

Updates in Hypertension

Greenlane Medical Specialists

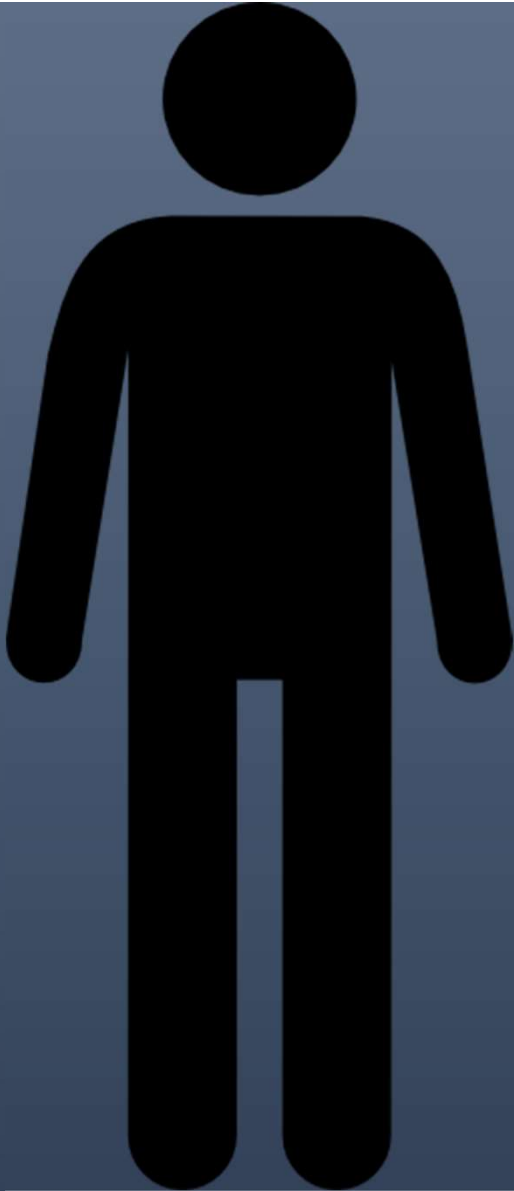
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17th August 2022



Overview

- Hypertension in the young
- Management of hypertension in advanced CKD
- Non pharmacological therapies: Dietary influences on BP
- Low dose combination therapy for treatment initiation



32 yo male with elevated clinic BP

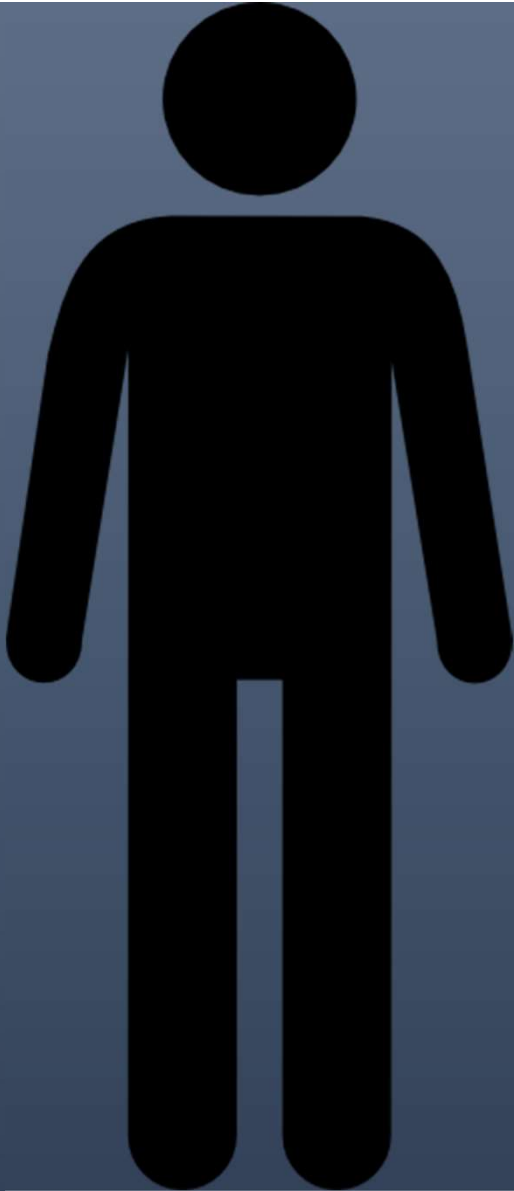
Asymptomatic

Family history of hypertension

BMI 35kg/m²

24 hr ABPM: Overall average BP 128/84 mmHg (normal <130/80 mmHg)

What is the next appropriate step?



Clinical questions

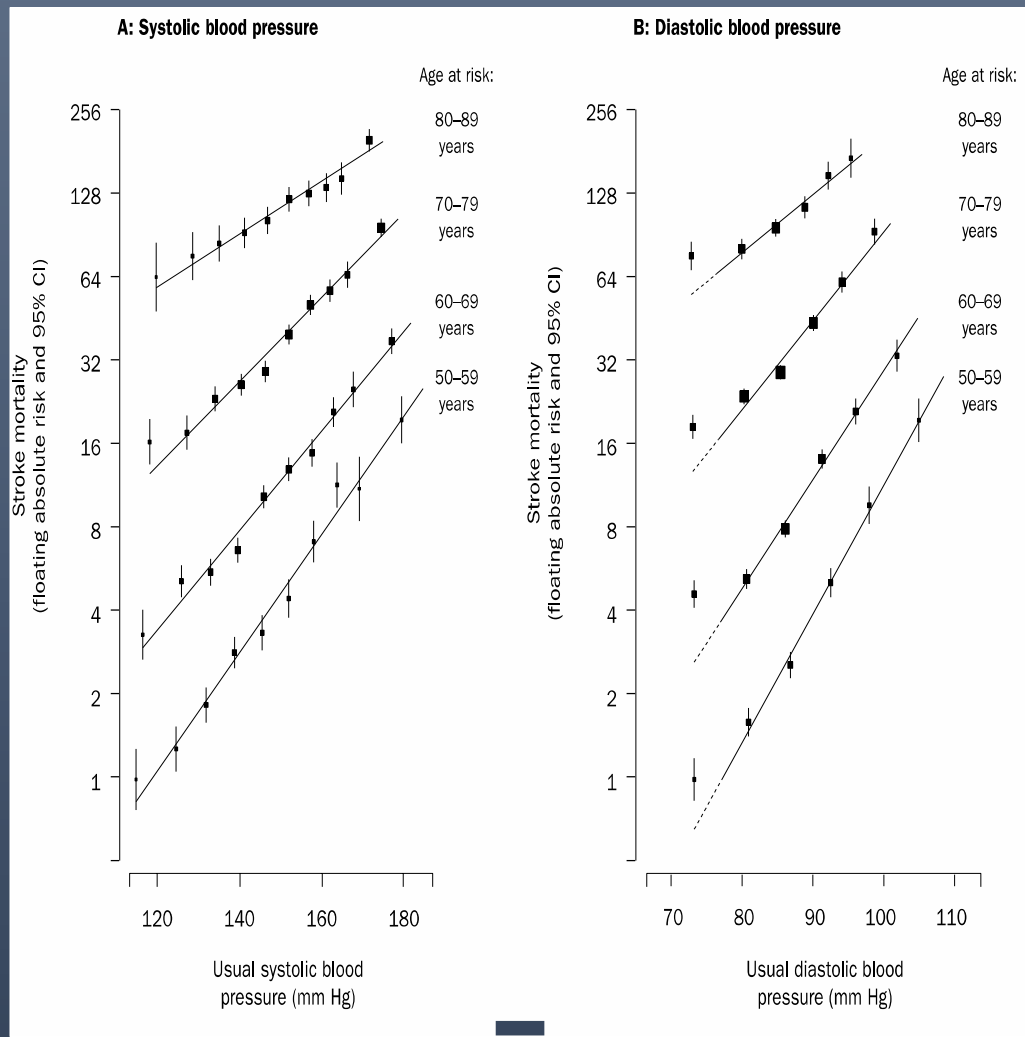
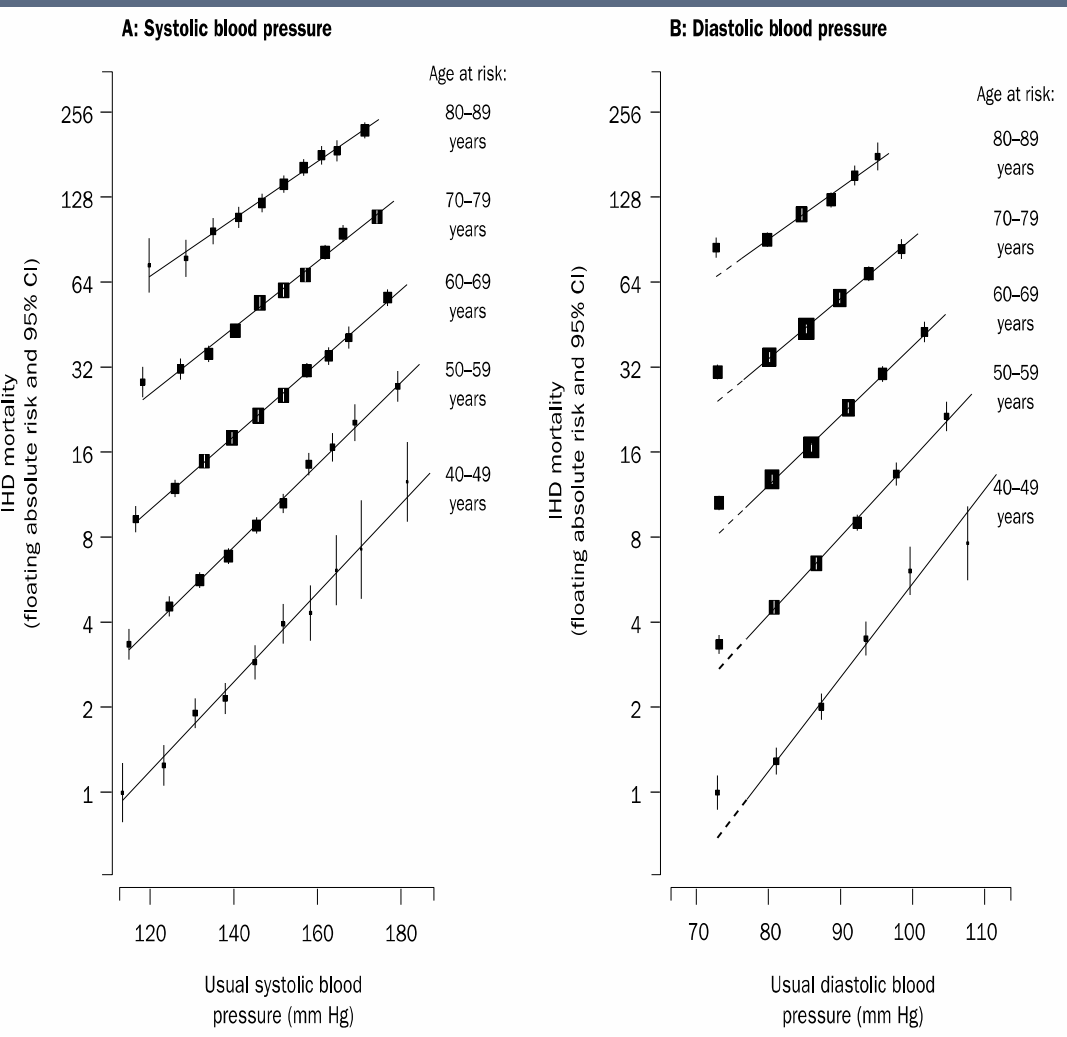
- Does elevated BP in young adults (<40 yo) matter?
- What about isolated diastolic hypertension?
- What is the threshold for treatment?

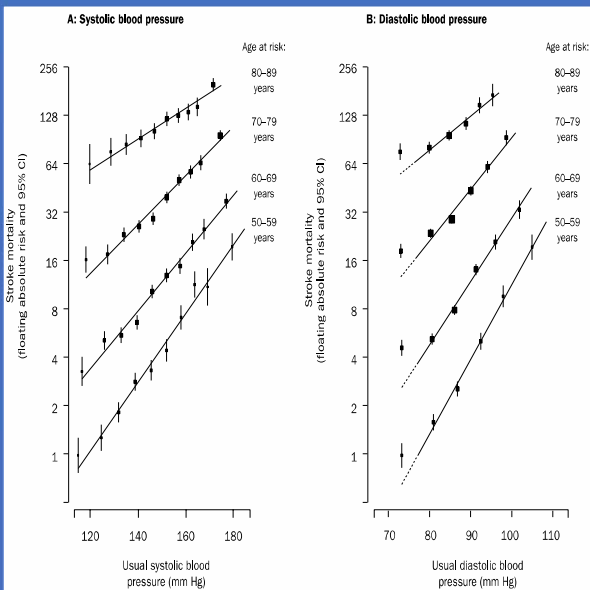
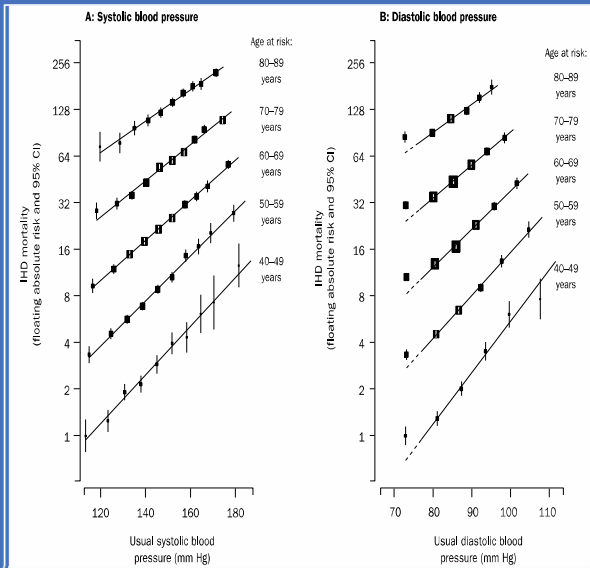
BP categories in 2017 ACC/AHA and JNC 7 guidelines

Systolic BP	Diastolic BP	2017 ACC/AHA	JNC7
<120	<80	Normal BP	Normal BP
120–129	<80	Elevated BP	Prehypertension
120–129	80–89	Stage 1 Hypertension	Prehypertension
130–139	80–89	Stage 1 Hypertension	Prehypertension
140–149	90–99	Stage 2 Hypertension	Stage 1 Hypertension
≥160	≥100	Stage 2 Hypertension	Stage 2 Hypertension

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Individuals with SBP and DBP in two categories should be designated to the higher BP category. BP is based on an average of ≥2 careful readings obtained on ≥2 occasions.





- Age specific risk for CVD in patients with HTN
 - Insufficient data in young patients (<40 yo)

- Log linear relationship of BP with rates of stroke and cardiovascular mortality

Literature is sparse

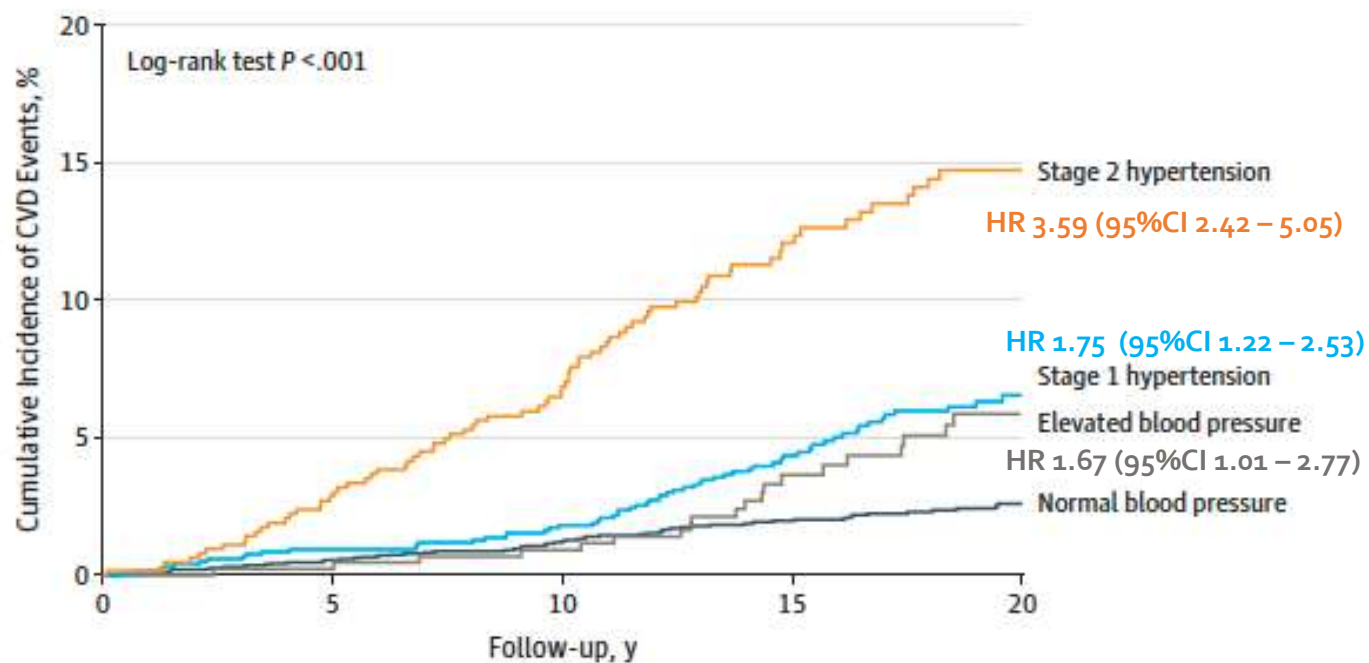
- Systematic reviews or RCT investigating associations of raised BP and CV risks among young adults are lacking.
- Risk prediction models/guidelines are mainly based on studies among older people (>55 yo)
- Observational studies in this cohort are heterogenous with inconsistent findings

JAMA | Original Investigation

Association of Blood Pressure Classification in Young Adults Using the 2017 American College of Cardiology/American Heart Association Blood Pressure Guideline With Cardiovascular Events Later in Life

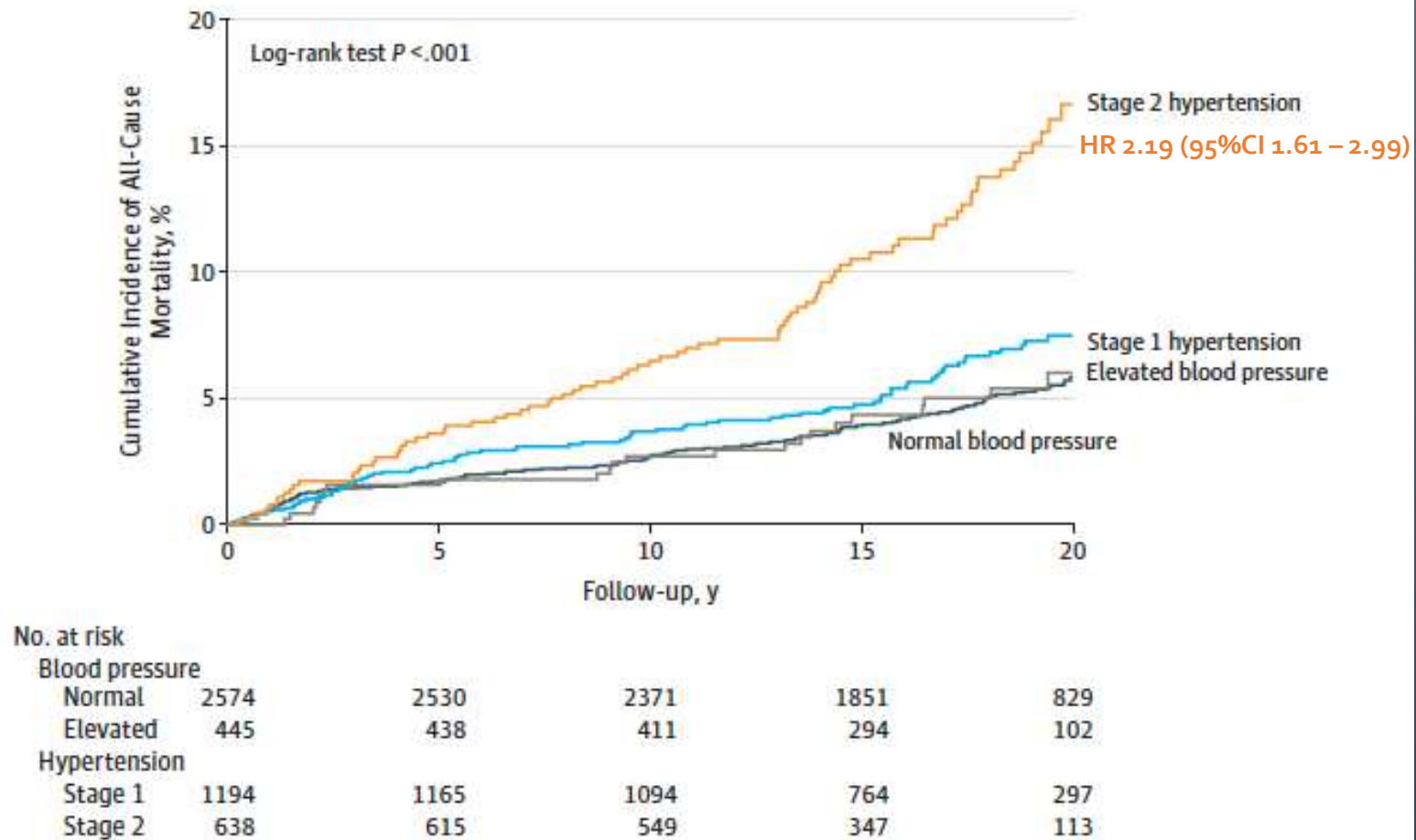
- Prospective cohort study
- N= 5,115 (18 – 30 yo)
- Median FU 18.8 years
- 4 subgroups
 - Normal BP (untreated SBP <120mmHg and DBP <80mmHg)
 - Elevated BP (untreated SBP 120-129mmHg and DBP <80mmHg)
 - Stage 1 hypertension (untreated SBP 130-139mmHg or DBP 80-89mmHg)
 - Stage 2 hypertension (SBP \geq 140mmHg, DBP \geq 90mmHg, or taking antihypertensive medication).

Figure 1. Cumulative Incidence of Cardiovascular Disease (CVD) Events Among Participants in the Coronary Artery Risk Development in Young Adults (CARDIA) Study by Blood Pressure (BP) Group



No. at risk						
Blood pressure						
Normal	2574	2522	2351	1824	813	
Elevated	445	437	409	286	99	
Hypertension						
Stage 1	1194	1158	1078	732	284	
Stage 2	638	603	519	314	105	

Figure 2. Cumulative Incidence of All-Cause Mortality Among Participants in the Coronary Artery Risk Development in Young Adults (CARDIA) Study by Blood Pressure (BP) Group



JAMA. 2018;320(17):1774-1782. doi:10.1001/jama.2018.13551

Association between high blood pressure and long term cardiovascular events in young adults: systematic review and meta-analysis

Dongling Luo,¹ Yunjiu Cheng,² Haifeng Zhang,³ Mingchuan Ba,⁴ Pengyuan Chen,⁴ Hezhi Li,¹ Kequan Chen,⁵ Weihong Sha,⁶ Caojin Zhang,¹ Hao Chen⁶

- Systematic review and meta-analysis (17 studies, N ~ 4.5 mil)
- Young adults (18 – 45 years)
- Uncomplicated study population
- 14.7 years follow up (range 4.3 – 56.3 years in each study)
- 5 subgroups of BP:
 - SBP <120 mmHg, DBP <80 mmHg optimal
 - SBP 120 – 129 mmHg; DBP 80 – 84 mmHg normal
 - SBP 130 – 139 mmHg; DBP 85 – 89 mmHg high normal
 - SBP 140 – 159 mmHg; DBP 90 – 99 mmHg grade 1 HTN
 - SBP ≥ 160 mmHg, DBP ≥ 100 mmHg grade 2 HTN