

# Morning blood pressure

## Daily blood pressure pattern

What is morning hypertension?

What causes morning hypertension?

Who is at risk for morning hypertension?

What are the consequences of morning hypertension?

How do I know if I have morning hypertension?

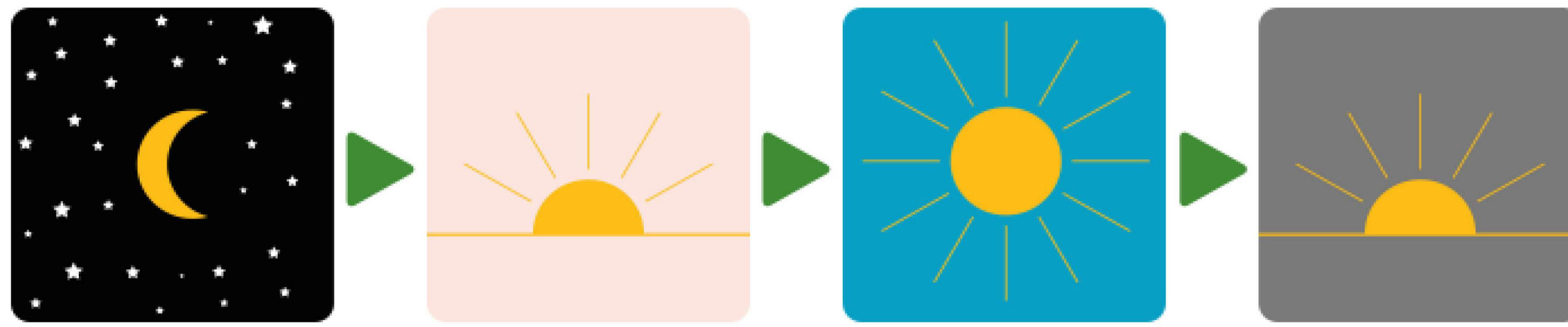
How is morning hypertension treated?

How can I prevent or control morning hypertension?

References

## Daily blood pressure pattern

Blood pressure (BP) follows a daily pattern. It is normally lower at night while you are sleeping and starts to rise a few hours before you wake up. This rise in BP continues during the day, usually peaking in the middle of the afternoon. By late afternoon or evening, your BP would begin to drop again.



Some people experience abnormality in their BP pattern. One of it is a morning surge in BP (also known as morning hypertension), which results in increased risk of damage to the brain, heart and kidneys. Morning hypertension could also happen in those with well-controlled BP.

## What is morning hypertension?



Morning hypertension can be defined based on blood pressure (BP) readings in the early morning and at bedtime. You may have morning hypertension if:

The average of your morning and evening BP reading is >135 mmHg

&

The difference between your morning and evening BP reading is 15–20 mmHg

The two types of morning hypertension<sup>2</sup>

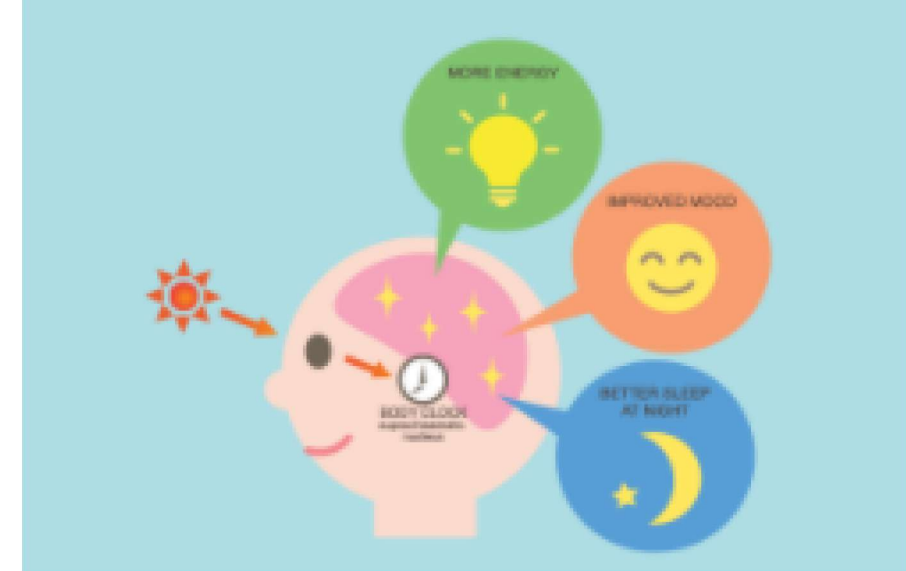
### Nocturnal hypertension

- Blood pressure readings do not fall much at night.
- Night BP readings are higher than daytime BP readings.
- Frequently occurs in people with diabetes, cardiac failure, sleep apnoea (a sleep disorder in which breathing stops and starts repeatedly) and those who have had a stroke.
- People with this type of morning hypertension have an increased risk of developing cardiovascular diseases occurring in the nighttime.

### Morning-surge hypertension

- Blood pressure elevation occurs about 2 hours before getting out of bed.
- Further elevation occurs after rising from bed.
- People with this type of hypertension are commonly found to have variability in their heart rate.

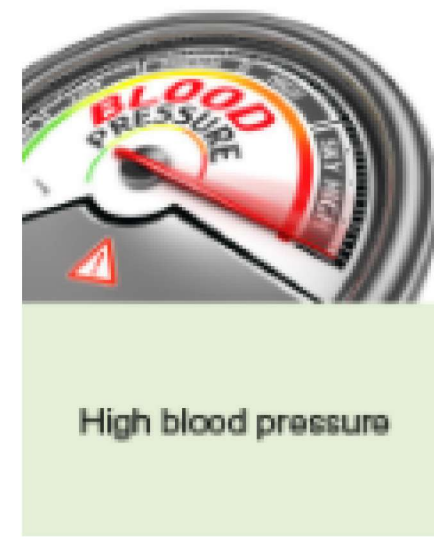
## What causes morning hypertension?



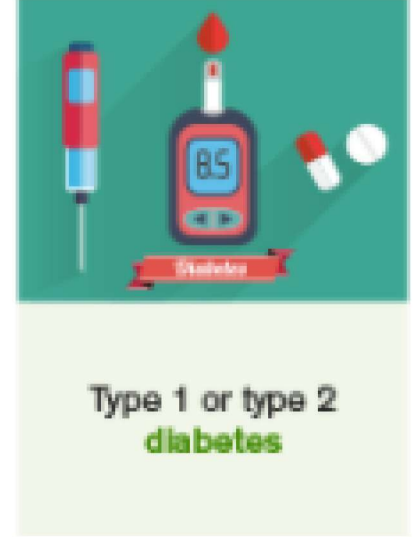
When you first wake up in the morning, blood pressure (BP) increases due to the body's normal circadian rhythm. Circadian rhythm is a daily 24-hour activity cycle that affects our sleep/wake patterns. In the morning, the body releases certain hormones such as adrenaline and noradrenaline. These hormones give you energy boosts but can also raise your BP. This morning increase in BP is usually seen between 6 am and noon. Harmful effects can be seen if the BP rises too high.

## Who is at risk for morning hypertension?

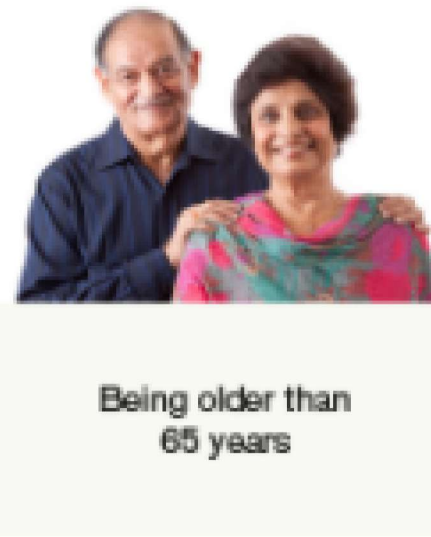
The following factors may put you at risk for morning hypertension:



High blood pressure



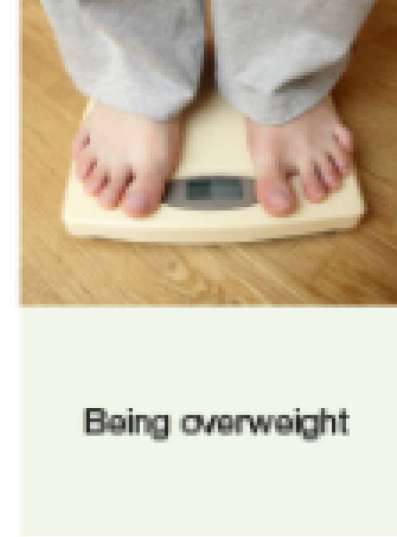
Type 1 or type 2 diabetes



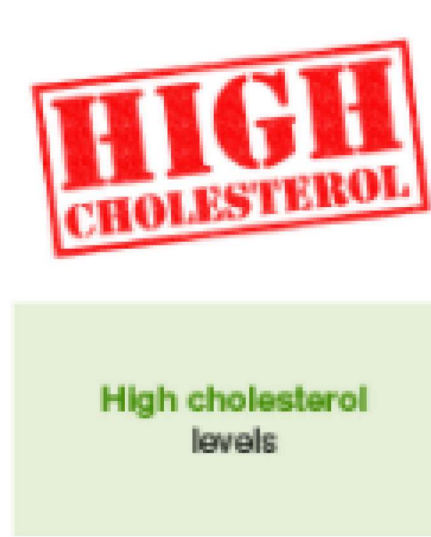
Being older than 65 years



Use of tobacco or alcohol

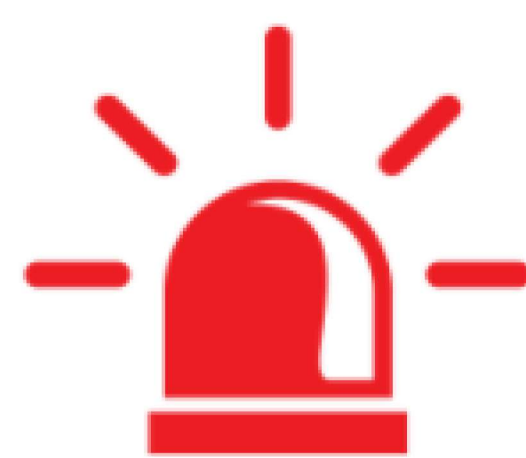


Being overweight



High cholesterol levels

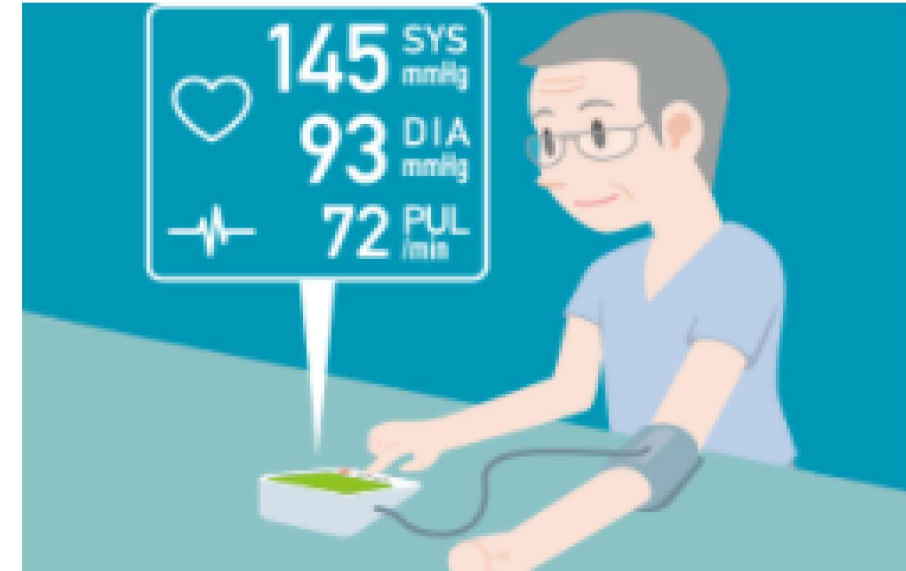
## What are the consequences of morning hypertension?



Those with morning hypertension have a higher risk for heart attack, stroke and sudden death in the first few hours of the morning compared with those without morning hypertension.

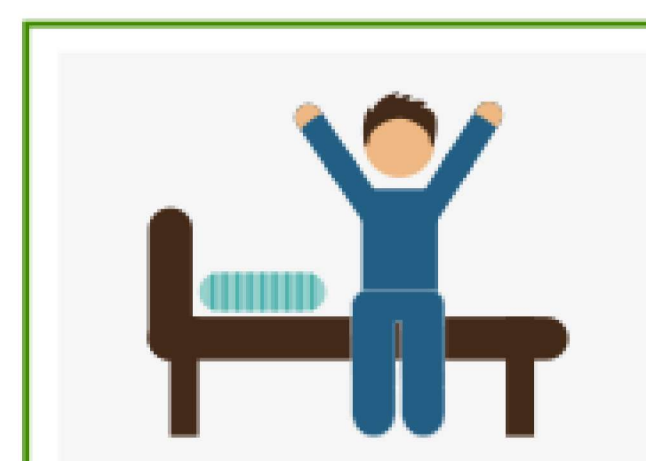
If you experience symptoms such as severe headache, chest pain, and numbness or tingling in your face or arms, be sure to contact your doctor immediately.

## How do I know if I have morning hypertension?

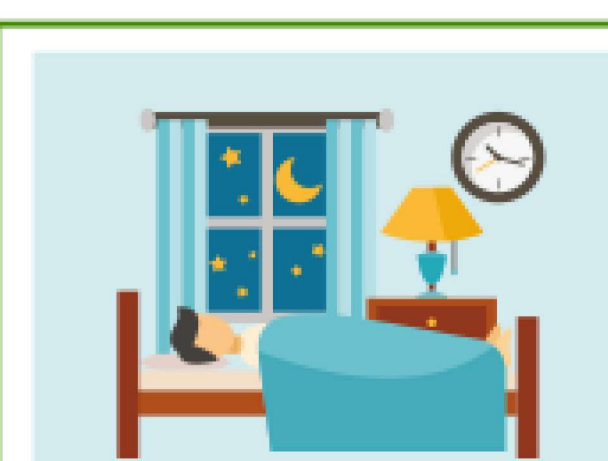


Having a home blood pressure (BP) monitor at hand can be useful in determining whether you have morning hypertension. These devices are easily available at your neighbourhood pharmacy, and are reasonably priced. There are several types of monitors available, so talk to your pharmacist about the type of model that would suit you best.

It is best to check your BP, using the same arm each time, at the following times:



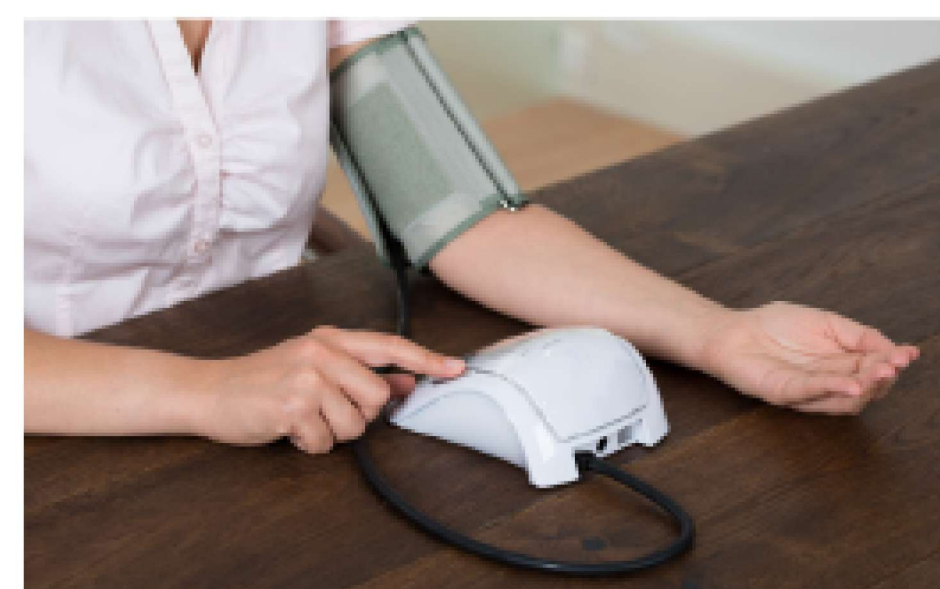
In the morning, about an hour after you wake up



In the evening, about an hour before you go to bed



Blood pressure should be measured in the arm that gives the higher systolic reading (the top number)



The lower edge of the cuff should be approximately 2 cm above the bend of your elbow, and no tight clothing should be worn around the arm



You should be seated, remain silent and at rest at least 5 minutes before taking a measurement. Both your feet should also be flat on the floor, as crossed legs raises your BP

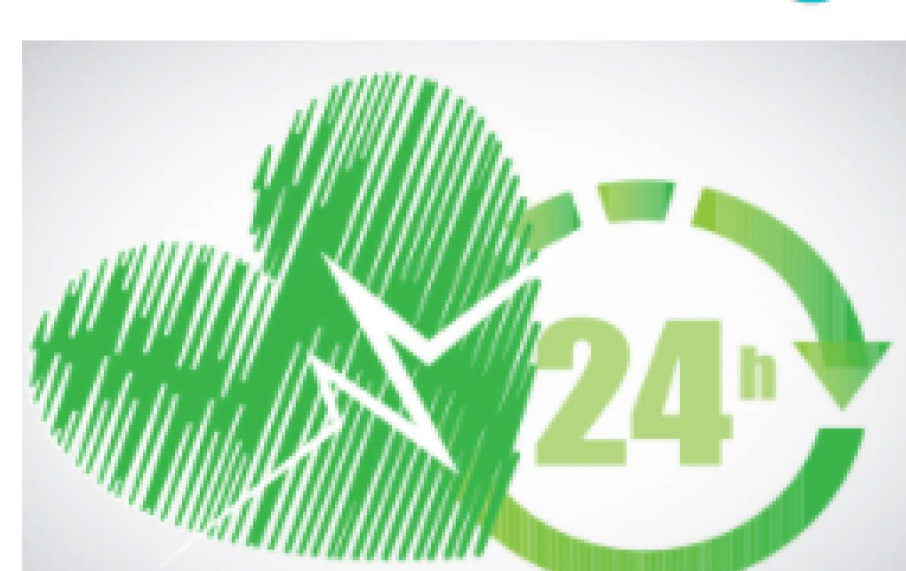


Make sure you have not smoked, eaten, drunk a caffeinated drink or undertaken physical activity within the past 30 minutes. Avoid taking a measurement with a full bladder



Do remember to record your BP readings in a log book, and bring it along on your doctor's appointment

## How is morning hypertension treated?



Morning hypertension generally happens because the effects of the antihypertensive medications a person is on do not last for 24 hours. Hence, your doctor may recommend antihypertensive medications that target morning hypertension to be combined with your existing hypertension treatment.

Before this additional medication is prescribed, the first step of management is self-monitoring of early morning blood pressure (BP) at home. Once you have been diagnosed with morning hypertension, your doctor will adjust your medications to reduce the surge in morning BP.

## How can I prevent or control morning hypertension?



In order to prevent the development of morning hypertension or to keep it under control, you should practice the following:

- Eat a nutritious diet
- Avoid tobacco and alcohol
- Engage in regular physical activity
- Take blood pressure (BP) medications as prescribed
- Keep a log of BP readings

## References

- Mayo Clinic. High blood pressure (Hypertension). Available at <http://www.mayoclinic.org/diseases-conditions/high-blood-pressure/expert-answers/blood-pressure/faq-20058115>. Accessed 19 September, 2019.
- Kario KJMAJ 2005; 48(5):234-240.
- Pharmacy Times. Early to rise? Your blood pressure may be too. Available at <https://www.pharmacytimes.com/publications/issue/2007/2007-04/2007-04-6392>. Accessed 8 October, 2019.
- Kaplan NM. *Circulation* 2003;107:1347.
- British Hypertension Society. Home blood pressure monitoring protocol. Available at <https://bihsoc.org/wp-content/uploads/2017/09/Protocol.pdf>. Accessed 8 October, 2019.

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