Stroke Prevention

Avoiding a first or second stroke

The Volunteer STROKE SCHEME

MERCK SHARP & DOHME

A publication of the Volunteer Stroke Scheme, in collaboration with the Neurovascular Clinical Science Unit, Stroke Service, Mater Misericordiae University Hospital, Dublin

Stroke Prevention - Avoiding a First or Second Stroke

Stroke often strikes without warning and can cause major disability or even death. Stroke is the third most common cause of death in Ireland, after heart disease and cancer. It was responsible for over 2,000 deaths in Ireland in 2003.

It is estimated that there are 30,000 people living in Ireland with disability after stroke, such as difficulty walking, problems with language or memory, swallowing problems, or difficulty with washing or dressing.

Most of us know little about the causes of stroke and even less about what can be done to prevent it. The aim of this booklet is to explain the causes and risk factors associated with stroke and the steps that you can take to help prevent you, or your loved ones, having a stroke.

The majority of people survive after their stroke and about two-thirds of survivors will return to live at home. It is important to remember that not all first strokes cause serious disability. Many are minor or warning strokes (TIAs), which are important because they signal that close attention should be paid to prevent a major stroke in the future.

Survivors of a first stroke are at higher risk of a second stroke. Smokers and people with certain medical conditions, such as heart disease, high blood pressure, diabetes, and an irregular heart beat (atrial fibrillation) also have a higher risk of stroke compared to the general population.

What is a stroke?

A stroke is caused by an interruption to the flow of blood to the brain. There are different types of stroke. The main types are:

A. **Blockage of an artery in the brain (ischaemic stroke):** This happens when a clot forms in an artery through which blood flows to the brain (cerebral thrombosis). It starves the brain of blood flow, oxygen, and nutrients, often causing an area of brain to die. This is called a brain infarction. Sometimes the clot forms elsewhere in the body (e.g. the heart) and travels through the blood vessels and lodges in the brain - this is called a cerebral embolism.

B. **Rupture of an artery in the brain (haemorrhagic stroke):** This is a less common type of stroke. It happens either when a blood vessel in the brain bursts causing a blood clot inside the brain, or when a blood vessel on the surface bursts, causing bleeding around the surface of the brain.

Mini-Stroke or TIA

Very small clots, or narrowing of the arteries, can stop the flow of blood for a short time and cause what is sometimes referred to as a mini-stroke or, by the medical term, transient ischaemic attack (TIA). This is a brief disruption in the flow of blood which does not cause disability. But it's important to recognise it and seek medical attention because about a third of those who have had a mini-stroke get a full-blown stroke within five years.

The effects of stroke on the brain:

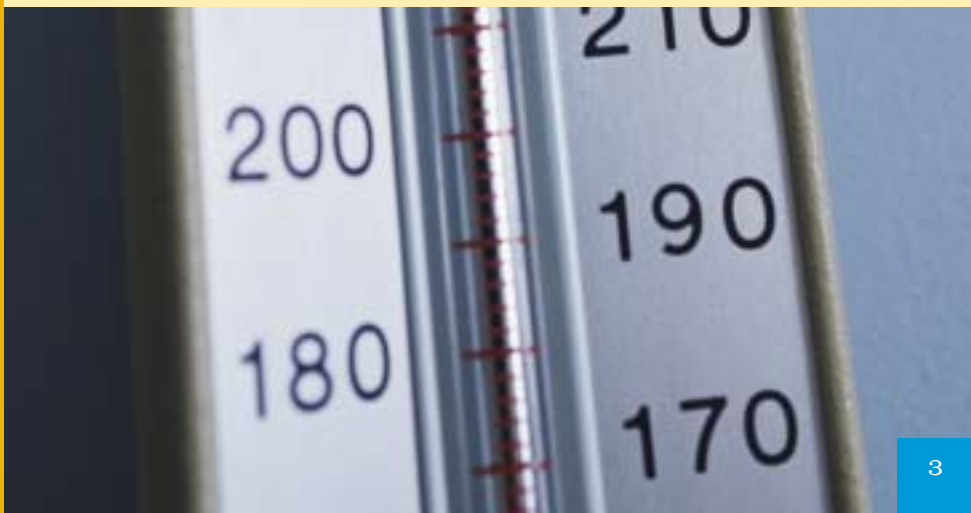
When the brain is deprived of oxygen some cells die, others become damaged. The effects vary widely, depending on what part of the brain and how much brain tissue has been damaged. There may be weakness of an arm or leg, difficulty with sensation, or loss of vision. Other people may develop difficulty with language or concentration, difficulty swallowing, bladder problems, or emotional problems such as depression.

What increases risk?

If you have already had a minor stroke, or have never had a stroke, you can reduce the risk of future stroke by making straightforward lifestyle choices - not smoking, eating a healthy diet, taking regular exercise, and visiting your GP regularly to have your blood pressure and cholesterol checked. You can also act to control medical risk factors like diabetes, high blood pressure, and atrial fibrillation (irregular heart beat).

Characteristics that increase risk of stroke that may be changed or treated:

1. **High blood pressure**
2. **High cholesterol, especially "bad cholesterol" (also called LDL cholesterol)**
3. **Smoking**
4. **Diabetes**
5. **Overweight**
6. **Irregular heartbeat (atrial fibrillation)**
7. **Prior stroke or mini-stroke**



Lowering Risk of Stroke:

1 High Blood Pressure:

High blood pressure (medical term "hypertension") is a common and treatable risk factor for stroke and heart disease. People with high blood pressure are four times more likely to have a stroke.

High blood pressure puts strain on blood vessels (medical term "arteries") especially in the brain and heart. It can damage the lining of brain arteries and block the flow of blood, or it may cause blood vessels to rupture, causing bleeding into the brain. High blood pressure also increases the risk of developing heart disease.

Because high blood pressure rarely causes symptoms, the only way to know if yours is at a healthy level is to have it measured regularly.

Understanding your blood pressure measurements:

Your blood pressure is first measured as your heart pumps out blood (top number or "systolic pressure") and then when it relaxes (bottom number or "diastolic pressure"). For example, a person might have a systolic blood pressure of 120 and diastolic blood pressure of 80.

This is written as: **120 / 80**

Your blood pressure varies naturally as you go though a normal day. It goes down when you are relaxed and up when you are physically active or stressed. It also tends to rise with age.

What should my blood pressure be?

You doctor will advise you of what level you should be aiming for. That said, expert guidelines indicate that almost all people should aim to have their upper ("systolic") blood pressure figure less than 140 and lower figure less than 90[1].

If you have diabetes, expert guidelines recommend that your blood pressure upper figure be less than 130 and lower figure be less than 80[1].

Recommended Blood Pressure Levels[1]:

Diabetics: At least, lower than **130 / 80**
General population: At least, lower than **140 / 90**
If tolerated, lower blood pressures are acceptable and may be beneficial

1 European Society of Hypertension-European Society of Cardiology guidelines for the management of arterial hypertension. *J Hypertens* 2003;21:1011-1053.

How do I lower my blood pressure?

Lifestyle changes:

Changes in lifestyle can have an important impact in lowering blood pressure, especially if it is only marginally raised. Examples include:

1. Dietary changes: Eating a diet low in salt, with emphasis on fruits and vegetables, limiting fat and carbohydrate intake, and confining alcohol to one drink daily may lower pressure.
2. Weight reduction: Reducing weight by 10kg may lower pressure
3. Exercise: Regular exercise may reduce pressure.

Medication:

If you already have high blood pressure, or lifestyle changes have not reduced it to normal levels, medication is the next step. Medical treatment for blood pressure is very effective, but it is important to remember that often more than one medicine is needed to achieve your target blood pressure level.

There are six main groups of blood pressure-lowering drugs: diuretics, beta blockers, ACE inhibitors, calcium channel blockers, alpha blockers, and angiotensin receptor antagonists (AIIA's). They work in different ways and not all are suitable for people with certain medical conditions. Side effects can vary—what suits one person may not suit another. If you need to take one or more blood pressure medications, your doctor will advise you which approach is most suitable for you.

2 Cholesterol:

"Good and bad" cholesterol:

Blood cholesterol is a combination of "bad" cholesterol (medical term "LDL cholesterol") and "good" cholesterol (medical term "HDL cholesterol"). LDL cholesterol is harmful, because it represents fat in the blood which is deposited in blood vessels, which in turn may lead to blockage. HDL cholesterol is fat in the blood which is being carried away from blood vessels for elimination by the liver, helping keep blood vessels open.

Cholesterol and stroke:

High blood cholesterol raises the risk of heart disease and stroke. This is mainly due to the bad effects of LDL cholesterol. Reducing LDL cholesterol lowers the risk of stroke and heart disease by about one-third, in stroke survivors and people who have never had a stroke.

What should my cholesterol level be?

If you or your loved one have had a stroke, expert guidelines recommend that the LDL cholesterol level should be less than 2.5 mmol/L as the best approach to prevent a second stroke or heart attack[2].

If you have not had a stroke, but have risk factors such as diabetes, prior heart disease or disease of the arteries of the legs, guidelines also recommend a fasting LDL cholesterol of less than 2.5 mmol/L[2].

If you are a smoker, have high blood pressure, or a family history of early heart disease, LDL cholesterol should be less than 3 mmol/L*. If you have several of these factors together, a lower level may be recommended[2].

Recommended Cholesterol Levels[2]:

Previous Stroke, Heart Disease, Artery disease of legs, Diabetes:
Total cholesterol less than 4.5
Bad (LDL) cholesterol less than 2.5

Smoker, High blood pressure, or Family history of early stroke/heart disease:
Total cholesterol less than 5
Bad (LDL) cholesterol less than 3

2 European guidelines on cardiovascular disease prevention in clinical practice. *Eur J Cardiovasc Prev Rehabil* 2003;10(Suppl 1):S1-78.

(The figures above refer to blood levels taken after an overnight fast.)

How do I lower my cholesterol?

Lifestyle changes:

The first step is a healthy lifestyle, with good diet and regular exercise. In general, cutting down on fatty foods and eating more fruit, vegetables, fibre, wholegrain cereals and oily fish will often lower LDL cholesterol, and increase HDL ("good") cholesterol. Exercising (eg. walking, swimming, cycling, dancing) for 20-30 minutes every day is beneficial. If your cholesterol is still high assessment by a dietician may be helpful.

Medication:

Many medications are available to lower cholesterol. "Statins" are often used to lower LDL-cholesterol and prevent stroke and heart disease. If you are on a statin and you still don't reach your target level a cholesterol absorption inhibitor may be added. Your doctor will advise you whether they are suitable for you.

* Rounded figure, after conversion from mg/dL.

3 Smoking:

Smoking increases the risk of stroke and heart disease especially in younger adults (under 65 years). Smokers who quit smoking begin to reduce this extra risk almost immediately.

Many supports are available to smokers who want to quit. Smoking cessation groups are now available throughout towns and cities in Ireland. Nicotine replacement treatments (eg. patch, gum, inhaler) and other medicines (eg. buproprion) are available to help reduce cravings in the early stages. Your doctor or pharmacist will advise you about these options if you are planning to quit. For advice, help and support on giving up smoking call The National Smokers Quitline on 1850 201203.

4 Diabetes:

Diabetes is associated with increased risk of stroke and heart disease. This is seen at all ages, but especially in the under-65s. Close attention to blood sugar levels and factors such as blood pressure, cholesterol, quitting smoking, diet, and exercise are recommended to reduce these risks.

5 Irregular Heart Beat:

An irregular heart-beat ("atrial fibrillation") is common in people over 60. It usually does not cause obvious symptoms, although occasionally may cause a feeling of a skipped or fluttering heartbeat, chest pain, or shortness of breath. It is usually detected at a routine medical check-up with your doctor.

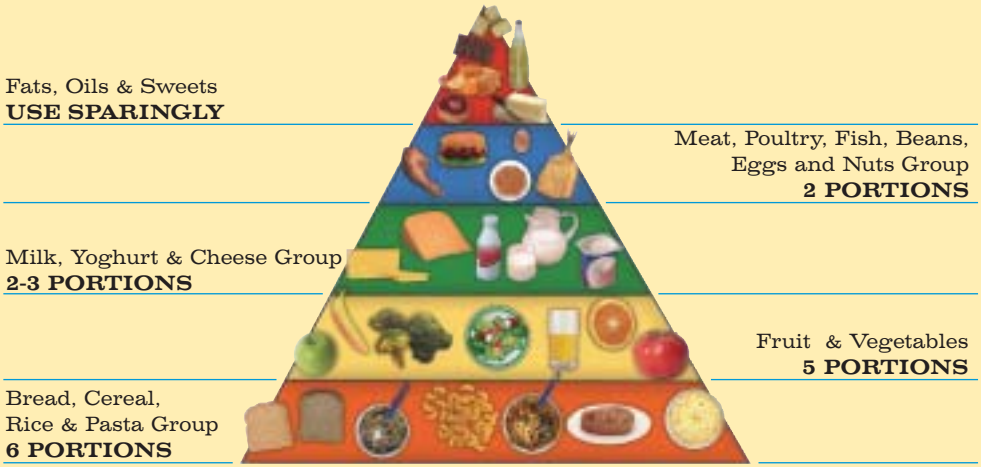
It is important because it can lead to stroke, especially in the over-60s. These strokes can often be prevented by a blood-thinning medicine called warfarin. Not everybody is suitable to take warfarin because it needs to be measured by frequent blood tests and may cause various types of bleeding as a side-effect. If you or a loved one have atrial fibrillation, you should discuss with your doctor whether you need warfarin for stroke prevention.

6 Eating the Right Foods:

Food nourishes us and gives us pleasure; the key to healthy, happy eating is to eat a wide variety of foods in a balanced way. Eating more foods that promote good health will suppress your desire for foods that, in excess, damage your health. Use the food pyramid (see below) to plan healthy, pleasurable food choices.

- At the top are high-fat foods. Go easy on these and watch out for hidden fats in processed foods – biscuits, bars, fast foods and ready meals with high levels of saturated fats, salt or sugar.
- Next are high protein foods. You need two portions a day of meat, poultry, fish, or eggs or peas and beans.
- Dairy produce keeps our bones strong. Try for three portions of milk, cheese or yoghurt a day. If you have high cholesterol or are overweight, choose a low-fat version.
- Fruit and vegetables are packed with vitamins, minerals and fibre; try for five portions a day. Include six portions of potatoes, pasta, rice, bread and cereals, wholegrain where possible. These naturally low-fat, high-fibre foods provide lots of energy and suppress the desire to snack on unhealthy foods.

Food Pyramid



7 Don’t Forget to Exercise:

The benefits of regular physical activity are many; a brisk walk will melt away tension, ease aching muscles and joints and make you more alert. Over time it helps maintain a healthy weight, promotes good sleep, strengthens muscles and bones and gives you a zest for life. Weight-bearing exercise helps prevent osteoporosis, keeps your heart muscles strong and lowers blood pressure, reducing risk of stroke and heart disease.

Choose activities you enjoy and are more likely to keep up and take it slowly, 30 minutes moderate activity every day keeps most adults fit. If you have been inactive for some time it is wise to have a check-up with your doctor before you start to exercise and always stop if you feel unwell or in pain.

8 Mini-Stroke or TIA

Risk of future stroke:

A previous stroke or mini-stroke is the most important factor associated with a higher risk of future stroke. The good news is that this risk can be greatly lowered by appropriate treatment and attention to blood pressure, smoking, cholesterol, and other factors discussed in this leaflet.

Initial assessment:

If you have had symptoms suggestive of stroke or mini-stroke, the first step is to visit your doctor for assessment. Depending on your symptoms, your doctor may refer you for medical investigations such as a brain scan, blood tests, or tests to examine your heart or neck blood vessels.

Symptoms of stroke and mini-stroke (TIA):

Sudden onset of

- numbness or weakness in the face, arm, or leg, especially on one side of the body
- confusion or difficulty in talking or understanding speech
- trouble seeing in one or both eyes
- difficulty walking
- dizziness
- loss of balance and coordination

Blood thinning medicines:

If your stroke has been caused by blockage of a blood vessel in the brain, most people will be prescribed an anti-clotting ("antithrombotic") medicine, which acts by thinning the blood.

These medicines have been proven to reduce the risk of second stroke or heart disease in patients with first stroke. Because they act by making the blood less prone to clot, all may cause different types of bleeding as side effects. Other side effects are specific to each tablet, and will be explained by your doctor.

For further information on any of the issues discussed in this booklet please talk to your GP or visit the Volunteer Stroke Scheme website on www.strokescheme.ie

References available on request.

When you visit your GP record your Blood Pressure and Cholesterol Measurements below:

Date	Blood Pressure	Cholesterol	
		LDL	Total
	/		
	/		
	/		
	/		
	/		
	/		
	/		
	/		
	/		
	/		

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Alternatively you can contact:

The Volunteer Stroke Scheme
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The Volunteer Stroke Scheme was established in 1983 to support stroke patients and their families. The VSS now has four Dublin based clubs where people meet weekly and participate in therapeutic activities as well as physiotherapy sessions.

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