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UNIVERSITATEA DE MEDICINĂ ȘI  
FARMACIE "CAROL DAVILA"  
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## AD-COR Program inovativ de formare in domeniul cardiologiei pediatrice POSDRU/179/3.2/S/152012

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### MODUL TEORETIC

# Hypertension in Pediatric Age

Imputernicit: Prof. Dr. Tammam Youssef

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# Hypertension in Pediatric Age

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# Introduction

- Hypertension is estimated to be prevalent in 5-8% in the United States according to the American academy of pediatrics
- in a study made by Hansen found that health care providers fail to diagnose high blood pressure of children

# Reasons of high incidence of high blood pressure in children

- increasing obesity in childhood
- sedentary lifestyle
- development of medical examination technique

# Hypertension:definition

Hypertension- is average systolic and or diastolic pressure that is  $\geq$  or equal 95 th the percentile for gender, age and height.

This must be confirmed on three repeated visits before making diagnosis .

# Hypertension: Classification

- Prehypertension average systolic and/or diastolic pressure between 90-95 percentile.
- Stage 1- average systolic and or diastolic blood pressure that range from 95<sup>th</sup> to 99<sup>th</sup> percentile ( and those must be reevaluated within one to two weeks).
- Stage 2- average systolic and / or diastolic pressure > 5 mmhg above the 99<sup>th</sup> percentile

# Measurement of BP in pediatrics

- Children 3 years and older have their blood pressure measured regularly .
- preferred method of measurement is auscultation.
- accurate measurement is important for correct diagnosis.

# Measurement of BP in pediatrics

- ❑ Main source of error – Using wrong cuff size
- ❑ Small cuff – overestimates BP
- ❑ Large cuff – underestimates BP

# Appropriate cuff size

- ❑ Inflatable bladder width that covers at least 40% of the arm circumference midway between the olecranon process and the acromion process
- ❑ The bladder length should cover 80-100% of the circumference of the arm
- ❑ The bladder width-to-length ratio should be at least 1:2

# In patients less than 3 years we measure BP in :

- Premature baby
- congenital heart disease
- recurrent UTI, renal problems
- Systemic disease
- bone marrow transplant
- High Intracranial pressure

# Hypertension: Symptoms

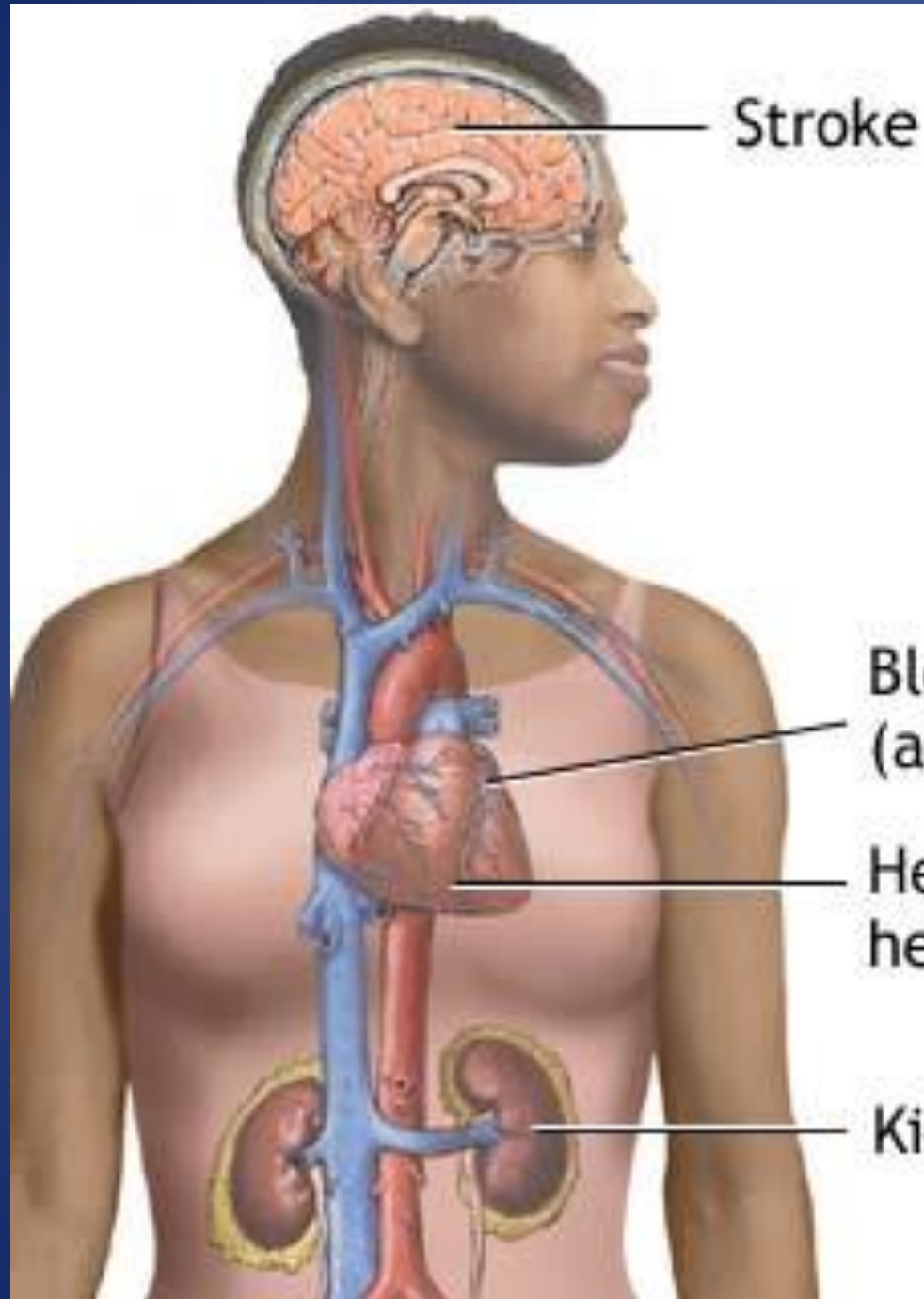
- Hypertension is often thought as a silent disease
- doubt is in older , taller, and overweight children
- three most common symptoms:
  - Headache
  - daytime tiredness
  - difficulty initiating sleep

# After Hypertension is Diagnosed

- Want to rule out secondary causes
- BP should be measured in both arms and a leg to rule out coarctation of aorta
- Fasting lipid , fasting glucose, standard chemistry panel, serum urea nitrogen (BUN),CBC, creatine,urinalysis and urine culture
- Echocardiogram,renal ultrasound
- Screen for major sleep disorders using BEARS

# Importance of early diagnosis of hypertension:

- prevent target organ damage of the brain ,eyes , heart , and kidneys
- if caught early preventive measures can be taken to reduce risk of (LVH , renal insufficiency)



Stroke

Chronic high blood pressure (hypertension) left untreated can lead to:

Blood vessel damage (arteriosclerosis)

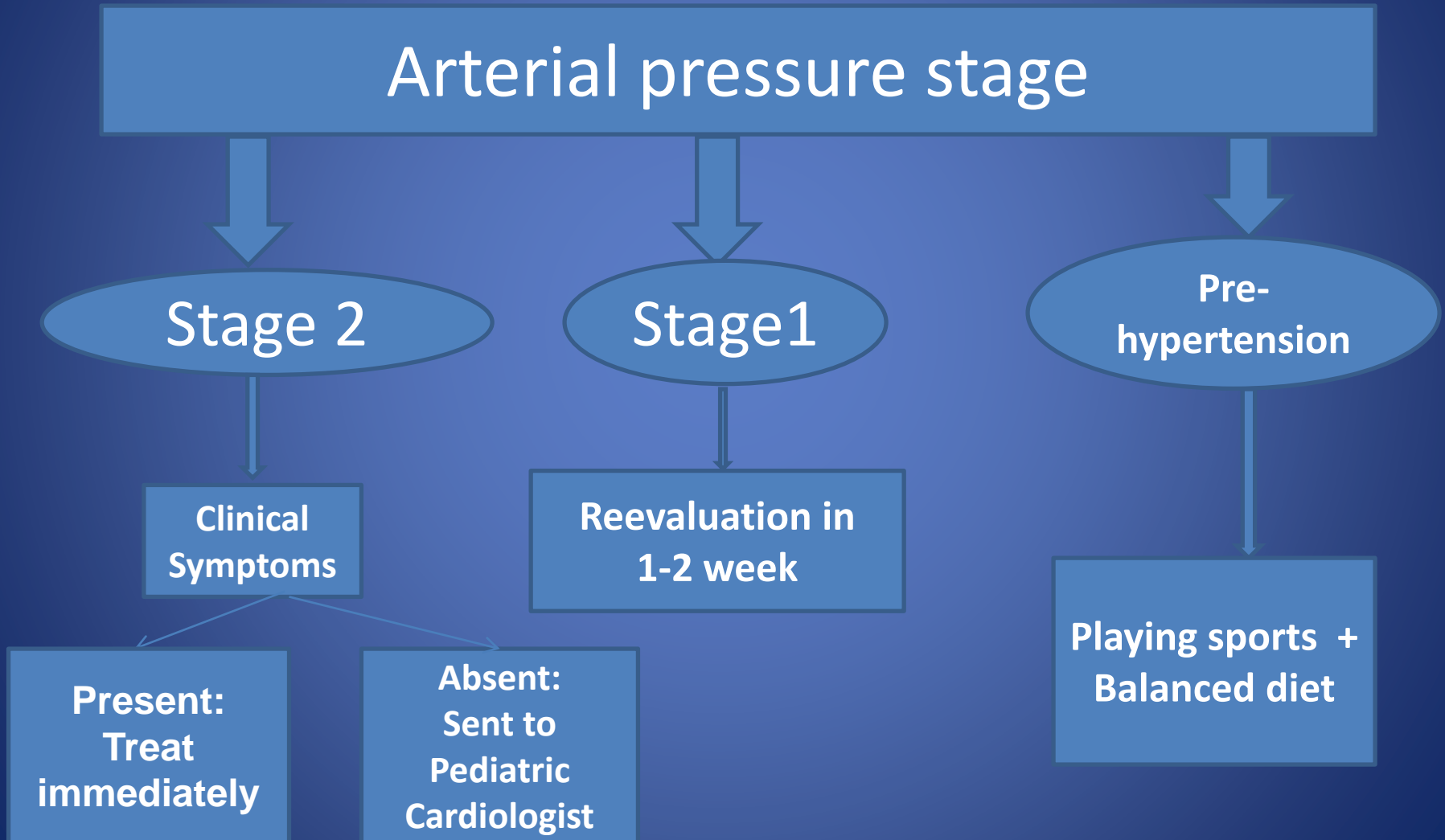
Heart attack or heart failure

Kidney failure

# Treatment

- Lifestyle modifications are typically the initial treatment of choice
- Indications for antihypertensive drug therapy in children
  - \*Secondary hypertension
  - \*Insufficient response to lifestyle modifications
  - \*Stage 2 hypertension

# Treatment plan



# Pharmacologic therapy of children hypertension:

- Unknown long-term effects of antihypertensive therapy in children with regard to growth
- ACE-1 and calcium channel blockers are the most commonly used antihypertensive in children

# CONCLUSION

- Hypertension and obesity in children are increasing in an upward trend
- It is imperative that pediatric Hypertension is recognized and treated
- It is advisable to measure blood pressure at every visit with the appropriate technique, use the gender ,age , and height specific blood pressure table .
- It is important to encourage healthy lifestyles in all children and adolescents and help institute lifestyle changes for weight reduction in overweight children

# Take home points

- Report the percentile of blood pressure on any BP you get.
- Recognize a hypertensive emergency
- ACE-I and calcium channel blockers are drugs of choice.