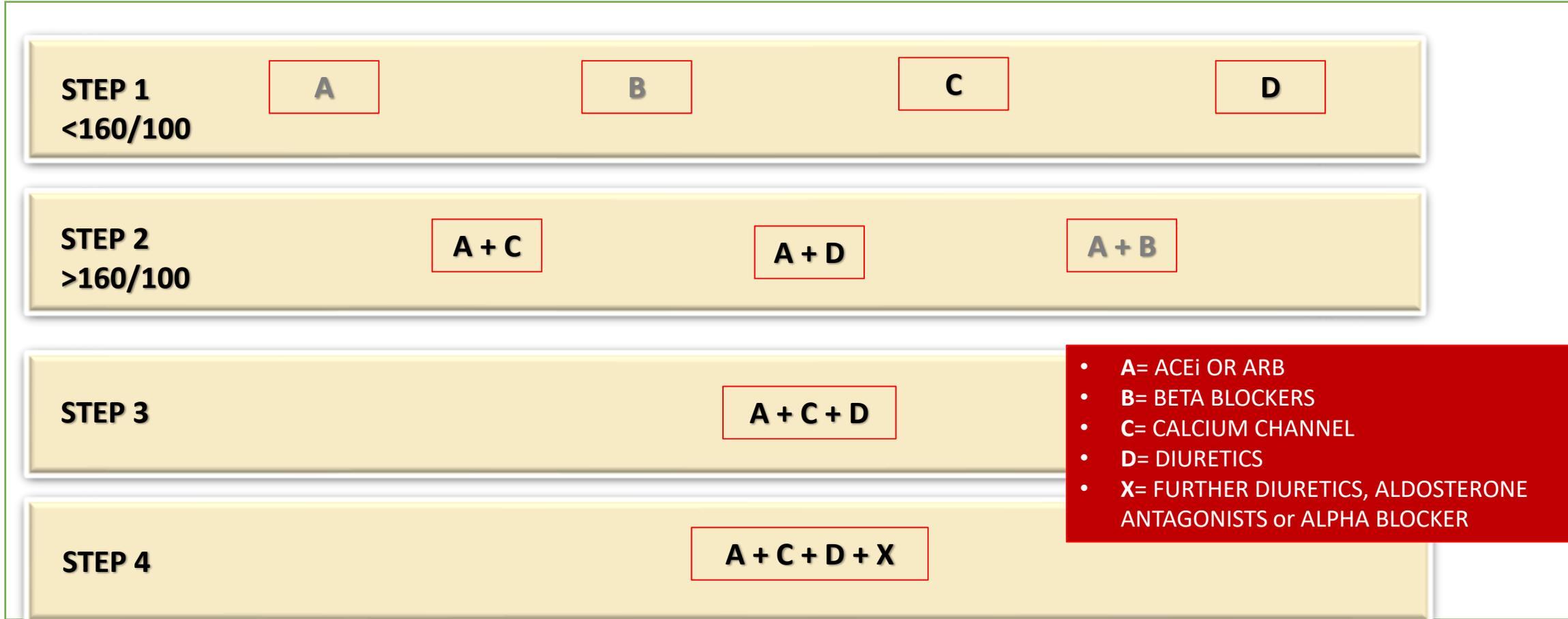
Start Low dose, → Combine Another → then Increase Dose

Core drug-treatment strategy for uncomplicated hypertension



9.3 Escalation of Drugs in Hypertension:

Start Low dose, → Combine Another → then Increase Dose



- A= ACEi OR ARB
- B= BETA BLOCKERS
- C= CALCIUM CHANNEL
- D= DIURETICS
- X= FURTHER DIURETICS, ALDOSTERONE ANTAGONISTS or ALPHA BLOCKER

9.4 Escalation of Drugs in Hypertension:

Start Low dose, → Combine Another → then Increase Dose

Step 1:

- **People aged <55**: initial therapy with an ACE-I/ARB. Or CCB+ACEIARB combination
- **People aged >55**: initial therapy with a CCB.
- **Black patients (any age)**: CCB or Thiazide-like Diuretic is preferred
- And Follow Compelling Indication

Step 2:

- Confirm Compliance
- Exclude Confounders
- Add ACE-I (or low-cost ARB) to CCB (or vice versa)
- or Thiazide-like Diuretics.

Step 3:

- Before considering step 3 treatment, ensure step 2 treatment is at optimal, or best tolerated dose.
- Add Other agents including aldosterone antagonists
- Look for uncontrolled risk and precipitators
- Refer to a Specialist

*Compelling indications/
contraindications should
be taken into account*

*Two Drug combination is
preferred from Stage 2
hypertension*

WHY DOCTORS CHOOSE CARDIOCARE



1	DETAILED FEEDBACK-REFERRAL: Timely updates in form of feedback reports on referred cases to referring doctors
2	TEAM WORK: Opportunity to discuss & collaborate with diverse and multidisciplinary team of specialists on referred cases
3	IMMEDIATE INTERVENTION: in all aspect of cardiovascular medicine, 24/7 emergencies and same-day appointments for referred patients
4	STATE OF ART FACILITY: Ultramodern world-class equipment & fully computerized systems
5	EXPERTISE & EXPERIENCE: with the success rate of over 600 interventional cardiology procedures, ranging from cardiac device implantations to advanced heart failure treatments
6	RESEARCH & COLLABORATIONS: Data sharing & Research collaborations with teaching hospitals & Public institutions for partnerships and residency trainings

- 56yr old man with hypertension and diabetes presenting in clinic for follow on Tab Lisinopril 20mg dly, Amlodipine 10mg dly and HCT 25mg dly
 - PR 72bpm
 - BP 156/92mmhg
 - HS S1S2
- What is the next line of management
 - A. Tab Aldomet 250mg b.d
 - B. Tab Lasix 20mg dly
 - C. Tab Spironolactone 25mg dly
 - D. Tab Lisinopril 30mg dly
 - E. Tab Valsartan 160mg dly

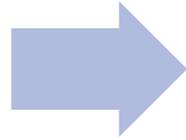
- Consider prescribing other drugs that modify CV risk.
- **Aspirin 75mg od:**
 - Reserved for ONLY secondary prevention of CV disease.
 - BUT Occasionally, primary prevention in hypertensives with 10-year CV risk > 20% and BP <150/90mmHg, with no contraindication.
- **Statin therapy:**
 - primary prevention in hypertensives with 10-year CV risk > 20%.
 - secondary prevention in all with overt CV disease, irrespective of baseline total cholesterol or LDL.
 - Targets (whichever is the greatest reduction) :
 - reduction in total cholesterol by 25% or
 - LDL cholesterol by 30%, or
 - achieve a total cholesterol of < 4.0mmol/L or
 - LDL cholesterol of < 2.0mmol/L

Recommendations	Class	Level
Antiplatelet therapy, in particular low-dose aspirin, is recommended for secondary prevention in hypertensive patients.	I	A
Aspirin is not recommended for primary prevention in hypertensive patients without CVD.	III	A

8 Cs of Hypertension Care

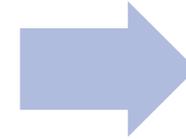
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2. CHECK

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- **Investigations**
- **Other CV Risk**
- **Hypertension Mediated/Associated Organ Dysfunction (HMOD)**
- **ASCVD Score**



3. CALCULATE RISK

- **Blood Pressure Grade**
- **Co-Morbidities**
- **HMOD**
 - Absent/
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 - Asymptomatic
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4. CONVEY EDUCATION

- Diet,
- Weight Control,
- Salt Reduction,
- Exercise,
- Stop Smoking
- Stop Excessive Alcohol,
- Follow up adherence,

5. COMMENCE TREATMENT

- Check Qualification
- Treat Co-morbidities, Precipitants and Confounders
- Start Low dose,
- Combine Another
- Increase Doses

6. CONTROL & CLINIC FOLLOW UP

HOW TO REFER TO CARDIOCARE



1	REFERRAL LETTER: Give a standard referral letter & preferably attach any available results of previous investigations
2	ON-SITE REFERRAL: Visit no 5 Giza Close, Area 11 Garki off Dunukofia Str- near FCDA) Abuja-FCT.
3	EMAIL: Send an email to frontdesk@cardiocare.ng or o.solomon@limihospital.org or e.james@limihospital.org
4	WHATSAPP: Send a Whatsapp message to 0908-331-7777 0806-530-1797
5	CALL: 0908-331-7777, 0817 444 0888
6	IDENTIFICATION: Kindly indicate Doctor's name, & email/phone number especially if you wish to receive a medical report afterwards.

10. Control and Clinic Follow Up

1. Follow Up for Life
2. Home BP Monitoring
3. Yearly Organ Function (HMOD) Survey
4. Low CV Risk may be managed in primary care settings
5. Intervals
 - 1-4 weekly follow up till target is reached
 - 3-4 monthly follow up once target is reached

- **DO NOT STOP MEDICATIONS ONCE TARGET IS REACHED!!!**

- Re-education
- Review of adherence & possible side effects
- Surveillance for Established Cardiovascular Disease Complications
 - Edema, Chest Pain, TIA, Claudication, etc
- Review of other CV risk-
 - DM, Uric Acid, Peripheral Artery Disease, Lipids, Proteinuria, etc.
- Review of HMOD once yearly
- Adjust of medications to target

10.3 General Follow Up Targets

1. BMI

- <30

2. Blood Pressure

- <125/75 if DM + Proteinuria
- <130/80 if other HMOD
- <140/90 if no HMOD or other risk factor

3. Pulse

- 60-90 typically
- 55-70 if Heart Failure or Ischemic Heart Disease , CVD, Investigations as appropriate

- Dorsalis Pedis Present
- Regular

4. LDL-Cholesterol

- Very High Risk- <55
- High Risk- <70
- Moderate Risk- <130
- Low Risk- <160

5. Urine-

- No proteinuria especially if present at previous visit

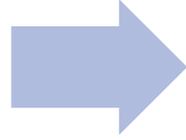
6. General and Systemic Exam

- Normal

8 Cs of Hypertension Care

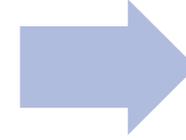
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Connect with us.

Website

www.cardiocare.ng

Email

info@cardiocare.ng

Visit

**5 Giza Close, off Dunokofia Street
Area 11 Garki, Abuja, Nigeria**

Call us

0908-331-7777



8 Cs of Hypertension Care

4. CONVEY EDUCATION

- Diet,
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5. COMMENCE TREATMENT

- Check Qualification
- Treat Co-morbidities, Precipitants and Confounders
- Start Low dose,
- Combine Another
- Increase Doses

6. CONTROL

- Target Blood Pressure
- HMOD Surveillance
- Co-Morbidities & CV Risk Optimization
- Medication & Lifestyle Adherence,
- Side Effects review
- Re-Education

- 60 yr old lawyer presenting in the emergency with seizures, LOC and severe headache. Known hypertensive but stopped medications to take herbal medications
- O/E Unconscious, not pale, afebrile, bilateral pedal oedema
- PR 110bpm
- BP 240/140mmhg

- Next line of treatment

- A) Give Sublingual nifedipine
- B) Tab Aldomet 500mg tds
- C) IV Labetalol
- D) Refer to Cardiocare
- E) IV Ceftriaxone

**NEVER give sublingual
NIFEDIPINE!!!**

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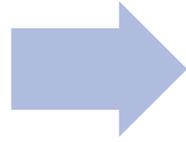
INSTANTLY CRASHING DOWN
BLOOD PRESSURE THAT WAS VERY
HIGH IS ALMOST ALWAYS A BAD
IDEA!!!

EXCEPT IN VERY FEW CIRCUMSTANCES

8 Cs of Hypertension Care

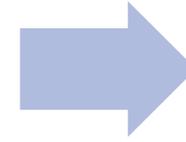
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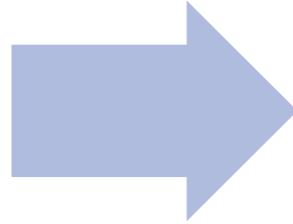
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- Side Effects review
- Re-Education

8 Cs of Hypertension Care

7. CAUTIONS

- Hypertensive Crises
- Hypertension in Pregnancy
- Drugs to Avoid When



8. CONSULTANT OR CARDIOCARE REFERRAL

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9th ACS
2025

11. Cautions

9th ACS
2025

A. Hypertensive Crises

9th ACS
2025

Hypertensive Crises

Acute or Impending
Organ Damage +
Severe BP?



Brain (Stroke, ICH)
Retina (Hemorrhages, papilledema)
Heart (ACS-chest pain & ADHF or Pul Edema)
Kidneys (AKI)

NO

YES

Urgency

Emergency

OPD Meds for most
IPD if symptoms
Close monitoring
Gradual Target in 7-14 days

ICU & Specialist-led Care
IV Medications
Rapid Target in 48-72hrs

1 HYPERTENSIVE CRISIS

- Hypertensive crises are **ACUTE, SEVERE ELEVATIONS IN BLOOD PRESSURE** typically above 180/110 mmHg
 - +/- acute/new, on-going, hypertension-mediated, target-organ damage target-organ dysfunction.
 - A. HYPERTENSIVE URGENCY:**
 - ABSENCE OF acute/new, on-going, hypertension-mediated, target-organ damage target-organ dysfunction
 - B. HYPERTENSIVE EMERGENCY:**
 - PRESENCE OF acute/new, on-going, hypertension-mediated, target-organ damage target-organ dysfunction
- *Hypertensive urgency is two to three times more common than hypertensive emergency*

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Hypertensive crisis

Are there findings of acute target organ damage?

- Brain (Stroke, ICH)
- Retina (Hemorrhages, papilledema)
- Heart (ACS-chest pain & ADHF or Pul Edema)
- Kidneys (AKI)

No

Confirm persistent elevation despite 20 – 30mins of rest

Symptoms attributable to high blood pressure?

No

Urgency

- Adjust long-acting medication.
- Follow-up in 1-7 days

Yes

Urgency

- TREAT any pain or full bladder
- Give “rapid” oral agent
- Adjust long-acting medications
- Discharge when symptoms have improved and blood pressure is <180/110mm Hg
- Follow-up in 1-7days

Yes

Emergency

- Admit to ICU
- Start IV treatment immediately
- Select drug according to indication
- Lower blood pressure according to pattern of organ injury
- Start or resume long acting medication during first 6-12 hrs of treatment
- Reach target by 48 hrs

**NEVER give sublingual
NIFEDIPINE ever!!!**

6.2 BP Treatment Goals for Hypertensive Emergency

BP Treatment Goals for Hypertensive Emergency

Goal Time ^a	BP Target
First hour	Reduce MAP by 25% (while maintaining goal DBP \geq 100 mm Hg)
Hours 2–6	SBP 160 mm Hg and/or DBP 100–110 mm Hg
Hours 6–24	Maintain goal for hours 2–6 during first 24 hr
24–48 hr	Outpatient BP goals according to the 2017 Guidelines for Management of High Blood Pressure in Adults

Emergency	First Line	AVOID!!!	***Caveat***
Hypertensive Encephalopathy	<ul style="list-style-type: none"> Nitroprusside 0.25-10 ug/kg/min Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min Nicardipine 5-15 mg/hr 	<ul style="list-style-type: none"> Clonidine Trimetophan NSAIDs 	<ul style="list-style-type: none"> MUST rule out Strokes
Cerebral Infarction or Hemorrhage (Stroke)	<ul style="list-style-type: none"> Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min Nitroprusside 0.25-10 ug/kg/min Nicardipine 5-15 mg/hr 	<ul style="list-style-type: none"> Avoid Hydralazine 	<ul style="list-style-type: none"> Don't treat to Normal Avoid Decreased Cerebral Perfusion Treat Cerebral Edema first Then Treat ONLY if BP: <ul style="list-style-type: none"> >220/120 (no thrombolytics) >185/110 (thrombolytics)
Eclampsia	<ul style="list-style-type: none"> Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min Nicardipine 5-15 mg/hr Magnesium 6g loading dose, then 2g/hr 	<ul style="list-style-type: none"> Avoid Enalaprilat Avoid Nitroprusside 	<ul style="list-style-type: none"> Consider Emergent delivery

ADVANCED CARE

Use links to go to a different page inside your presentation.



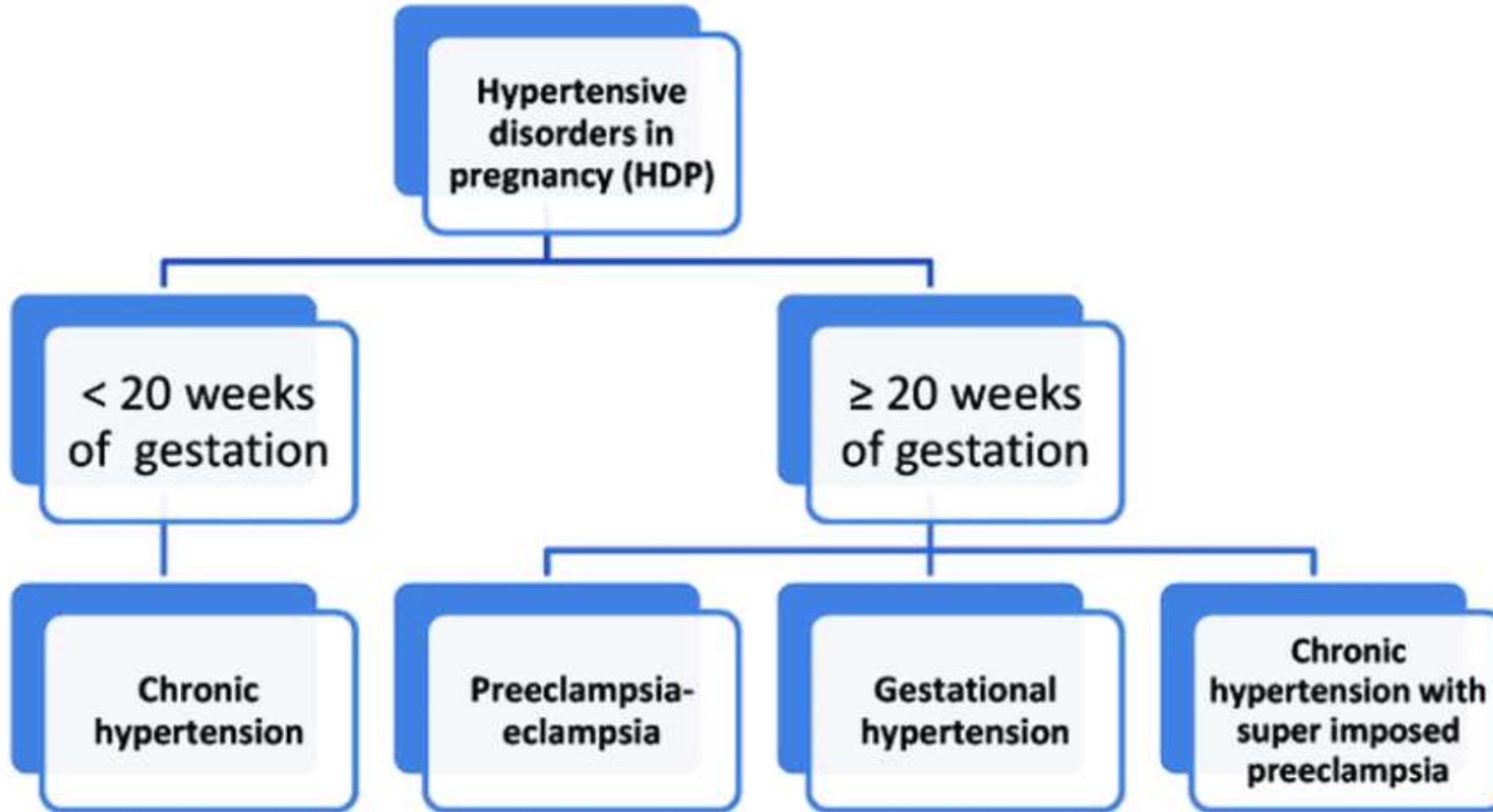
- 1 CORONARY ANGIOGRAPHY & INTERVENTIONS-** For patients presenting with chest pains, acute coronary syndrome
- 2 PERIPHERAL ANGIOGRAPHY & INTERVENTIONS-** For patients presenting with Peripheral vascular diseases causing tissue loss or gangrene
- 3 CARDIAC DEVICE IMPLANTATION & PROGRAMMING** such as Pacemakers, ICDs, CRTs for patients presenting with heart failure & Cardiac rhythm abnormalities
- 4 STRUCTURAL HEART INTERVENTIONS –** for patients presenting with ASD, VSD, PDA etc..
- 5 THROMBOEMBOLIC THERAPIES such as IVC Filters,** for VTE (Venous Thromboembolic) treatment and management
- 6 CARDIAC SURGERY –** Open Heart Surgery
- 7 KIDNEY TRANSPLANT & DIALYSIS**
- 8 CRITICAL CARE**
- 9 ADVANCED CARDIAC INVESTIGATIONS**

6.4 Hypertensive Emergency Drug Treatments-2

Emergency	First Line	AVOID!!!	***Caveat***
Acute Myocardial Infarction	<ul style="list-style-type: none"> Nitroglycerin 5-100 ug/min Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min Nitroprusside 0.25-10 ug/kg/min 	<ul style="list-style-type: none"> AVOID Hydralazine 	<ul style="list-style-type: none"> Increase coronary perfusion Decrease afterload
Acute Left Ventricular Failure/Pulmonary Edema	<ul style="list-style-type: none"> Nitroglycerin 5-100 ug/min Nitroprusside 0.25-10 ug/kg/min Enaprilat 1.25-5mg every 6hours (+ Diuresis) 	<ul style="list-style-type: none"> AVOID Labetalol 	<ul style="list-style-type: none"> Decrease Afterload
Aortic Dissection	<ul style="list-style-type: none"> Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min Nitroprusside 0.25-10 ug/kg/min 	<ul style="list-style-type: none"> Avoid Hydralazine 	<ul style="list-style-type: none"> Decrease dP/dT shearing forces
Catecholamine Excess	<ul style="list-style-type: none"> Phentolamine 5-10mg/min Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min Nitroprusside 0.25-10 ug/kg/min 		<ul style="list-style-type: none"> Avoid unopposed Beta Blocker Consider benzodiazepines for cocaine toxicity

B. Hypertension in Pregnancy

11.1 Classification of Hypertensive Disorders In Pregnancy



Our Non-Invasive Assessment services



- HOTLERS
- SPIROMETRY
- STRESS
- EEG
- ECG

11.2 Hypertension in Pregnancy: Treatment cut-off

- Regardless of the hypertensive disorder of pregnancy, BPs consistently at or $>140/90$ mm Hg in clinic or office (or $\geq 135/85$ mm Hg at home) should be treated
- BP requires urgent treatment in a monitored setting when severe ($>160/110$ mm Hg);

- Methyldopa
- Labetalol
- Nifedipine
- Second- or third-line agents include Hydralazine and Prazosin

Emergency

- IV Labetalol
- IV Hydralazine (*may raise intracranial pressure so should be hardly used without specialist input*)
- *Blood pressure drop must be cautious so as not to reduce fetal and placental blood supply*



- BP requires urgent treatment in a monitored setting when severe (>160/110 mm Hg);
- Acceptable agents for this include oral Nifedipine or intravenous Labetalol (or even Hydralazine).
- Oral Labetalol may be used if these treatments are unavailable.

C. Resistant Hypertension

OUR FACILITIES



24



BED SPACE

VIP SUITES,
PRIVATE SUITES,
GENERAL SUITES etc

2

INTENSIVE CARE UNIT

HDU&ICU

3

THEATERS

ULTRAMORDEN
CATHLAB,
CARDIAC
OPERATION
THEATER

1

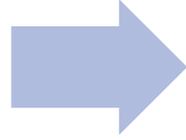
DIALYSIS
SUITE
PHYSIOLOGY
LAB
RADIOLOGY
SIUTE

- *Resistant hypertension is defined as failure to achieve a blood pressure of **140/90** mm Hg despite the use of a rational triple-drug regimen in optimal doses, including an oral diuretic.*

8 Cs of Hypertension Care

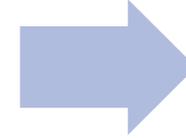
1. CONFIRM

- **>2 office readings**
- **And/Or Ambulatory Blood Pressure**
 - High normal
 - Suspected Masked HTN or
 - Control



2. CHECK

- **History**
- **Examination**
- **Investigations**
- **Other CV Risk**
- **Hypertension Mediated/Associated Organ Dysfunction (HMOD)**
- **ASCVD Score**



3. CALCULATE RISK

- **Blood Pressure Grade**
- **Co-Morbidities**
- **HMOD**
 - Absent/
Present
 - Asymptomatic
 - Established



**LET'S SUPPORT
YOUR PATIENTS WITH
WORLD CLASS
CARDIAC SOLUTIONS**



8 Cs of Hypertension Care

4. CONVEY EDUCATION

- Diet,
- Weight Control,
- Salt Reduction,
- Exercise,
- Stop Smoking
- Stop Excessive Alcohol,
- Follow up adherence,



5. COMMENCE TREATMENT

- Check Qualification
- Treat Co-morbidities, Precipitants and Confounders
- Start Low dose,
- Combine Another
- Increase Doses



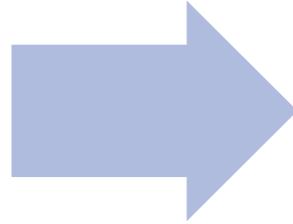
6. CONTROL

- Target Blood Pressure
- HMOD Surveillance
- Co-Morbidities & CV Risk Optimization
- Medication & Lifestyle Adherence,
- Side Effects review
- Re-Education

8 Cs of Hypertension Care

7. CAUTIONS

- Hypertensive Crises
- Hypertension in Pregnancy
- Drugs to Avoid When



8. CONSULTANT-LED CARE OR CARDIOCARE REFERRAL

9th Anniversary
2015

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Area 11 Garki, Abuja, Nigeria**

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12. When to Refer

CONSULTANT-LED CARE OR CARDIOCARE REFERRAL

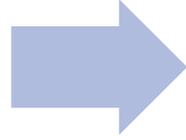
Suggested indications for specialist referral

- Urgent treatment need: accelerated HTN, severe hypertension, hypertensive emergency, ACS, Stroke etc
- Possible secondary HTN
- Resistant HTN
- Multiple drug intolerance
- Difficult patient
- Unclear Clinical Situation
- Other situations: Unusual BP variability, possible white coat effect, HTN in pregnancy
- End organ damage

8 Cs of Hypertension Care

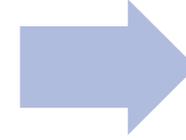
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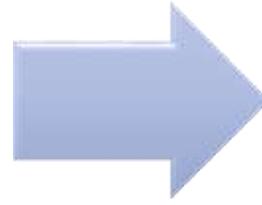
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8. CONSULTANT-LED CARE OR **CARDIOCARE** REFERRAL

- Uncontrolled BP & Crises
- Unclear Case
- Resistant BP
- End-Organ Damage
- Very High CV Risk
- Possible Secondary Hypertension
- Special Situations

- ❖ HTN is a preventable major cause of global mortality and morbidity
- ❖ The biggest socio-economic impact is on LMICs like Nigeria
- ❖ Accurate BP measurement is central to diagnosis and treatment
- ❖ Treatment of HTN should be guideline-based and targeted at holistic CV risk reduction
- ❖ Adherence has a huge effect on cardiovascular outcomes in HTN

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need to go abroad for
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9th ACS
2025



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THANK YOU

Our vision to curb medical tourism
Is incomplete without your collaborations

Lets do it together!

**Lets support your practice for better patients
outcomes.**

Lets partner with you...

**Cardiocare Hospital Abuja appreciates you &
the opportunity to be here!**

