Visualizing and Predicting Heart Diseases with an Interactive Dash Board

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Dashboard Showing Different Types Of Visuals

Blood Pressure Stages

STAGE	SYSTOLIC	DIASTOLIC
NORMAL	LESS THAN 120	LESS THAN 80
ELEVATED	120 – 129	LESS THAN 80
HYPERTENSION STAGE I	130 – 139	80 – 89
HYPERTENSION STAGE II	140 OR HIGHER	90 OR HIGHER
HYPERTENSIVE CRISIS	HIGHER THAN 180	HIGHER THAN 120

Source: American Heart Association

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Normal Blood Pressure

People with a blood pressure range of 90 to 120 systolic and 60 to 80 diastolic have normal blood pressure, says Dr Wong. A systolic reading below 90 signifies low blood pressure.

Elevated Blood Pressure

A blood pressure reading of 120 to 129 systolic and less than 80 diastolic signifies elevated blood pressure and, thus, a higher probability of developing hypertension.

"As blood pressure elevates, there is t h e increased workload on the heart and arteries," says Dr Desai. "This results in [the] thickening of the heart muscle (hypertrophy), which can lead to heart failure. It also results in [the] micro-tearing of the artery wall, leading to cholesterol deposition (atherosclerosis). This leads to [the] narrowing of the vessel and further elevation of blood pressure."

Hypertension Stage I

Hypertension Stage I is defined by a systolic reading of 130 to 139 and a diastolic reading of 80 to 89.

Dr Wong says while doctors initially treat this stage of hypertension by suggesting a healthier lifestyle—eating more vegetables and whole grains, using less salt, increasing physical activity and controlling stress — medications may be needed if blood pressure falls in this range on multiple readings over a period of time in people with other cardiovascular risk factors.

Dr. Wong adds that, per 2017 ACC/AHA guidelines, adults with Hypertension Stage I should consider medication after three to six months of non pharmacologic therapy. There's also a risk of atherosclerosis— thickening or hardening of the arteries caused by a buildup of plaque in

the inner lining of an artery—if it isn't treated. Risk factors for atherosclerosis may include high cholesterol and triglyceride levels, high blood pressure, smoking, diabetes, obesity, physical activity and eating saturated fats.

1. **Age**: Age of subject

2. **Sex**: Gender of subject: 0 = female ,1 = male

3. **Chest-pain type**: Type of chest-pain experienced by the individual: 1= typical angina
   2 = atypical angina
   3 = non-angina pain
   4 = asymptomatic angina

4. **Resting Blood Pressure**: Resting blood pressure in mm Hg

5. **Serum Cholesterol**: Serum cholesterol in mg/dl

6. **Fasting Blood Sugar**: Fasting blood sugar level relative to 120 mg/dl:
   0 = fasting blood sugar <= 120 mg/dl.
   1 = fasting blood sugar > 120 mg/dl

7. **Resting ECG**:   Resting electrocardiographic results
   0 = normal
   1 = ST-T wave abnormality
   2 = left ventricle hypertrophy

8. **Max Heart Rate Achieved**: Max heart rate of the subject

9. **Exercise Induced Angina**: 0 = no ,1 = yes

10. **ST Depression Induced by Exercise Relative to Rest**: ST Depression of subject

11. **Peak Exercise ST Segment**:

    1 = Up-sloping
    2 = Flat
    3 = Down-sloping

12. **Number of Major Vessels (0-3) Visible on Fluoroscopy**:
    Number of visible vessels under flour

13. **Thal**: Form of thalassemia:

    3 = normal 6 =
    fixed defect
    7 = reversible defect.