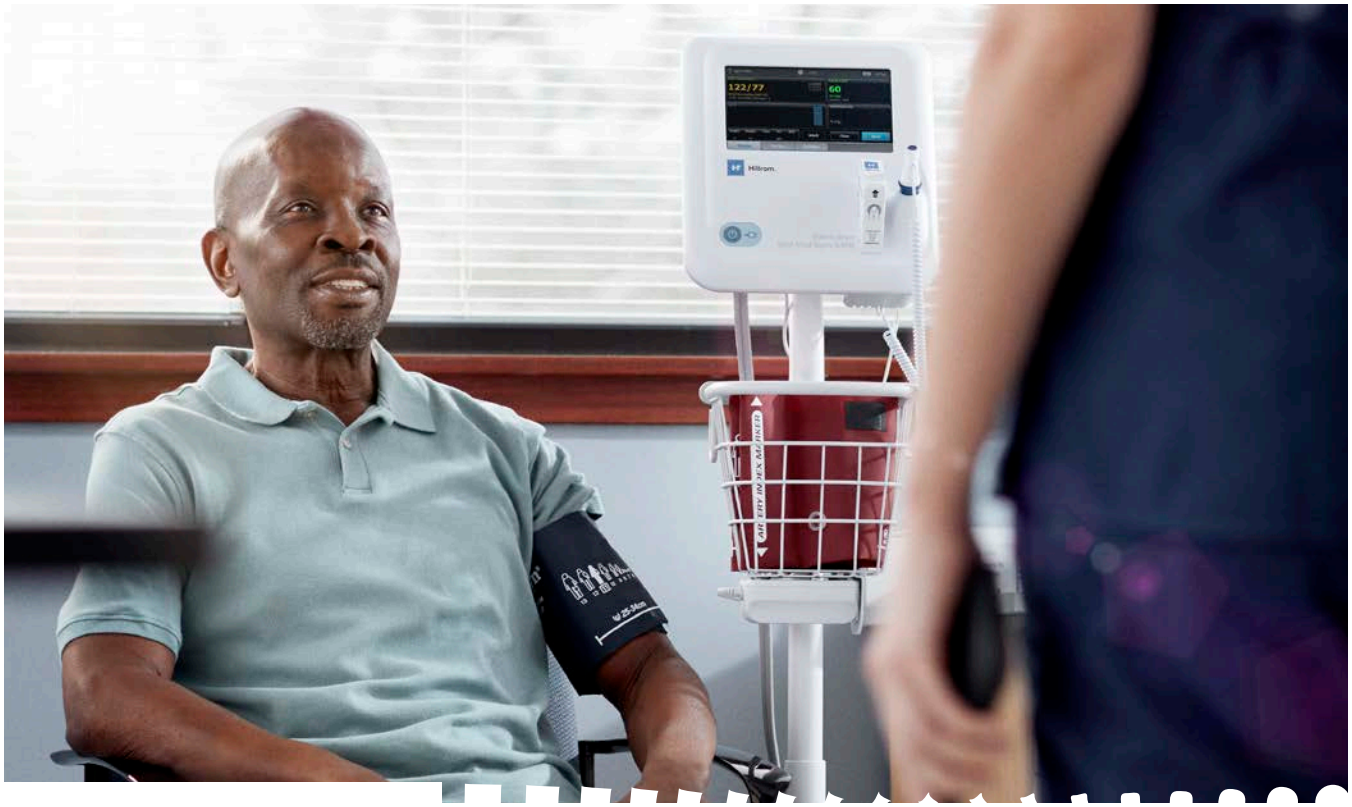
Hillrom™

RETHINK YOUR HYPERTENSION PROGRAM

How Blood Pressure Averaging Can Improve Hypertension Diagnoses



INTRODUCTION

Taking a patient's blood pressure (BP) may feel like second nature. It is, after all, one of the most commonly collected vital signs in outpatient and primary care. Although common, inaccurate readings can occur, often resulting from measurement technique or improper patient positioning.[1] Automated oscillometric devices are less prone to human error and can help provide more accurate BP readings.[2] These devices have started to replace manual auscultation and have even been shown to provide practices with cost- and time-savings.[3]

But is moving to a digital solution enough? Capturing only one BP reading per exam could be putting your patients at risk for inaccurate hypertension diagnoses. Researchers wanted to better understand the benefits of blood pressure averaging, so they designed a study to compare single in-office blood pressure readings with multiple averaged readings.

METHODOLOGY

Dr. Robert Smith and his staff at the St. Francis Cardiology Clinic studied the blood pressure readings of 187 adult patients. They used an automated Welch Allyn® vital signs device from Hillrom to capture patient data. The device's unique, inflation-based SureBP® algorithm captured multiple blood pressure data points and calculated an average reading for each patient. As part of the algorithm's program, the device only averages readings that are believed to be stable, helping to optimize for accuracy.

Baselining technology—an important component to blood pressure averaging algorithms—was enabled on devices throughout the study. This feature helps account for factors that can cause variability during a blood pressure reading, like cuff placement over clothing, crossed feet, talking during an exam, a distended patient bladder and more.

To recreate the physician office experience, researchers began capturing a patient's first blood pressure measurement at various times after they entered the exam room—ranging from one to three minutes after entry. Five additional measurements were captured automatically by the Hillrom device at one-minute intervals after the initial measurement. After collecting multiple blood pressure readings, the device automatically calculated a recommended average that included up to six of the acquired measurements.

To better understand the benefits of blood pressure averaging, researchers compared the accuracy of single, in-office readings with multiple, averaged readings.

STUDY PARAMETERS

187 Patients Studied

1,122 Readings Collected (Six Readings per Patient)

RESULTS

VARIABILITY IS COMMON

Across the six readings captured for each patient, researchers found a variability of 15.43 mmHg and a standard deviation of 9.26 mmHg. This means that most patients showed variations greater than 10 mmHg between readings. And in 41% of cases, the first reading was the highest reading in the series.

With variability this common, relying on a single-reading method for blood pressure analysis—especially if it's the first reading in a series—can provide an inaccurate picture of your patient's health.

ONE READING IS MISLEADING

If only one blood pressure reading was used as the basis for diagnosis,[4] 27% of patients in this study would have received improper care—13% of patients would not have gotten the appropriate management and follow-ups, while 14% would have been managed more aggressively than needed.

With a single-reading method:

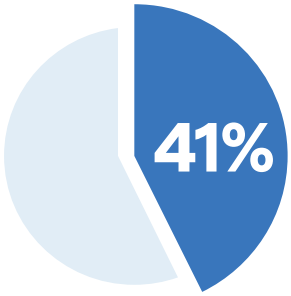
- Five patients with an elevated blood pressure—who require more frequent assessment—would have been missed altogether.
- Twelve patients who are Stage 1 Hypertensive would have been undiagnosed.
- Twenty-seven patients would have been misclassified as Stage 2 Hypertensive.

Help limit reading-to-reading variability with blood pressure averaging for a more accurate, holistic picture of your patient's hypertension status.

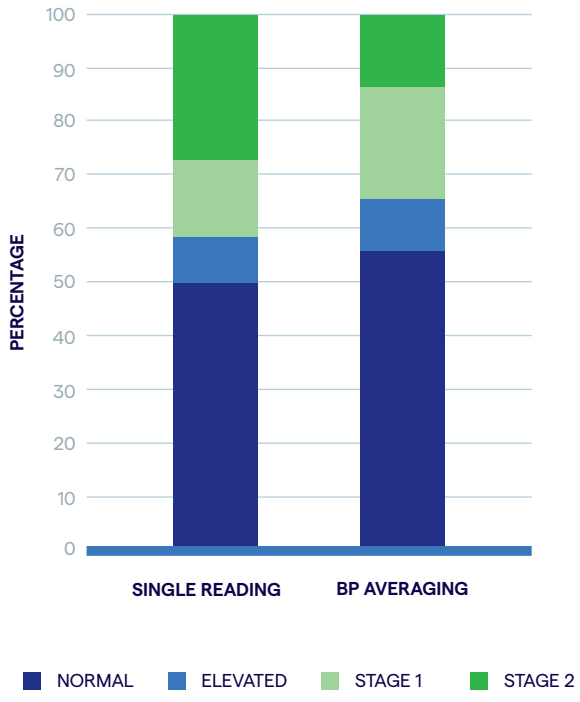
Automated office blood pressure devices capable of taking and averaging at least three blood pressure readings are considered the preferred method for in-office BP measurements.[2]

3 out of 4

patients showed greater than 10 mmHg variability between blood pressure measurements



of patients had a high first-time reading



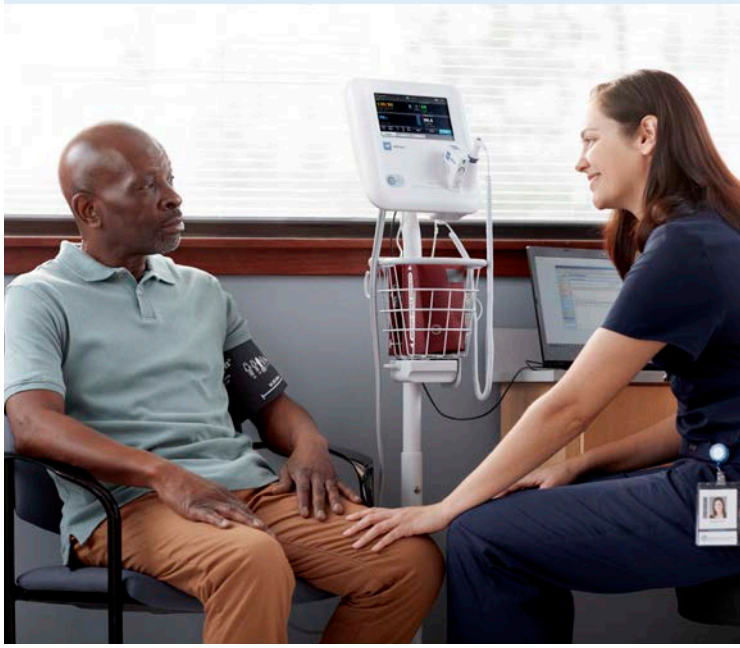
CONCLUSION

As automated vital signs solutions have become more common and sophisticated, it's easier than ever to implement blood pressure averaging at your practice. Some solutions—like the Welch Allyn® Spot Vital Signs® 4400 device—even include blood pressure averaging in the main workflow.

With noticeable differences between individual readings, relying on a single blood pressure measurement can result in misdiagnosis and delay the treatment regimens your patients may need. Measuring and averaging at least three or more blood pressure readings can help provide a clearer picture of your patient's blood pressure status, helping you diagnose and treat hypertension with confidence. If your practice doesn't utilize blood pressure averaging, now is the time to start.

Begin using blood pressure averaging at your practice today. Contact your Hillrom representative to learn more.

Introducing Hillrom's latest innovation: the Welch Allyn Spot Vital Signs 4400 device. This simple, easy-to-use solution offers an efficient way to capture, access and document vital signs so you can spend more time focused on your patients. It also includes blood pressure averaging right on the home screen—allowing you to take and average multiple blood pressure readings with one touch—for improved hypertension detection and diagnosis.



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[1] "How Proper Blood Pressure Measurement Technique Can Help Avoid Hypertension Misdiagnosis." Welch Allyn Research Article. https://www.welchallyn.com/en/education-and-research/research-articles/proper-blood-pressure-measurement-technique.html
[2] Muntner, Paul et al. "Measurement of Blood Pressure in Humans: A Scientific Statement From the American Heart Association." Hypertension 73, no. 5. pg.e35. (May 1, 2019). Doi:10.1161/hyp.0000000000000087.
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[4] Whelton, Paul K. et al. "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: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines." Hypertension 71, no. 6. (November 13, 2017). https://doi.org/10.1161/HYP.0000000000000066