



What you should know about  
**hypertension**



The innovative **Swiss** pharmaceutical company

**mepha**



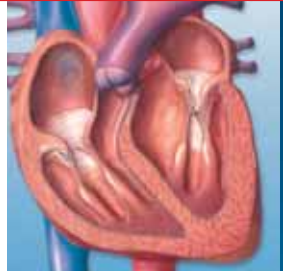
Blood pressure above 140/90 mm Hg is called **hypertension**



**Hypertension** often does not cause any symptoms



Everyone can develop **hypertension** independent of age and sex



**Hypertension** can cause life-threatening events like heart attacks and strokes



**Hypertension** should be treated



## Important

High blood pressure (hypertension) can be inherited to a certain extent. Aside from this predisposition the personal lifestyle plays an important role. Everyone has it in the hand to play an active role in the prevention of hypertension and its life-threatening effects.

Start today and decrease your risk factors. This will help to reduce the risk of developing hypertension and can help to reduce your blood pressure.

- Avoid or reduce obesity
- Use salt reluctantly
- Enjoy alcohol with measure
- Reduce your consumption of nicotine or become a non-smoker
- Exercise regularly
- Take enough time for your hobbies
- Care for enough sleep (6 – 8 hours per night)

If you have to take drugs to control your blood pressure you should pay attention to the following:

- If you experience undesired effects inform your physician.
- By no means should you change or stop the treatment without having discussed it first with your physician.



## Blood pressure is needed

Blood transports oxygen and nutrients to the organs. The heart pumps the blood through the blood vessels. This action causes pressure on the blood, the blood pressure.

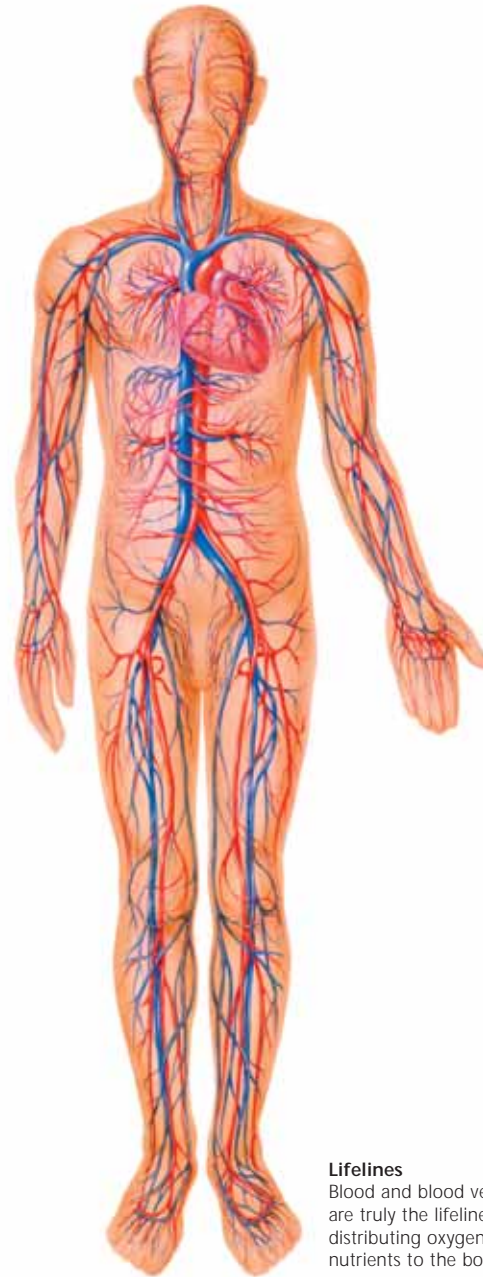
The blood pressure has to be adapted constantly to the needs of the body. When lying down the heart has to pump less than standing or even exercising. The human body has different mechanisms to regulate blood pressure. Some of them work very fast like increasing the heart frequency when you are active or nervous; others like regulating the blood volume take more time. The blood pressure is also influenced by many other parameters like body weight, age and even the time of day.

When measuring the blood pressure usually two values are measured. The first, higher value is called systolic (maximal) blood pressure. This is the maximal pressure while the heart is beating. The second, lower value is the diastolic (minimal) pressure, the lowest value when the heart relaxes between two beats.

The blood pressure is measured in millimetres of mercury (mm Hg). According to the recommendations of the World Health Organization (WHO):

- An optimal blood pressure is one of under 120 over 80 mm Hg. The systolic (upper) value is below 120 mm Hg and the diastolic (lower) value is below 80 mm Hg.
- A systolic blood pressure of 120 to 139 mm Hg or a diastolic value of 80 to 89 mm Hg is called high normal.
- Values of 140 mm Hg or more systolic and 90 mm Hg or more diastolic are called hypertension.

When one of the two values is elevated, this is enough to be in the high normal or the hypertension group.



### Lifelines

Blood and blood vessels are truly the lifelines distributing oxygen and nutrients to the body.

## Measuring blood pressure

Blood pressure often rises with age. High blood pressure however can occur at any age and mostly it does so without causing any symptoms. This is what makes it so dangerous because it can often do damage for many years without being detected. Only a correct measurement of the blood pressure can tell you if you suffer from hypertension. It is therefore very important to measure the blood pressure regularly.

Measuring the blood pressure can be done by your physician or by yourself. Physicians have accurate and calibrated machines and they know how to measure correctly. Some patients get nervous when measuring their blood pressure with their physician. This causes their blood pressure to rise. This phenomenon is called white coat hypertension and is best avoided by measuring blood pressure alone at home.

Measuring blood pressure at home has the advantage that it can be done regularly and comfortably. It is important however to measure correctly because you can easily get false results. Read the instructions of your machine carefully and ask your physician to show you how to use your machine correctly if you have doubts. Measure your blood pressure at different times of the day after some minutes of rest. It is also useful to compare your results with that of your physician. Usually machines that measure at your upper arm are more reliable than machines for the wrist.

Monitor your blood pressure. Ask your physician about a blood pressure passport where you can enter your measurements with date and time. Bring this document to your next visit so your physician can have a look at your data.



## What is the risk of high blood pressure?

Having high blood pressure is like continuously running a machine at a pace it was not designed for. The risk of damages is markedly increased. Hypertension can affect many different organs in the body like the brain, heart, kidneys, eyes and blood vessels and may lead to stroke and heart attack. High blood pressure can double or even triple the risk for strokes and heart attacks.

The risk to suffer from a serious event is increased when other risk factors are also present. The different risk factors influence each other. The total risk can be markedly increased even when several individual risk factors are only mildly elevated. Different risk factors do not simply add up but almost multiply. It is therefore important to control your risk factors as good as possible.

The risk factors that add to the total risk of hypertension are:

- Dyslipidemia  
(high LDL cholesterol and/or low HDL cholesterol)
- Diabetes
- Obesity
- Sedentarity
- Smoking
- Family history of cardiovascular disease
- Existing cardiovascular disease
- Age (men > 55 years, women > 65 years)

(Guidelines of the European Society for Cardiology ESC)

Some of these risk factors cannot be modified like the age or the disposition due to family history. Others like dyslipidemia or diabetes often require a drug therapy but many can be influenced with a healthy lifestyle like obesity, smoking and sedentarity.

## Control your risk – reduce your risk factors



### Avoid a chain reaction

Hypertension is among the most frequent diseases in developed countries and cardiovascular disease that can be one of the consequences of hypertension is the leading cause of death. In an ageing population and with other risk factors like obesity and lack of exercise increasing it is a major health concern that is still aggravating. Astonishingly every third person suffering from hypertension does not know about it.

Blood pressure varies throughout the day and depends on physical activity, emotional state and other factors. High blood pressure called hypertension is defined as a resting blood pressure of 140/90 mm Hg or above. Hypertension can occur at any age and independent of the sex. However blood pressure also increases with age. If a person develops a hypertension it normally persists for the rest of the life if it is not treated. Fortunately there are many ways to influence blood pressure to avoid hypertension or to normalise elevated blood pressure levels.

### The ideal blood pressure is below 120/80 mm Hg

If blood pressure is not treated it can cause serious events and it will do so mostly without causing any symptoms that could be seen as warning signals. Nevertheless hypertension damages the blood vessels, overloads the heart and increases the risk for a heart attack or stroke threefold.





## Hypertension can be fatal

### ■ Stroke

Hypertension is the most important risk factor for stroke. The two reasons for a stroke are the rupture (hemorrhagic stroke) and the blockage (ischemic stroke) of a blood vessel in the brain. Hypertension can lead to both types of strokes. The high blood pressure increases the risk of a blood vessel to rupture. If a blood vessel ruptures the blood flows into the brain tissue and damages it (hemorrhagic stroke). High blood pressure also increases atherosclerosis, the formation of cholesterol plaque in the blood vessels. When they rupture, the blood clots and such a thrombus can block a blood vessel. The part of the brain that is not anymore supplied by blood from this vessel will become damaged irreversibly (ischemic stroke).

A stroke can be fatal and it can seriously affect life even if it is non-fatal, leading to handicaps and often a reduced quality of life.

### ■ Heart attack

Hypertension is a major risk factor for heart attacks. Atherosclerosis promoted by hypertension can also affect the blood vessels providing the blood to the heart muscle. If such an artery is blocked by a thrombus the access of the heart muscle to oxygen and nutrients is reduced. This causes angina pectoris, a pain sensation and the feeling of narrowness in the breast area. If the blood vessel is blocked to a larger extent this is called a heart attack. The affected area of the heart muscle will die and will be replaced by scar tissue. If the area is large, the heart attack is fatal. Although the treatment of a heart attack has improved greatly during the last years many still end fatal and non-fatal heart attacks often cause dangerous problems like arrhythmia and heart failure.

### ■ Heart failure

Hypertension is one of the main reasons for heart failure. If the blood pressure rises, the heart has to pump harder to pump the same amount of blood through the body. If the heart has to do this for a prolonged period of time, the efficiency of the heart decreases. The efficiency of the heart can also be reduced by a heart attack because the affected area of the heart does not work properly any more. Heart failure is a serious disease because the organs in the body are not supplied sufficiently with oxygen and nutrients.





## Hypertension can be fatal

### ■ Reduced kidney function

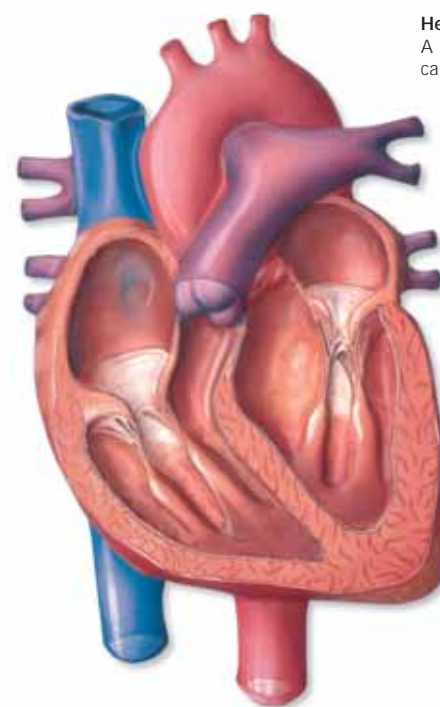
Hypertension can affect the kidney function. High blood pressure destroys the tiny filters in the kidneys that are responsible for cleaning the blood. If too many of the filters are destroyed, the kidneys will do their job less and less efficient until the filtration is not sufficient any longer. This is a very serious condition and might require regular dialysis (washing of the blood with a machine) or the transplantation of a healthy kidney from another person can help.

### ■ Damage to the eyes

Hypertension can damage the blood vessels in the retina of the eyes. The results can be blocked or ruptured blood vessels. Both conditions can seriously reduce the ability to see and can even lead to blindness.

### ■ Damage to the blood vessels

Hypertension can damage all blood vessels. However, the damage done to blood vessels by hypertension is the most serious in the heart and the brain because both have a big impact on the quality of life and are often life threatening. If the legs are affected, walking can cause pain because the leg muscles are not supplied with enough oxygen and nutrients. This is called peripheral arterial disease (PAD). Badly functioning blood vessels can also cause erectile dysfunction.



**Heart attack**  
A blocked artery can cause an infarct.

**The consequences of high blood pressure are serious and can be life threatening. Have your blood pressure checked regularly. An early detection and treatment of the disease can prevent complications.**

## What can be done against hypertension?

**Hypertension is a serious disease that is often diagnosed too late because it does not cause symptoms. It is important to check the blood pressure regularly. A healthy lifestyle can reduce the risk for developing hypertension.**

- Losing excess weight can help to reduce the blood pressure. Less weight less work for the heart.
- Use less salt. Salt causes the body to secrete less water and increases blood pressure.
- Avoid excessive alcohol consumption (one glass per day is OK).
- Physical activity burns calories and helps to strengthen your heart.
- Stop smoking. Smoking increases blood pressure by narrowing the blood vessels. Smoking also increases the risk for atherosclerosis.
- Avoid stress because stress increases blood pressure.

Hypertension must be treated to reduce the risk for serious events. The above listed lifestyle changes cannot only reduce the risk of developing hypertension but can also help to reduce an elevated blood pressure.

## Drug therapy

If lifestyle changes are not enough, your physician will initiate a drug therapy. The goal is to reduce the blood pressure to prevent damages to the body. A drug treatment should always be accompanied by lifestyle measures to reduce the causes of hypertension.

There are different classes of drugs to treat hypertension. Each of them has a different mode of action. Your physician will choose your therapy depending on the amount of blood pressure reduction that is required, the existence of other diseases, age, other drugs that you need to take and the individual reactions to a certain drug.

For many patients more than one drug is required to reach the blood pressure goal. Some drugs already contain a fixed combination of two active ingredients.

### The drug classes to treat hypertension are:

- **Diuretics**  
They lead to an increased secretion of water. They are an old class of drugs that are often used in combination therapies. Many of them are available in fixed combinations with an ACE inhibitor or an ARB.
- **ACE inhibitors**  
Influence the blood pressure by dilating (relaxing) the blood vessels and by reducing the water retention. They also have a positive influence on the heart after a heart attack and can prevent heart failure.





## Drug therapy

### ■ ARB

Work as ACE inhibitors. Their main advantage over the latter is that they do not cause coughing as an undesired effect.

### ■ Beta blockers

Act on the brain, the kidneys, the blood vessels and the heart. They act dilating and reduce water retention. They also decrease the heart frequency. They are often used after a heart attack to reduce the workload for the heart.

### ■ Calcium channel blockers

Reduce the blood pressure by dilating the blood vessels. The larger vessel diameter reduces the blood pressure.

If your physician prescribes you an antihypertensive treatment, you should follow the instructions exactly and take your medication regularly and as long as your physician has recommended. Often it is necessary to take these drugs for the rest of the life. With the therapy it is possible to get high blood pressure under control to avoid the life-threatening complications of hypertension.

After having taken the drugs for a certain period the blood pressure will drop with high probability to normal values. It is important to continue the drug treatment because stopping it will cause the blood pressure to rise quickly again.

Your physician is the only person who can decide if the dose of a drug should be changed or if a treatment should be stopped. Doing so on your own can have serious effects on your health. Stopping a treatment abruptly can cause extremely high blood pressure that can be very dangerous.

If you experience undesired effects or if you want to change your drug regimen, it is therefore important to discuss this with your physician.



Your physician:

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