What is Hypertension and How is it Diagnosed?

- Hypertension, also known as high blood pressure, is a condition in which blood vessels have persistently raised pressure, causing the heart to work harder when pumping blood through these vessels.\(^1\)

- More than one billion people worldwide live with hypertension and, in the U.S., approximately 50 percent of adults live with the disease.\(^1,2\)
  - It is the leading cause of cardiovascular disease worldwide, including heart attack, stroke and chronic kidney disease (CKD), and carries a substantial risk of morbidity and mortality.\(^3\)
  - Additional cardiovascular risk factors found commonly in people with hypertension include diabetes, lipid disorders, obesity, and unhealthy lifestyle habits such as alcohol consumption and smoking.\(^4\)

- Early effects of hypertension can include subtle target organ damage such as left-ventricular hypertrophy, microalbuminuria and cognitive dysfunction.\(^5\)

- Over time, uncontrolled hypertension can lead to heart failure, atrial fibrillation, valvular heart disease, peripheral arterial disease and aortic syndromes, CKD and end stage renal disease, dementia, and Alzheimer’s disease.\(^6,7,8\)

- A person is diagnosed with hypertension when they present with a systolic blood pressure (SBP) reading of above 140 mm Hg or a diastolic blood pressure (DBP) reading greater than 90 mm Hg. Some professional guidelines have a lower threshold of a SBP above 130 mm Hg or a DBP greater than 80 mm Hg.\(^4,9\)

Symptoms of Hypertension

- Hypertension can be asymptomatic, so people may be unaware they have it. The only way to detect hypertension is to have a health care professional measure blood pressure.\(^1\)

- When symptoms do present, they may include:\(^1\)
  - Early morning headaches
  - Nosebleeds
  - Irregular heart rhythms
  - Vision changes
  - Buzzing in the ears

- Severe hypertension may present with symptoms, including:
  - Fatigue
  - Nausea
  - Vomiting
  - Confusion
  - Anxiety
  - Chest pain
  - Muscle tremors

Hypertension in the Body

- The renin-angiotensin-aldosterone system (RAAS) is a hormone system within the body that is critical for the regulation of blood pressure, acting primarily through the peptide hormone angiotensin (Ang) II, a potent vasoconstrictor.\(^10\)

- Angiotensinogen (AGT) is the most upstream precursor of subsequent angiotensin peptides and its cleavage represents the initial, rate-limiting step in the eventual formation of Ang II.\(^10\)

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Unmet Need in Hypertension

- Despite well-established management strategies, such as lifestyle modifications and several classes of available anti-hypertensive treatments, up to 80 percent of people with hypertension remain uncontrolled.²

- Poor adherence, including failure to take medication as often as prescribed or persist on therapy, is common in people on daily oral anti-hypertensive medications and is a major cause of inadequate blood pressure control, including blood pressure fluctuations and variability between doses.²,¹¹,¹²,¹³
  
  ◦ It has been estimated that 50 to 80 percent of people are nonadherent or suboptimally adherent to their anti-hypertensive treatment.¹⁴

- Blood pressure variability consists of fluctuations in short-, mid-, and long-term blood pressure patterns and correlates closely with target organ damage and an increased risk of cardiovascular events, independent of mean blood pressure.¹³,¹⁵

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⁸ Thorin, E. Hypertension. 2015;65:36-38.