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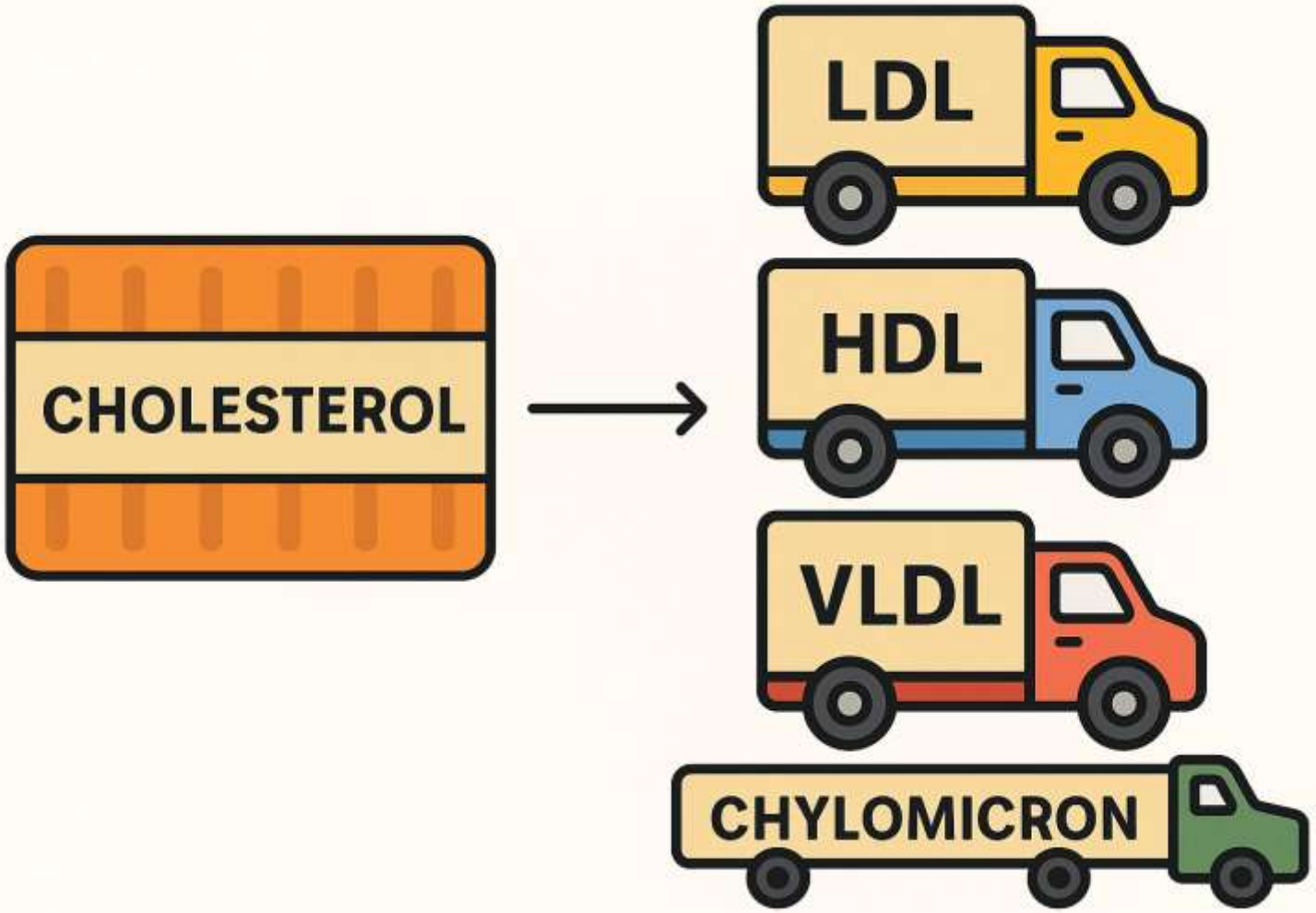
Everyone does not need to go abroad for advanced Cardiovascular healthcare.

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

Lipid Mgt

Lipoproteins



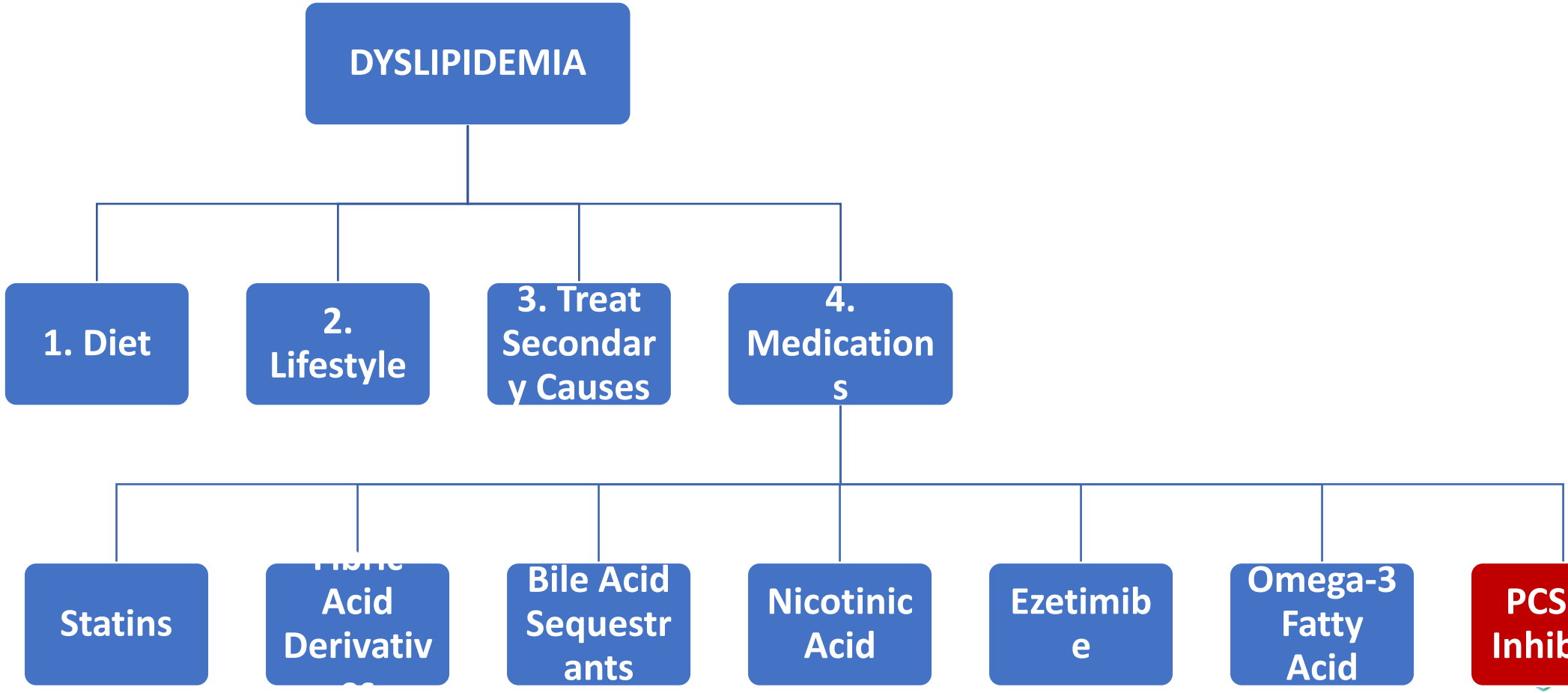
LDL- The Cholesterol Delivery Truck

HDL- The Cleanup & Recycling Truck

VLDL- The Liver's Export Truck

Chylomicrons – The Dietary Fat Delivery Truck

Therapy for Dyslipidemia



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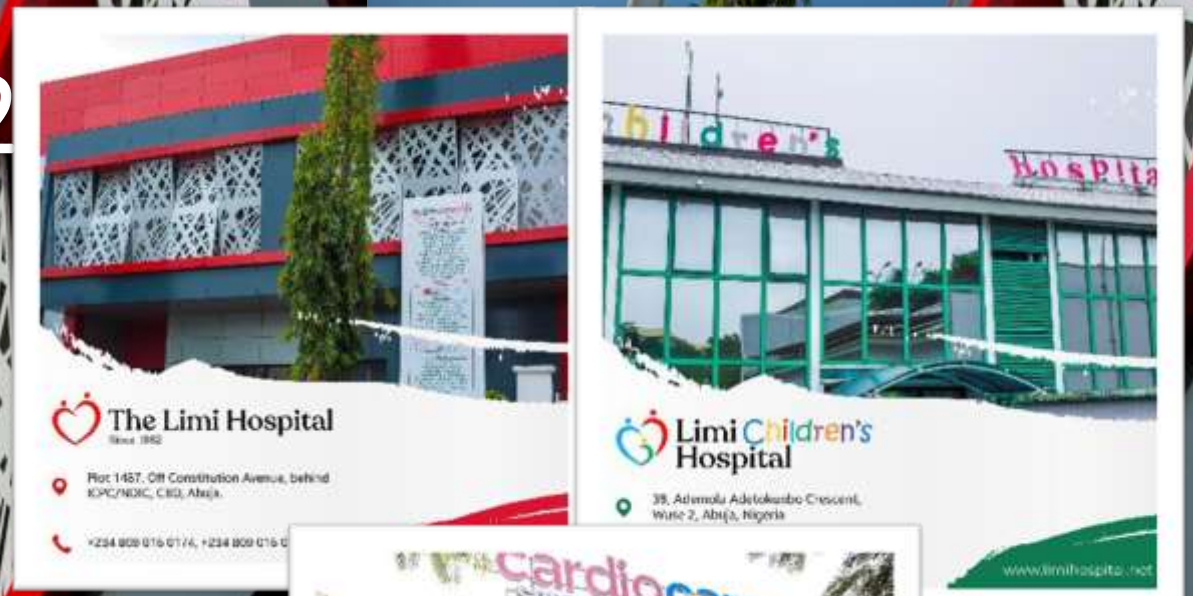

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4.7 Serum LDL-Cholesterol Targets

Risk category	LDL-C goal (mg/dL)	LDL-C goal (mmol/L)	Additional target/remark
EXTREMELY HIGH RISK recurrent events despite therapy	**<40 mg/dL** *(used/considered for patients with recurrent events within 2 years)*	**<1.0 mmol/L**	Consider aggressive combination therapy (statin + ezetimibe ± PCSK9). (Archives of Medical Science)
VERY-HIGH RISK (established ASCVD — e.g., prior MI, stroke, PAD; or multiple major events / multiple high-risk conditions)	**<55 mg/dL**	**<1.4 mmol/L**	**AND ≥50% reduction from baseline**. Consider ezetimibe/PCSK9 if on maximally tolerated statin and goal not reached. (EAS)
HIGH RISK (e.g., diabetes with other risks, severe CKD, markedly elevated single risk factors, or some primary prevention high-risk states)	**<70 mg/dL**	**<1.8 mmol/L**	AND aim for ≥50% reduction when appropriate. (EAS)
MODERATE RISK (eg. 1 risk factor eg Hypertension)	**<100 mg/dL**	**<2.6 mmol/L**	Lifestyle ± moderate-intensity statin depending on overall risk. (EAS)
LOW RISK (generally young, no/few risk factors)	**<116 mg/dL**	**<3.0 mmol/L**	Emphasize lifestyle; pharmacotherapy only if risk rises. (EAS)

5-Step Evaluation of Dyslipidemia

9th ACS 2025

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if Yes, Jump to next Level; If No, Jump to next Step

Level1. Step A. Is there ASCVD? (Y/N)

Very High Risk	Stable	Extreme (Multiple Events)

Level1. Step B. ASCVD Risk >10% or DM + Age>40yrs old? (Y/N)

Low <10%	Medium 10-20%	High 20-30%	Very High >30%

Level1.Step C. LDL Level above 190mg/dl? (Y/N)

Level 2 TREATMENT

Lifestyle	Diet	Medications	Secondary Causes if Applicable

Level 3 FOLLOW-UP (+/- Escalation)

Normal & >20 years, every 5years	Normal & >45 years, every 2 years	Abnormal every 3-6 months

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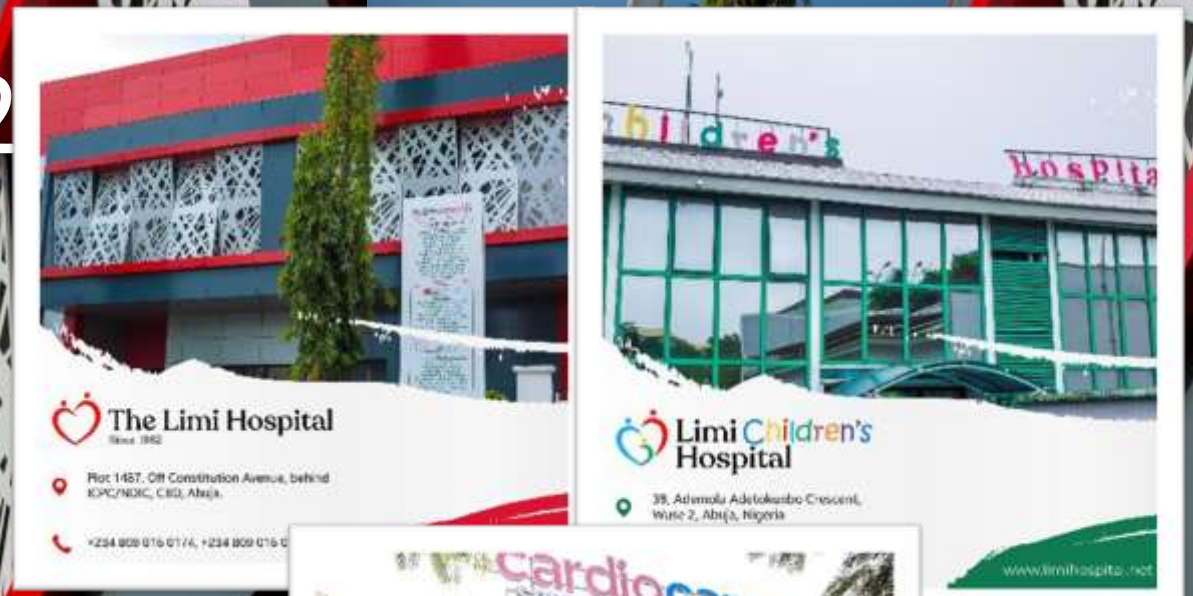

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ESCALATION ALGORITHM FOR DYSLIPDEMIA TREATMENT

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LIFESTYLE

H - Healthy diet (Mediterranean)
E - Exercise
A - Avoid smoking & alcohol moderation
R - Reduce weight
T - Treat comorbidities (DM, HTN)

+ STATINS

Atorvastatin

Rosuvastatin

Simvastatin

Do ALT & AST before starting… if normal repeat only if liver dysfunction

+ EZETIMIBE

Ezetrol

Higher incidence of myopathy and elevated transaminases when co-administered with a statin

Give PCSK9 if Ezetimibe is not available or Very High Risk

PSCK9

If Ezetimibe is not available

OR

Target not achieved in 3months after it

Give Bempedoic Acid if unable to afford PCSK9

4. DYSLIPIDEMIA MANAGEMENT ALGORITHM FOR PRIMARY CARE: Statin Intensity

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HIGH INTENSITY STATIN	MODERATE INTENSITY STATIN	LOW INTENSITY STATIN
• **Lower LDL by ≥ 50 %** • Atorvastatin 40 or 80mg od • Rosuvastatin 20 or 40mg od	• **Lower LDL by 30 to 49 %** • Atorvastatin 20mg od • Rosuvastatin 10mg od	• **Lower LDL by <30 %** • Atorvastatin 10mg od • Rosuvastatin 5mg od

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5. When to add non-statin therapy?

- **<u>Ezetimibe or</u> PCSK9i (eg Inclisiran):**

1. ASCVD on maximal tolerated statin with LDL ≥ 1.8 mmol (70 mg)
2. Severe primary hypercholesterolemia (baseline LDL ≥ 4.9 mmol [190 mg]) on maximal tolerated statin with LDL ≥ 2.6 mmol (100 mg)

ACC/AHA Guidelines. J Am Coll Cardiol 2018 10.1016/j.jacc.2018.11.003

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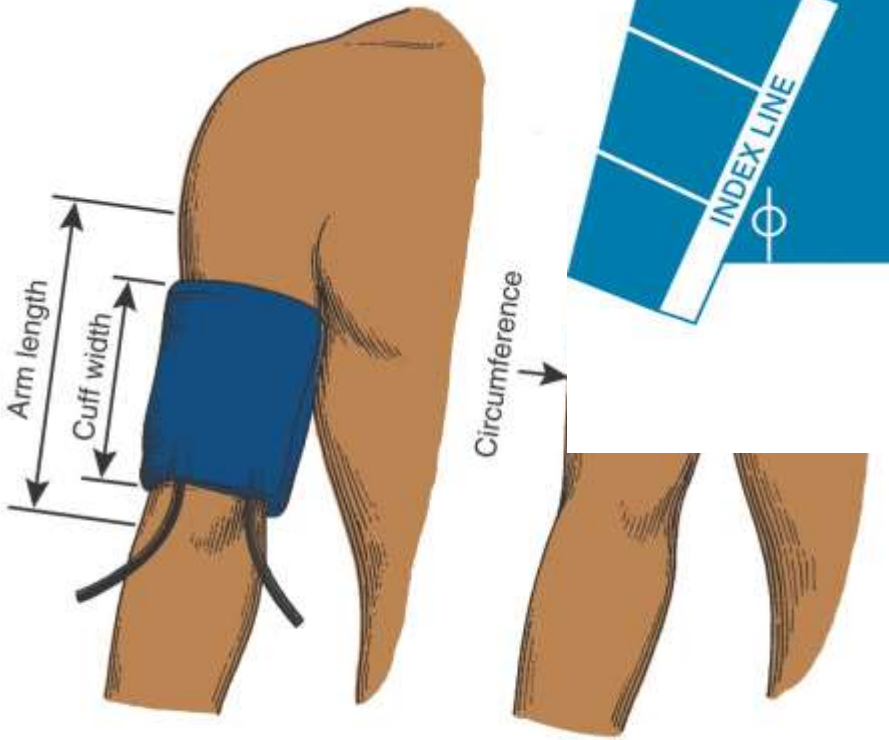
6. Indications for PCSK-9 inhibitors- eg Inclisiran

1. Very high risk ASCVD on maximal tolerated statin & Ezetimibe with LDL ≥ 1.8 mmol (70 mg)
2. Severe primary hypercholesterolemia (baseline LDL ≥ 4.9 mmol [190 mg]) on maximal tolerated statin & Ezetimibe with LDL ≥ 2.6 mmol (100 mg)

ACC/AHA Guidelines. J Am Coll Cardiol 2018 10.1016/j.jacc.2018.11.003

Hypertension

2.2 Appropriate Cuff



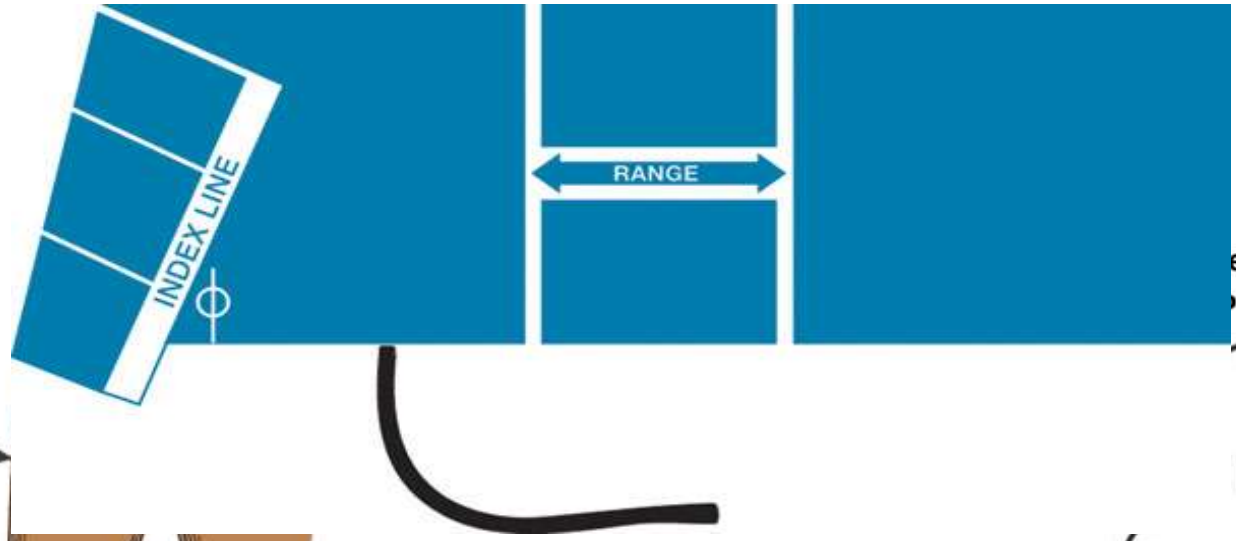
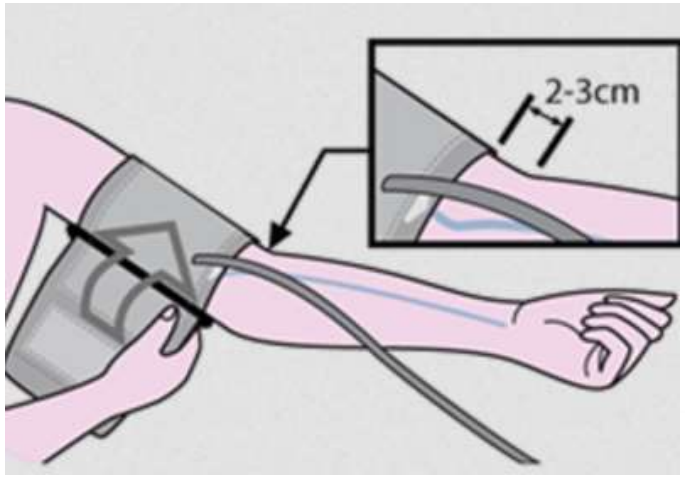
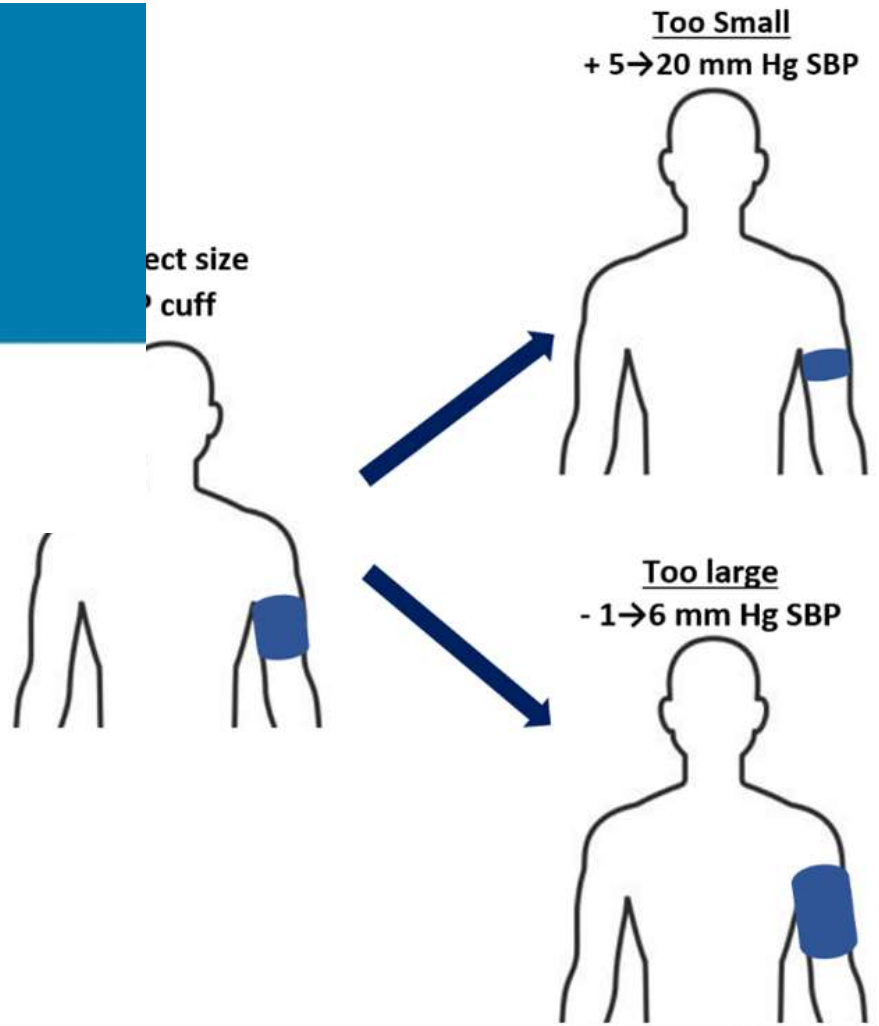


FIG. 29-13 Guidelines for proper blood pressure cuff size. Cuff width 20% more than upper-arm diameter or 40% of circumference and two thirds of arm length.





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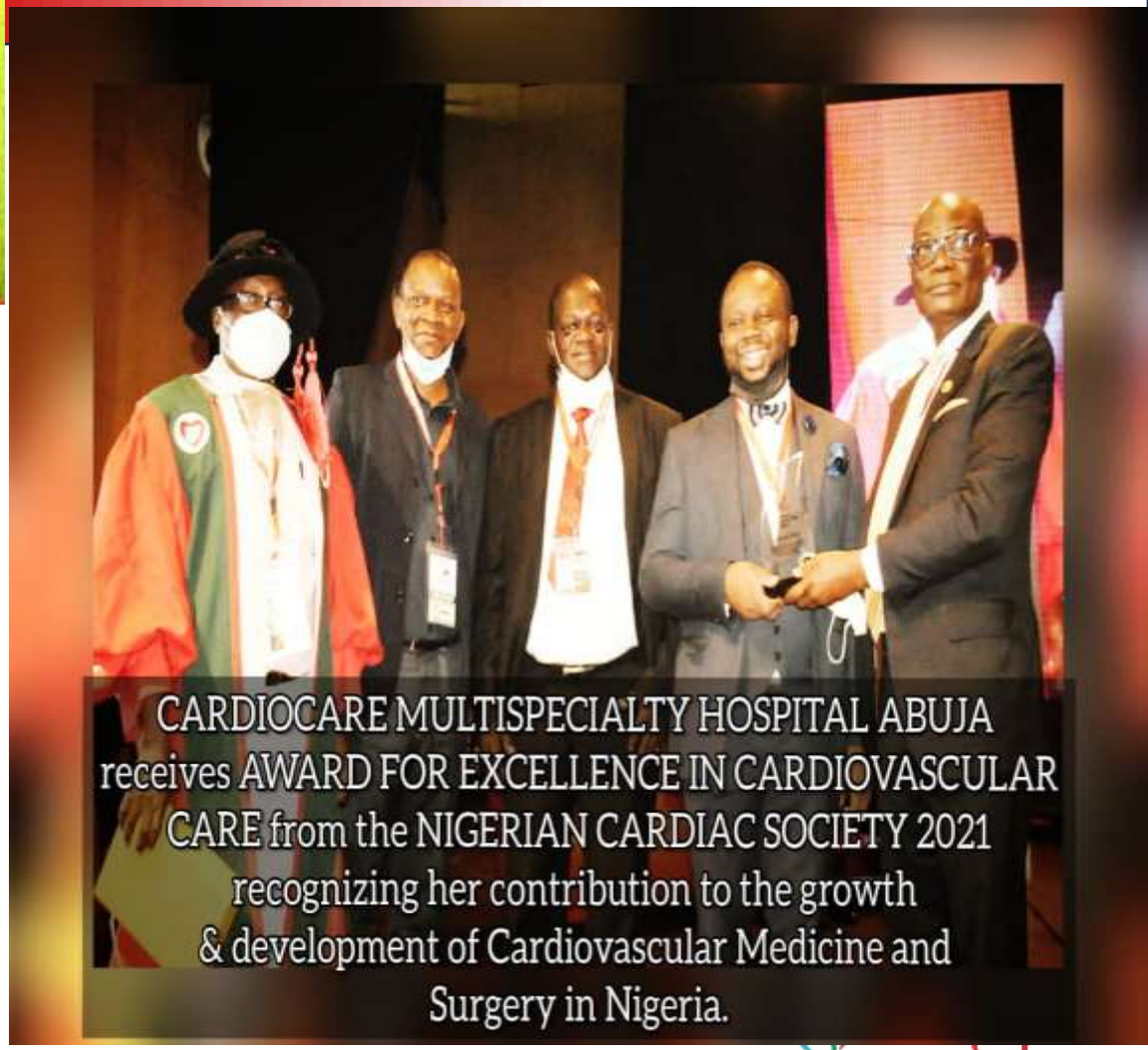

2.1 Pre-Conditions for BP Measurement

- 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**

3.5. Some Terms

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

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

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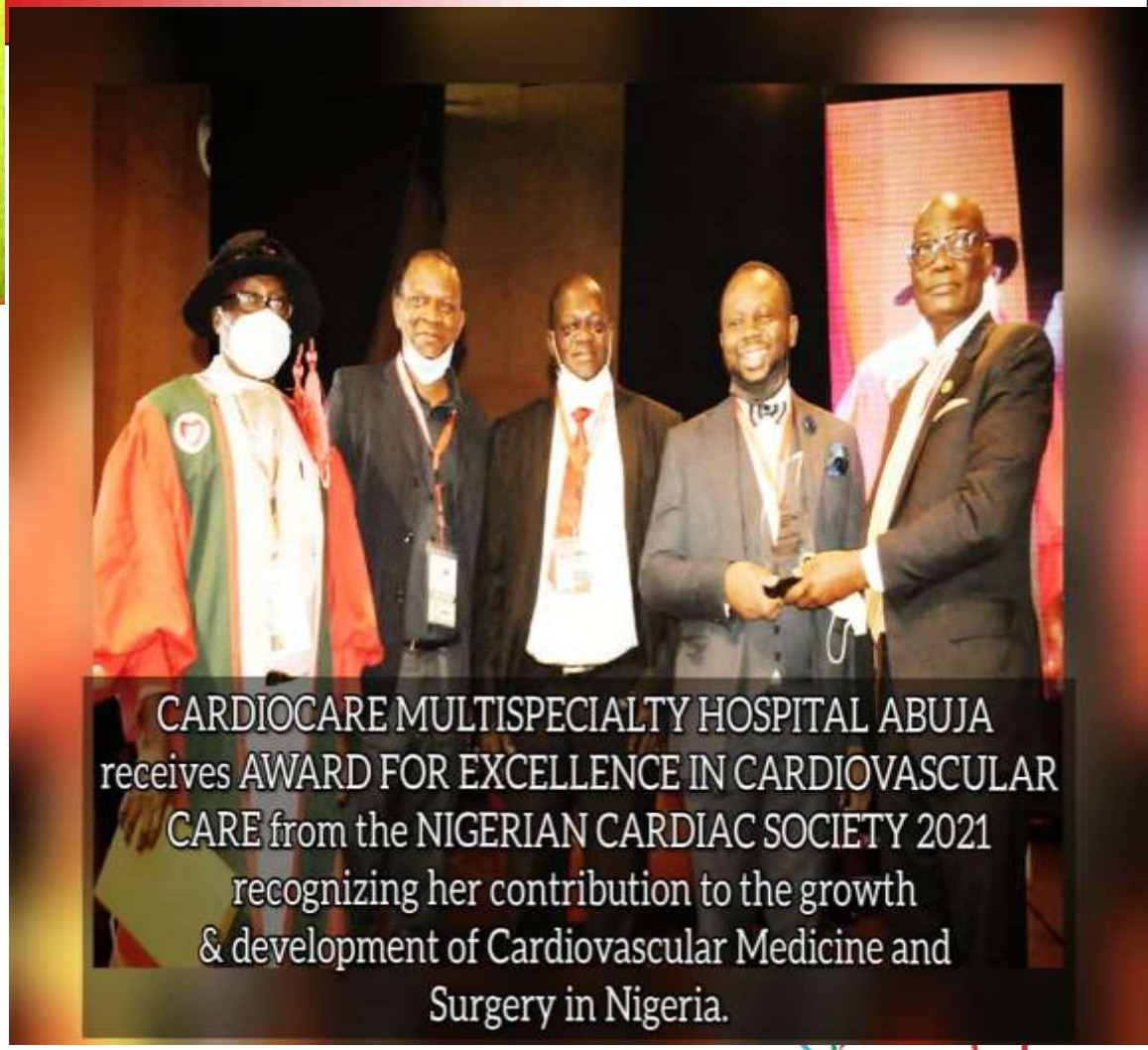

EVERYONE

WITH ELEVATED BLOOD PRESSURE (no matter how transient)

MUST BE

EVALUATED FULLY!

No Exceptions.

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)	***No other risk factor***	Low	Low	Moderate	High
	1 or 2 risk factors	Low	Moderate	Moderate-to-High	High
	3 or more risk factors	Low –to-Moderate Treat Risk	Moderate-to-High	High	High

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)	***HMOD, CKD Grade 3, or DM without Organ Damage***	Moderate-to-High	High	High	High-to-Very High

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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)
Stage 3 (Established HMOD)	***Established CVD, CKD ≥ Grade 4, or DM with Organ Damage***	Very High	Very High	Very High	Very High

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

EDUCATION, EDUCATION, EDUCATION!!!

8.1. 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

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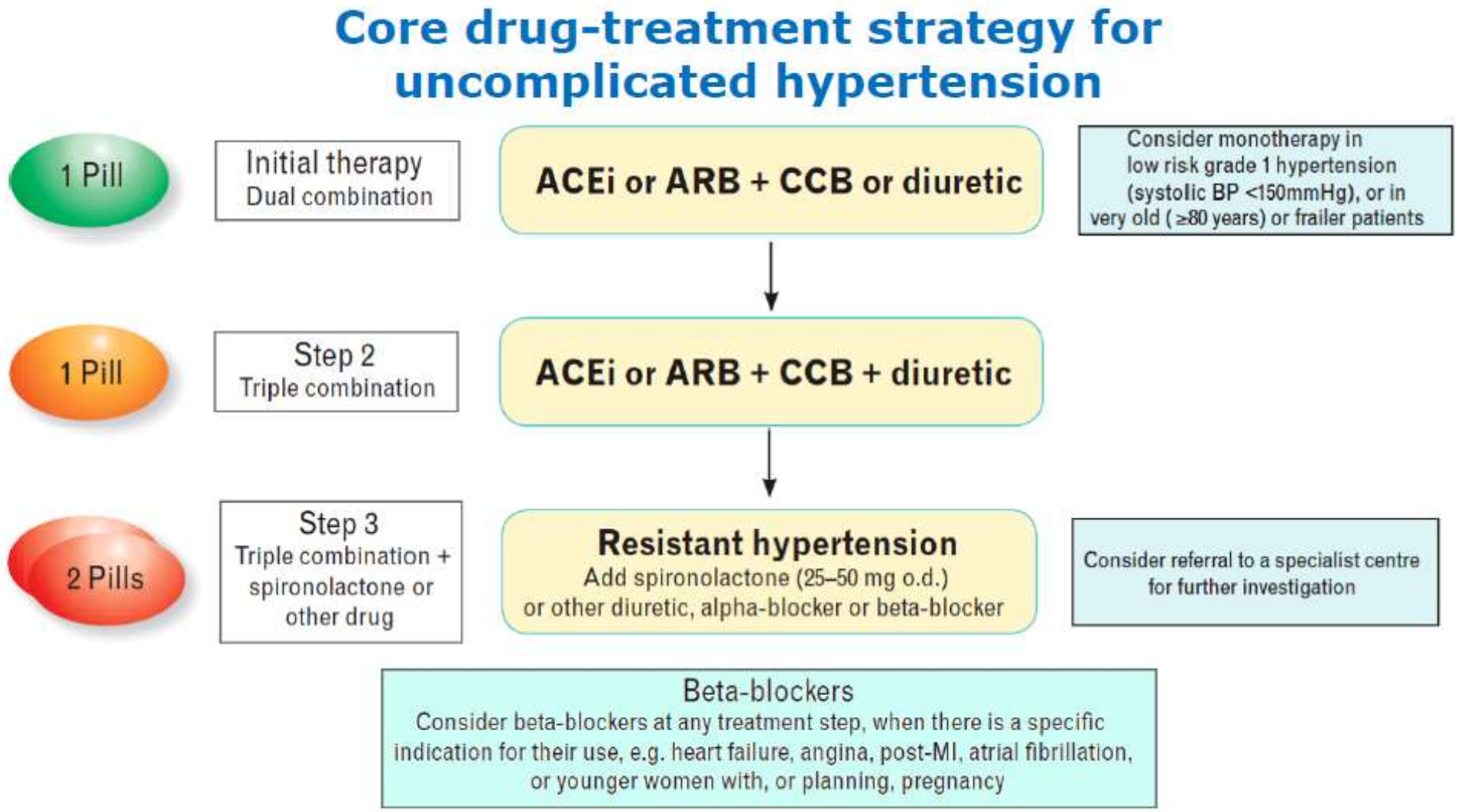
9.1 Starting Pharmacologic Treatment?

	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	

Williams, Mancia et al., J Hypertens 2018;36:1953-2041 and Eur Heart J 2018;39:3021-3104

9.2 Escalation of Drugs

Start Low dose, →Combine Another → then Increase Dose



9.3 Escalation of Drugs in Hypertension

Start Low dose, →Combine Another → then Increase Dose

STEP 1 <160/100	A	B	C	D
STEP 2 >160/100	A + C	A + D	A + B	
STEP 3	A + C + D			
STEP 4	A + C + D + X			

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

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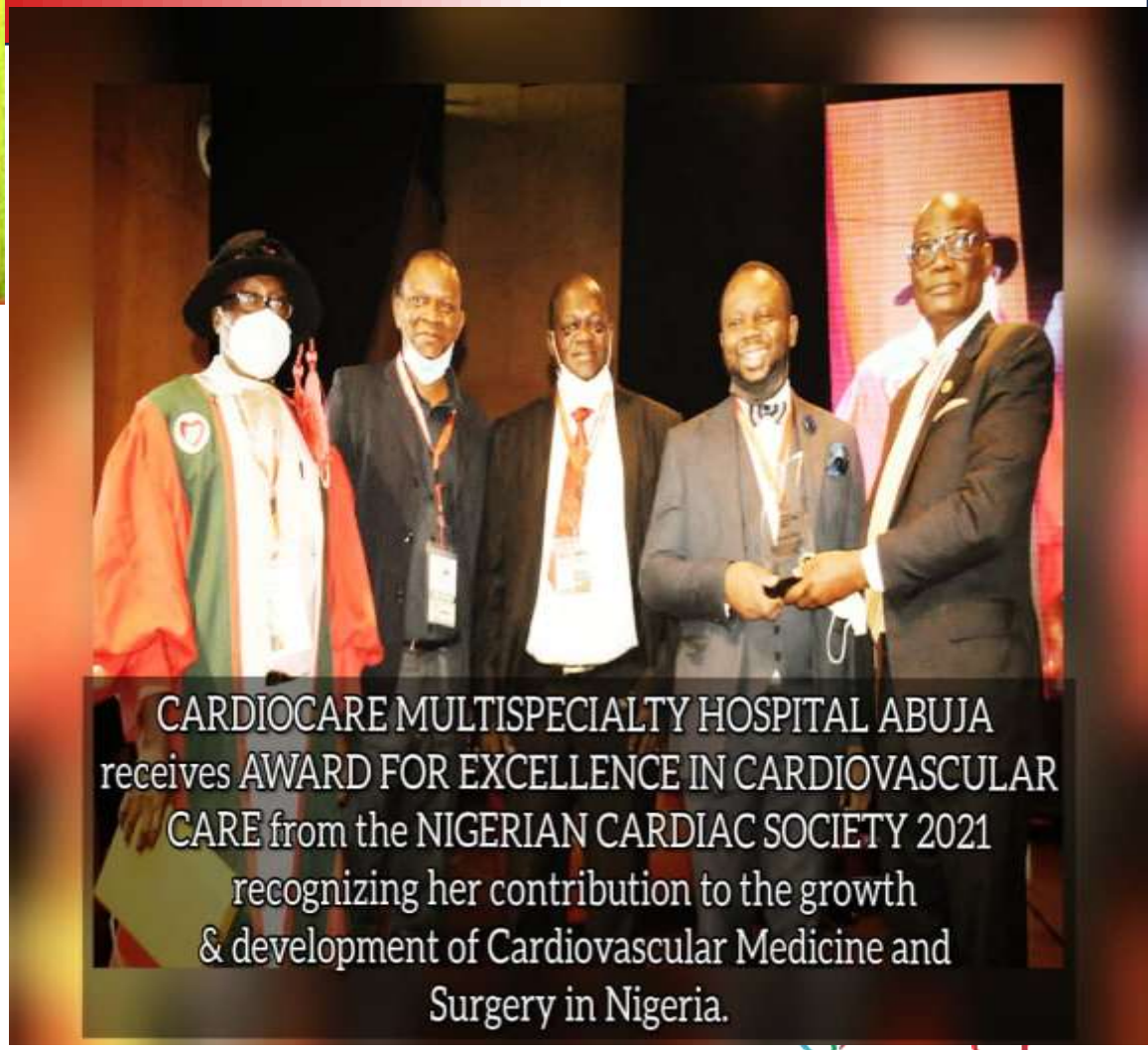

10.1 Follow up

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!!! .**

NEVER give sublingual NIFEDIPINE!!!

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

EXCEPT IN VERY FEW CIRCUMSTANCES

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frontdesk@cardiocare.ng

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

Urgency

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

YES

Emergency

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

6.4 Hypertensive Emergency Drug Treatments-1

Emergency	First Line	AVOID!!!	***Caveat***
Hypertensive Encephalopathy	• Nitroprusside 0.25-10 ug/kg/min • Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min • Nicardipine 5-15 mg/hr	• Clonidine • Trimetophan • **NSAIDs**	• **MUST rule out Strokes**

Cerebral Infarction or Hemorrhage (Stroke)	• Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min
	• Nitroprusside 0.25-10 ug/kg/min
	• Nicardipine 5-15 mg/hr
		• **Avoid Hydralazine**	• Don't treat to Normal
			• Avoid Decreased Cerebral Perfusion
			• Treat Cerebral Edema first
			• Then Treat **ONLY** if BP:
			  • >220/120 (no thrombolytics)
			  • >185/110 (thrombolytics)

Eclampsia	• Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min • Nicardipine 5-15 mg/hr • Magnesium 6g loading dose, then 2g/hr	• **Avoid Enalaprilat** • **Avoid Nitroprusside**	• Consider Emergent delivery

6.4 Hypertensive Emergency Drug Treatments-2

Emergency	First Line	AVOID!!!	***Caveat***
Acute Myocardial Infarction	• Nitroglycerin 5-100 ug/min • Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min • Nitroprusside 0.25-10 ug/kg/min	• **AVOID Hydralazine**	• Increase coronary perfusion • Decrease afterload
Acute Left Ventricular Failure/Pulmonary Edema	• Nitroglycerin 5-100 ug/min • Nitroprusside 0.25-10 ug/kg/min • Enaprilat 1.25-5mg every 6hours • (+ Diuresis)	• **AVOID Labetalol**	• Decrease Afterload
Aortic Dissection	• Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min • Nitroprusside 0.25-10 ug/kg/min	• **Avoid Hydralazine**	• Decrease dP/dT shearing forces
Catecholamine Excess	• Phentolamine 5-10mg/min • Labetalol 20-80mg IV bolus every 10mins, 0.5-2 mg/min • Nitroprusside 0.25-10 ug/kg/min		• Avoid unopposed Beta Blocker • Consider benzodiazepines for cocaine toxicity

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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

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 Pregancy
- Drugs to Avoid When

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

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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.

BLS

CARDIOCARE IN-HOSPITAL BLS ALGORITHM- THE 6Cs

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A Member of The Limi Hospitals

1. CHECKLIST OF HOSPITAL & PATIENTS

- Crash cart
- AED
- Close monitoring of high risk
- Prevent Arrest

2. CHECK SAFETY & RESPONSIVE NESS

- Environment
- People
- Cameras

3. CALL FOR HELP

- AED
- People
- Crash Cart
- ACLS TEAM

4. CONFIRM ARREST? - *RESPONSIVE, PULSE & BREATHING*?

- **PULSE FELT BUT NO NORMAL BREATHING**
  - RESCUE BREATHS 1 EVERY 6 SECS
- **IF NORMAL PULSE & NORMAL BREATHING**
  - MONITOR

5. CPR

- Compressions
- Airway & Breathing
- Defibrillation ASAP if shockable rhythm
- Adrenaline every 2-3mins

6. CARDIAC LIFE SUPPORT- ADVANCED

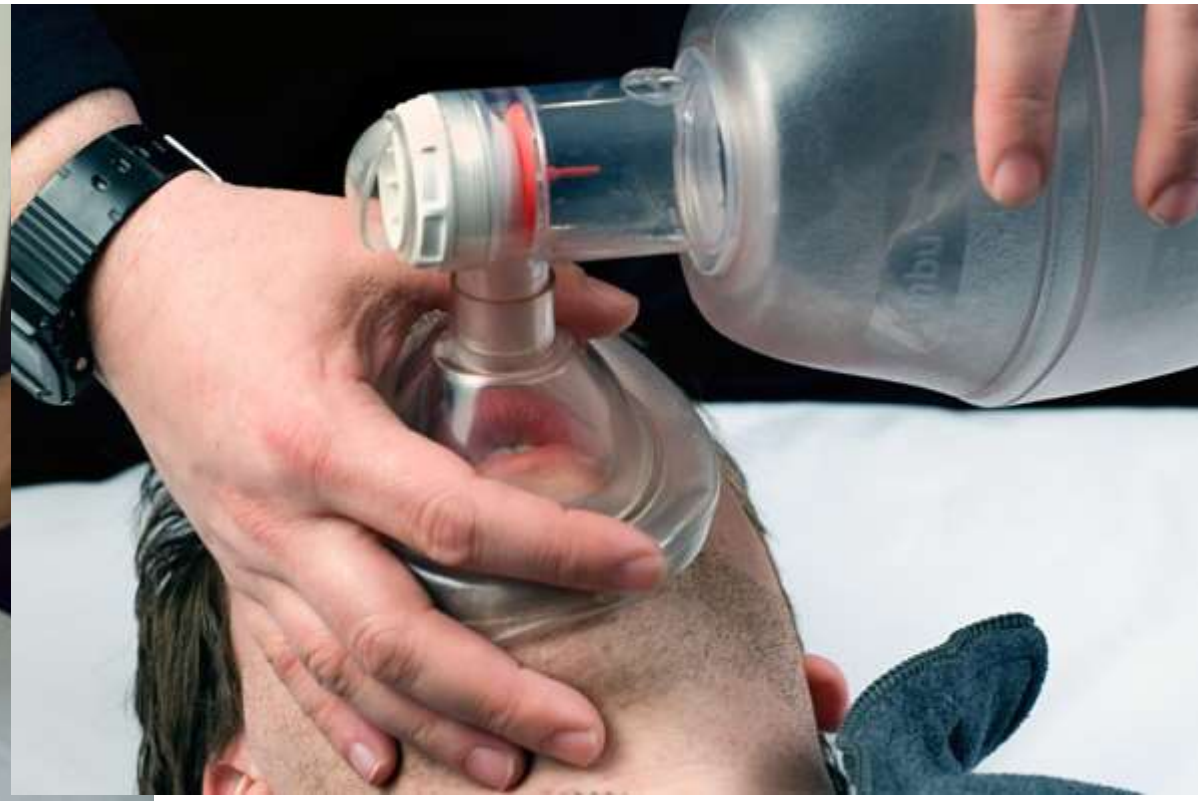
- 5Hs and Ts
- Medications
- Advanced Airway
- Specialists
- ECG Monitoring
- Post Arrest Care

OUR FOCUS

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

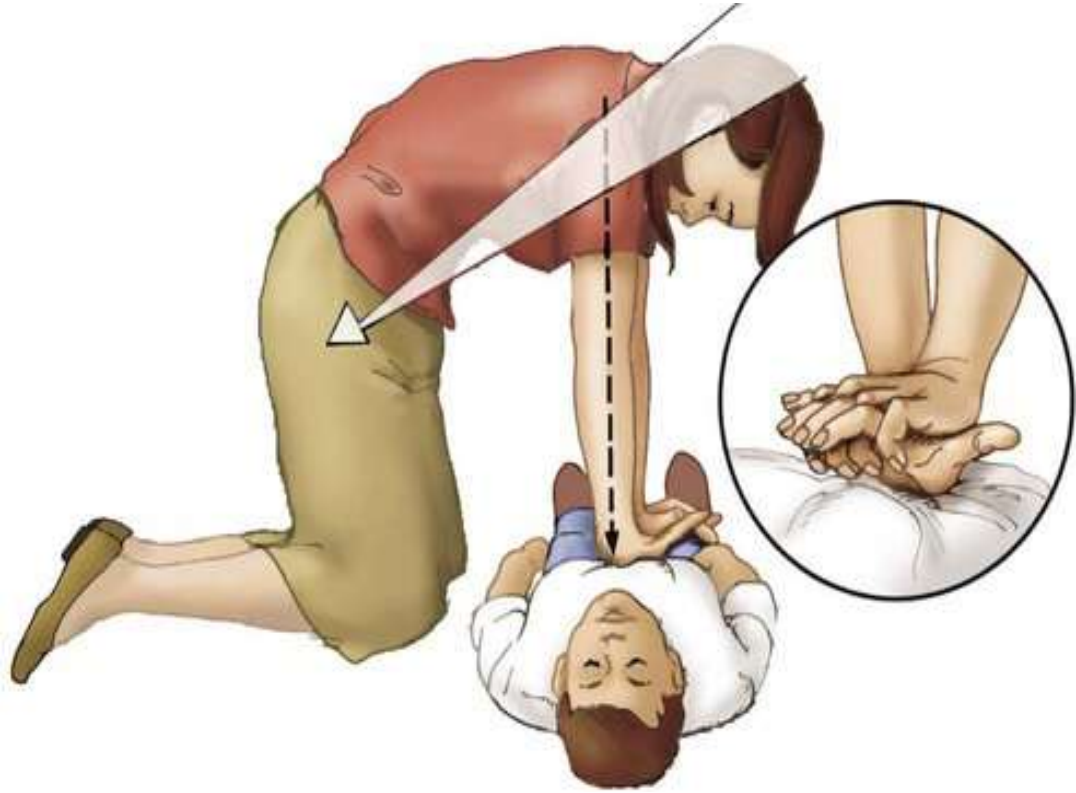
- ❑ **SAFETY**
- ❑ **EFFECTIVENESS**
- ❑ **PATIENT CENTEREDNESS**
- ❑ **INTERNATIONAL STANDARDS**

5b. Ventilations: Bag-Valve-Mask Resuscitator (Ambu)- 3



a. Chest Compressions (1)

- Place patient on a firm surface
  - Backboard under mattress
  - Deflation of air mattress
- Hand in the middle of the chest
- Arms straight as possible, lock elbows



OUR FACILITIES

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24

BED SPACE

VIP SUITES,

PRIVATE SUITES,

GENERAL SUITES etc

2

INTENSIVE CARE UNIT

HDU&ICU

3

THEATERS

ULTRAMORDEN CATHLAB, CARDIAC OPERATION THEATER

1

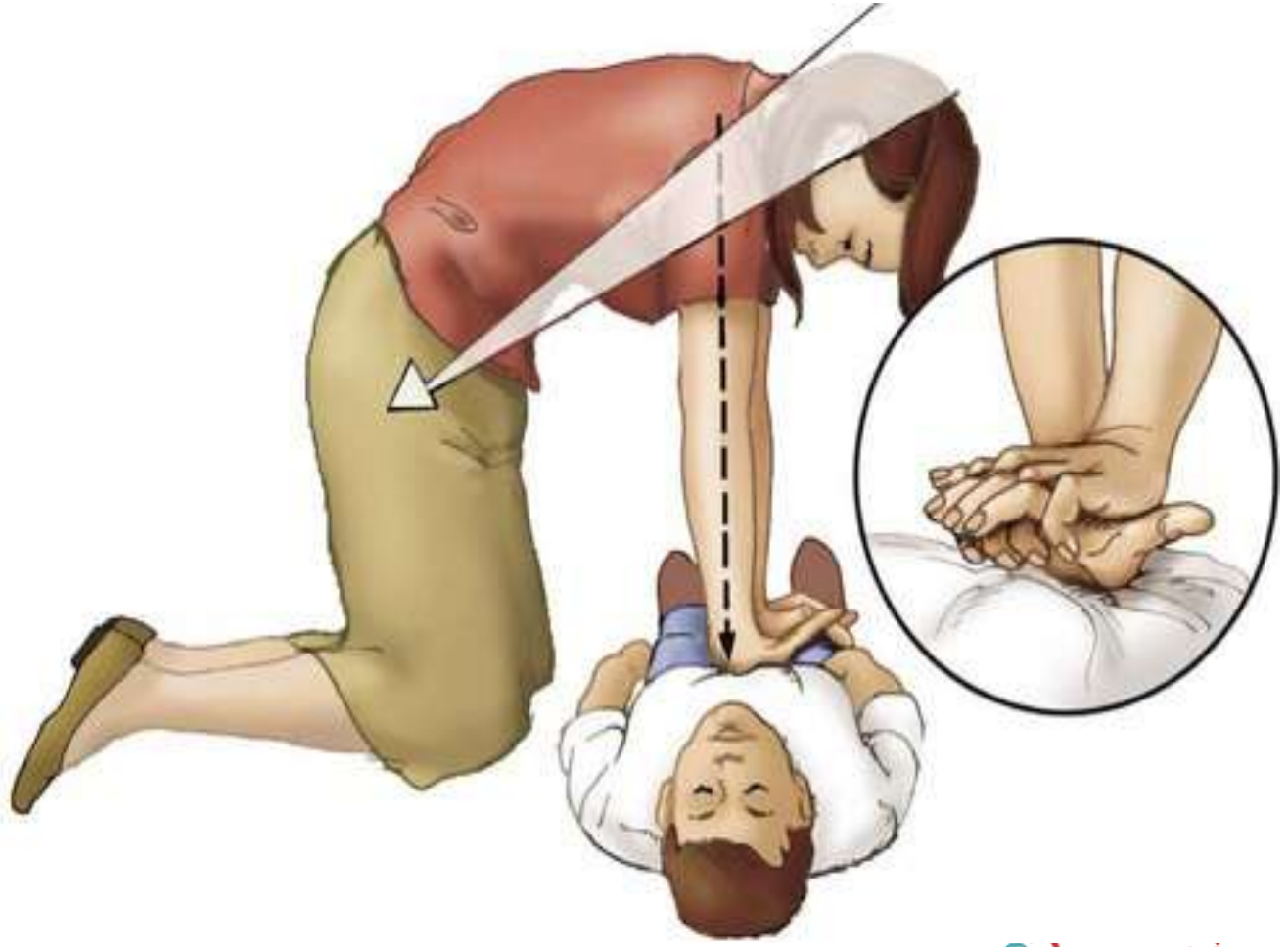
DIALYSIS SUITE

PHYSIOLOGY LAB

RADIOLOGY SIUTE

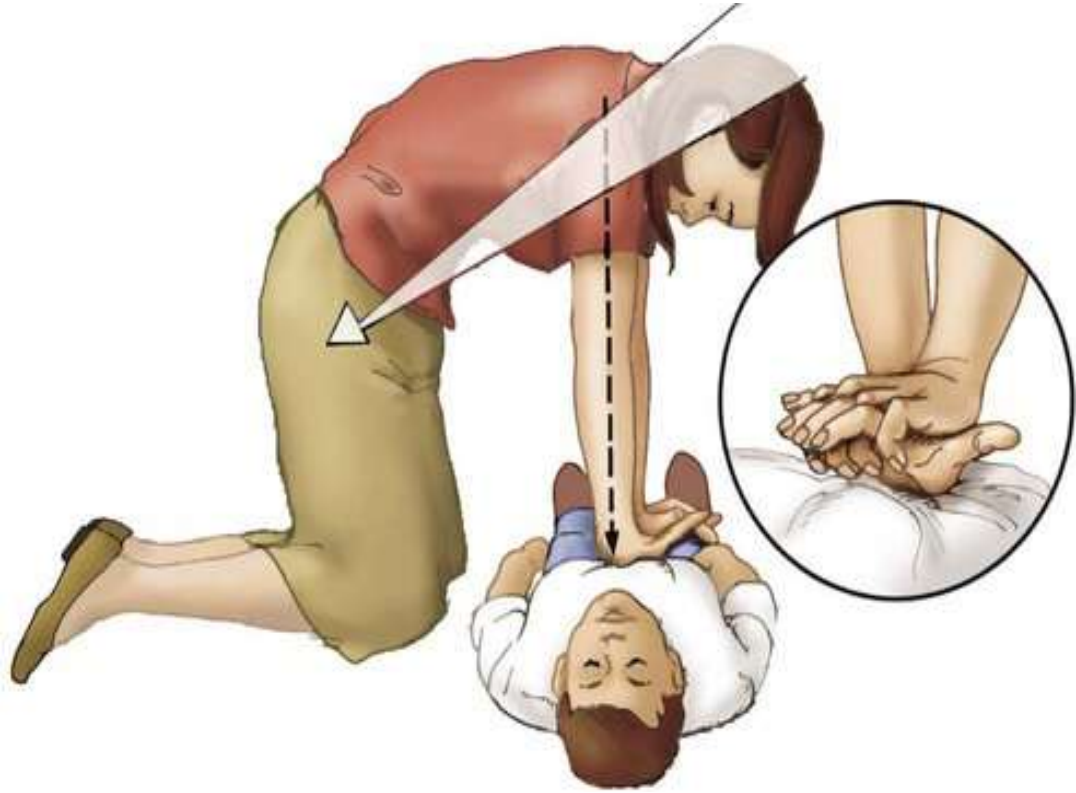
a. Chest Compressions (2)

- to promote effective compressions
- Arms are as straight as possible, with
- the shoulders directly over the hands



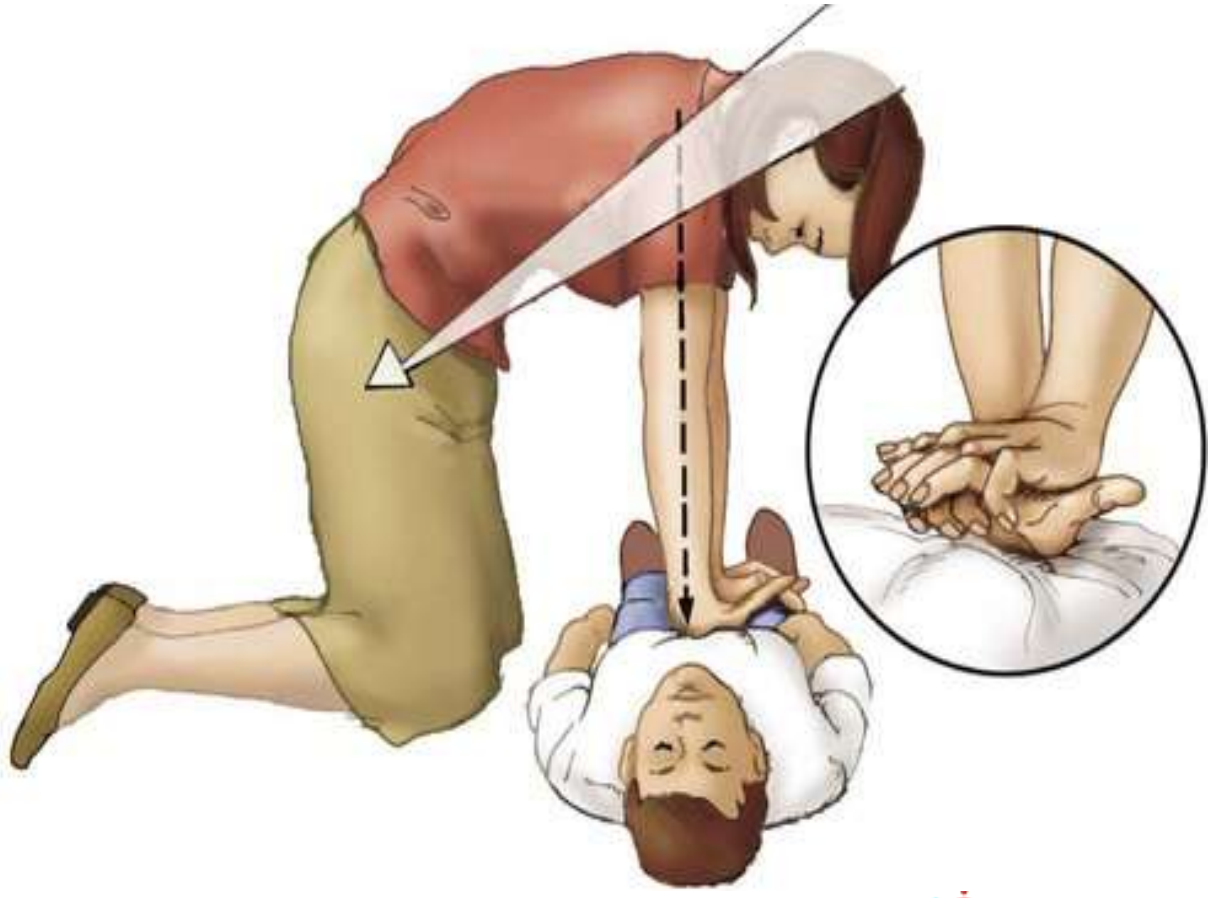
4. Chest Compressions (3)

- Locking elbows will help maintain straight arms.
- Minimize interruption in CPR
- 5 cm (2”) of depression
- Rate 100-120 cpm



a. Chest Compressions (4)

- Allow complete recoil- Allow as much time relaxing as compressing
- For adult patients, CPR consists of 30 chest compressions followed by 2 ventilations.
  (Children same except if two rescuers then 15:2)
  - Count out loud so other members of the team can follow



CARDIOCARE IN-HOSPITAL BLS ALGORITHM- THE 6Cs

cardiocare MULTISPECIALTY HOSPITAL
A Member of The Limi Hospitals

1. CHECKLIST OF HOSPITAL & PATIENTS

- Crash cart
- AED
- Close monitoring of high risk
- Prevent Arrest

2. CHECK SAFETY & RESPONSIVE NESS

- Environment
- People
- Cameras

3. CALL FOR HELP

- AED
- People
- Crash Cart
- ACLS TEAM

4. CONFIRM ARREST? - *RESPONSIVE, PULSE & BREATHING*?

- **PULSE FELT BUT NO NORMAL BREATHING**
  - RESCUE BREATHS 1 EVERY 6 SECS
- **IF NORMAL PULSE & NORMAL BREATHING**
  - MONITOR

5. CPR

- Compressions
- Airway & Breathing
- Defibrillation ASAP if shockable rhythm
- Adrenaline every 2-3mins

6. CARDIAC LIFE SUPPORT- ADVANCED

- 5Hs and Ts
- Medications
- Advanced Airway
- Specialists
- ECG Monitoring
- Post Arrest Care

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!