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UNIVERSITY OF SAN DIEGO

Hahn School of Nursing and Health Science: Beyster Institute for Nursing Research

DOCTOR OF NURSING PRACTICE

**Self-Measured Blood Pressure Monitoring:
A Patient Empowerment Project**

by

Alison C. Cusmano

A Doctor of Nursing Practice Portfolio presented to the
FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE:
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Documentation of Mastery of DNP Program Outcomes

**Self-Measured Home Blood Pressure Monitoring:
A Patient Empowerment Project**

Alison Cusmano

University of San Diego

Abstract

Hypertension is a public health issue estimated to affect 112 million adults by 2030. Primary care patients in an outpatient clinic in Southern California with elevated blood pressure readings in the office did not have an organized system for close follow-up. The purpose of this evidence-based project (EBP) was to educate patients on self-measured blood pressure monitoring (SMBP), Dietary Approaches to Stop Hypertension (DASH), diet interventions, and healthy weight loss to improve hypertension rates. Through these interventions, patients developed an understanding of their systolic and diastolic blood pressure goals. Nurse practitioners, medical assistants, and licensed vocational nurses screened for high blood pressure at each visit. Patients with an average of three blood pressure readings of greater than 130/80 received 5 minutes of direct patient education on SMBP supplemented with handouts. In addition, bi-weekly guided telephone outreach was conducted to reinforce teaching. Nine patients were enrolled in the EBP from September-January 2021. There was an average systolic blood pressure reduction of 22.8 mmHg and 12.6 mmHg decrease in diastolic blood pressure among patients over two weeks period of pre and post educational interventions. Downstream effects included reduced costs and hospitalization rates for uncontrolled hypertension. Future research should focus on optimal telehealth timeframes to ensure that patients are not lost to follow-up.

Keywords: hypertension, self-measured blood pressure monitoring, telehealth, DASH diet

Self-Measured Home Blood Pressure Monitoring: A Patient Empowerment Project

Background

High blood pressure, or hypertension, is the leading modifiable risk factor for cardiovascular disease-related deaths (Whelton et al., 2018). The American College of Cardiology (ACC) and American Heart Association (AHA) 2017 guidelines lowered the threshold for the definition of hypertension, subsequently increasing hypertension awareness, detection, prevention, and management. In addition, these guidelines recommend implementing lifestyle modifications for most patients with a blood pressure reading over 120/80 mmHg (Whelton et al., 2018). The purpose of this evidence-based practice (EBP) project is to educate patients on the blood pressure treatment guidelines through self-measured blood pressure (SMBP) monitoring, the Dietary Approaches to Stop Hypertension (DASH) diet, and lifestyle modifications targeting healthy weight loss. Using evidence-based interventions to screen for high blood pressure and applying appropriate treatment improved chronic disease management metric rates and quality patient care in an ambulatory internal medicine department in Southern California.

Hypertension is a threat to public health because this chronic disease plays a significant role in the development of strokes and heart failure (Pfeffer, 2017). The treatment of hypertension prevents more deaths than mammography, colonoscopy and Papanicolaou testing combined (Kirkland et al., 2018). This EBP project is necessary to reduce patients' risk factors for multiple debilitating diseases. There is also an overall cost reduction caused by decreasing the potential for emergency department visits for hypertensive urgency and the incidence of cardiovascular events.

Evidence Based Practice Model

Evidence-Based Practice (EBP) models create a systematic approach to gather evidence, identify resources, implement the protocol, and to sustain a project (Gawliniski & Rutledge, 2008). This project uses the Stetler model of EBP as its guiding framework. This model focuses on applying critical thinking in the advanced practice nursing role. This model is unique because it dismisses a "one size fits all" approach and allows advanced practice nurses to individualize research-based recommendations to the specific target (Melnik & Fineout-Overholt, 2019). In addition, the model considers both external and internal evidence. An example of relevant external evidence that supports the project is the *American Heart Association/American College of Cardiology 2017 Guidelines for Management of High Blood Pressure in Adults* (Whelton et al., 2018). An example of relevant internal evidence is evaluating similar healthcare organization's hypertension metric data in neighboring areas (Melnik & Fineout-Overholt, 2019). By implementing the Stetler model of EBP, this comprehensive EBP project is cognizant of both types of evidence.

The five phases of the Stetler model help break down the EBP process into attainable action steps that lay the foundation for success. A strength of phase I is that it directs the researcher's focus on objectivity (Stetler, 2001). In this model, personal beliefs are set aside when assessing the literature for hypertension intervention strategies. Phase II encourages the advanced practice nurse to use a table to assess the strength of evidence. In phase III and IV of the Stetler model, the nurse practitioner organizes and condenses collected information (Stetler, 2001). This step-by-step process helps to focus on strong levels of evidence and address feasibility in practice. The final phase

encourages the practitioner to use critical thinking when applying the evidence. For example, an elderly patient at high risk for falls might not benefit from the same antihypertensive regimen as a 50 year old without co-morbid health conditions. The Stetler model is used to emphasize advanced practice provider decision-making that is crucial to the success of this EBP project.

PICOT Question

In patients 18–85 years old with at least two in-office blood pressure readings greater than or equal to 130/80 (P), how does implementing self-measured blood pressure education with bi-weekly telephone call follow-up (I), compared to a standard office visit (C), result in a 5% reduction in the number of hypertensive patients (O) over 5 months (T)?

Literature Review

A literature review was performed to critically appraise articles published to identify evidence-based guidelines regarding accurate hypertension screening in the ambulatory care setting, the efficacy of self-measured blood pressure monitoring, and effective methods for follow-up. The medical subject headings terms used in the PubMed database included: *essential hypertension*, or *primary hypertension*, or *high blood pressure*, and *screening program*, and *adults*, and *United States* and *epidemiology*, and *American Heart Association*. The initial search yielded more than 200 results, which were narrowed down to evaluate the most recent hypertension screening clinical guidelines, the epidemiologic significance of high blood pressure, and the management intervention strategies for hypertension.

The American College of Cardiology's (ACC) and American Heart Association's (AHA) collaborative 2017 clinical practice guideline was the driving force for this EBP project (Whelton et al., 2018). The task force was transparent about its writer selection committee and the quality of studies it reviewed. It provided a class strength recommendation for each intervention based on the quality of evidence. Whelton et al. (2018) included a systematic review of four main questions addressed in the guidelines: evidence on the impact of self-directed home blood pressure monitoring, optimal targets for antihypertensive therapy, impact of the various classes of antihypertensive medications, and the utility of single versus combination antihypertensive pharmacologic therapy. The guidelines recommended multiple approaches to reduce the incidence of undiagnosed hypertension by incorporating screening algorithms in electronic medical records for at-risk patients, providing monthly feedback to patients who have not had a blood pressure check, and incorporating electronic prompts in the electronic medical record for blood pressure checks at each visit (Whelton et al., 2018).

The most recent worldwide clinical practice guideline intended to reduce the burden of high blood pressure is the International Society of Hypertension (ISH) 2020 guideline. Notably, the prevalence of high blood pressure worldwide has accounted for approximately 10.4 million deaths per year. Regionally, health disparities for high blood pressure have been primarily attributed to a lack of awareness of high blood pressure. The prevalence of high blood pressure and its effect on cardiovascular deaths have continued to rise globally. Suggested management to improve hypertension rates worldwide include salt reduction and increasing the availability of fruits and vegetables (Unger et al., 2020).

Furthermore, the United States Preventative Services Task Force (USPSTF) reaffirmed its 2015 recommendation to screen adults 18 years and older for high blood pressure with office blood pressure measurements. Then, ambulatory blood pressure monitoring or home blood pressure monitoring should be used to confirm the diagnosis of hypertension before starting treatment. The screening intervals for hypertension remain vague, and the guidelines recommend annual screening in patients over 40 years old and with risk factors for high blood pressure. It is reasonable to screen for high blood pressure every 3–5 years in adults 18–39 years old without an increased risk (USPSTF, 2021).

The systematic review and meta-analysis by Fletcher (2017) was used to evaluate over 7,000 patients and favored SMBP to improve medication adherence and lifestyle factors in people with hypertension. A limitation of the 28 trials reviewed was that the literature was heterogenous when evaluating the effect of SMBP on lifestyle factors (Fletcher et al., 2017). Next, an integrated review of the literature on home blood pressure monitoring reviewed 118 articles and found that home blood pressures showed a better correlation with measures of target organ damage. The SMBP was able to overcome provider therapeutic inertia, identify white-coat hypertension early, and help to determine patient stroke risk and left ventricular hypertension (Crabtree et al., 2013). A 2019 randomized control trial of 1,182 participants compared routine care to SMBP alone or SMBP plus telemonitoring. Both treatment arms of the study had a more significant reduction in systolic blood pressure. Monahan et al. (2019) discussed the time limitation imposed on standard office visits but noted that telemonitoring had an 89% probability of cost-effectiveness.

A quasi-experimental pre vs. post-study design study of patients 18–85 years old diagnosed with hypertension followed 21,611 patients over 6 months to implement a quality improvement program called “Measure accurately, Act rapidly, & Partner with Patients” or “MAP” (Egan et al., 2018). The pilot study took place at large, diverse family medicine practice sites. Patients’ blood pressures were accurately measured using a validated Omron HEM-907XL device. Therapeutic inertia was evaluated by monitoring the number of office visits without any changes made to the antihypertensive medication for a patient with an uncontrolled reading. Patients’ blood pressures were monitored to compare readings 2–8 weeks after an office visit. The study demonstrated better hypertension control from 64.4% to 74.4% during the first 6 months, but the change was not sustained over a year (Egan et al., 2018).

The net benefit to screening for hypertension is clear based on multiple systemic reviews and meta-analysis data. Adding education on lifestyle modifications and SMBP with telehealth monitoring helps confirm the diagnosis of hypertension and overcome therapeutic inertia. This project aims to educate patients on accurate SMBP monitoring and lifestyle modifications to improve hypertension rates in an outpatient primary care clinic.

Methods

Institutional Review Board approvals were obtained from an outpatient clinic in Southern California and the University of San Diego in August 2020. The study was conducted using a purposeful sample of patients from September 2020 through January 2021. The Internal Medicine clinic in Southern California serves patients over 18 years old for acute and chronic care needs. Exclusion criteria for the study included patients

greater than 85 years old and those with end-stage renal disease. Informed consent was not obtained because the project was consistent with the standard of care.

Screening

The AHA and ACC 2017 hypertension guidelines recommend categorizing blood pressure levels for clinical decision making because higher blood pressure readings correlate with increased cardiovascular disease risk, end-stage renal disease, atherosclerosis, and death. Normal blood pressure is categorized as a systolic blood pressure of less than 120 mm Hg and a diastolic reading of less than 80 mm Hg. Stage 1 hypertension is now defined as systolic blood pressure between 130–139 mmHg and diastolic blood pressure of 80–89 mm Hg (Whelton et al., 2018).

Accurate measurement of blood pressure is essential to categorize hypertension and design non-pharmacologic and pharmacologic clinical treatment interventions. The EBP project began with reviewing the 2017 AHA/ACC guideline *Checklist for Accurate Measurement of Blood Pressure*. Best practice guidelines recommend that the patient relax, sit with their feet on the floor, and back supported for at least 5 minutes before the blood pressure is taken. The patient should also be offered to empty their bladder prior to measuring their blood pressure. The patient and observer should not talk during the measurement. Using a validated blood pressure device, the cuff should be positioned on a patient's arm, supported on a firm surface at heart level. The cuff size should encircle 80 percent of the patient's arm. An average of at least two readings should be obtained and documented in the patient record. At project implementation, the guideline recommendations were reinforced with the outpatient Internal Medicine Care Team,

consisting of one full-time licensed vocational nurse and three full-time medical assistants.

Education

The ACC/AHA (2017) guidelines support out-of-office blood pressure measurements to confirm the diagnosis of hypertension in conjunction with telehealth counseling or clinical intervention (Whelton et al., 2018). After the nurse practitioner, licensed vocational nurse, or medical assistant screen each internal medicine patient for high blood pressure, patients with an average of three readings greater than 130/80 mmHg were asked to participate in the EBP project. Nine patients with an average blood pressure reading of greater than 130/80 mmHg were then educated on hypertension, how readings may vary, selection of validated automated blood pressure devices, home blood pressure monitoring procedures, and interpretation of results. A review on sodium reduction and the Dietary Approaches to Stop Hypertension (DASH) diet was also discussed. A packet of educational handouts was given to each patient enrolled in the EBP project (see Figure 1).

Figure 1

Educational Handouts

TARGET:BP™

AMA

What is self-measured blood pressure?

Self-measured blood pressure (SMBP) is when you measure your blood pressure outside of the doctor's office or other health care settings.

Why do I need to measure my blood pressure if my blood pressure was already measured at the doctor's office?

SMBP allows you to measure at different times throughout the day and over a longer period of time, helping your doctor get a more complete picture of your blood pressure.

How does SMBP help me with my health?

By using SMBP you and your care team can come up with a treatment plan to better control your blood pressure, which can prevent more serious health problems.

The consequences of hypertension can be costly ... and deadly.

46%

of Americans with high blood pressure are **not** controlled

What do the numbers mean when I take a blood pressure reading?

Systolic blood pressure (SBP or SYS): Top number of your blood pressure measurement, indicates how much pressure your blood is exerting against your artery walls when the heart beats

Diastolic blood pressure (DBP or DIA): Bottom number of your blood pressure measurement, indicates how much pressure your blood is exerting against your artery walls while the heart is resting between beats

Pulse: Number of times the heart beats per minute

What are some important things to know before I start measuring my own blood pressure?

Use an SMBP device and blood pressure cuff that are recommended by your doctor or care team.

If you purchase your own device, ask your care team to check it for accuracy.

Understand the correct way to take a blood pressure reading.

Know when and how you will share your blood pressure readings with your doctor.

Make sure you have instructions from your care team on what to do if your blood pressure is out of the expected range.

How to measure your blood pressure at home

Follow these steps for an accurate blood pressure reading

1 PREPARE

Avoid caffeine, cigarettes and other stimulants 30 minutes before you measure your blood pressure.

Wait at least 30 minutes after a meal.

If you're on blood pressure medication, measure your BP **before** you take your medication.

Empty your bladder beforehand.

Find a quiet space where you can sit comfortably without distraction.

2 POSITION

3 MEASURE

Rest for five minutes while in position before starting.

Take two or three measurements, one minute apart.

Keep your body relaxed and in position during measurements.

Sit quietly with no distractions during measurements—avoid conversations, TV, phones and other devices.

Record your measurements when finished.

TARGET:BP™

Control your blood pressure

Helpful resource to understand your numbers

Blood Pressure Category	Systolic mm Hg (upper #)		Diastolic mm Hg (lower #)
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

My blood pressure is ____ / ____

Learn more about high blood pressure at [ManageYourBP.org](https://www.ManageYourBP.org).

TARGET:BP™

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7 SALTY MYTHS **BUSTED**

American Heart Association
My Heart. My Life.
heart.org/sodium

1 ELIMINATE sodium COMPLETELY for GOOD HEALTH

SODIUM is an **ESSENTIAL NUTRIENT** that **CONTROLS BLOOD PRESSURE** and is needed to make nerves and muscles work properly, but you need the **RIGHT AMOUNT**.

Institute of Medicine 2004 Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. Washington, DC: The National Academies Press.

2 SEA SALT has LESS SODIUM than TABLE SALT

about 40% LESS SODIUM

SEA SALT **TABLE SALT**

Sea salt has boomed in popularity, but it usually isn't any **less salty**. Just like table salt, it typically **contains 40% sodium**.

Institute of Medicine. 2010. Strategies to Reduce Sodium Intake in the United States. Washington, DC: The National Academies Press.

3 I usually don't SALT my FOOD, so I DON'T EAT too MUCH SODIUM

MORE THAN 75% of SODIUM Americans consume is estimated to come from **processed foods** — not the salt shaker.

Nutrition Facts

*That's why it's so important to compare **NUTRITION FACTS** labels and serving sizes.*

Myers, R. D., and D. Donnelly. 1991. Journal of the American College of Nutrition 10(4):382-393.

4 HIGH levels of SODIUM are FOUND only in FOOD

Some over-the-counter medications contain high levels of sodium. Carefully read drug labels, and remember that some companies produce low-sodium, over-the-counter products.

5 LOWER SODIUM foods have NO TASTE

There is a rich world of creative and flavorful alternatives to salt. Experiment with **spices, herbs** and **citrus** to **enhance** the natural **flavor** of your **food**!

6 My BLOOD PRESSURE is NORMAL, so I don't NEED to WORRY about how much SODIUM I eat

THE AMERICAN HEART ASSOCIATION recommends CONSUMING LESS THAN 1500mg daily

Even for people who don't have high blood pressure, less **sodium** will significantly blunt the rise in blood pressure that occurs as we age and will also reduce the risk developing other conditions, such as **kidney disease**, associated with eating too much **sodium**.

Appel LJ, Frohlich ED, Hall JE, Pearson TA, Sacks RL, Seaton OR, Sacks PM, Sirtori CR, Valtola OK, Verdonck WJ. Circulation. 2011;123(11):1138-1142.

7 I don't EAT a lot of SALTY FOOD so I DON'T EAT too much SODIUM

WATCH OUT FOR:

POULTRY **CHEESE** **BREAD**

These foods can have excess sodium that can increase your risk for heart disease and stroke.

Centers for Disease Control and Prevention. 2012. Vital Signs: Food Categories Contributing the Most to Sodium Consumption — United States, 2007–2008. Morbidity and Mortality Weekly Report (61), February 2, 2012.

©2013, American Heart Association. 9*13DS7223

CONSEQUENCES of High Blood Pressure

TARGET:BP™

High blood pressure is often the first domino in a chain or **“domino effect”** leading to devastating consequences, like:

STROKE

HBP can cause blood vessels in the brain to burst or clog more easily.

VISION LOSS

HBP can strain the vessels in the eyes.

HEART FAILURE

HBP can cause the heart to enlarge and fail to supply blood to the body.

HEART ATTACK

HBP damages arteries that can become blocked.

SEXUAL DYSFUNCTION

This can be erectile dysfunction in men or lower libido in women.

KIDNEY DISEASE/ FAILURE

HBP can damage the arteries around the kidneys and interfere with their ability to effectively filter blood.

A simple **blood pressure check** is the first step to preventing the “domino effect.”

Learn more at heart.org/hbp.

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All six handouts were printed in color and were available in English, Spanish, or Chinese through the TargetBP.org website, created by the American Heart Association and American Medical Association. Additionally, a bulletin board with laminated copies of each handout was displayed for reference in the patient examination room.

In addition to taking accurate blood pressure at home, patients were educated on diet-related factors associated with high blood pressure. A poor diet with excessive sodium intake and insufficient potassium, calcium, magnesium, protein, fiber, and fish fats is an underlying cause of hypertension. Additionally, a direct relationship exists between overweight/obesity and propensity for hypertension. Patients were educated on the DASH diet specifically because it can have an approximate an 11 mmHg reduction in

systolic blood pressure among hypertensive patients. The DASH diet involves fruits, vegetables, whole grains, and low-fat dairy (Whelton et al., 2018).

Follow-up

After accurately screening for hypertension, implementing education on high blood pressure and lifestyle modifications, the patient was notified they would receive bi-weekly telephone outreach calls to review home blood pressure readings. The patient's best contact phone number was obtained, and a 2-week reminder was then placed in the electronic medical record (EMR) to generate a task to call the patient back. A standardized template was used: "Hi, my name is [], and I am a [Medical Assistant, Licensed Vocational Nurse, or Advanced Practice Clinician], calling from Internal Medicine Department. I am calling to check-in with you to see how your home blood pressure readings are running." Next, the staff member on the call would record an average in the EMR flowsheet and route the telephone encounter to the Principal Investigator to review. If the blood pressure was normotensive, then there was no further outreach needed. If the blood pressure was not at a goal, a follow-up appointment was made to review the blood pressure readings and discuss potential pharmacologic treatment changes with the nurse practitioner.

Data Analysis

Data analysis of the results was performed using Excel to determine the average change in systolic and diastolic blood pressure prior to and after the evidence-based interventions.

Results

Results were measured by a positive or negative change in the systolic and diastolic blood pressure readings, measured in mm Hg prior to the educational intervention and two weeks after intervention. An average of three blood pressure readings were taken before and after the intervention to account for variations in readings. The average change in systolic blood pressure was a decrease of 22.8 mm Hg. The average change in diastolic blood pressure was a decrease of 12.6 mm Hg. Only one patient had an increase in blood pressure at the 2-week follow-up and required further pharmacologic intervention.

Demographics

Demographic data were obtained for each patient enrolled in the EBP project through the Electronic Medical Record. Seven patients were identified as Caucasian, one as Asian, and one as Indian ethnicity. Six patients were male, and three were female. The patient ages ranged from 45-67, with a mean age of 57 years old. The average body mass index was 25.5 kg/m². The most common co-morbid condition was hyperlipidemia. Other co-morbid conditions included nonalcoholic fatty liver disease, tobacco use, overweight, impaired fasting glucose, and coronary artery calcifications.

Cost-Benefit Analysis

Compared with standard clinic blood pressure measurements alone, initiating home blood pressure monitoring with telehealth follow-up interventions enables health professionals to diagnose hypertension early and improves patients' medication adherence (Beyhaghi & Viera, 2019). Despite the increased costs of time to educate patients and implement 2-week follow-up phone calls, the overall benefits of this project

are cost-effective (see Appendix A). The costs associated with this EBP project are training staff to reinforce blood pressure screening methods, educational handout supplies, and time spent on the phone for follow-up calls. The evidence-based intervention upholds the standard of care for primary care patients. Notably, in a study of Canadian stroke survivors, the long-term cost-effectiveness of home blood pressure monitoring and telehealth showed a “net health care savings of \$1,929” and “increased per-patient quality-adjusted life years by 0.83” (Padwal et al., 2019, p. 159). Although this study cannot be extrapolated to lower-risk patients, it does demonstrate the overall potential cost-benefit savings for patients with cerebrovascular co-morbidities.

Notably, a benefit of this EBP project is that Medicare is now providing reimbursement for SMBP once the patient has access to a device. In January 2020, Medicare-approved the one-time Current Procedural Terminology (CPT) code 99473, which is "self-measured blood pressure using a device validated for clinical accuracy; patient education/training and device calibration" (National Association of Chronic Disease Directors, 2020, p. 10). The CPT code 99474 can also be used to generate revenue of \$15.16 per patient per month for self-measured blood pressure taken over 30 days and reviewed with the health care provider (National Association of Chronic Disease Directors, 2020). Additionally, there is internal strength in using a team-based approach to off-load the physician's billable time. The team approach will ensure multiple staff is available to implement follow-up for a patient.

Discussion and Practice Implications

The goal of the project was to use evidence-based interventions to improve hypertension rates in a primary care outpatient clinic. A review of the literature

recommended an interdisciplinary team approach, SMBP monitoring, and telehealth follow-up to successfully evaluate and treat high blood pressure (Whelton et al., 2018). Self-monitoring blood pressure is most effective when combined with lifestyle counseling, systematic medication titration, and individually tailored support (Tucker et al., 2017). Implementing an educational protocol and 2-week telephonic follow-up successfully improved nine patients' blood pressure readings over 5 months. The low operating costs of this team-based approach vastly outweigh the variable cost of time spent on patient education. In addition, intangible benefits—such as improved patient communication, increased access to care, and reduced liability when titrating antihypertensive medications—reap financial rewards.

The pilot project by Egan et al., (2018) showed improvement in hypertension was unsustained beyond 6 months when implementing “Measure Accurately, Act Rapidly, and Partner with Patients” (p. 1320). The home and online management and evaluation of blood pressure unmasked randomized control trial of 622 patients in the United Kingdom did show better control of systolic blood pressure after 1 year than usual routine hypertension care (McManus et al., 2021). Future similar EBP projects should focus on monitoring the blood pressure changes for sustainability for greater than one year. Monahan (2019) discussed the pitfall of time spent on the telephone to review home blood pressure readings negatively impacting the flow of the clinic day. The amount of time spent on telehealth calls varies widely, which can take time away from patients in the office and create a potential barrier to sustainability.

An interdisciplinary team at the outpatient clinic this project took place in is now in the process of starting a remote patient monitoring system for direct transmission of

blood pressure data to the healthcare system's electronic medical record. Remote patient monitoring can be used by the patient and care team to quickly act on uncontrolled blood pressure readings. This method can reduce the amount of time spent on the phone, the number of calls returned to the clinic, and reduce the risk of error when transcribing blood pressure readings from the phone to the computer. Future research should focus on ways to continue to motivate patients to monitor their home blood pressures long-term. A smartphone application could also be utilized to help remind patients log their readings and adhere to medications (Morawski, 2018).

In the future, this project can be implemented on a larger scale with more patients and staff throughout multiple internal medicine department sites in the county by following the EBP protocol. Adding a clinical pharmacist to the team of patient educators can also help with blood pressure control and therapy compliance (Mehos et al., 2000). Health policy can focus on insurance company reimbursement for blood pressure cuff devices to ensure patient access to the intervention. The initial financial investment of education and training of SMBP and cointerventions such as lifestyle modification will demonstrate a positive return on investment. By increasing the number of patients in the EBP, cost savings will result from a reduction in office visit follow-ups because of improved blood pressure control, a decrease in cardiovascular events, and an improvement in quality of life (Casey et al., 2019).

Limitations

This project was implemented during the COVID-19 pandemic. As a result, the number of patients scheduling in-office visits was limited in compliance with social distancing precautions.

Conflicts of Interest

The author has no conflicts of interest.

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Appendix A

Cost-Benefit Analysis

Project Costs

Staff/Learner	Cost	Training	Weekly telephone outreach time	1 month
MA (3.0 FTE)	\$20/hour	1 hour x 3 employees	1 hour x 4 weeks	\$240
LVN (1.0 FTE)	\$25/hour	1 hour	1 hour	\$125
NP (1.0 FTE)	\$50.00/hour	1 hour	1 hour	\$50
Clinic Operations Director	\$35.00/hour	reinforce change	-	\$0 monitoring is involved in daily tasks
Supplies (education materials, printing)	\$0.1 x 100	Once	-	\$10
Total				\$ 425

Project Benefits

Benefits			
Tangible	<p>Cost Avoidance of 1 ER visit for HTN emergency</p> <p>Other consideration is cost avoidance of an acute stroke + rehab</p>	<p>\$4,514.00 for CPT code 99285 ER visit + EKG \$65.28 (CPT code 93000). Lab work not included given variability If patient requires ER transport ~\$1,000-2000.00 additional charge</p> <p>Future insurance company reimbursement for SMBP</p>	\$4,579.28

Intangible	<ul style="list-style-type: none"> • Patient satisfaction • Reduced Risk/Decreased liability when changing BP medication dosage • Improved communication to clients • Streamlined outreach process, MA used to top of licensure • Reduced MD time to educate patient allows for more access to clinic care 		
Total			\$4,579.28

Cost-Benefit Analysis (CBA) Calculation:

$$\frac{\text{Total Benefits}}{\text{Total Cost}} = \text{CBA}$$

$$\frac{\$4,579.28}{\$425} = \$10.77 \text{ for every dollar spent for 1 month of intervention}$$

Return on Investment (ROI) Calculation.

$$\frac{\text{Net Program Benefits} - \text{Program Cost}}{\text{Program Cost}} \times 100 = \text{ROI}$$

$$\left(\frac{\$4,579.28 - \$425}{\$4,579.28} \right) \times 100 = \mathbf{90.71\% \text{ ROI}}$$

Appendix B

Poster Presentation