2020

# Hypertension Screening Guidance for Michigan Oral Health Professionals

**ORAL HEALTH UNIT**

**MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES**

PREPARED BY | MDHHS Oral Health Unit with assistance from an Oral Health and Chronic Disease Advisory Group and the Center for Child and Family Health, Michigan Public Health Institute

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## Acknowledgements

**Special thanks to the Advisory Group for input and guidance on this document!

**Michigan Department of Health and Human Services (MDHHS) staff:**

Christine Farrell, RDH, BSDH, MPA

Susan Deming, RDH, BS

Sandy Sutton, RDH, BS

Beth Anderson, MPH

Kaylynn Miesen, BS

Krystal Quartermus, MS, RD

Michele Kawabe, MPH, RD, CDE

Kristina Dawkins, MPH

Suzanne O'Brien, MSN, RN, CCRN-K, CEN, ANVP

Adrian Zeh, MPA, MA

**Michigan Public Health Institute (MPHI) staff:**

Katie Hubbard, MA, Senior Project Coordinator

Vanessa Burnett, MPH, Community Health Associate

**Statewide Experts:**

Jeff Johnston, DDS, Senior Vice President and Chief Science Officer, Delta Dental Plan of Michigan, Ohio, and Indiana

Sanjay Chand, MD, Director of Infection Control and Safety, School of Dentistry, University of Detroit Mercy

Lisa Knowles, DDS, Associate Dental Consultant & Dental Director, Blue Cross Blue Shield of Michigan

April Stopczynski, Manager of Access and Prevention, Michigan Dental Association

Phillip Levy, MD, MPH, FACEP, FAHA, FACC, Professor and Associate Chair for Research, Department of Emergency Medicine, Wayne State University

Kathie Thomas, Quality & Systems Improvement Director, American Heart Association

Andrea Boucher, MHSA, Quality Program Manager, MPRO

Lindsay Sailor, Integrated Health Program Manager, Michigan Primary Care Association (MPCA)

Faiyaz Syed, MD, MPH, Chief Medical Officer, Michigan Primary Care Association (MPCA)

Wenche Borgnakke, DDS, University of Michigan School of Dentistry

## Introduction

Oral health providers play a central role in integrating healthcare due to the growing body of research linking oral health to several systemic diseases. According to Healthy People 2020, oral health is integral to a person's general health. Research has shown an association with oral health to several chronic diseases including diabetes, heart disease, and stroke. Hypertension continues to be a concerning health condition in the United States and in Michigan. Oral health providers have an enormous opportunity to become involved with screening for hypertension and monitoring blood pressure, which would benefit the patients they see.

In 2016, the Michigan Department of Health and Human Services (MDHHS) Oral Health Unit, Heart Disease and Stroke Prevention Unit, and Diabetes Prevention and Control Program along with Delta Dental Plan of Michigan, Ohio, and Indiana worked in collaboration to conduct a survey of oral health professionals in Michigan to assess hypertension and diabetes screening practices. Results from the study indicated the need to increase oral health provider knowledge of proper hypertension screening methods and to provide guidance in referring for care. Sixty-two percent (62%) of respondents indicated that they do not measure patient blood pressure, only measure it for patients with a history of hypertension, measure it for new patients only, or only measure it for patients that requested a measurement be taken. Only 22 percent (22%) of respondents indicated they contact the patient's primary care provider as follow up to an elevated blood pressure reading. A recommendation from the survey was to develop screening guidelines for oral health professionals that are specific to dental settings which will aid these providers in identifying patients at high risk for disease, interpreting test results, and deciding the appropriateness of follow-up care and patient referral.

With guidance from the Michigan Public Health Institute, the Oral Health and Chronic Disease Advisory Group was formed in February 2017. This group consisted of MDHHS professionals specializing in oral health, cardiovascular health, and diabetes control. The goal of the advisory group was to adopt hypertension and diabetes screening guidelines that were specific to oral health providers and to develop practical tools to guide oral health professionals in Michigan.

In October 2017, a multi-disciplinary group of stakeholders throughout the state collaborated to provide knowledge and expertise and assist the advisory group with completing its mission of developing defined screening guidelines for hypertension and diabetes for oral health professionals and developing related tools that are clear, concise, and useful. In October of 2019, an additional advisory group was brought together to collaboratively work on a guidance document. This document is the result of that work and specifically concentrates on recommendations for screening for *hypertension* by an oral health professional.

This guidance, recommended by the advisory group, is offered for oral health professionals to use when assessing for hypertension in a dental setting. This guidance is meant to assist oral health providers in taking accurate blood pressure measurements, determining when to continue dental procedures if a patient has an elevated blood pressure reading, assessing for oral health conditions associated with hypertension and hypertensive medications, and identifying possible target organ damage associated with elevated blood pressure readings. In addition, there is guidance for follow up care by the oral health provider and referring to a patient's primary care provider for possible needed care.

## Hypertension

Hypertension is diagnosed when blood pressure is consistently high. Hypertension usually has no warning signs or symptoms, and many people do not know they have it. The only way to know if a person has hypertension is to measure their blood pressure. Steps can be taken to control it if it is too high.[1]

Blood pressure is the numerical representation of the force of blood pushing against the walls of arteries. Blood pressure normally rises and falls throughout the day, but if it stays high for an extended period of time it can damage the heart and lead to health problems. Hypertension raises the risk for heart disease, and stroke, which are leading causes of death in the United States. Hypertension also increases the risk for vision loss, kidney disease, and sexual dysfunction.

In November of 2017 the American College of Cardiology and the American Heart Association published new high blood pressure guidelines which lowered the threshold for hypertension (Image 1).[2] This new threshold accounts for complications that can occur at lower numbers and allows for earlier intervention. Because the diagnostic threshold for hypertension has been lowered, more people will be classified as having hypertension. Under these new hypertension guidelines, approximately 46 percent of adults in the United States, or more than 103 million adults, are currently considered to have hypertension compared with an estimated 72 million adults under the previous 2003 guidelines.[3]

Image 1. Blood Pressure Categories

**Blood Pressure Categories**

American Heart Association | American Stroke Association

| BLOOD PRESSURE CATEGORY | SYSTOLIC mm Hg (upper number) | | DIASTOLIC mm Hg (lower number) |
|---|---|---|---|
| NORMAL | LESS THAN 120 | and | LESS THAN 80 |
| ELEVATED | 120 – 129 | and | LESS THAN 80 |
| HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1 | 130 – 139 | or | 80 – 89 |
| HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2 | 140 OR HIGHER | or | 90 OR HIGHER |
| HYPERTENSIVE CRISIS (consult your doctor immediately) | HIGHER THAN 180 | and/or | HIGHER THAN 120 |

The new guidelines eliminate the category of prehypertension, categorizing patients as having either Elevated (120-129 mm Hg systolic and less than 80 mm Hg diastolic) or Stage I hypertension (130-139 mm Hg systolic or 80-89 mm Hg diastolic). While previous guidelines classified 140/90 mm Hg as Stage 1 hypertension, this level is classified as Stage 2 hypertension under the new guidelines.[2]

The main non-modifiable risk factors for hypertension are age, race/ethnicity, family history of hypertension, genetic predisposition, and sex. Hypertension affects about one-third of U.S.

adults. It is more common in non-Hispanic Blacks (42.1%) than in non-Hispanic Whites (28.7%), non-Hispanic Asians (27.2%), or Hispanic (29.4%) adults aged 20 years and over.[4] Compared with other racial or ethnic groups, non-Hispanic Blacks tend to have higher average blood pressure numbers and develop hypertension earlier in life.[5]

Modifiable risk factors for hypertension include obesity, diabetes, high blood cholesterol levels, lack of physical activity, stress, unhealthful diet, high sodium intake, high added sugar intake (e.g. sugar-sweetened beverages), alcohol consumption, and tobacco use, including vaping.[6]

## Oral Health and Hypertension

Several studies report associations between oral health, mostly periodontitis and tooth loss, and cardiovascular disease and ischemic stroke. Results from a nationally representative U.S. study using the "gold standard" full-mouth periodontal probing protocol from 2009 to 2014 determined there is an association between periodontitis and systolic blood pressure levels, even in a dose-response manner. That is, the more severe the periodontitis level, the greater the mean systolic blood pressure. In people undergoing hypertension treatment, the mean systolic blood pressure was 2.3 mm Hg to 3 mm Hg higher in those with periodontitis compared to those without periodontitis. A systematic review and meta-analysis concluded that periodontitis, especially severe disease, was associated with significantly higher risk of hypertension.[7] Some people with hypertension may also exhibit signs of increased gingival bleeding, periodontitis, hyposalivation, lichen planus lesions, or gingival enlargement.[8]

All major groups of pharmaceuticals, such as diuretics, beta-blockers, angiotensin converting enzyme (ACE) inhibitors, angiotensin receptor blockers (ARBs), and calcium channel blockers, can produce oral side effects including, but not limited to, xerostomia, taste changes, gingival hyperplasia, gingival bleeding, lichenoid reactions, and increased risk of oral infections. Therefore, people who take medications for hypertension may be at increased risk for poor oral health consequences. Additionally, having periodontal disease may interfere with the effectiveness of hypertension therapy.

Oral health providers can reference the Prescribers' Digital Reference (PDR; https://www.pdr.net/) for current information on any medication a patient may be taking for hypertension. In general, patients should be instructed to continue taking their hypertensive medication prior to any dental procedures. If there are any questions, patients and their oral health providers should consult with the patient's primary care provider for further guidance.

## Why Michigan Oral Health Professionals Should Routinely Measure Blood Pressure

A dental visit may be the only routine care visit that a patient receives. Dental visits provide the perfect opportunity to screen for hypertension and refer patients to their primary care provider for further evaluation. Many patients trust their oral health providers and welcome their interest in their overall health, not only their oral health.[9]

Measuring a patient's blood pressure can assist with detecting, treating, and managing hypertension in its early stages. Checking blood pressure readings also provides the oral health

provider with information needed to make informed treatment decisions. Blood pressure readings are important to consider before selecting an appropriate anesthetic for dental procedures.

**The American Dental Association (ADA) recommends** that all dental care providers become involved in the detection and management of hypertension. The ADA recommendation is for oral health professionals to measure blood pressure of all new patients, all patients at least annually, and patients with diagnosed hypertension at each visit.[10]

**The American Dental Hygienists' Association standards** for clinical practice outline taking and recording blood pressure as part of a general health history assessment and risk assessment, which would necessitate that registered dental hygienists record this at every initial visit and every recall/recare visit.[11]

## Screening for Hypertension in the Dental Setting

Screening for hypertension in a dental setting should start when a patient reaches 18 years of age or prior to age 18 if they have a history of hypertension. Separate guidelines for children under 18 years old can be found at: https://www.aap.org/en-us/professional-resources/quality-improvement/Project-RedDE/Pages/Blood-Pressure.aspx.

All pregnant patients, regardless of age, should be screened for hypertension. Hypertensive disorders of pregnancy, such as preeclampsia/eclampsia and gestational hypertension, complicate 6 to 8 percent (6-8%) of pregnancies and can cause significant maternal and fetal morbidity and mortality.[12]

**White coat hypertension:** Blood pressure readings in an office setting may be higher than readings taken at home or in another type of setting. White coat hypertension occurs when the blood pressure readings in clinical settings are higher than they are in other settings, such as the home.[12]

It was once thought that white coat hypertension was caused by the stress that doctor's appointments can create. Once the patient left the doctor's office, if their blood pressure normalized, the thought was that there was not a problem. The current thinking is that white coat hypertension might signal that a person is at risk of developing hypertension as a long-term condition. Patients who experience white coat hypertension may also be at higher risk of developing certain cardiovascular problems compared with people who have normal blood pressure at other times. It is thought that even these temporary increases in blood pressure could develop into a long-term condition. White-coat hypertension is estimated to place the patient at much greater risk for dying from cardiovascular events.[12] Regardless of the suspected etiology of the high blood pressure reading, the patient should be referred to a primary care provider for follow up.

## Equipment and Methods for Taking Blood Pressures

There are various methods for measuring blood pressure in the dental setting. Make sure any equipment used is properly calibrated. The United States Preventive Services Task Force (USPSTF) recommends using a manual or automated sphygmomanometer to measure a patient's blood pressure. Devices with an upper arm cuff are recommended. Accuracy of wrist cuffs may be inconsistent; however, in some cases they may be used as an alternative for patients who have difficulty using an upper arm cuff or when an upper arm cuff is not large enough. Finger cuffs should not be used. The dabl® Educational Trust provides a list of currently available devices at: www.dableducational.org/sphygmomanometers/devices_2_sbpm.html.

Examples of recommended equipment types are shown in the images below.

*Sphygmomanometer and Stethoscope*

*Auto Arm Monitor*

*Wall Mounted Monitor*

To determine the recommended cuff size, measure the patient's arm circumference (typically reported in centimeters) by wrapping a tape measure around the patient's bicep at mid-arm. Select an appropriate cuff size based on the patient's arm circumference using the table below. The ideal cuff bladder length is greater than or equal to 80 percent of the patient's arm circumference. The ideal cuff bladder width is greater than or equal to 40 percent of the patient's arm circumference. A thigh cuff might be indicated for a person with an arm circumference of 50 centimeters or greater.

Table 1. Selection Criteria for Blood Pressure Cuff Size for Measurement of Blood Pressure in Adults

| **Arm Circumference** | | **Recommended Cuff Size** (width x length in centimeters) |
|---|---|---|
| centimeters | inches | |
| 22-26 | 8.7-10.2 | 12 x 22 (small adult) |
| 27-34 | 10.6-13.4 | 16 x 30 (adult) |
| 35-44 | 13.8-17.3 | 16 x 36 (large adult) |
| 45-52 | 17.7-20.5 | 16 x 42 (extra-large adult) |

Many devices are sold with variable size cuffs that will fit a majority of arm circumferences from the small adult to large adult range. Check device specifications for the range of arm circumferences covered. For example, if a patient has a 40 centimeter arm circumference, 80 percent of the arm circumference is 32 centimeters (0.8 x 40 cm). The minimum cuff length that can be used for this person is 32 centimeters, which is a large adult cuff.[13]

While the 2017 hypertension guidelines recommend taking, on average, two to three blood pressure readings on at least two different occasions to provide baseline data for each patient, oral health professionals should refer patients for primary care follow up for any high blood pressure reading. Table 2 on the following page provides a detailed checklist for the accurate measurement of blood pressure.

Table 2. Adapted Checklist for Accurate Measurement of Blood Pressure (Guidelines, 2017)

| Key Steps for Proper Blood Pressure Measurements | Specific Instructions |
|---|---|
| Step 1: Properly prepare the patient. | 1. Have the patient relax, sitting in a chair (feet on floor, back supported) for at least five minutes.<br>2. The patient should avoid caffeine, exercise, and smoking for at least 30 minutes before measurement.<br>3. Ensure patient has emptied his/her bladder.<br>4. Neither the patient nor the observer should talk during the rest period or during the measurement.<br>5. Remove all clothing covering the location of cuff placement.<br>6. Measurements made while the patient is sitting or lying on an examining table do not fulfill these criteria. |
| Step 2: Use proper technique for blood pressure measurements. | 1. Use a blood pressure measurement device that has been validated, and ensure that the device is calibrated periodically.<br>2. Support the patient's arm (e.g., resting on the arm of a chair).<br>3. Position the middle of the cuff on the patient's upper arm at the level of the right atrium (the midpoint of the sternum).<br>4. Use the correct cuff size, such that the bladder encircles 80% of the arm, and note if a larger or smaller than recommended cuff size is used.<br>5. Either the stethoscope diaphragm or bell may be used for auscultatory readings. |
| Step 3: Take the proper measurements needed for diagnosis and treatment of elevated blood pressure/hypertension. | 1. At the first visit, record blood pressure in both arms. Use the arm that gives the higher reading for subsequent readings.<br>2. Separate repeated measurements by 1 to 2 minutes.<br>3. For auscultatory determinations, use a palpated estimate of radial pulse obliteration pressure to estimate systolic blood pressure. Inflate the cuff 20 to 30 mm Hg above this level for an auscultatory determination of the blood pressure level.<br>4. For auscultatory readings, deflate the cuff pressure 2 mm Hg per second, and listen for Korotkoff sounds.* |
| Step 4: Properly document accurate blood pressure readings. | 1. Record systolic blood pressure and diastolic blood pressure. If using the auscultatory technique, record systolic blood pressure and diastolic blood pressure as onset of the first Korotkoff sound and disappearance of all Korotkoff sounds, respectively, using the nearest even number.<br>2. Note the time of most recent blood pressure medication taken before measurements, if applicable. |
| Step 5: Provide blood pressure readings to patient. | 1. Provide patients the blood pressure readings both verbally and in writing. |

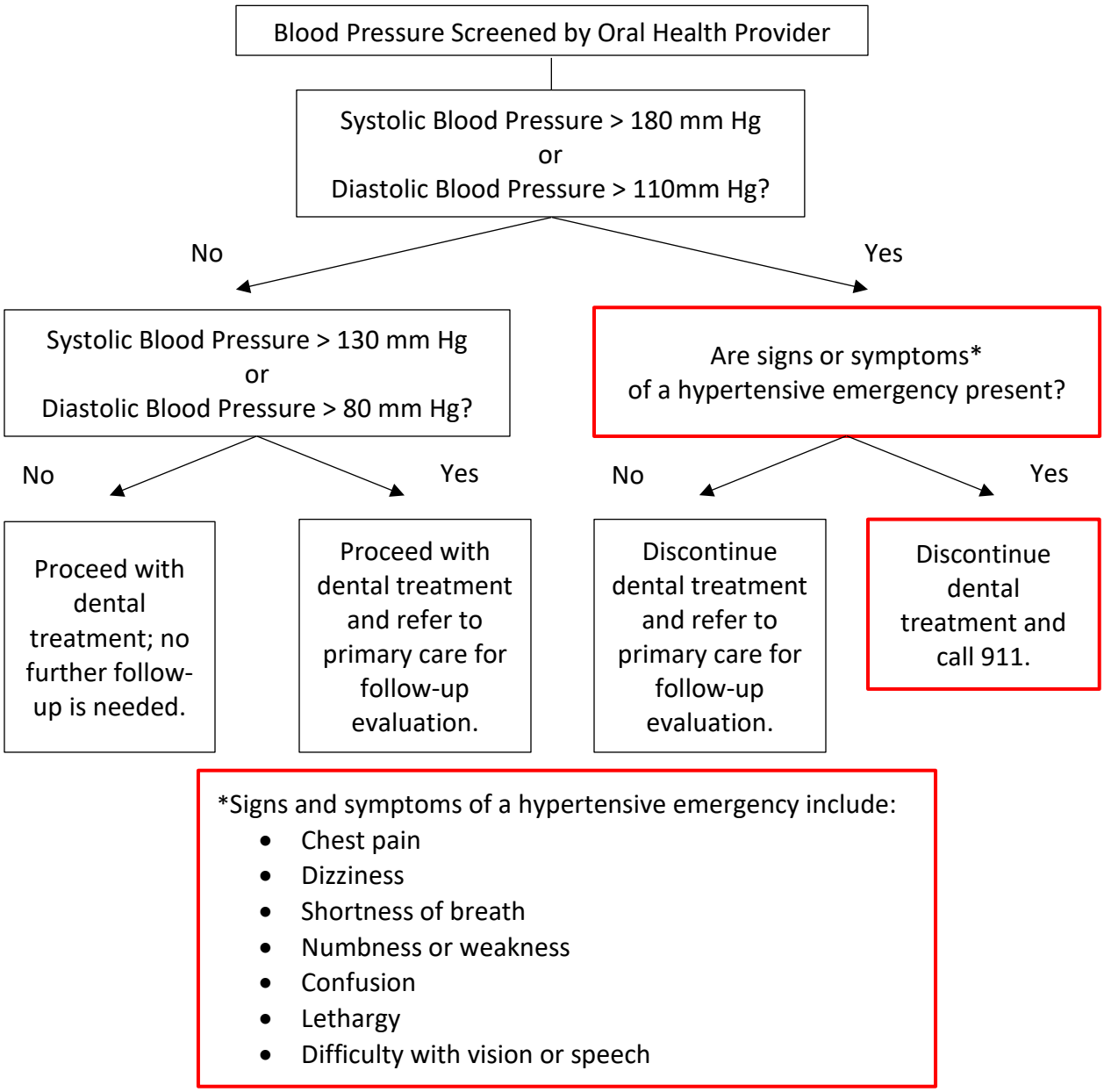
**Korotkoff sounds are blood flow sounds that are observed while taking blood pressure with a sphygmomanometer over the brachial artery in the antecubital fossa. These sounds appear and disappear as the blood pressure cuff is inflated and deflated*.

Although measurement of blood pressure in office settings is relatively easy, errors are common and can result in a misleading estimation of an individual's blood pressure (**Appendix A**). Accurate measurement and recording of blood pressure readings are essential to ascertain high blood pressure-related risk of cardiovascular disease and help guide management of hypertension.

## Hypertensive Patients and Dental Procedures

Oral health providers need to know when to consider a medical consultation for a hypertensive patient, how to refer a patient, and when and how to follow up on a patient's health (Image 2). Hypertensive patients should normally maintain their antihypertensive medications during the course of any dental care/treatment unless otherwise directed by the patient's primary care provider.

Image 2. Blood Pressure Screening Algorithm



According to the ADA guidance, the 2017 American College of Cardiology and American Heart Association guidelines do not change the approach to the question "What level of blood pressure is treatment unsafe for the patient?" As most dental procedures are elective, the general recommendation remains intact to defer care on patients with blood pressure readings that exceed 180 mm Hg systolic or 110 mm Hg diastolic.[10]

The advisory group's recommendation is to follow the ADA guidance on postponing dental procedures. If the blood pressure reading is 180/110 mm Hg or greater and the person is experiencing any other associated symptoms of target organ damage such as chest pain, shortness of breath, back pain, numbness/weakness, change in vision, or difficulty speaking, do not wait to see if their blood pressure comes down on its own -- call 911.

## Referral/Follow-up

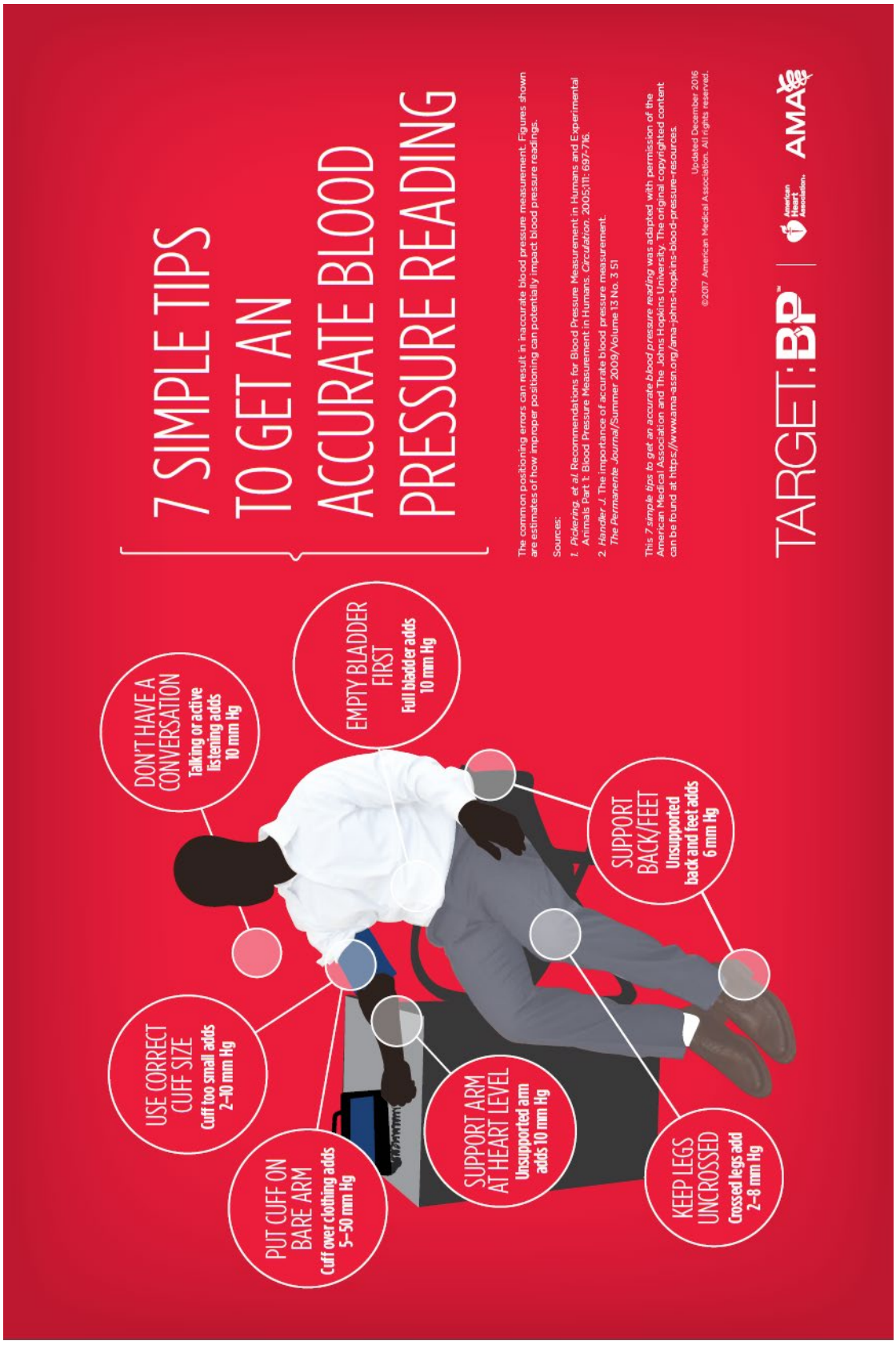
If the patient's blood pressure readings are high, the oral health professional should inform the patient about their blood pressure readings, provide a referral to the patient's primary care provider, and follow up with the patient to ensure needed care was obtained to prevent long-term consequences of hypertension. Having a referral form to fax or e-mail to the patient's primary care provider will greatly enhance efforts to follow up with the hypertensive patient. If the patient does not have a primary care provider, then guidance can be provided as to where the patient should go for a check-up. See **Appendix B** for a sample referral form that can be adapted for your use.

## Policy/Protocol for Hypertension Screening in the Dental Setting

It is recommended that each dental practice/agency have a ***written*** policy and/or procedures document regarding hypertension screening for the staff to utilize. This may be included in the policies and procedures manual. The policy should state which staff members are responsible for taking blood pressures, how to ensure an accurate blood pressure reading is obtained, at which type(s) of appointments blood pressure measurement is required, how often the measurement is required, and at what age blood pressure screenings should begin.

It also should include recommendations as to when dental procedures should be delayed and when and how referrals to the patient's primary care provider should occur. This should include procedures to follow if the patient does not have a primary care provider. Follow up protocols should be included as well as emergency protocols for someone with an elevated blood pressure reading who is experiencing symptoms of target organ damage. See **Appendix C** for a sample of a written hypertension screening policy/procedures document.

## Appendix A: Seven Simple Steps to Get an Accurate Blood Pressure Reading



## Appendix B: Sample Referral Form

| Dental Provider Logo | Dental Provider Contact Information |
|---|---|

**Medical Consultation/Referral for Hypertension**

To: _____ Date: _____

Address: _____

_____

Dear _____,

Your patient, listed below, has presented to us for oral health care. To ensure appropriate management of the health of this person, we are asking you to follow up with an assessment for hypertension.

Patient's Name: _____

Patient's Address: _____

_____

The patient presented today with blood pressure readings as follows:

*1st reading*: ___/___mm Hg *2nd reading*: ___/___mm Hg mm Hg *3rd reading*: ___/___mm Hg

Comments: _____

Please evaluate the patient and inform us of your findings, treatment, and recommendations. We normally do not provide any dental treatment on patients with a blood pressure reading of >180 mm Hg systolic or >110 mm Hg diastolic.

Dental Provider notes: _____

Dentist's Signature: _____Date: _____

**Please fax reply to:** (XXX) XXX-XXXX

Physician's reply: _____

Physician's Signature: _____Date: _____

Dental Provider/Patient follow-up:

Date:_____ Note:_____

Date:_____ Note:_____

Date:_____ Note:_____

## Appendix C: Sample Policy/Procedures

### MI Department of Health and Human Services- Oral Health Unit Policy/Protocols for Dental Screening for Hypertension

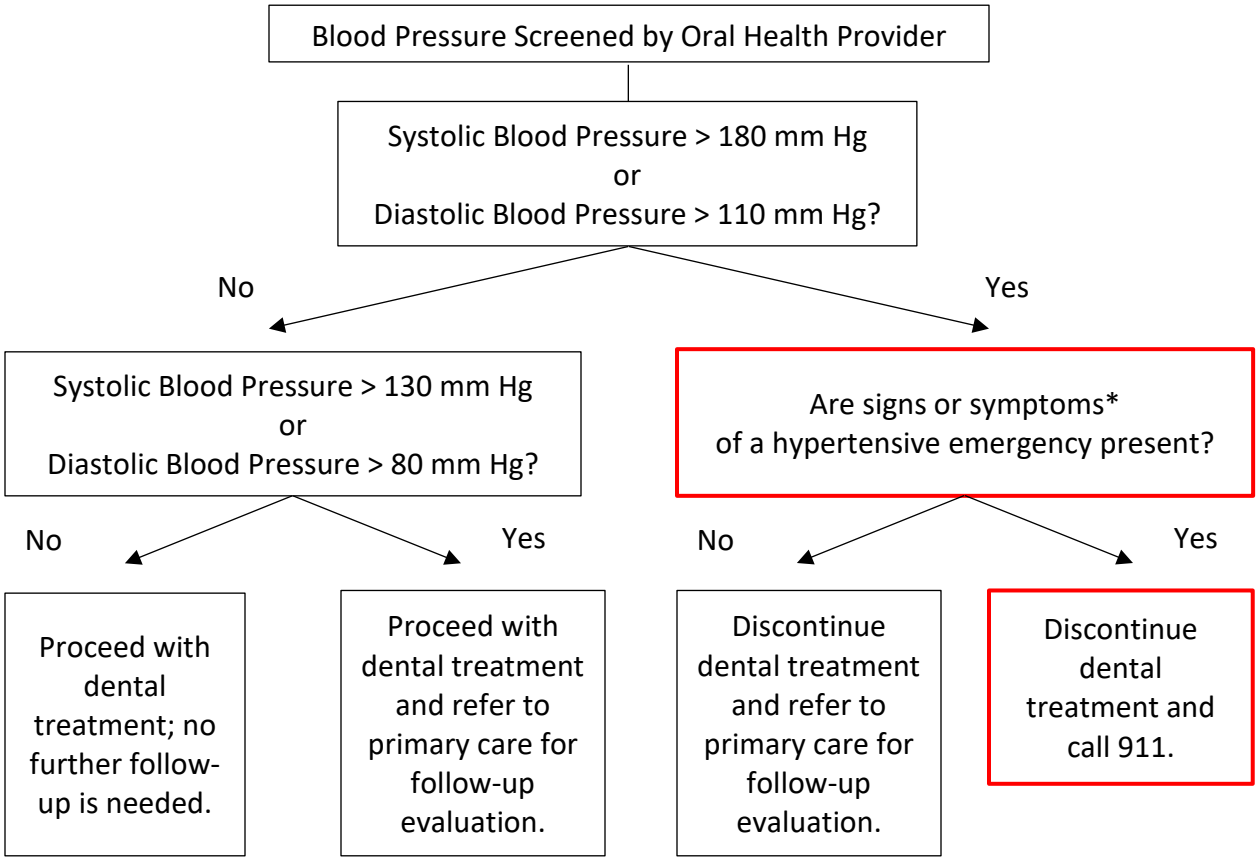
Effective dates: **October 1, 2020 to September 30, 2021**

**Purpose:** To provide standard of care in screening for hypertension, management of treatment, and referral recommendations by all staff.

### Hypertension screening guidelines and treatment protocol:

1. Blood pressure will be checked on every patient over 18 years of age at every visit as well as on any children with a medical history of hypertension. Blood pressure will be taken for all pregnant patients, regardless of age.
2. The initial blood pressure must be taken after the patient has been seated quietly for at least 5 minutes, using an appropriate size cuff, according to the proper protocol for taking blood pressure, and documented in the patient's record.
3. If the initial reading is above normal (greater than 120/80 mm Hg), retake it in 1 to 2 minutes.
4. If the second reading is above normal, refer to the algorithm on the next page for guidance and notify the supervising dentist.
5. Inform the patient of all readings both verbally and in writing. Use the office referral form to communicate elevated blood pressure readings to the patient's primary care provider.
6. Schedule a follow up visit or phone contact with the patient at 1 week, 3 weeks, and 6 weeks after elevated blood pressure readings.

# Blood Pressure Screening Algorithm




*Signs and symptoms of a hypertensive emergency include:

- Chest pain
- Dizziness
- Shortness of breath
- Numbness or weakness
- Confusion
- Lethargy
- Difficulty with vision or speech

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*For more information or questions on this guidance please write oralhealth@michigan.gov