

intake ≥ 6 drinks per day who reduced intake by 50% on average, mean BP was lowered by 5.5/4.0 mm Hg. Reductions were significant but lower for participants with a baseline intake of 3 to 5 drinks per day. At ≤ 2 drinks per day, there was no significant reduction in BP observed with reduction of alcohol intake.²⁹ There are no harms identified with alcohol reduction, but continued alcohol intake is associated with other noncardiovascular harm. Prior observational studies suggesting health benefits with moderate alcohol intake appear to be partially confounded by other positive health factors and socioeconomic position and offset by other health risks.¹⁰⁴ Thus, aiming for abstinence appears to be optimal.^{91,104}

7. Increasing leisure-time physical activity reduces BP significantly in adults with hypertension,³⁹ and it has been an intrinsic component of weight reduction interventions used to reduce BP in patients with and without hypertension.^{1,3,4} Structured exercise programs that involve aerobic exercise (eg, endurance activities such as jogging^{14,33,35-37,105}), dynamic resistance (eg, weight lifting^{14,33,36,106,107}), and static/isometric resistance training (eg, handgrip^{14,32-34,36,108-110}) appear particularly effective for BP lowering in adults with or without hypertension. Even lower-intensity physical activity (eg, walking) that interrupts sedentary time can reduce BP.¹¹¹⁻¹¹⁶ All types of structured exercise also appear to be safe, even for older adults with hypertension. Aerobic exercise reduces SBP on average by 4 to 7/3 to 4 mm Hg, with a slightly larger effect in patients with versus without hypertension.^{14,33,35} There is a dose response, with an average 2/1 mm Hg reduction for each additional 30 minutes of aerobic exercise per week and the largest BP reduction at 150 minutes per week.³⁷ Dynamic resistance training alone appears to have a more modest effect on BP reduction (3/2 mm Hg) than aerobic exercise, with larger reductions in people with hypertension versus without.^{14,33,36,106,107} Isometric exercise may have the largest effect on BP reduction (mean reductions of approximately 8/4 mm Hg).^{14,32-34,36,108-110} Combination training with aerobic and resistance exercise appears similarly efficacious as either alone.^{33,36,38} BP-lowering effects are observed for lower- and higher-intensity exercise and with continuous and interval training.^{33,38,106,117,118}
8. A number of stress-reduction strategies have been assessed for their effect on BP lowering.¹¹⁹ There is consistent moderate- to high-level evidence from short-term clinical trials that transcendental meditation can lower BP in patients without and with hypertension, with mean reductions of approximately 5/2 mm Hg in SBP/DBP.^{14,40} Meditation appears to be

somewhat less effective than BP-lowering lifestyle interventions, such as the DASH eating plan, structured exercise programs, or low-sodium/higher-potassium intake.¹⁴ The study designs and means of teaching and practicing meditation interventions are heterogeneous across trials, and trials have been of smaller size and short duration, so further data would be beneficial.

9. Among other stress-reducing and mindfulness-based interventions, data are less robust, and evidence is of lower quality because of smaller, short-term trials with heterogeneous interventions and results. There is moderate-grade evidence that breathing control interventions lower SBP/DBP by approximately 5/3 mm Hg in people with and without hypertension.¹⁴ There is also low- to moderate-grade evidence that yoga of diverse types lowers BP.^{14,41,42}

5.2. Medical Management

Synopsis

Throughout this guideline, we use the term thiazide-type diuretic to collectively refer to HCTZ, chlorthalidone, and indapamide. Although the literature traditionally differentiates these medications based on their chemical structures, categorizing HCTZ as a thiazide-type diuretic because it possesses a benzothiadiazine ring and categorizing chlorthalidone and indapamide as thiazide-like diuretics because they lack this ring (yet remain closely related sulfonamide derivatives), the interchangeability of thiazide-type and -like agents remains a debated topic. For simplicity and to minimize confusion, in this guideline we have chosen to group them under a single term. In most settings, it is acceptable for clinicians to choose among these agents for treatment. We recognize there are differences in potency and half-life between these agents that may be relevant in some situations, particularly in the management of resistant hypertension (Section 5.6, “Resistant Hypertension”). In that setting, thiazide-like diuretics are preferred due to their greater efficacy; therefore, treatment recommendations in this setting continue to advocate thiazide-like diuretics.

5.2.1. Initiation of Pharmacologic BP Treatment in the Context of Overall CVD Risk

Synopsis

Evidence from meta-analyses of clinical trial data, large observational studies, and simulation models has consistently shown the benefits of antihypertensive therapy initiation can be maximized by prioritizing those at highest cardiovascular risk with the use of absolute risk estimation.¹⁻⁷ Although the public health burden is significant at stage 1 hypertension and many will progress to stage 2 hypertension with associated risk,⁸ the BP