Screening for Hypertension and Lowering Blood Pressure for Prevention of Cardiovascular Disease Events

Anthony J. Viera, MD, MPH

KEYWORDS

• Hypertension • High blood pressure • Screening
• Cardiovascular disease prevention • Ambulatory blood pressure monitoring

KEY POINTS

- High blood pressure (BP) is the single greatest contributor to the global burden of disease.
- BP-lowering therapy reduces risk of stroke about 35%, myocardial infarction about 25%, and heart failure by more than 50%.
- Ambulatory BP monitoring is recommended to confirm the diagnosis of hypertension in most patients before initiating drug therapy; home BP monitoring is an alternative.
- Treatment guidelines are stratified by age (<60 vs >60 years) and include cutoffs for recommended treatment BPs and target BP goals.
- Quality improvement efforts for BP control include incorporation of registries, evidence-based treatment algorithms with specialized titration visits, and regular reporting of control rates.

THE IMPORTANCE OF HYPERTENSION

Increased blood pressure (BP) is the strongest modifiable risk factor for cardiovascular disease (CVD) and the most important contributor to global mortality, contributing to an estimated 9.4 million deaths per year.[1] CVD morbidity and mortality are correlated positively with the degree of elevation of BP, without any evidence of a threshold down to at least 115/75 mm Hg.[2] For every increase of 20 mm Hg in the systolic BP above 115 mm Hg, the CVD risk doubles.[2]

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Department of Family Medicine, University of North Carolina at Chapel Hill, 590 Manning Drive, CB 7595, Chapel Hill, NC 27599, USA
E-mail address: viera@med.unc.edu

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The goal of a population strategy to reduce CVD events attributable to elevated BP is to reduce average BP such that the distribution curve "shifts to the left." Population-level interventions could include policies that reduce sodium consumption (eg, content of prepackaged foods).[3] The conventional clinical approach to reduce CVD events attributable to elevated BP relies on identifying people above an arbitrary threshold or cutpoint, who are "diagnosed" as having hypertension. Predominant guidelines currently recommend a threshold of 140 mm Hg systolic (150 mm Hg for older adults) or 90 mm Hg diastolic based on office BP measurements.[4–6] At this level of BP, clinical intervention (labeling, evaluating, treating with medications) offers net benefit, that is, the weight of the evidence suggests that it does more good than harm. Because hypertension is an asymptomatic condition, the clinical strategy relies on screening to identify people for whom risk-reducing strategies can be offered.

EPIDEMIOLOGY OF HYPERTENSION

Hypertension affects 1 in 3 American adults over the age of 18, making it the most commonly seen condition in adult primary care practices.[7,8] Its high prevalence along with average longer life expectancy translate into substantial population exposure to this risk factor. Prevalence increases with age such that approximately 7% of 20- to 34-year-olds are affected, that 54% of 55- to 64-year-olds have high BP, and that, among those 75 years and older in the United States, nearly 80% have hypertension.[8]

Men and women between the ages of 55 and 64 are approximately equally likely to have high BP, with nearly 54% of the population affected (**Table 1**).[8] Before this age, men are more commonly affected, and after these ages more females are affected. Black women most commonly have hypertension (43%), with black men following (42%).[8] Approximately 30% of white men have high BP, whereas 28% of white women are affected.[8] About 27% of Mexican American men and women have hypertension.[8] People who are normotensive at 55 years of age still have a 90% life-time risk for developing hypertension.[9]

Fortunately, treatment of hypertension with BP-lowering medications reduces the risk of heart failure, stroke, myocardial infarction, chronic kidney disease, and cognitive decline. Left untreated, hypertension may lead to vascular and renal damage, which with time could become treatment resistant.[5] The percentage of people who know they have hypertension, who are treated, and who have controlled BP has increased. From 2005 to 2010, nearly 82% of adults with hypertension were aware

Table 1
Prevalence of hypertension by age and sex categories

Sex	Age Group (y)	Prevalence (%)
Male	20–34	8.6
	35–44	22.6
	45–54	36.8
	55–64	54.6
	65–74	62.0
	≥75	76.4
Female	20–34	6.2
	35–44	18.3
	45–54	32.7
	55–64	53.7
	65–74	67.8
	≥75	79.9