

# Take Your Blood Pressure at Night While Lying Down

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✓ Fact Checked

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## STORY AT-A-GLANCE

- › Research presented at the 2023 American Heart Association's Hypertension Scientific Sessions in Boston revealed that taking blood pressure while lying down was a better predictor of high blood pressure risk than when it was taken while sitting or standing
- › High blood pressure increases your risk for stroke and heart disease, which are the two leading causes of death in the U.S. An accurate blood pressure reading allows you to take strategic steps to lower your risk
- › A 2019 study published in Hypertension showed nearly 46% of American adults could benefit from taking their blood pressure at home, slightly less than the percentage of adults with high blood pressure in the U.S.
- › Common causes for high blood pressure include insulin and leptin resistance, high waist-to-hip ratio, elevated uric acid levels, lead exposure, and air and noise pollution

Research presented at the September 2023 American Heart Association's (AHA) Hypertension Scientific Sessions in Boston revealed surprising findings about how taking blood pressure while lying down may offer a more accurate reading.<sup>1</sup>

High blood pressure increases your risk for stroke and heart disease, which are two leading causes of death in the U.S. Getting accurate blood pressure measurements gives you the opportunity to take strategic steps to lower your risk.

In 2023, the CDC<sup>2</sup> reported that roughly 119.9 million people, or 48.1% of American adults, have high blood pressure, but only 22.5% of those have the condition under

control. High blood pressure costs the U.S. roughly \$131 billion each year, a data point that was averaged over 12 years from 2003 to 2014.

Managing high blood pressure is understood to be a vital part of heart health. Unfortunately, the first recommended step is often prescription medication, yet many lifestyle changes, including addressing insulin and leptin resistance, can help most people normalize their blood pressure without resorting to drugs that come with a long list of adverse side effects.

It is crucial to start with an accurate blood pressure reading you can use as a comparison as you make lifestyle changes that can help reduce your blood pressure. The featured study<sup>3</sup> indicates that blood pressure readings taken lying down or at night may be a better predictor of heart disease than when you're sitting or standing.

## **Supine Blood Pressure May Predict Heart Disease Better**

The data presented at the AHA meeting revealed that readings taken when an individual was lying down (supine) could more accurately predict a person's future stroke, heart disease and death risk. The results presented are preliminary findings that have not been peer-reviewed or published. The senior researcher, Dr. Stephen Juraschek, is a general internist at Beth Israel Deaconess Medical Center in Boston and associate professor at Harvard Medical School.<sup>4</sup>

According to the current clinical guidelines by the AHA and American College of Cardiology, a normal blood pressure reading for adults is 120/80 mmHg.<sup>5</sup> Blood pressure readings fluctuate throughout the day. Juraschek notes that the “gold standard” for blood pressure accuracy is wearing a 24-hour monitor to get an overall understanding of daily blood pressure fluctuations and an average reading.

In the past, Juraschek said that research has revealed night blood pressure monitoring is the best predictor of cardiovascular disease, but repeated monitoring at night is difficult and often disrupts sleep, which can have an adverse effect on blood pressure.

The goal of the featured study was to determine whether simply lying down during the day may simulate blood pressure readings taken during sleep and thus help identify those who are at higher risk for heart disease. The researchers began by comparing readings in the same individual while they were seated and then lying down.

Data were gathered from the Atherosclerosis Risk in Community Study in which participants' blood pressure measurements were taken in both the seated position and lying down. Researchers used 11,369 participants whose average age was 54 and older and then followed them for a median of 25 to 28 years.<sup>6</sup>

The research team divided the data into four groups based on the blood pressure readings. The first data group had normal blood pressure when seated and lying down, the second had high blood pressure only while seated, the third had high blood pressure only when they were lying down, and the fourth data group had high blood pressure while seated and lying down.

## **Nighttime May Be the Best Time**

During the following 25 to 28 years of collecting data, the research team found the group with high blood pressure while seated and lying down were consistently at higher risk for heart disease. However, they also found that the group that had high blood pressure only while lying down had a similar risk of heart disease and stroke to those who had high readings when they were seated and lying down.

More specifically, people with high blood pressure only when lying down "had a 53% higher risk of coronary heart disease, 51% higher risk of heart failure, 62% higher risk for stroke, 78% higher risk of fatal coronary heart disease, and 34% higher risk of death from all causes compared to participants with normal blood pressure in both positions."<sup>7</sup>

The results of the study imply that taking blood pressure in the clinic while the patient is lying down may help reveal high blood pressure that would otherwise be missed and highlight the importance of identifying blood pressure measurements in all body positions.

It is important to note that the study participants were lying down for 20 minutes before their blood pressure was measured, which is far longer than generally is possible during a typical office visit. Taking your blood pressure at home in the evening when you can lie down for 20 minutes may offer a better assessment of your blood pressure measurement.

Juraschek notes that with more information, high blood pressure could be identified in people who may have been “flying under the radar” or may help to identify people who do not need treatment.<sup>8</sup>

## **Get a Proper Blood Pressure Reading**

A blood pressure measurement has two numbers. The top number is your systolic blood pressure, and the lower number is your diastolic pressure. The systolic pressure is the highest pressure in the arteries and happens when your heart ventricles contract, while diastolic pressure is the lowest arterial pressure that happens during the resting phase of your cardiac cycle.

To avoid getting a false normal or false high blood pressure diagnosis, it's important to remember that blood pressure readings vary significantly throughout the day and from one day to the next. One high reading is not a reason to become overly concerned. However, when blood pressure measurements are consistently or chronically elevated, this could indicate reasons to take steps to evaluate and change your lifestyle choices.

Variables that can affect the validity of the blood pressure reading include the size of the blood pressure cuff, the position of your arm and your internal stress. The blood pressure cuff size is crucial to obtaining an accurate reading.<sup>9</sup> If you are overweight, using an average blood pressure cuff can falsely elevate the reading, so make sure the right size is used for your arm.

Blood pressure should also be taken when your elbow is bent, and your forearm is at a right angle to your body. Some people may experience “white coat hypertension” or

“white coat syndrome,”<sup>10</sup> which is a term used for high blood pressure caused by stress or fear associated with your visit to a doctor or hospital.

While this type of high blood pressure is transient, it may indicate your blood pressure elevates to damaging levels in other stress-inducing situations. If this applies to you, then stress reduction strategies can be key to protecting your health.

According to a 2019 study<sup>11</sup> published in Hypertension, 45.8% of American adults could benefit from taking their blood pressure at home. An automated blood pressure meter can be a good investment and help determine if you are experiencing white coat syndrome in the doctor’s office and if your blood pressure is elevated at other times when you are stressed.

Consumer Reports<sup>12</sup> tested at-home blood pressure monitors for accuracy, comfort, clarity of display and ease of use. These were the top five picks. All are commercially available on Amazon and other large retailers and pharmacies.

- Omron Platinum BP5450
- Omron Silver BP5250
- Omron 10 Series BP7450
- A&D Medical UA767F
- Rite Aid Deluxe Automatic BP3AR1-4DRITE

For an accurate blood pressure measurement in the doctor’s office or at home during the day, follow these guidelines:<sup>13</sup>

Don’t exercise, smoke or drink coffee or caffeinated beverages within 30 minutes of measuring your blood pressure. Also, empty your bladder and relax for at least five minutes beforehand.

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Sit with your back straight on a firm chair. Avoid sitting on the couch as that encourages slouching. Keep your feet flat on the floor and do not cross your ankles or

legs.

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Make sure your arm is supported on a flat surface, such as an armrest or table, with your upper arm at heart level.

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Place the blood pressure cuff directly above the bend of your elbow on bare skin. Do not measure on top of clothes. The cuff should be snug but not too tight nor too loose. Press the start button and remain still while the pressure is being taken.

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Measure your blood pressure at the same time every day and take multiple readings each time. Ideally, take two readings one minute apart and record the results.

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Based on the featured study, consider taking your pressure twice a day to compare measurements: once during the day and once in the evening after lying down for 20 minutes.

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## **Common Causes for High Blood Pressure**

As I have discussed in the past, researchers have identified several factors that contribute to developing high blood pressure. You can read more about these in [“Do You Know Your Blood Pressure? Your Brain Depends on It.”](#) Some of the common causes include insulin and leptin resistance, elevated uric acid levels, lead exposure and air and noise pollution.

Another measurement that can help assess your risk of high blood pressure is your waist-to-hip ratio. Research has suggested that your waist size is an effective measure for assessing high blood pressure that's related to obesity and overweight. People with a high waist-to-hip ratio carry more fat around the waist than on the hips. This increases the risk for obesity-related hypertension.

To calculate your waist-to-hip ratio, measure the circumference of your hips at the widest part, across your buttocks, and your waist at the smallest part, just above your belly button. Next, divide your waist measurement by your hip measurement to get the

ratio. The University of Maryland<sup>14</sup> offers an online waist-to-hip ratio calculator with ratio ranges indicating excellent to extreme risk of heart disease.

Knowing your blood pressure and your waist-to-hip ratio are the first steps to identifying your risk for blood pressure-related heart disease. Your next step is to engage in key lifestyle strategies that help lower your blood pressure. These are strategies I discuss in depth in [“Top Tips to Lower Your Blood Pressure.”](#)

As you consider these lifestyle strategies, consider your potential risk in each category and commit to making one change at a time until it becomes part of your daily habit. Speak with your physician and pharmacist about the medications you are currently taking, since some have side effects that increase the risk of high blood pressure.

Pay attention to the foods you eat, since blood pressure is typically linked with insulin resistance, which results from eating a diet that's high in the omega-6 fat [linoleic acid](#). As your insulin level goes up, so does your blood pressure. This means a diet high in processed food, which is often loaded with high fructose corn syrup, grains, and linoleic acid, contributes to high blood pressure.

Other factors that can help improve blood pressure are optimizing your vitamin D, magnesium and vitamin K2 levels, as well as balancing your sodium-to-potassium ratio. Don't forget to include exercise, particularly isometric exercises<sup>15</sup> that have demonstrated the greatest influence over systolic and diastolic blood pressure.

## Sources and References

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