

Effects of Parkinson's Disease on Blood Pressure

People with Parkinson's disease can experience problems with low blood pressure (hypotension) as a result of the symptoms of Parkinson's and as a side effect of some of the drugs used to treat the condition. This information sheet provides you with facts about the nature of low blood pressure in Parkinson's and gives you some tips to help manage it.

What is blood pressure?

Blood pressure refers to the pressure in the circulatory system of the body. The heart pumps blood, circulating it first through the blood vessels in the body and returning it towards the heart, into the lungs for replenishment with oxygen, and back again to the heart. This pumping mechanism is controlled automatically and blood pressure goes up and down as a normal response to activities of daily living. It will go up in response to stress or physical activities, and go down when a person is resting.

Blood pressure is determined by three main factors:

- The blood pumped out by the heart per minute (called cardiac output) which is the product of the heart rate and blood pumped out with each heart beat (stroke volume);
- The volume of blood in the circulatory system;
- The resistance to blood flow offered by the blood vessels. This is called the peripheral resistance and mainly occurs in the small vessels.

Blood pressure readings are usually given as two numbers. The first number describes the rate the heart is beating when pumping blood out and the second describes the rate the heart is beating when it is at rest. An example of a blood pressure reading is 120 over 70 (written as 120/70). Generally, the normal values for blood pressure are approximately 120/80. However, the variation in blood pressure in one person during the course of a day can be enormous. There can also be great variations in blood pressure from one person to the next. What is 'low blood pressure' to one person may be normal for another.

However, in considering whether a person has abnormally high or low blood pressure (see below), the change in blood pressure and how it affects that person is more important than the actual blood pressure reading. For example, a person with high blood pressure may find their blood pressure drops to a low level when they take tablets to treat it, but their blood pressure may still be higher than a person with normal blood pressure.

What is high blood pressure (hypertension)?

High blood pressure (hypertension) is an extremely common condition. It means that a person's blood pressure is above the normal range expected in a particular age group. High blood pressure can cause conditions such as heart failure and stroke, but controlling high blood pressure can stop their development. Risk factors for high blood pressure include being overweight or eating a poor diet, smoking, age, inherited factors, and medication you are taking.

What is low blood pressure (hypotension)?

Low blood pressure (hypotension) is much less common than high blood pressure. Unlike high blood pressure, there is no generally accepted level of blood pressure to indicate low blood pressure. Clinically significant low blood pressure describes a situation where the blood pressure is low enough to produce symptoms either as a complication of another condition or as a side effect of medication.

These symptoms can occur in emergency situations such as reduction of blood volume through loss of blood or through loss of fluid (dehydration as in severe diarrhoea or vomiting), reduced pumping of the heart (for example in an acute heart attack) or where the capacity of the blood vessels is suddenly increased (like in anaphylactic shock caused by a severe allergic reaction).

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Parkinson's does not generally cause high blood pressure. Many people with Parkinson's, particularly older people, may also have high blood pressure, but it is not directly related to their Parkinson's. Medication to treat high blood pressure may, however, cause problems with low blood pressure and so the dose has to be carefully adjusted by the doctor.

Parkinson's and almost all the drugs used to treat the condition (levodopa and dopamine agonists) can cause low blood pressure which may in turn cause dizziness and even fainting. The most common type experienced by people with Parkinson's is orthostatic or postural hypotension, which occurs only with a change of posture such as moving from a lying to a standing position or from a sitting to a standing position.

What are the symptoms of low blood pressure?

Symptoms are variable but predictable, which is useful for management. They include:

- Dizziness/light-headedness (in the extreme this can result in a fall);
- Changes in vision, such as blurred, tunnel, greying or blacking vision;
- Angina-like pain in the chest;
- Weakness;
- Fatigue;
- Loss of confidence to walk alone or without support;
- Feeling muddled or confused.

These symptoms are most likely to happen when there is an increased demand for blood for activities throughout the day. For instance:

- In the morning, as more urine is passed overnight and the blood volume is lower and as a consequence of lying flat for several hours and the reduction of the effect of gravity on blood pressure;
- After a quick change in position, particularly from a lying down to a sitting or standing position, because the blood regulatory mechanism can't be activated quickly;

- On exertion, as the increased demand for blood from exercising muscles decreases the circulation to the brain;
- After meals, when more blood is needed by the digestive system and the blood supply available to the brain is reduced. Alcohol has a similar effect as it tends to dehydrate the body;
- After inactivity, especially bed rest;
- In the warmth of a centrally heated room, hot bath or summer days. Peripheral circulation (to the fingers and toes) increases due to the dilation (enlarging) of blood vessels in a warm environment, which can cause low blood pressure;
- Sometimes, when constipated, the effort of straining lowers blood pressure. This can also occur when coughing, or if there is any effort required in passing urine. People with Parkinson's can be particularly prone to constipation. See the Parkinson's Association's Information Sheet: "Bladder and Bowel Problems in Parkinson's Disease";
- Illnesses, ranging from a cold to more serious conditions, can cause low blood pressure, often as a result of dehydration. It is important to remember that an increase in symptoms may be a sign of illness;
- Anxiety can cause over-breathing which lowers the blood pressure.

People are more at risk of low blood pressure if they are older, have diabetes, are already taking blood pressure-lowering pills to treat high blood pressure. A male who takes tablets to ease urine flow because of prostate problems (e.g. tamsulosin, indoramin) may also be at greater risk of low blood pressure. The doctor should always look carefully at any other tablets you may be taking for conditions other than Parkinson's.

Is low blood pressure dangerous?

On the whole, the answer is no. Normally, it does not cause major problems, but it can be a hazard because low blood pressure can cause fainting or blackouts, possibility resulting in falls and injuries. Fainting is nature's way of trying to preserve blood flow to the brain. The moment a person who is standing faints because the blood pressure is low, they are protecting their brain, because it is much easier for the heart to pump blood into the brain when the body is horizontal. If a person with a tendency to low blood pressure faints, it

is important to keep them flat and not try to stand them up. The sense of weakness and faintness is very unpleasant. Sometimes the lack of blood reaching the brain can cause mild confusion, which can be frightening, but the confusion should clear when the blood pressure returns to normal.

What can be done medically to help overcome low blood pressure problems?

Postural hypotension can often be reduced by the self-help measures described below. However, medical intervention may be necessary. The first step is to discuss the symptoms with a doctor.

A doctor should measure lying and standing blood pressure before starting treatment with any drug for Parkinson's. Feeling dizzy or light-headed when standing up, or feeling faintish after a heavy meal or exercising may indicate the presence of postural hypotension.

If the dose of the drug to treat Parkinson's is built up gradually, blood pressure is closely monitored and the precautions mentioned in this information sheet (such as getting up slowly) are taken then individuals should not experience any serious consequences from postural hypotension.

It is important to ensure that medication is taken as prescribed. If it does not seem to be working as well as it used to, it may mean that the drugs need to be reviewed.

Postural hypotension alone is not by itself a reason to change drugs, but its presence requires precautions to be taken. In some cases, it is severe enough to warrant the gradual withdrawal of the drug and its substitution with another drug.

If medication is being taken to lower blood pressure, it is advisable to have it checked as this, combined with the effects of Parkinson's, may be making blood pressure too low.

In some people, the postural hypotension can also be controlled by using drugs that increase the blood volume, such as fludrocortisone.

Some people find that wearing support stockings to stimulate the circulation can be helpful. These are usually available in the form of tights or men's socks, either on prescription or over the counter. These can be obtained from a pharmacist.

Some people find putting on support stockings difficult. If feet get swollen during the day, it is best to put the support stockings on before getting out of bed (before the feet have swollen). There are various

items of equipment available to help with dressing and putting on footwear, but we recommend that advice is obtained from an occupational therapist before buying any equipment to ensure that an item is appropriate.

Are there any simple strategies that can be adopted to cope with low blood pressure?

Yes. These include:

- Do not sit in the sun, or any overheated environment, for too long. Try to curtail unnecessary activity when it is too hot, and keep hydrated with extra fluids. Consider using a fan to cool the body in warm environments;
- Try not to sit or stand still for long periods, for example doing the ironing. The length of time varies greatly from person to person. Sit while getting dressed, do tasks sitting down and not all at once. When doing a task that requires standing then move about a little by rocking on the toes and then heels alternately, or change tasks for a while;
- Some dizzy spells can be avoided by taking time to alter positions such as rising from a chair to standing position. Get up slowly from the sitting position, especially after dozing. Do not rush to answer the phone or the doorbell. On rising, do not walk away from the chair straight away. Stand for a while until feeling steady. Before getting out of bed, allow the feet to dangle on the floor for a few minutes before rising. Then rise slowly;
- When bending or reaching, do so slowly, holding on to something if needed;
- If someone has episodes of low blood pressure, it helps to raise the head of the bed so that the person becomes used to the more upright position and experiences less of a postural drop when standing up from the bed. Blocks for the bed legs, a foam wedge or an electric bed raiser can be used to do this. An occupational therapist can advise further;
- Eating small, frequent meals, increasing fluid intake, avoiding caffeine at night and avoiding alcohol may also help. A doctor or dietician can advise whether an increase in dietary salt may also be beneficial;
- Taking some medication on an empty stomach may aggravate the problem, as medication is absorbed more quickly. Be sure to read the instructions carefully;

- Large, heavy hot meals may add to the problem. When we eat, the blood goes from our brain to our stomach to help digest the food, so keep meals small and frequent if feeling faint after eating;
- Recognising what triggers symptoms, and what makes them better or worse, will help manage the problem. It may be helpful to keep a diary of food and symptoms for a few days;
- Exercise can help, for instance leg exercises, flexing the ankle and foot up and down, or squeezing the calf muscle, gentle marching movements, crossing and uncrossing legs. Most of these can be done sitting, standing or lying in bed. A physiotherapist can advise further on exercises and management of falls. See the Parkinson's Association's Information Sheet "Physiotherapy and Parkinson's Disease" for more information on the role of physiotherapists and how to access one;
- If feeling dizzy or faint, sit (preferably with legs raised) or lie down immediately, until the feeling passes. Always take enough time when rising. If symptoms are severe, discuss them further with the doctor. Some people with severe symptoms also find it helpful to use a Derby or shooting stick to sit on. These are devices that look like lightweight walking canes, but can convert to a chair when needed – allowing a person to rest whenever they need to. Sporting shops, especially those that cater for country outdoor pursuits, often sell them;
- Sometimes, taking a small drink of water before getting up can help reduce the effects of blood pressure dropping.

Can low blood pressure affect driving?

Yes, low blood pressure can affect the ability to drive and consequently car insurance. This should be discussed further with a doctor. For general information on driving, see the Parkinson's Association's Information Sheet "Driving and Parkinson's Disease".

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Other Relevant Information Sheets:

G8: Diet and Nutrition in Parkinson's Disease

EX1: Physiotherapy in Parkinson's Disease

NM6: Bladder and Bowel Problems in Parkinson's Disease

DISCLAIMER – The information on these pages is not intended to be taken as advice. No changes to your treatment should be made without prior consultation with your doctor or allied health professional.

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