

(Updated AAP Guidelines (Pediatrics 2017; 140(3): e20171904))

## Incidence in children: 3.5% (true HTN), 3.5% (elevated BP (previously known as prehypertension))

### Who should have BP checked

- All children  $\geq 3$  years, annually
- Oscillatory BP devices may be used for screening
  - If abnormal, must confirm by auscultation
  - Repeat X3 during same visit and average

**TABLE 9 Conditions Under Which Children Younger Than 3 Years Should Have BP Measured**

- History of prematurity <32 week's gestation or small for gestational age, very low birth weight, other neonatal complications requiring intensive care, umbilical artery line
- Congenital heart disease (repaired or unrepaired)
- Recurrent urinary tract infections, hematuria, or proteinuria
- Known renal disease or urologic malformations
- Family history of congenital renal disease
- Solid-organ transplant
- Malignancy or bone marrow transplant
- Treatment with drugs known to raise BP
- Other systemic illnesses associated with HTN (neurofibromatosis, tuberous sclerosis, sickle cell disease, <sup>114</sup> etc)
- Evidence of elevated intracranial pressure

Adapted from Table 3 in the Fourth Report.<sup>1</sup>

**Note: Major change in the guidelines was to try to make screening easier – the table below can be used as cutoff for a negative screen. Also, for age 13 or older you can just use adult cut off (> 120/80 is elevated blood pressure, > 130/90 is hypertension warranting medical therapy) (Screening)**

### Simplified BP Tables

Age, y	BP, mm Hg				Isolated diastolic HTN in pediatrics is almost unheard of  Further simplification 2 = 100 6 = 106 8 = 108 10 = 110 12 = 112 13 = adult
	BOYS		GIRLS		
	Systolic	DBP	Systolic	DBP	
1	98	52	98	54	
2	100	55	101	58	
3	101	58	102	60	
4	102	60	103	62	
5	103	63	104	64	
6	105	66	105	67	
7	106	68	106	68	
8	107	69	107	69	
9	107	70	108	71	
10	108	72	109	72	
11	110	74	111	74	
12	113	75	114	75	
$\geq 13$	120	80	120	80	

### BP measurement best practices

- Patient seated in quiet exam room with back supported and feet on floor uncrossed x 3-5 min
- Arm supported at heart height
- No speaking
- Bottom of cuff 2-3cm above antecubital fossa
- Inflate cuff to 20-30mmHg above loss of radial pulse

### Definitions of HTN

**TABLE 3 Updated Definitions of BP Categories and Stages**

#### For Children Aged 1-13y

- Normal BP: <90th percentile
- Elevated BP:  $\geq 90$ th percentile to <95th percentile or 120/80 mmHg to <95th percentile (whichever is lower)
- Stage 1 HTN:  $\geq 95$ th percentile to <95th percentile + 12 mmHg, or 130/80 to 139/89 mmHg (whichever is lower)
- Stage 2 HTN:  $\geq 95$ th percentile + 12 mmHg, or  $\geq 140/90$  mmHg (whichever is lower)

#### For Children Aged $\geq 13$ y

- Normal BP: <120/<80 mmHg
- Elevated BP: 120/<80 to 129/<80 mmHg
- Stage 1 HTN: 130/80 to 139/89 mmHg
- Stage 2 HTN:  $\geq 140/90$  mmHg

If BP elevated repeat in 6 months

If elevated again check upper and lower BP

**Note: Another major change is reducing work up for those that are overweight (ie no longer need to do routine renal ultrasounds)**

### Initial Workup

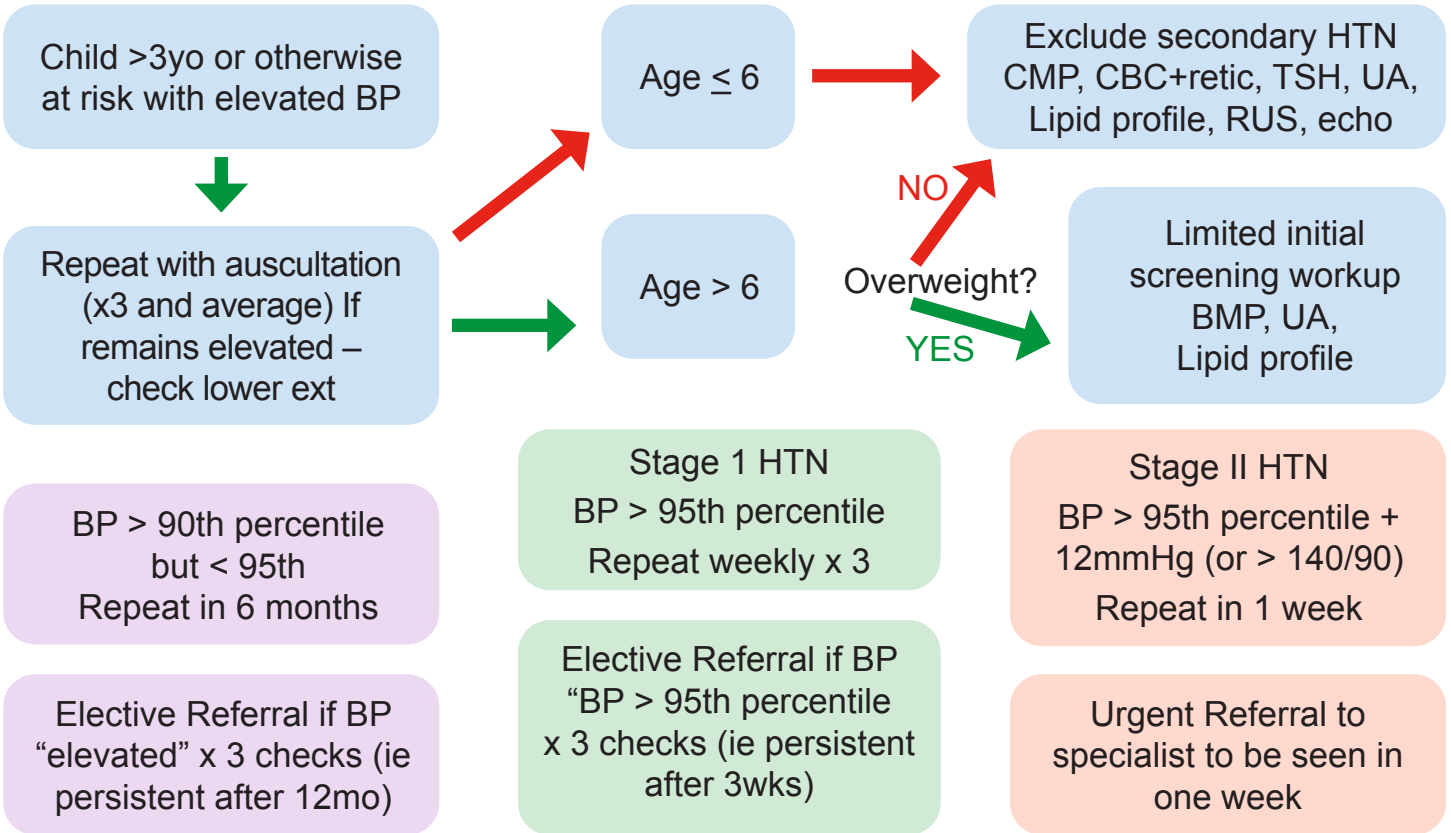
- Children > 6yo do not require extensive evaluation if:
  - Family history of HTN
  - Overweight
  - Reassuring physical exam (ie no proptosis, renal bruit, etc)
- Labs for all: UA, BMP, Lipid profile ("common soil")
- Labs for overweight: CMP, HgbA1C
- Ambulatory BP monitor to confirm
- Consider the following based on history/exam:
  - TSH, UDS, Sleep study, CBC

**New guidelines recommend ambulatory BP monitoring → however this is not widely available (either with us or nephrology and is not an isolated problem for Atlanta)**

# BP Guidelines and When to Refer

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## Primary Care Algorithm (Simpler)



## Who to refer

- Elevated BP x 3 occasions
  - checking Q 6mo
- Stage I HTN (BP > 95th percentile x 3)
  - checking Qweek
- Stage II HTN (BP > 95th percentile +12mmHg or >140/90) - “to be seen in one week”
- SBP in arm > 20mmHg above legs
- Abnormal cardiac exam