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INSTRUCTIONS

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3. Complete the required feedback for this lesson online at eCortex.ca.

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The pharmacy technician's role in hypertension management

by Ann Thompson, BScPharm, ACPR, PharmD



Learning objectives

By the end of this CE lesson, pharmacy technicians should be able to:

1. Outline the 9 steps to measure and record home blood pressure accurately and properly.
2. Summarize an approach to recommending validated home blood pressure monitors
3. Explain proper blood pressure measurement technique to patients and be able to advise on the Canadian guidelines recommendation on frequency of home blood pressure measurement
4. Describe at least 2 strategies that may improve adherence to antihypertensive drug therapy.

Introduction

Cardiovascular disease is the second highest cause of death among Canadians, with over 50,000 Canadians dying annually.¹ High blood pressure (BP), also known as hypertension, is a leading global risk factor for both men and women causing death from cardiovascular disease.² Since the mid-2000s, Canada has been very successful in hypertension management, with treatment rates at 80% and control rates of 68%, although data from 2007-2017 show that treatment and control rates have declined to 65% and 49% respectively, in women (with no significant changes for men during the same time frame).³

Hypertension is prevalent in Canada, affecting approximately 22.6% (or 7.5 million) Canadians.⁴ Given only two-thirds of Canadians (or less, if women) are at or below their BP target, there is opportunity for all members of the healthcare team, including pharmacy technicians, to play a role in educating patients about hypertension, starting with using an appropriate BP monitor and measuring BP properly. This aligns with the World Hypertension Day (May 17, 2023) theme, which is Measure Your Blood Pressure Accurately, Control It, Live Longer.⁵ Finally, adherence to a treatment plan is also important, and opportunities for pharmacy technicians to improve this are discussed below.

The Role of Home Blood Pressure Monitoring in Hypertension Management

The Hypertension Canada 2020 guidelines recommend that home blood pressure monitoring (HBPM) should be considered in adults with inadequately controlled BP.⁶ In 2015, Hypertension Canada updated the hypertension diagnosis algorithm to recommend out-of-office measurement as the preferred method to determine a patient's true blood pressure.⁷

Out-of-office measurements using a validated monitor, with HBPM being most common, have the following benefits:

1. The ability to detect masked hypertension, which occurs in approximately 20% of untreated adults, and is defined as BP that is below guideline thresholds in an office setting, but elevated in home settings.⁶
2. The ability to rule-out whitecoat hypertension, which is BP that is elevated in a medical setting, but not at home.⁷
3. Robustly predict cardiovascular morbidity and mortality.⁶
4. Improvement in medication adherence.⁶
5. Easily accessible given the cost of validated home BP monitors are typically \$100 or less. Using one with bluetooth technology enables BP reporting for clinician sharing, either in-person, virtually, or using cloud-based technology (if available).

Further, HBPM should be performed according to a standard protocol⁷, which is outlined on the Hypertension Canada website at <https://hypertension.ca/guidelines/supplementary-tables/#suptbl1d>. Box 1

BOX 1 - Recommended Technique for HBPM⁶

1. Measurements should be taken with a validated electronic device
2. Choose a cuff with an appropriate bladder size matched to the size of the arm. Bladder width should be close to 40% of arm circumference and bladder length should cover 80–100% of arm circumference. Select the cuff size as recommended by its manufacturer.
3. Cuff should be applied to the non-dominant arm unless the SBP difference between arms is >10 mmHg, in which case the arm with the highest value obtained should be used.
4. The patient should be resting comfortably for 5 minutes in the seated position with back support
5. The arm should be bare and supported with the BP cuff at heart level.
6. Measurement should be performed before breakfast and 2 hours after dinner, before taking medication.
7. No caffeine or tobacco in the hour and no exercise 30 minutes preceding the measurement.
8. Duplicate measurement should be done in the morning and in the evening for seven days (i.e., 28 measurements in total).
9. Average the results excluding the first day's readings.

outlines key steps. These steps ensure that BP is accurate and not falsely elevated by situational factors, such as talking during measurement or being in pain.

Home Blood Pressure Measurement - Where, When and How?

Location of BP measurement

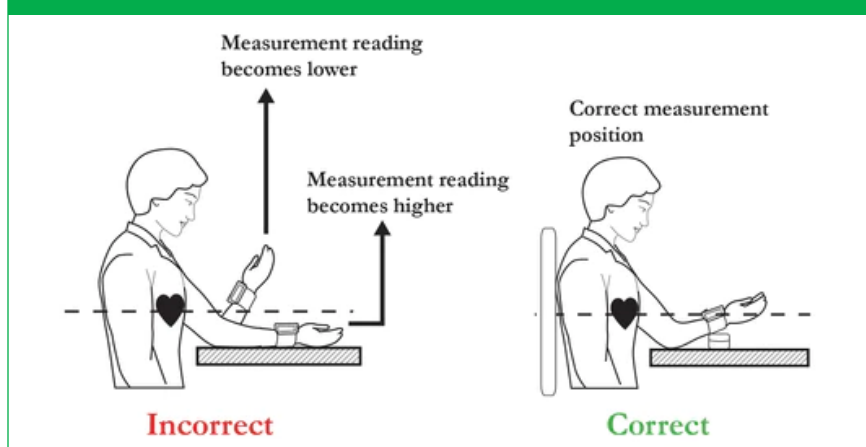
Appropriately sized upper arm cuffs are still the recommended standard for BP measurement. Using a cuff that is the correct size for the patient's upper arm is important and HBPMs have a "reference range" indicated whereby the cuff, when secured into place, should land within this range. If it does not, the cuff is too big or too small, which can lead to underestimating or overestimating BP respectively, and a cuff of appropriate size should be used.⁸ When upper arm BP measurements are not possible due to extreme arm size or pain is severe with upper arm measurements, a

wrist measurement (with the arm and wrist held at the level of the heart) may be used since wrist diameter is minimally affected by obesity.⁹ Measurement of fingertip BP is not recommended as none of these devices are validated for accuracy at this time. During an initial assessment, it is important to check the BP in both arms. BP measurement should be taken in the non-dominant arm unless there is a >10 mmHg difference in systolic BP (SBP) between arms, in which case the BP should be taken in the arm with the higher SBP.⁶

When and how frequently should BP be measured?

Home BP should be measured twice daily, with two measurements recorded twice daily, for one week in duration to ascertain true BP. This provides clinicians with 28 readings over one week, and it is recommended to discard day one readings, and

FIGURE 1 - Wrist BP Measurement



average the remaining 24 readings to have a robust measurement set on which to base decisions. To help patients record and report BP readings to their healthcare team members, a BP log can be downloaded and used, available from Hypertension Canada's website at: https://guidelines.hypertension.ca/wp-content/uploads/2023/03/HTC_BloodPressureLog_ENG_FILLABLE.pdf. Alternatively, for patients who are tech-savvy, they can record BP measurements in an app, and if they have a blue-tooth enabled home blood pressure (HBP) monitor, BP results can be automatically downloaded when they conduct BP measurements. One Hypertension Canada recommended mobile app is Heart Track (freely available from Google Play and the iOS App store), from A&D Medical. The Quick Start Guide is available on the Hypertension Canada website, found at: <https://medical.andonline.com/wp-content/uploads/2022/11/HT-QSG-App.pdf>. Using this app will allow patients to share HBP measurements over various time frames, with the "swipe averaging" feature allowing for easy calculation of average BP over different time frames. This allows clinicians to easily see BP changes over time, and the impact of therapy changes on BP.

For patients on antihypertensive therapy who are using HBPM to achieve their BP targets, measuring BP for at least 1 week every 1-2 months is recommended until the BP goal is achieved and maintained for 2 consecutive months. Shorter intervals may be recommended for patients who are symptomatic (most patients are asymptomatic, but a minority may experience symptoms such as dizziness, headache, or shortness of breath), have severely elevated BP, or are not tolerating their antihypertensive regimen. Thereafter, once controlled, HBP monitoring can reduce in frequency and should be checked every 3-6 months to ensure that BP control is still maintained. Empowering patients with hypertension to know their BP on a regular basis helps them to be proactive should their BP control slip over time.⁵

Selecting an accurate and validated HBPM

Selecting an appropriately sized, accurate and validated HBPM is important for patients with hypertension. Unfortunately, HBPM devices are not required to be vali-

dated to be cleared for marketing and sale. Currently, there are approximately over 3000 BP monitors available and less than 15% of these have been tested for validity.¹⁰ HBPM are ubiquitously available in many retail outlets (both online and brick-and-mortar) and unless consumers and healthcare professionals specifically know to look for validation markers, it is difficult to differentiate validated from nonvalidated monitors. A recent analysis showed that for the 100 best selling HBPM sold on Amazon in Canada, 70% of upper arm cuff devices were not validated, and 81% percent of wrist devices were not validated.¹¹ Moreover, in a Canadian study (n=85), it was shown that most home BP monitors are not accurate to within 5 mmHg systolically. When compared to BP measurement by auscultation (using gold standard technique and multiple measurements), the proportion of devices with systolic BP ≥ 5 , 10 and 15 mmHg was 69%, 29% and 7% respectively. In this study, 66% of the devices were validated monitors, and these devices exhibited slightly higher mean systolic differences but less variability in this difference (compared to non-validated devices).¹² Validation of HBPM means that the device has been tested using a standardized scientific protocol and therefore is deemed to be accurate (compared to non-validated HBPM). There are a number of national and international registries that publish lists of validated blood pressure monitors.^{10,13} In Canada, Hypertension Canada has a recommended BP monitor device listing that provides recommendations on many types of blood pressure monitors including ambulatory blood pressure monitors, clinic-grade BP devices, HBPM, and blood pressure kiosks. The list (found at: <https://hypertension.ca/bpdevices>) contains over 70 HBPM, with most being upper arm-based cuffs, and a few wrist monitors. Currently, the "Recommendation Level" is indicated (silver or gold) which simply refers to the exact validation protocol used, and HBPM manufacturers specify validation status using the appropriate logo, making it easy for patients to know the HBPM is validated. Moving forward, Hypertension Canada will replace these two logos with a single logo to be used by manufacturers. Both current and future logos are shown in Box 2. The list indicates brand, make, model, a photo of the monitor, recommen-

BOX 2 - Logos to indicate blood pressure monitors recommended by Hypertension Canada*

Current Logos



Logo launched in Spring 2023



**Hypertension
CANADA**

*Permission for use granted from Hypertension Canada

ation level and cuff sizes available. For monitors that may not be on the Hypertension Canada recommended device listing, there are other registries that list devices and their validation status. The first is the STRIDE-BP, a not-for-profit collaborative, located at <https://www.stridebp.org/>. This organization provides a BP device registry and e-learning training modules on office, home and ambulatory BP measurement for health professionals. The second is a for-profit private organization called Medaval (<https://medaval.ie/>), and it is the only site that includes both validated and nonvalidated HBPM (and also lists other types of devices such as blood glucose meters and pulse oximeters). These are reputable organizations aiming to improve blood pressure measurement with the use of validated and accurate devices.¹³ Pharmacies should only carry validated devices for purchase, and the Hypertension Canada logo helps consumers and health professionals to quickly identify if the monitor is validated. In general, a validated monitor costs between \$65-110 CAN.¹¹ For

patients who have an existing HBPM and want to know if it is valid, it is recommended to check one of the 3 registries above.

Educating Yourself and Patients on How to Measure Home Blood Pressure Accurately

To prepare health professionals and patients, including pharmacy technicians, to feel skilled and confident in accurate automated BP measurement, a virtual course was developed by the Pan American Health Organization in collaboration with Resolve to Save Lives, the World Hypertension League, Lancet Commission on Hypertension Group, and Hypertension Canada. This was created in response to the World Health Organization noting that blood pressure is often measured poorly, and healthcare professionals should be retrained every 6 months to measure blood pressure properly. This course is titled “Virtual course on accurate automated blood pressure measurement”, and consists of a 12-minute interactive and narrated video that illustrates the step-by-step proper way to measure blood pressure. Box 3 contains the instructions to access the course. After watching the video, a knowledge assessment is available and upon successful completion, a certificate of recognition is provided. It is free for users and is accessible after creating a username and password. This course provides an efficient and accessible mechanism for both patients and healthcare professionals to learn the proper technique for BP measurement, with the goal of empowering those with hypertension to know their BP and hopefully improve treatment and control rates. For a visual poster that outlines proper BP measurement set-up, Hypertension Canada has a Blood Pressure Measurement Postcard on their website at: <https://guidelines.hypertension.ca/wp-content/uploads/2022/09/HC-BP-Postcard.pdf>.

Improving Adherence to Drug Therapy

Adherence is defined as “The extent to which a person’s behaviour – taking medication, following a diet and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider.¹⁴ As mentioned above, in Canada, at least one-third of patients still are not at target, with women having poorer rates of control compared to men.³ The Canadian

BOX 3 - Instructions to Access “Virtual course on accurate automated blood pressure measurement”

1. Go to <https://www.campusvirtualsp.org/en/node/29166>
2. At bottom of page, click “Join Course”
3. This directs you to a page where you “Create Account” if it’s your first time accessing the course.
4. After account creation, complete the module, which includes the instructional video.

BOX 4 - Case Scenario

Case

A patient approaches you at the pharmacy intake counter to request a refill of telmisartan 80 mg daily, which is 9 days past due. They also provide you with a new prescription for hydrochlorothiazide 25 mg daily. During the interaction at the counter, the patient complains about how they’re not excited to be starting yet another medication but will comply for the time being.

As the technician, what are some actions you can take to help this patient?

Actions to consider

1. Engage in a conversation about adherence and how the patient is managing taking their medications. Some items to consider include:
 - a. strategies they use to help remember taking medication (ie: having medication in a common location that facilitates adherence? dosette, self-filled? adherence pack, filled by pharmacy?)
 - b. are they experiencing side effects, which may impact adherence (discuss any findings with pharmacist)
 - c. Explore how the new prescription may influence medication adherence (given the new prescription is for hydrochlorothiazide 25 mg, and an SPC exists with telmisartan, this could be brought to the attention of the patient since they also need a refill of their telmisartan)
2. Explore whether they use a home BP monitor
 - a. If they use one, review proper technique with them. If the patient is tech-savvy, can recommend the course outlined in Box 3 as a resource for the patient to watch.
 - b. If they don’t, determine if they would be willing to purchase a home BP monitor. If they are receptive, you could provide information about validated BP monitors, how to select one and use it properly. If purchasing a monitor is not feasible, consider offering they have their BP measured at the pharmacy periodically and as possible.
3. Ask about their average home BP readings
 - a. If they don’t know, explore willingness to start this to help assess the impact of their hypertension management.
 - b. If they have readings, review how frequently they are monitoring and if they are using accurate technique. Discuss the patient’s perception of the readings, and share findings with the pharmacist

hypertension guidelines recommend adherence should be routinely evaluated in patients with hypertension.⁶ In 2003, the World Health Organization produced a report entitled “Adherence to long-term therapies: evidence for action” and outlined many key take-home messages, including that poor adherence to treatment of chronic diseases is a worldwide problem and importantly, improving adherence improves patient safety.¹⁵ It emphasized that adherence is a dynamic process that needs to be followed-up. Given the multifactorial nature of poor adherence, this report also notes

that patients need to be supported, not blamed, and a multidisciplinary approach to improving adherence is needed.¹⁵ Pharmacy technicians can play a role in this. Two therapy-related factors that can impact patient adherence are complex medication regimens, with high pill burden, and refill schedules that are not consolidated.¹⁵ Reducing pill burden, with use of once daily single-pill combinations (SPC) being one solution, is consistently associated with better adherence and hypertension control.¹⁶ Patients are not always switched to a SPC (even when one exists based on their prescribed

medication regimen), and prescribers may not be aware of SPCs available (especially given drug shortages). Hypertension Canada has a number of additional recommendations to improve patient adherence, including: **(1)** simplifying medication regimens to once-daily dosing (if appropriate, after consulting with the pharmacist), **(2)** recommending use of unit dose, blister packaging, or use of dosettes to aid with adherence, **(3)** recommending use of HBPM to empower patients to monitor their BP and **(4)** encouraging adherence with timely follow-up by the patient's healthcare team, especially during the first three months of therapy.⁶

Role of the Pharmacy Technician

Pharmacy technicians are positioned within pharmacy teams to take a lead in patient education regarding HBPM and proper measurement, which enables patients to have accurate BP data to share with their primary care providers. This will enable pharmacists to spend more time assessing and advising on patient management related to this. With the large number of nonvalidated HBPM, technicians can ensure that pharmacies only carry validated monitors, and indicate the importance of this to the patients they serve. Technicians can also guide patients to track their BP using either manual BP logs, or digital solutions such as apps that track BP (made easier with the use of bluetooth enabled HBPM), and encourage sharing this regularly with their pharmacist and healthcare team members. Educating patients on how to properly use their HBPM is also of paramount importance, and the tools shared in this lesson will help technicians share correct information with their patients. This can be reviewed with patients periodically to ensure ongoing appropriate technique. Finally, pharmacy technicians can facilitate proactive conversations with patients to help them better adhere to their medication regimens. This includes identifying patients for whom SPC are available and could be used. Given they have current information on supply and availability, they are particularly suited to advise prescribers on what is available, including SPC that could simplify a patient's medication regimen. Appropriateness can be determined in collaboration with the pharmacist. They can also gather medication information from patients, and in collab-



oration with the pharmacist, determine if medication taking can be streamlined to once daily, and if adherence packaging (such as dosettes or blister packs) would optimize medication taking. Finally, close follow-up through contact with patients about how they are tolerating and managing their treatment plan can improve adherence. One idea to streamline pharmacy workflow would be to have pharmacy technicians support the pharmacist by conducting follow-up calls, and involving the pharmacist in care plan decisions if a problem is identified or a patient concern/question is raised. Box 4 outlines an approach to a case pharmacy technicians may see in practice.

Conclusion

Hypertension is common and easy to monitor with HBPM. Pharmacy technicians are frontline healthcare professionals who can work collaboratively with both patients and pharmacists to educate patients about the importance of proper BP measurement, using validated devices. They can also help improve various aspects of adherence as a collaborative team member.

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QUESTIONS

Find and answer the questions for this CE lesson online at eCortex.ca. Search using all or part of the course title.

- True or False. Out-of-office blood pressure (BP) is the preferred method of blood pressure assessment.
 - True
 - False
- Which of the following is true regarding out-of-office blood pressure measurement (such as home blood pressure measurement)?
 - It can detect masked hypertension, which is defined as BP that is high at home, and normal in a medical office.
 - It includes a BP measurement taken at home, in a pharmacy or in a medical office.
 - It has no impact on medication adherence.
 - It detects whitecoat hypertension which is defined as blood pressure that is high at home, and normal in a medical office.
- Which of the following statements are true about blood pressure (BP) measurement?
 - Both upper-arm based cuffs and wrist monitors are recommended.
 - Patients should routinely stand while measuring BP
 - Patients should rest for 5 minutes before measuring BP
 - BP should be measured while sitting with legs crossed
- True or false. It is OK to talk while having blood pressure measured.
 - True
 - False
- The recommended duration of home blood pressures to determine a person's true BP is:
 - 3 days
 - 4 days
 - 5 days
 - 7 days
- A patient approaches the pharmacy counter, requesting a refill of their 3 antihypertensive medications. You determine the patient does not monitor their BP at home, and decide to use this opportunity to educate the patient. Which of the following statements are true?
 - The non-dominant arm should always be used for BP measurement.
 - It's OK to borrow a home BP machine as it is known that most are accurate.
 - BP measurement should be performed before taking medication.
 - BP measurements should be taken lying down.
- The optimal number of readings that should be taken at one time when measuring blood pressure is:
 - 1
 - 2
 - 3
 - 4
- Steps involved in appropriate BP measurement include:
 - Using a validated electronic device
 - Sitting in a chair with back and arm supported
 - Applying cuff over thick clothing to minimize pain when cuff inflates
 - A & B
- True or False. Hypertension Canada has a program to validate HBPM and for devices approved or recommended, a logo can be used (on the HBPM device box) to indicate this.
 - True
 - False
- Which of the following are registries that provide listings of validated HBPM?
 - Hypertension Canada
 - STRIDE-BP
 - Medaval
 - All of the above
- Which of the following may improve adherence to medications for hypertension?
 - Using vials with snap caps
 - Using blister packaging
 - Dosing medications at different times of the day
 - Measuring BP once annually
- True or False. HBPM can improve adherence to antihypertensive therapy.
 - True
 - False

TECH talk CE

Presented by **pharmacy eCortex.ca**Sponsored by **teva**

The pharmacy technician's role in hypertension management

1.25 CE Units • JULY/AUGUST 2023

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