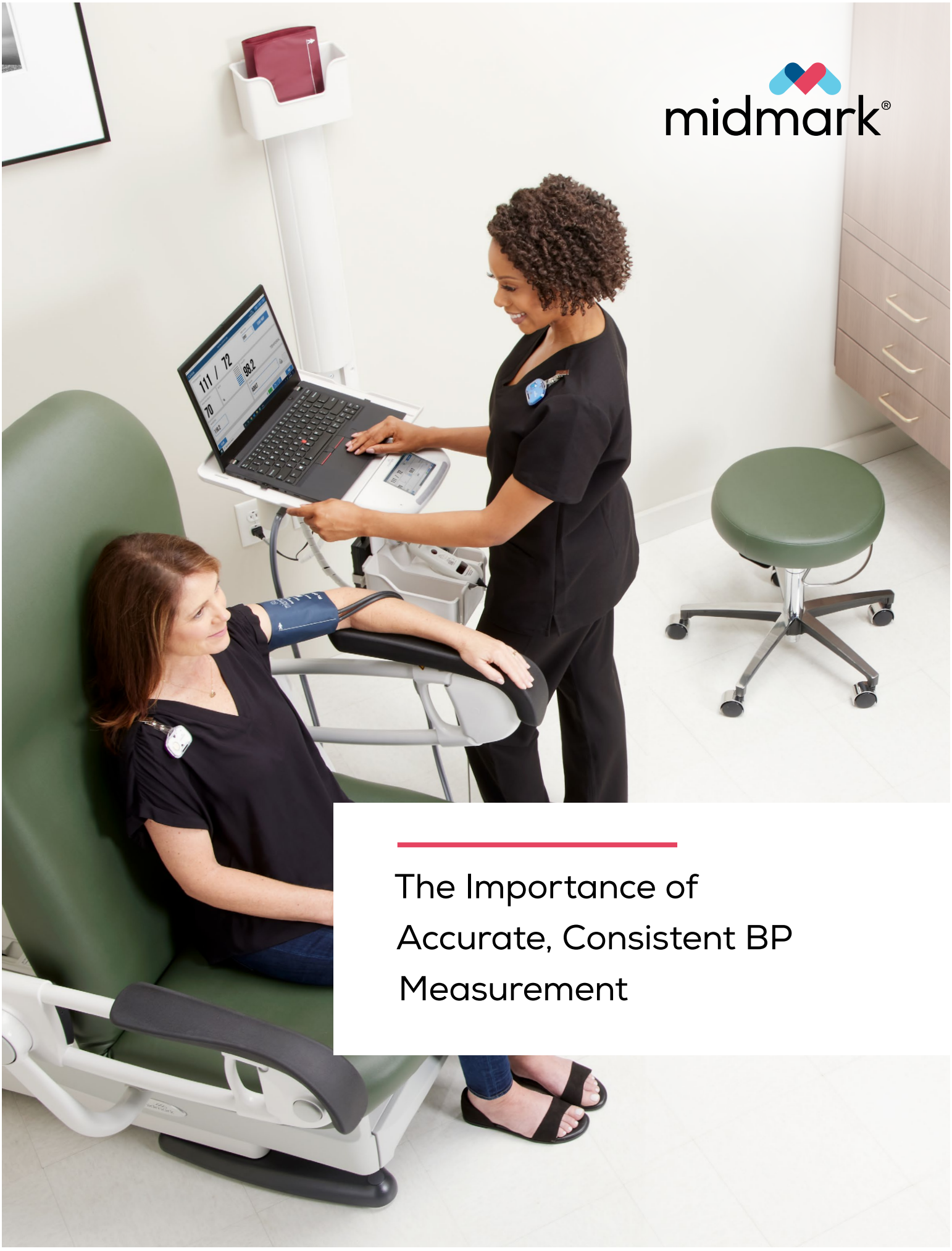
midmark®



The Importance of Accurate, Consistent BP Measurement

Of all the vital signs, blood pressure (BP) measurement has perhaps the most clinically significant connection to point of care diagnosis, patient risk stratification and proper medication dosing. These important factors of care management are essential to proper diagnostic and therapeutic decision-making tied to better outcomes.

For instance, in order to properly diagnose and treat hypertension—a major risk factor for coronary heart disease, stroke and renal failure—caregivers need to obtain accurate BP information that includes both current BP measurements and trending data.

Inaccurate BP measurement can lead to either a missed diagnosis or misdiagnosis, both of which can cause harm to patients by either not appropriately treating hypertensive patients or medicating patients who are not hypertensive, respectively.

Accurate BP measurement can help identify patients with hypertension who may need treatment and also reduce instances where a patient might be overmedicated. As with any clinical disorder, there is risk to prescribing medication to a patient. This risk increases significantly when the person being treated does not actually suffer from the disorder, or the level of abnormality is over measured. In both cases, patients are at a high risk to incur avoidable medication side effects, which can lead to additional illness or injury.

To improve patient outcomes in general (and in particular for patients with chronic diseases, especially cardiovascular disease), the BP measurements guiding therapeutic management need to be accurate.

It is also important to detect small differences in BP readings to effectively manage patients with hypertension and other metabolic disorders, such as diabetes, renal disease and cardiovascular conditions. Careful BP management, including identifying and adjusting to small shifts over time, is essential to achieving best-in-class outcomes for each patient.

Because of its centrality in care and better outcomes, it is essential for BP measurement to be accurate and repeatable for all caregivers at all sites of care. Slight variations in technique and measurement can have a big impact on the effectiveness of the therapeutic management of many, if not most, chronic diseases.

Occurrence of Inaccurate BP Measurement

Despite established protocols and efforts to raise awareness from groups like the American Heart Association (AHA) and companies like Midmark, BP measurement continues to be the point of care test that is often suboptimally performed in the clinical environment.

This is not a criticism of healthcare providers' current measurement processes. Rather, it is about the importance of having a standardized approach. It is also about ensuring the routine of conducting BP measurements at the beginning of every doctor's visit does not lead to straying away from the standardized approach over time.

Consider the act of driving a car. When we learn to drive, we are taught the optimal hand positions on the steering wheel are 10 o'clock and 2 o'clock. Most of us do that for the first few months. But as the act of driving becomes more routine for us, our hands begin to move and we develop our own way to hold the steering wheel. This does not mean we forgot how to drive or are now bad drivers; it just means that we have become comfortable enough with the task that we no longer do it the way we were taught.

When a standardized approach to BP measurement is not in place or followed, the accuracy of the measurement can be impacted. This is often why BP readings can vary when obtained by different members of a care team. Two different caregivers independently acquiring BP measurements using manual methods on the same patient can often result in two different readings.

A lack of standardization is just one of the factors that can lead to inaccurate BP measurement. A 2019 consensus document from the Lancet Commission on Hypertension Group compiled the main causes of BP measurement inaccuracy into four categories:

Patient-Related

These causes stem from the actions and behaviors of the patients. Examples include eating a meal right before the visit, having a full bladder and experiencing a case of white coat syndrome.

Procedure-Related

This category primarily refers to the errors that can occur when not following best practices as defined by both the AHA guidelines for in-clinic BP measurement and the Systolic BP Intervention Trial (SPRINT) study standardized protocol for measuring BP.

Equipment-Related

These refer to issues that can arise when inadequate equipment is used as part of the process. This can include a chair that does not allow a patient to sit comfortably with feet flat on the floor or a BP cuff that is too large or too small for the patient.

Observer-Related

These are errors that can be potentially caused by the healthcare professional who is taking the BP measurement. Examples of these types of errors include transcription errors that occur when patient data is entered manually and the failure to allow a five-minute rest period before the measurement is taken.

Standardized Approach to BP Measurement

Increasing standardization within healthcare organizations is helping allow good experiences and outcomes to be duplicated. The consolidation of medical practices has compelled many organizations to establish network-wide operational and clinical standards. This is making it possible for these organizations to develop clinical protocols that create efficiencies and cost savings, as well as drive better clinical outcomes. If something is proven to work, it can be easily replicated throughout the network by experienced healthcare workers and those who are just entering the field.

In fact, according to a research report in the Annals of Family Medicine, "Consistency across clinical sites offers advantages to an organization: it provides guidance during emerging health threats, facilitates the training and cross coverage of staff, allows for a more predictable patient experience, and can promote the wider adoption of efficient workflows."

Standardization can also help eliminate human variables that often increase the likelihood of errors and contribute to inaccurate BP measurement. Proper protocols for BP measurement are defined by both the AHA guidelines for in-clinic BP measurement and the SPRINT study standardized protocol for measuring BP.

The SPRINT study was published in the New England Journal of Medicine in 2015. SPRINT researchers based the protocol on individual peer-reviewed clinical studies of varying size and quality that analyzed the known causes for BP measurement variation. Many of the known causes for avoidable variation were taken into account in the SPRINT protocol, except for the known impact of white coat hypertension. The study showed that lowering systolic BP (SBP) to less than 120 mmHg can reduce cardiovascular events by 25 percent for high-risk patients with hypertension.

In 2017, the AHA, partnering with the American College of Cardiology (ACC), published new guidelines for in-clinic BP measurement that largely mirrored the highly specific protocol for BP measurement defined in the SPRINT study. These guidelines for the detection, prevention, management and treatment of high BP lower the traditional definition of high BP to account for complications that can occur at lower numbers and to allow for earlier intervention.

Unfortunately, these protocols on their own are not enough. There is a need for greater education and awareness.

Better BP® Initiative

In an effort to help increase the level of education and awareness around proper BP measurement, Midmark established the Better BP Initiative. Through this initiative, we have been offering education to healthcare providers on the importance of consistent BP capture, as well as the clinical and monetary cost of inaccurate BP.

For instance, our clinical education program created a course focused on hypertension that provides continuing education units (CEUs) to a variety of healthcare professionals. This continuing education course highlights the importance of accurate and standardized BP measurement and is intended for registered nurses, surgical technologists or other healthcare professionals responsible for obtaining BP measurements.

We are also helping our healthcare customers understand that BP acquisition provides an ideal place to start the journey to better clinical outcomes through the use of a Lean methodology approach. First developed in the manufacturing industry, the Lean methodology for process improvement offers a systematic approach to implementing continuous improvements that minimize or remove waste and unnecessary steps without negatively impacting efficiency, productivity or quality.

The approach focuses on seven forms of waste: overproduction, waiting, defects, motion, overprocessing, inventory and transport. The first five can be directly applied to clinical work, including BP measurement. For example, in the area of overproduction, healthcare professionals can implement process improvements that help ensure they are only seeing BP patients that truly need to be seen and will benefit from the visit.

We are also embedding this initiative into many of the product solutions and technologies in development. Midmark has focused our fully integrated point of care ecosystem on three main areas. When combined, these three pillars of Better BP can help make it easier for caregivers to integrate BP measurement into clinical workflows to help ensure a more consistently accurate BP measurement process. The three pillars of Better BP are:

1. Proper Patient Positioning

Patient comfort level and position of their body, including arms and legs, can impact BP readings. Barrier-Free® power examination chairs, such as the Midmark® 626 with Patient Support Rails+, are designed to promote AHA-recommended patient positioning for BP capture.

The Midmark 626 is the only exam chair of its kind designed to promote proper patient positioning for a more accurate BP measurement. It offers multi-positioning options to ensure a patient's back is properly supported, while the arm is maintained at heart height by the accessory rails. The low chair height helps ensure a patient's feet are firmly placed on the floor while acquiring BP readings.

2. Accurate, Consistent BP Capture

Midmark is the first company to implement a SPRINT BP Protocol with patient positioning guidelines in a vital signs acquisition device. IQvitals® Zone™ with the SPRINT BP Protocol introduces automation at the point of care that can help ensure a higher level of standardization, minimizing human variables while maximizing consistency and data accuracy.

The SPRINT BP Protocol features embedded positioning guidelines to help ensure proper patient positioning techniques are followed. The guidelines are displayed in a checklist format to help ensure accurate and repeatable BP capture every time. Healthcare providers can even leave the exam room during the measurement process, reducing the chance of white coat hypertension.

3. EMR Connectivity

Introducing connectivity to the BP measurement process helps protect the quality of data by reducing the risk of human errors occurring at the keyboard. Seamless connectivity from the IQvitals Zone device to the electronic medical record (EMR) allows access to patient information and facilitates automatic transfer of data to the patient chart. This minimizes the need for manual entry of patient data, improving workflow efficiency and reducing the likelihood of transcription errors.

These three pillars of Better BP should serve as an important reminder that even with something as seemingly simple and routine as BP measurement, there is the risk of human errors and inaccuracies occurring when proper protocols are not followed. This is why there needs to be greater education and awareness focused on the important role standardized protocols can play in achieving accurate, consistent BP measurement.

For more information on how healthcare providers can help ensure accurate, consistent BP capture, visit Midmark.com.

Designing better care.®

midmark®

007-10488-00