Root of The Matter: Blood Pressure Matters Updates

Jacqueline Guyader Senior Dental Hygiene Advisor

In March 2017, the College published an article in Access on the importance of monitoring blood pressure (BP) in dental hygiene practice. This article focused on baseline BP requirements, implications and considerations prior to implementing invasive dental hygiene care along with referral/consolation needs when the blood pressure measurements were elevated. Since that publication, the American College of Cardiology (ACC) and the American Heart Association (AHA) released *2017 Guidelines for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults* which replaces the 2003 *Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)*. This article is meant to highlight the changes that impact dental hygiene care.

Of most significant note for a dental hygienist coming from these 2017 updates is the dramatic change for the classification of hypertension. For many years a blood pressure (BP) reading starting at 140/90 mm Hg was considered as hypertension stage 1. The updated classification now considers the BP range of 130-139/80-89 mm Hg as hypertension stage 1. Along with the classification changes, there is a focus on healthy lifestyle modifications.

It is important to stress that it is not within the Scope of Practice for a dental hygienist to diagnose hypertension. It would be up to the physician to make this diagnosis. This does not negate the importance of a dental hygienist assessing blood pressure. Along with a thorough review of the medical and medication history, BP screening provides additional information that informs treatment planning needs. Treatment planning, in the event that BP readings are elevated, may include planning for appropriate modifications during dental hygiene care along with any referral and consultation needs.

The CDHBC Bylaws, specifically related to the CDHBC Practice Standards (PS), outline the responsibility of the dental hygienist to assess and update blood pressure as indicated or as appropriate for the client's needs. The PS go further to state that this assessment data must be analyzed to determine any treatment considerations and/or modifications including the need for a medical consultation and/or medical clearance.[1] Further to this, the CDHBC Code of Ethics provide ethical statements meant to provide guidance to ensure that safe and ethical interactions are upheld and appropriate interventions are provided during all aspects of dental hygiene care.[2]

In addition to the ACC/AHA 2017 guidelines, Hypertension Canada published the *2016 Canadian Hypertension Education Program Guidelines for Blood Pressure Measurement, Diagnosis, Assessment of Risk, Prevention and Treatment of Hypertension* in early 2017. **Table 1** provides a comparison of the 2003 JNC7 BP classifications, ACC/AHA 2017 BP classification and those published by Hypertension Canada in 2017.[3, 4, 5] The terminology and classifications have slight variations between those published by the AHA and those published by Hypertension Canada.

Table 1 Comparison the 2007 and 2017 Blood Pressure Classifications [3, 4, 5]		
Previous Classification of Hypertension (JNC 7, 2003)	**ACC/AHA 2017 Updated Blood Pressure Classification**	**Hypertension Canada 2017 Blood Pressure Classification**
Normal BP Systolic Blood Pressure (SBP) < 120 mm Hg and Diastolic Blood Pressure (DBP) < 80 mm Hg	**Normal BP** SBP < 120 mm Hg and DBP < 80 mm Hg	**Low Risk** SBP < 120 mm Hg and DBP < 80 mm Hg
Prehypertension SBP 120-139 mm Hg or DBP 80-89 mm Hg	**Elevated BP** SBP 120-129 mm Hg and DBP < 80 mm Hg	**Moderate Risk** SBP 121-139 mm Hg and DBP 80-89 mm Hg
Hypertension Stage 1 SBP 140-159 mm Hg or DBP 90-99 mm Hg	**Hypertension Stage 1** SBP 130-139 mm Hg or DBP 80-89 mm Hg	**Elevated Risk** SBP 140-159 mm Hg or DBP 90-99 mm Hg
Hypertension Stage 2 SBP ≥ 160 mm Hg or DBP ≥ 100 mm Hg	**Hypertension Stage 2** SBP ≥ 140 mm Hg or DBP ≥ 90 mm Hg	**Medical Referral to MD** SBP ≥ 160 mm Hg or DBP ≥ 100 mm Hg
	Hypertension Crisis SBP ≥ 180 mm Hg DBP ≥ 120 mm Hg	**Target range for those with diabetes or chronic kidney disease** SBP 130mm Hg and DBP 80 mm Hg

Considering the recent ACC/AHA 2017 classification of blood pressure in adults, CDHBC has updated the BP Dental Hygiene Management Considerations. The management considerations are for adult clients with no known co-morbidities and no other conditions that require medical clearance or modifications to dental hygiene care. Co-morbidities may include but are not limited to: diabetes, chronic kidney disease and recent myocardial infraction just to name a few.

The Dental Hygiene Management Considerations, outlined in Table 2, follow a more conservative approach than originally published in the March 2017 edition of Access. **Table 2 is not meant to provide the only means of clinical decision making related to management considerations when blood pressure is elevated.** Safe and ethical care relies on more than one assessment. A comprehensive medical history and medication assessment, along with blood pressure readings contribute vital information to inform clinical decisions. Clinical decisions may include: treatment management to prevent a medical emergency, determining consultation and referral needs, and education strategies just to name a few.

Information found in **Table 2** has been adapted from the following resources: *Dental Management of the Medically Compromised Patient 9th edition[6] and Darby's Comprehensive Review of Dental Hygiene[7], Medical Emergencies in the Dental Office 7th edition[8]* and *Highlights From the 2017 Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults[9]*.

TABLE 2: Blood Pressure Classifications and Dental Hygiene Management Considerations (adapted from 4, 6, 7, 8, 9)				
BP Category	**Systolic BP (mm Hg)**		**Diastolic BP (mm Hg)**	**DH Management Considerations**
Normal	< 120	and	< 80	• Evaluate yearly or if any changes to medical/medication history • Observe routine dental hygiene management
Elevated	120-129	and	< 80	• Evaluate annually or if a change in medical/medication history • Observe routine dental hygiene management • Advise client of BP readings • Encourage client to seek a consultation with physician • Encourage healthy lifestyle management
Hypertension Stage 1	130-139	or	80-89	• Monitor at consecutive appointments • Observe routine dental hygiene management • Implement stress management protocol • Advise (verbal and written) client of BP readings • Advise client to seek a consultation with physician • Encourage healthy lifestyle management
Hypertension Stage 2	≥ 140	or	≥ 90	• Monitor at consecutive appointments • Observe routine dental hygiene management • Implement stress management protocol • Advise (verbal and written) client of BP readings • Encourage healthy lifestyle management • Advise client to seek a consultation with physician • **If BP ≥ 160/100 mm Hg refer to physician promptly (within 1-month) for consult**
Hypertensive Crisis (Consult physician immediately)	≥ 180	and/or	≥ 110	• Recheck in 5 minutes • If BP remains elevated referral for immediate medical consultation • Do not perform dental hygiene care invasive or non-invasive until BP is controlled

When providing dental hygiene care for a client with hypertension, stress management protocols should be incorporated. This may include short morning appointments, appropriate pain control and monitoring the client to ensure they are not becoming anxious during the appointment. If increased anxiety and/or apprehension is noted, the appointment should be rescheduled for another time.[6, 7] For those with anxiety, pharmaceuticals (such as benzodiazepines) may be prescribed by the dentist or physician prior to the appointment and/or the use of nitrous oxide, administered by the dentist, during the appointment.[6]

For those clients who are taking antihypertensive medications, care must be taken when adjusting the client chair to ensure orthostatic hypotension is avoided. As well, limiting the dose of epinephrine when administering local anesthetic (e.g., no more than 2 cartridges of LA with 1,1000.000 epinephrine) for

specific medications such as beta blockers.[6, 7, 8] It is also important to be aware of antihypertensive drug interactions with those drugs commonly prescribed in the dental office. Nonsteroidal anti-inflammatory drugs have a potential to decrease effectiveness of some antihypertensive medications.[6, 8]

The ACC/AHA 2017 guidelines (updated May 2018) and Hypertension Canada 2017, provide detailed information on standard techniques for obtaining an accurate BP measurement. The following list provides a refresher for steps related to: preparing the client, BP techniques, documentation, and client feedback.[4,5]

- Sitting position
- Empty bladder
- After a 5-minute rest
- Support the back
- Legs uncrossed with feet on the floor
- No tobacco, caffeine or exercise 30 min before monitoring
- No talking during measurement
- No clothing under the location of the cuff
- Use a validated BP measurement device*
- Use appropriate cuff size
    - For automated follow recommendation of manufacturer
    - For auscultation, bladder width should cover close to 40% of the arm circumference and bladder length should cover 80-100% of arm circumference

- Support the arm at heart level
- Middle of the cuff at the heart level, lower portion of cuff directly above the elbow
- At the first visit, record BP in both arms. Use the arm that gives the higher reading for subsequent readings
- Wait 1-2 minutes between measurements
- Document BP findings in the client record of care, indicating the arm, and method (digital or auscultatory)
- Provide the BP readings to the client, both verbally and in writing
- If the BP reading is ≥ 130/80 mm Hg, after 2 consecutive readings on 2 occasions, encourage the client to follow-up with their physician

The American Heart Association sees all health care professionals as playing a role in either BP screening and/or reinforcing adherence to physician recommended treatment regimens.[10] Incorporating blood pressure monitoring in the practice setting not only meets the CDHBC Practice Standards and Code of Ethics, it provides a screening tool to plan modifications for care and, when required, referrals for consultation and/or medical clearance to ultimately prevent medical emergencies during dental hygiene care.

The inclusion of the BP assessment into practice is not meant to be time consuming. There are newer generation automated BP monitoring units that are more time efficient and provide accurate results. As with all aspects of dental hygiene care, ensure appropriate documentation of the blood pressure in the client chart along with any pertinent conversations and/or consultation notes.

*Hypertension Canada refers to dabl for the most current list of validated BP measurement devices.

References:

1. College of Dental Hygienists of BC. Practice Standards. Victoria: College of Dental Hygienists of British Columbia; 2013.
2. College of Dental Hygienists of BC. Code of Ethics. Victoria: College of Dental Hygienists of British Columbia; 2013.
3. U.S. Department of Health & Human Services: National Heart, Lung and Blood Institute. The Seventh Report on the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure. Bethesda. U.S. Department of Health & Human Services. 2004. [cited 2016 October 26]. Available from: http://www.nhlbi.nih.gov/files/docs/guidelines/jnc7full.pdf
4. Whelton PK, Carey RM, Aronow WS, Casey Jr DE, Collins KJ, Dennison Himmelfarb C, DePalma SM, Gidding S, Jamerson KA, Jones DW, MacLaughlin EJ, Muntner P, Ovbiagele B, Smith Jr SC, Spencer CC, Stafford RS, Taler SJ, Thomas RJ, Williams Sr KA, Williamson JD, Wright Jr JT. 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults: Executive Summary. *Journal of the American College of Cardiology*. May 2018, 2199-2269.Available from: https://reader.elsevier.com/reader/sd/3DB67632A226A19F8827ACFABE8795DD998B54E3045C0C5F8FB5576F100B1AFB110CB99CA9D48B596D7D0BAE09151F8F
5. Leung, Alexander A. et al. Hypertensive Canada's 2017 Guidelines for Diagnosis, Risk Assessment, Prevention, and Treatment of Hypertension in Adults. *Canadian Journal of Cardiology*. May 2017, 33 (5):557-576. Available from: http://www.onlinecjc.ca/article/S0828-282X(17)30110-1/pdf
6. Little, J.W., Falace, D.A., Miller, C.S., Rhodus, N.L. *Dental Management of the Medically Compromised Patient* 9th ed. St-Louis, Missouri: Mosby Elsevier. 2017.
7. Blue, Christine. *Darby's Comprehensive Review of Dental Hygiene* 8th ed. St-Louis, Missouri: Saunders Elsevier. 2017.
8. Malamed, Stanley F. *Medical Emergencies in the Dental Office* 7th ed. St-Louis, Missouri: Mosby Elsevier. 2015.
9. American Heart Association. Highlights From the 2017 Guideline for the Prevention, Detection, Evaluation and Management of high Blood Pressure in Adults. Dallas: American Heart Association. 2017. [cited 2018 January 25]. Available from: https://professional.heart.org/idc/groups/ahamah-public/@wcm/@sop/@smd/documents/downloadable/ucm_497445.pdf
10. American Heart Association. Understanding blood pressure readings. Dallas: American Heart Association. November 2017. [cited 2018 January 25]. Available from: http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/KnowYourNumbers/Understanding-Blood-Pressure-Readings_UCM_301764_Article.jsp#.WmoPs6inGUk