

Arterial hypertension in young adults: risk factors, clinical assessment, and evidence-based management.

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Abstract

Arterial hypertension in young adults is an increasingly important contributor to long-term cardiovascular and renal morbidity. Early-onset hypertension is frequently underdiagnosed due to asymptomatic presentation, measurement variability, and white-coat or masked hypertension, highlighting the value of ambulatory or home blood pressure monitoring for confirmation. Risk factors include obesity, high sodium intake, physical inactivity, alcohol and tobacco use, stress, sleep disorders, and medication or substance-related effects, while secondary causes should be considered when hypertension is severe, resistant, or clinically atypical. Clinical assessment aims to confirm persistent elevation, quantify global cardiovascular risk, detect hypertension-mediated organ damage, and evaluate for reversible secondary etiologies when appropriate. Management prioritizes lifestyle intervention (weight control, exercise, DASH-type diet, sodium reduction, moderation of alcohol, smoking cessation, and sleep optimization) and introduces pharmacotherapy when blood pressure remains uncontrolled or when overall risk is elevated. Evidence-based treatment and sustained follow-up in young adults can meaningfully reduce lifetime risk of stroke, coronary disease, heart failure, and chronic kidney disease.

Keywords

Arterial hypertension; young adults; cardiovascular risk factors; secondary hypertension; ambulatory blood pressure monitoring; home blood pressure monitoring; white-coat hypertension; masked hypertension;

Arterial hypertension in young adults is increasingly recognized as an important clinical and public health issue because elevated blood pressure at an early age substantially increases lifetime risk of stroke, coronary artery disease, heart failure, chronic kidney disease, and premature mortality. In this population, hypertension is

often underdiagnosed due to mild or absent symptoms, irregular health screening, and misclassification caused by stress-related or “white-coat” blood pressure elevation. Accurate diagnosis therefore depends on standardized measurement techniques and confirmation with out-of-office monitoring.

Risk factors for hypertension in young adults include a mix of non-modifiable and modifiable determinants. Non-modifiable factors include family history of hypertension and genetic susceptibility, male sex (in many populations), and early-life influences such as low birth weight. Modifiable factors are highly prevalent and include excess body weight and central obesity, high dietary sodium intake and low potassium intake, sedentary lifestyle, poor sleep quality and obstructive sleep apnea, psychosocial stress, excessive alcohol consumption, and tobacco use. In addition, stimulants and certain medications (for example, non-steroidal anti-inflammatory drugs, oral contraceptives, corticosteroids, and some antidepressants) may contribute to elevated blood pressure. In young adults, clinicians must also maintain a high index of suspicion for secondary hypertension, especially when blood pressure is severe, resistant to treatment, or associated with hypokalemia or atypical clinical findings. Secondary causes include renal parenchymal disease, renovascular hypertension, primary aldosteronism, thyroid disorders, pheochromocytoma/paraganglioma, Cushing syndrome, coarctation of the aorta, and drug-induced hypertension.

Clinical assessment begins with correct blood pressure measurement and confirmation. Office readings should be taken after rest, using appropriate cuff size, with repeated measurements. Because masked hypertension and white-coat hypertension are relatively common, ambulatory blood pressure monitoring (ABPM) or home blood pressure monitoring (HBPM) improves diagnostic accuracy and risk stratification. Once hypertension is confirmed, evaluation focuses on: identifying cardiovascular risk factors; detecting hypertension-mediated organ damage (left ventricular hypertrophy, chronic kidney disease, retinopathy); and ruling out secondary causes when clinically indicated. Basic investigations typically include fasting glucose or HbA1c, lipid profile, creatinine/eGFR, electrolytes, urinalysis (protein/albumin), and a 12-lead ECG, with echocardiography, renal ultrasound, or endocrine testing added when needed based on risk and presentation.

Management in young adults should be evidence-based and individualized. Lifestyle intervention is foundational for all patients and may be sufficient for some with stage 1 hypertension and low overall cardiovascular risk. Core measures include weight

reduction, regular aerobic and resistance exercise, dietary modification (DASH-style eating pattern), sodium reduction, higher intake of fruits/vegetables and potassium (when safe), limiting alcohol, smoking cessation, stress management, and improving sleep. When medication is indicated—such as persistent hypertension despite lifestyle changes, stage 2 hypertension, high cardiovascular risk, diabetes, chronic kidney disease, or evidence of target-organ damage—first-line pharmacologic choices typically include ACE inhibitors or ARBs, calcium channel blockers, and thiazide/thiazide-like diuretics. Choice should consider comorbidities, pregnancy potential, side-effect profiles, and patient adherence. In resistant cases, evaluation for secondary causes and medication adherence is essential, and combination therapy is often required. Long-term follow-up with home monitoring and periodic assessment of organ damage helps ensure sustained control and reduces future cardiovascular events.

Conclusion

Hypertension in young adults is common, often silent, and strongly predictive of future cardiovascular and renal events. Accurate diagnosis requires standardized measurement and frequent confirmation with ABPM or HBPM to detect masked and white-coat patterns. Management should begin with intensive lifestyle modification and escalate to evidence-based pharmacotherapy when indicated, while actively considering secondary causes in severe, resistant, or atypical presentations. Early identification, individualized therapy, and long-term follow-up provide the greatest opportunity to prevent lifelong complications and reduce premature cardiovascular disease.