Understanding the New Blood Pressure Guidelines

Susan H. Davide  
CUNY New York City College of Technology

Anty Lam  
CUNY New York City College of Technology

Recommended Citation
https://academicworks.cuny.edu/ny_pubs/270
Dimensions of Dental Hygiene

Understanding the New Blood Pressure Guidelines

Oral health professionals who are well versed in the new guidelines will be best prepared to handle the implications on patient care.

By Susan Davide, RDH, MS, MSEd, and Anty Lam, RDH, MPH

Hypertension is a common health condition in the United States and a risk factor for heart disease and stroke. The US Centers for Disease Control and Prevention (CDC) 2016 statistics indicate that hypertension affects nearly one-third of US adults—approximately 75 million people. One out of every three adults has high blood pressure and only about half of individuals with hypertension have their condition under control. In 2014, high blood pressure was a primary or contributing cause of death for more than 410,000 Americans, or more than 1,100 deaths each day.

The annual cost of health care services, medications, and missed days of work due to hypertension is estimated at $48.6 billion. Women and men are equally likely to develop high blood pressure during their lifetime. Black men develop high blood pressure more often than white and Hispanic men. Medical screening for chronic diseases conducted in the dental setting could save the health care system approximately $42 million to $102 million annually, as many patients visit their oral health professionals more often than their physicians.

Numerous studies have shown blood pressure levels are positively related to the risk for stroke and coronary heart disease. According to Global Health Observatory data, raised blood pressure can lead to heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment. To allow for earlier intervention with lifestyle changes and nonpharmacological approaches, the American College of Cardiology and American Heart Association (ACC/AHA) released new guidelines to lower the definition of high blood pressure in 2017. The new ACC/AHA guidelines (Table 1) were developed with nine other professional organizations and were written by a panel of 21 scientists and health experts who reviewed more than 900 published studies.

Screening in the dental setting

This course was published in the May 2018 issue and expires 05/31/21.

The authors have no commercial conflicts of interest to disclose.

This self-study activity is electronically mediated.

EDUCATIONAL OBJECTIVES

After reading this course, the participant should be able to:

1. Describe the categories in the new blood pressure guidelines.
2. Explain the new lower threshold for high blood pressure.
3. Discuss the impact of the new guidelines on health, in addition to management strategies and interventions.
The National Institutes of Health developed the National High Blood Pressure Education Program (NHBPEP) in 1972—which consists of a network of groups, including federal agencies, professional agencies, state health departments, and community-based programs—to provide education and screening opportunities for the early diagnosis of high blood pressure. The American Dental Hygienists’ Association and American Dental Association have supported blood pressure screening as an important aspect of patient care and have endorsed the NHBPEP’s mission and goals. Over the years, screening for various diseases has become more prevalent in the dental setting. Numerous studies have validated the significance of chairside medical screening in the dental setting and the willingness of oral health professionals to conduct it. Patients are also open to medical screening in the dental setting. High blood pressure screening in dental settings is an effective way to detect unknown hypertension.

Hypertension is asymptomatic and known as the “silent killer.” The only way to determine whether a patient has hypertension is to conduct a blood pressure screening. Blood pressure is measured in millimeters of mercury (mm Hg) using two numbers. The first number is called systolic blood pressure, which represents the pressure in the blood vessels when the heart beats while pumping blood. The second number is called diastolic blood pressure, which indicates the pressure in the blood vessels when the heart is at rest between beats. The gold standard for blood pressure measurement is the auscultatory method (sphygmomanometer and stethoscope), with digital arm and automated equipment as secondary modalities. Digital or electronic automatic blood pressure equipment is used in dental education institutions and commonly used in dental practices for convenience and low cost; however, clinical accuracy may be compromised. As such, if the reading is questionable, the blood pressure should be taken again using the auscultatory method or the patient should be referred to his or her primary care provider.

### TABLE 1. Adults: New Blood Pressure Ranges/Categories

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Systolic mm Hg (upper number)</th>
<th>Diastolic mm Hg (lower number)</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Less than 120</td>
<td>and</td>
<td>Keep up with heart healthy habits</td>
</tr>
<tr>
<td>Elevated</td>
<td>120 to 129</td>
<td>and</td>
<td>Likely to develop high blood pressure unless steps are taken to control it</td>
</tr>
<tr>
<td>High Blood Pressure (Hypertension) Stage 1</td>
<td>130 to 139</td>
<td>or</td>
<td>Health care provider may modify pharmacological treatment based on the risk of atherosclerotic cardiovascular disease; positive lifestyle changes are needed</td>
</tr>
<tr>
<td>High Blood Pressure (Hypertension) Stage 2</td>
<td>140 and higher</td>
<td>or</td>
<td>Health care providers are likely to prescribe a combination of blood pressure medications; positive lifestyle changes are needed</td>
</tr>
<tr>
<td>Hypertensive Crisis (Consult a physician immediately)</td>
<td>Higher than 180</td>
<td>and /or</td>
<td>Requires medical attention; call 911 if there are signs of organ damage</td>
</tr>
</tbody>
</table>

**CHILDREN and ADOLESCENTS**

Before 1977, measuring the blood pressure of asymptomatic children or adolescents was uncommon in routine medical visits because there was no link between blood pressure levels in childhood and heightened risk for subsequent adverse cardiovascular events. In the mid-1970s, the NHBPEP convened a task force to examine blood pressure data on healthy children in order to determine the normal distribution and define the upper limits of blood pressure according to age. As data linking high blood pressure in childhood to an increased risk of cardiovascular events later in life were not available, the task force defined hypertension as the blood pressure level that exceeded the 95th percentile on age-related blood pressure distribution curves. This served as the first clinical practice guideline for childhood hypertension. The number of studies conducted on elevated blood pressure in children and adolescents has grown within the past 10 years, thus, the American Academy of Pediatrics released new pediatric hypertension clinical practice guidelines in 2017. Table 2 (page 47) provides guidelines for adolescents. The web version of this article includes a table on the children’s guidelines.

**RECOMMENDATIONS AND DENTAL CARE**

The new guidelines lower the definition of high blood pressure to 130/80 mm Hg for adults. This new definition broadens what defines disease, encompassing people who were previously considered healthy. Approximately 46% of US adults now have hypertension compared with about 32% under the former high blood pressure definition. Normal blood pressure is now considered below 120/80 mm Hg and elevated blood pressure is 120 mm Hg to 129 mm Hg systolic with a diastolic pressure below 80 mm Hg. Stage 1 hypertension is between 130 mm Hg and 139 mm Hg, or 89 mm Hg and 89 mm Hg (formerly known as “prehypertension”) and stage 2 hypertension is 140/90 mm Hg or higher (the old definition of high blood pressure). The new guidelines include recommendations for the way health professionals take blood pressure measurements, stressing the importance of using validated devices, allowing patients to rest for 5 minutes before taking their blood pressure, averaging at least two readings over two visits, and highlighting the value of appropriate training for health professionals to reveal “white-coat hypertension.” White-coat hypertension, also known as white coat syndrome, occurs when patients exhibit blood pressure levels above the normal range in a clinical setting due to anxiety.
Nonpharmacologic interventions to lower blood pressure are strongly supported in the new guidelines. The initiation of pharmacologic therapy for stage 1 hypertension is only if the patient has experienced a cardiovascular event (eg, heart attack, stroke) in the past or is at high risk of one based on age or the presence of a comorbidity (eg, diabetes, kidney disease, atherosclerosis). The recommendation to initiate pharmacologic therapy in patients without risk and at low risk for cardiovascular disease at blood pressure levels ≥ 140/90 mm Hg remains unchanged.

High blood pressure is second only to smoking as a preventable cause of heart attacks and strokes. Cardiovascular disease remains the leading cause of death among Americans. If Americans act on the new guidelines and lower their blood pressure by exercising and eating a healthier diet, they could decrease the death rate from heart attacks and stroke. A few concerns with the new guidelines are that a new disease designation can become a mandate for pharmacologic treatment without consideration of the patient's risk level, and the guideline recommends daily sodium intake of less than 1,500 mg per day, which will be challenging for most people to achieve. The primary change in pharmacologic therapy is the elimination of beta-blockers from first-line therapy, with primary hypertension and no coexisting conditions that require beta-blocker therapy. An individualized approach to treating high blood pressure is recommended.

Oral health professionals need to become familiar with the new guidelines so they can educate patients about the impact on their overall health. Each blood pressure category has management recommendations and can be easily printed as an education/information handout. Patient education regarding both the adult and child/adolescent guidelines is important and oral health professionals should be prepared to provide referrals for further evaluation, if applicable. For patients whose blood pressure is deemed too high, medical clearance should be obtained before administering dental treatment to avoid an emergency situation.

Preventive MEASURES TO REDUCE RISK OF HYPERTENSION

High blood pressure generally develops over many years, and it affects nearly everyone eventually. Fortunately, it can be easily detected and controlled. Other than predisposing factors, such as age, race, and family history, recommended preventive measures are relatively easy to follow. They are as follows:

1. Maintain a healthy weight. The heavier a patient is, the more blood is needed to supply oxygen and nutrients to tissues. As the volume of blood circulated through the blood vessels increases, so does the pressure on artery walls.
2. Eat a heart-healthy diet. The DASH diet (Dietary Approaches to Stop Hypertension) is recommended by the US Department of Agriculture as an ideal eating plan for all Americans. It is rich in fruits, vegetables, whole grains, and low-fat dairy foods, and includes meat, fish, poultry, nuts, and beans. It limits sugar-sweetened foods and beverages, red meat, and added fats.
3. Reduce sodium intake. Too much sodium in the diet can cause the body to retain fluid, which increases blood pressure. All Americans are recommended to keep sodium intake less than 2,300 mg. For people with high blood pressure, the recommendation is 1,500 mg or less per day.
4. Supplement with potassium. Potassium helps balance the amount of sodium in the cells. If patients don’t have enough potassium in their diets or retain enough potassium, they may accumulate too much sodium in the blood. The adequate intake recommendation for potassium is 4,700 mg per day for adults.
5. Increase physical activity. For substantial health benefits, adults should do at least 150 minutes a week of moderate-intensity, or 75 minutes a week of vigorous-intensity aerobic activity, or an equivalence combination of moderate- and vigorous-intensity aerobic activity. Children and adolescents should do 60 minutes or more of physical activity daily.
6. Consume alcohol in moderation. Women should consume no more than one drink per day and men should consume no more than two drinks per day. One drink equals 12 oz of beer, 5 oz of wine, or 1.5 oz of 80-proof liquor.
7. Reduce stress. High levels of stress can lead to a temporary increase in blood pressure.
8. Quit tobacco use. Not only does smoking or chewing tobacco immediately raise blood pressure temporarily, but the chemicals in tobacco can damage the lining of the artery walls. This can cause the arteries to narrow, increasing blood pressure.

**Blood Pressure Categories for Children Age 1 to 13**

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Age</th>
<th>Blood Pressure Category at Percentile for Age, Sex, and Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>1 to 13</td>
<td>&lt; 90th percentile</td>
</tr>
<tr>
<td>Elevated</td>
<td>1 to 13</td>
<td>≥ 90th percentile to &lt; 95th percentile or 120/80 mmHg to &lt; 95th percentile (whichever is lower)</td>
</tr>
<tr>
<td>Hypertension Stage 1</td>
<td>1 to 13</td>
<td>≥ 95th percentile to &lt; 95th percentile + 12 mmHg or 130/80 mmHg to 139/89 mmHg (whichever is lower)</td>
</tr>
<tr>
<td>Hypertension Stage 2</td>
<td>1 to 13</td>
<td>≥ 95th percentile + 12 mmHg, or ≥140/90 mmHg (whichever is lower)</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Oral health professionals play an important role in screening patients for hypertension. They also provide educational resources and recommendations and encourage patients to follow up with their primary health care providers. The new lower threshold is evidence-based with the intention to increase awareness, prevention, treatment and control of blood pressure. Table 3 provides additional resources for patients regarding blood pressure management. All health professionals should share this new information with patients to support early detection and early intervention.

**SUSAN DAVIDE, RDH, MS, MSEd,** is an associate professor and preclinic coordinator in the Department of Dental Hygiene at New York City College of Technology (City Tech) in Brooklyn. She has 15 years of experience in dental hygiene education and 28 years in clinical practice. Davide’s areas of interest include instrumentation, infection control and asepsis, mentoring, community service, and teaching methodology. Her research interests focus on human immunodeficiency virus (HIV)/acquired immune deficiency syndrome and oral rapid HIV screening, alternative smoking forms, and oral piercings. Davide can be reached at: sdavide@citytech.cuny.edu.

**ANTY LAM, RDH, MPH,** is a professor in the Department of Dental Hygiene at City Tech. She teaches public health, dental materials laboratory, and clinical dental hygiene.

**REFERENCES**

