

## Sigma Theta Tau International's 29th International Nursing Research Congress

### Clinicians Take 5: Emphasizing Accountably in Blood Pressure Measurement

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**Purpose:** Over the years there has been numerous support to guideline based approaches to treatment and management of individuals who carry a diagnosis of hypertension. There is minimal information however, supporting the uncertainty of whether blood pressure measurements (BPMs) are accurately obtained through evidence-based best practices. The United States Preventive Services Task Force (USPSTF) recommends that all individuals age 18 years and older receive screening for high blood pressure (BP) or hypertension. This recommendation includes allowing a 5 minute rest interval before any BPM is collected; however, it is well known that such recommendations are not used in everyday practice in contrast to research studies and controlled trials. The goal of this study was to evaluate BPM readings of individuals in a primary care clinic when applying the USPSTF recommendations versus BPM collection as usual.

**Methods:** A repeated-measures design was used to examine individual BPMs at the intervals of baseline, after a 5-minute rest period post-baseline, and after a 10-minute rest period post-baseline. BPMs were collected during a single patient encounter. The sample included 100 participants (48% European American; 51% African American; 1% Asian; 68% Female) between the ages of 18 and 88 years old ( $M_{age} = 53.23$ ,  $SD = 14.95$ ) who visited a university based primary care clinic in the Southeast United States region between May 2016 and August 2016. Two participants were excluded from the analysis due to insufficient participants in those categories, the only Asian participant and the only underweight participant. Thus, the final sample included 98 participants.

**Results:** For systolic blood pressure (SBP) measurements between intervals, results indicated that there were no significant differences across sex,  $F(1, 96) = 0.50$ ,  $p = .48$ , , race,  $F(1, 96) = 3.42$ ,  $p = .07$ , or BMI categories,  $F(2, 95) = 1.30$ ,  $p = .28$ . However, there were significant differences between age groups,  $F(2, 95) = 4.21$ ,  $p = .02$ . 18-45 year olds had significantly lower SBP than both 46-64 year olds and 65+ year olds (both  $ps < .05$ ). For diastolic blood pressure (DBP) measurement intervals, results indicated that there were no significant differences across sex,  $F(1, 96) = 0.14$ ,  $p = .71$ , race,  $F(1, 96) = 2.54$ ,  $p = .11$ , or age groups,  $F(2, 95) = 2.72$ ,  $p = .07$ .

**Conclusion:** When applying USPSTF recommendations SBP measurements were significantly impacted while there was little to no effect on DBP measurements. These findings support the USPSTF recommendation that there should be at least a 5-minute rest period before BPMs are taken in an office based setting. Due to busy schedules and longstanding routines or practices, clinicians might not stop to evaluate processes such as blood pressure collection for accuracy or latest supported evidence. It is important that healthcare clinicians are aware of these findings in order to prevent misdiagnosis of hypertension, which can lead to a myriad of problems for the individual who is receiving care. The USPSTF recommendation is based on evidence and clinicians must ensure that evidence based best practices are being implemented in practice.

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#### Title:

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#### Keywords:

Blood Pressure, Cardiovascular Health and Guideline

**References:**

Campbell, N., Berbari, A., Cloutier, L., Gelfer, M., Kenerson, J., Khalsa, T., & ... Zhang, X. (2014). Policy Statement of the World Hypertension League on Noninvasive Blood Pressure Measurement Devices and Blood Pressure Measurement in the Clinical or Community Setting. *Journal of Clinical Hypertension*, 16(5), 320-322.

Campos-Outcalt, D. (2016). USPSTF urges extra step before treating hypertension. *The Journal of Family Practice*, 65(1), 41-44.

Centers for Disease Control and Prevention. (2016). High blood pressure fact sheet. Retrieved from [http://www.cdc.gov/dhbsp/data\\_statistics/fact\\_sheets/fs\\_bloodpressure.htm](http://www.cdc.gov/dhbsp/data_statistics/fact_sheets/fs_bloodpressure.htm)

Centers for Disease Control and Prevention. (2015). Heart disease facts. Retrieved from <http://www.cdc.gov/heartdisease/facts.htm>

Franklin, S. S., Larson, M. G., Khan, S. A., Wong, N. D., Leip, E. P., Kannel, W. B., & Levy, D. (2001). Does the relation of blood pressure to coronary heart disease risk change with aging? The Framingham Heart Study. *Circulation*, 103(9), 1245-1249

Headley, C.M., Wall, B.M., & Cushman, W.C. (2017). A blood pressure you can believe in. *Nephrology Nursing Journal*, 44(1), 57-71.

James, P., Oparil, S., Carter, B., Cushman, W., Dennison-Himmelfarb, C., Handler, J., & ... Ortiz, E. (2014). 2014 evidence-based guideline for the management of high blood pressure in adults report from the panel members appointed to the eighth joint national committee (JNC 8). *Journal of the American Medical Association*, 311(5), 507-520.

Mayo Clinic. (2016). High blood pressure (hypertension): Risk factors. Retrieved from <http://www.mayoclinic.org/diseases-conditions/high-blood-pressure/basics/risk-factors/con-20019580>

National Heart, Lung, & Blood Institute. (2015). Risk factors for high blood pressure. Retrieved from <https://www.nhlbi.nih.gov/health/health-topics/topics/hbp/atrisk>

Stergiou, G., & Parati, G. (2012). Should the measurement of blood pressure in the office be redefined?. *Journal of Hypertension*, 30(10), 1906-1908. doi:10.1097/HJH.0b013e328358a221

United States Preventive Services Task Force. (2015). Final recommendation statement: High blood pressure in adults: Screening. Retrieved from <https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/high-blood-pressure-in-adults-screening#Pod2>

World Health Organization. (2016). BMI classification. Retrieved from [http://apps.who.int/bmi/index.jsp?introPage=intro\\_3.html](http://apps.who.int/bmi/index.jsp?introPage=intro_3.html)

**Abstract Summary:**

The USPSTF provides evidence based recommendations for blood pressure (BP) screening. All individuals 18 years and older should receive screening for high BP. Demographic variables play a role in BP reading difference. Systolic BP readings were significantly impacted whereas Diastolic BP readings had minimal to no variance.

**Content Outline:**

## I. Introduction

- Universal need for blood pressure screening in adults
- USPSTF blood pressure screening recommendations
- Blood pressure measurement collection is a clinician controlled clinical practice
- Additional variables that affect blood pressure measurements readings

## II. Body

A. Main Point #1 -Demographic variables play a role in blood pressure reading difference.

Supporting point #1- Results from blood pressure readings as reports in abstract.

B. Main Point #2- When utilizing USPSTF recommendations systolic blood pressure measurement readings were significantly impacted.

Supporting point #1-Table with descriptive statistic of blood pressure readings by demographic variables.

C. Main Point #3- When utilizing USPTST recommendations diastolic blood pressure readings had minimal to no significant change.

Supporting point #1 Results from blood pressure readings as reports in abstract.

## III. Conclusion

Results from this study support the USPSTF recommendation that there should be at least a 5-minute rest interval before BPMs are taken in a clinic setting. Systolic BPMs were affected the most when this rest interval was not implemented while there was little to no effect on diastolic BPMs. Due to busy schedules and longstanding routines or practices, clinicians might not stop to evaluate processes such as blood pressure collection for accuracy or latest supported evidence. It is important that clinicians are aware of these findings in order to prevent misdiagnosis of hypertension, which can lead to a myriad of problems for the individual who is receiving care. The USPSTF recommendation is based on evidence and clinicians must ensure that evidence based practices are being implemented in practice.

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**Author Summary:** Dr. Leslie G. Cole is a Clinical Assistant Professor at the Capstone College of Nursing. In addition to her teaching role, she is also the Wellness Clinician for the UA employee wellness program, WellBAMA. Special research interests include active and collaborative learning in nursing education, the integration of evidence-based practice concepts into nursing curricula, and best practices for gastrointestinal care.

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