Vascular dementia is the second most common type of dementia (after Alzheimer’s disease), affecting around 150,000 people in the UK. The word ‘dementia’ describes a set of symptoms that can include memory loss and difficulties with thinking, problem-solving or language. In vascular dementia, these symptoms occur when certain parts of the brain are damaged because of problems with blood supply.

This factsheet outlines the causes, types and symptoms of vascular dementia. It looks at how the condition is diagnosed and the factors that can put someone at risk of developing it. It also describes some treatments and sources of support.

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150,000

There are 150,000 people in the UK with vascular dementia, making it the second most common type.

Causes

Vascular dementia is caused by reduced blood supply to certain parts of the brain due to diseased blood vessels.

To stay healthy and function properly, brain cells need a constant supply of oxygen and nutrients. These are present in the blood, and are pumped to the brain through a network of vessels called the ‘vascular system’. If blood vessels in the brain’s vascular system are damaged by disease, they can gradually become blocked, stiff and twisted, or they can leak. This means they are not able to supply enough blood to keep the cells around them healthy. Eventually, these brain cells become so starved of oxygen and nutrients that they die.

Over time, as more brain cells die and are not replaced, problems begin to occur with memory, thinking or reasoning – together known as ‘cognition’. When cognitive problems caused by vascular disease begin to affect everyday tasks, the condition is known as ‘vascular dementia’.
Types of vascular dementia

There are several types of vascular dementia – explained below. The type of vascular dementia someone has is determined by the underlying cause and the area of the brain that is affected. The various types of vascular dementia have different symptoms. They also progress at different rates.

Subcortical vascular dementia

Subcortical vascular dementia is thought to be the most common type of vascular dementia. It is caused by diseases of the very small blood vessels that lie deep in the brain (this is called small vessel disease). Over time, these blood vessels can develop thick walls and become stiff and twisted, so blood cannot travel through them easily. The brain tissue supplied by these blood vessels becomes starved of oxygen and nutrients, so eventually it dies and the cells are lost.

Vascular dementia caused by small vessel disease happens much more slowly and gradually than other types of vascular dementia. The damage happens in a region of the brain called the ‘subcortex’ which is very important for controlling movement and emotions. This means that these aspects of thinking are particularly affected. This is explained further under ‘Symptoms’ on page 5.

Stroke-related dementia

Vascular dementia can be caused by a stroke, which happens when the blood supply to a part of the brain is suddenly cut off. In most strokes, a blood vessel in the brain becomes narrowed and is blocked by a clot. The clot may have formed in the brain or, if someone has heart disease, it may have formed in the heart and been carried to the brain. Some strokes are more severe than others, depending on where the blocked vessel is and for how long the blood supply is interrupted (this can be permanent or temporary).
Dementia after a major stroke (‘post-stroke dementia’)
A major stroke occurs when the blood flow in a large vessel in the brain is suddenly and permanently cut off. This usually happens when the vessel is blocked by a clot. Sometimes, it is because the vessel bursts and bleeds into the brain, but this is much less common. About one person in every five who have had a major stroke goes on to develop vascular dementia within six months.

Someone who has already had a major stroke is also at greater risk of having another one. This is because the health problems that led to their original stroke (such as high blood pressure or heart problems) can cause another clot to happen. The more strokes that someone has, the more of their brain function they will lose overall. This means that they are more likely to develop dementia.

Single-infarct and multi-infarct dementia
Single or multi-infarct dementia is caused by one or more smaller strokes. These strokes happen when a large or medium-sized blood vessel is blocked by a clot. The stroke may be so small that there are no noticeable symptoms. Sometimes the blockage in the blood vessel can clear itself. This means that the symptoms of the stroke (such as weakness down one side of the body, or slurred speech) may only be temporary – lasting perhaps a few minutes. If symptoms last for less than 24 hours this is known as a ‘mini-stroke’ or ‘transient ischaemic attack’ (TIA). A TIA may sometimes be dismissed mistakenly as a ‘funny turn’.

If the blood supply is interrupted for more than a few minutes, the stroke will lead to the death of a small area of tissue in the brain. This area is known as an ‘infarct’. Sometimes just one infarct forms in an important part of the brain and this causes dementia (known as single-infarct dementia). Much more often, a series of small strokes over a period of weeks or months lead to a number of infarcts spread around the brain. Dementia in these cases is caused by the total damage of all the infarcts combined. This is known as ‘multi-infarct dementia’.
Mixed dementia
At least one in every ten people with dementia is diagnosed with mixed dementia. This is when their dementia is caused by more than one underlying condition. Most often it is a combination of Alzheimer’s disease and vascular disease which causes mixed dementia. For example, someone with existing Alzheimer’s disease may have a stroke or a TIA and the combined effects cause them to develop dementia.

The symptoms of mixed dementia vary, depending on the amount of each type of disease – either Alzheimer’s or vascular. If Alzheimer’s disease is the biggest cause, then a person’s symptoms are likely to be more like the symptoms of Alzheimer’s disease. For example, they may have problems with memory loss, language, concentrating, planning and judging distances (for more information about Alzheimer’s disease, see factsheet 401, What is Alzheimer’s disease?).

If a person’s dementia is caused mostly by vascular disease then their symptoms will be more like those of someone with vascular dementia. These symptoms are explained further in the next section.

Symptoms
The way someone is affected by vascular dementia varies. The symptoms will depend on the underlying causes of the vascular dementia, the areas of the brain which are affected and just because everybody is different. Symptoms may develop suddenly (for example, after a stroke) or more gradually (such as with small vessel disease).

Some of the symptoms of vascular dementia can be similar to those of other types of dementia, particularly memory problems, taking longer to process thoughts and changes in behaviour. However, they may not appear in exactly the same ways as with other types of dementia. For example, memory loss is very common in the early stages of Alzheimer’s disease, but is not usually the main early symptom of vascular dementia.
What is vascular dementia?

The most common cognitive symptoms during the early stages of vascular dementia are:

- problems with planning or organising, making decisions or solving problems
- difficulties following a series of steps (such as when cooking a meal)
- slower speed of thought
- problems concentrating, including short periods of sudden confusion.

A person in the early stages of vascular dementia may also have difficulties with:

- their memory – they may have problems recalling recent events (although this may be mild)
- their language – for example their speech may become less fluent.

As well as these cognitive symptoms, it is common for someone with early vascular dementia to experience mood changes such as apathy, depression or anxiety. Depression is a particularly common symptom, partly because someone may be aware of the difficulties their condition is causing. A person with vascular dementia may also become generally more emotional. They may be prone to mood swings and being unusually tearful or happy.

Other symptoms vary between the different types of vascular dementia. Symptoms for post-stroke vascular dementia can depend on which part of the brain has been affected. If a certain part of the brain is affected someone might have paralysis or weakness of a limb. If a different part of the brain is damaged they may have problems with vision or speech. With rehabilitation, symptoms can get a little better or stabilise for a time, especially in the first six months after the stroke.
The symptoms for subcortical vascular dementia are typically more consistent than other types of vascular dementia. Early loss of bladder control is common, which causes problems with continence. As the damage to the brain occurs in the subcortex, movement and emotion can be particularly affected. This means that someone with subcortical vascular dementia may also have mild weakness on one side of their body, or become less steady when walking and more prone to falls. Other symptoms may include clumsiness, lack of facial expression and problems pronouncing words.

**Progression and later stages**

Vascular dementia is ‘progressive’, which means that it will continue to get worse with time. However, the speed and pattern of this progression can vary greatly. For example, stroke-related dementia often progresses in a ‘stepped’ way, with long periods when symptoms are stable and then periods when symptoms rapidly get worse. This is because each additional stroke causes further damage to the brain. Subcortical vascular dementia can occasionally follow this stepped progression. More often, however, symptoms get worse gradually as the area of affected tissue slowly expands.

Over time, a person with vascular dementia is likely to develop more severe confusion or disorientation, and further problems with reasoning and communication. Memory loss will also become worse, for example with recent events or names. They are also likely to need more support with day-to-day activities such as cooking or cleaning.

As vascular dementia progresses, many people also develop behaviours that seem unusual or out of character. They may become more irritable, agitated, aggressive or have a disturbed sleep pattern. Someone may also act in ways which could be considered rude or inappropriate. This is often because they have an unmet need which they are trying to communicate. For example they may be hungry, thirsty or under-stimulated. For more information on this see factsheet 525, *Changes in behaviour.*
Occasionally a person with vascular dementia will strongly believe things that are not true (delusions) or – less often – sense things that are not really there (hallucinations). Common examples include believing that someone has stolen from them, or believing that someone who has died is still alive and will be coming home soon. These behaviours can be distressing, and a challenge for everybody involved.

For more information and advice on dealing with this see factsheet 527, *Sight, perception and hallucinations in dementia*.

Someone experiencing the later stages of vascular dementia may become much less aware of what is happening around them. They may have difficulties walking or eating without help, and may become increasingly frail. Eventually, they will need help with all their daily activities.

It is very difficult to predict how long somebody with vascular dementia will live. This is because everybody’s experience of dementia is different. However, someone with vascular dementia will probably not live as long as they would do if they didn’t have the condition. This is largely because someone with vascular dementia is more likely to have other serious health conditions such as heart disease or high blood pressure. The severity of these other health conditions is a large factor in how long somebody will live. Generally they are more likely to die from having a stroke or heart attack related to these health conditions than from the dementia itself.

For more information on the later stages of dementia, see factsheet 417, *The later stages of dementia* and factsheet 458, *The progression of Alzheimer’s disease and other dementias*. 
Who gets vascular dementia?

There are a number of things that can put someone at risk of developing vascular dementia. These are called risk factors. Most risk factors for vascular dementia are the same things that contribute to other cardiovascular problems, such as heart disease, high blood pressure or poor circulation in the hands and feet.

Some risk factors, such as diet and physical activity, can be managed to limit a person’s likelihood of developing dementia during later life. Other risk factors, such as age, ethnicity and family history, cannot.

Age is the biggest risk factor for vascular dementia. Once a person gets to 65 years of age, their risk of developing the condition doubles approximately every five years. Vascular dementia under the age of 65 is uncommon and affects fewer than 8,000 people in the UK. Men are at slightly higher risk of developing vascular dementia than women.

People who have problems with their heart and vascular system (such as high blood pressure or diabetes) are at particularly high risk of developing vascular dementia. This is because these conditions increase the chances of a clot or bleed occurring in the blood vessels in the brain. A person who has had a stroke, or who has diabetes or heart disease, is approximately twice as likely to develop vascular dementia as someone who has not had these conditions.

The biggest risk factors for cardiovascular disease are:

- being overweight (especially during middle age)
- smoking
- drinking too much alcohol
- having high cholesterol
- not doing enough physical activity.
The list below describes some things people can do to reduce their risk of developing cardiovascular disease, and therefore also vascular dementia.

- Have regular health check-ups with the GP (this is especially important for people over the age of 40).

- Keep as physically active as possible. The amount of activity will be different for different people, and it can be best to build up gradually. If possible, aim for either 150 minutes of moderate aerobic activity (such as brisk walking, riding a bike or pushing a lawnmower) or 75 minutes of vigorous aerobic activity (such as jogging, fast swimming or riding a bike up a hill) each week.

- Do activities that require strength and work different muscles twice a week, such as digging in the garden, or exercises such as push-ups and sit-ups. Some activities such as football, running, netball or circuit training are both physical exercise and work muscles around the body.

- Eat a healthy balanced diet. A healthy balanced diet should contain lots of fruits and vegetables each day, as well as foods which are high in healthy unsaturated fats (rather than animal fats). The amount of added sugar and salt in food should be limited.

- Avoid smoking cigarettes or other tobacco products. GPs can offer advice to help stop smoking.

- Drink alcohol only in moderation. If drinking alcohol, beer and wine are generally preferable over spirits.

Poor sleep quality may also be a risk factor for vascular dementia. Sleep apnoea, a condition where breathing stops for a few seconds or minutes during sleep, is associated with a greater chance of having small brain clots that go unnoticed. These clots increase the risk of developing vascular dementia. GPs can give advice and information for anyone worried they may have sleep apnoea.
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Someone can reduce their risk of dementia by trying to manage these conditions as well as possible. This could include:

- taking prescribed medicines (even if they feel well)
- following professional advice
- making positive lifestyle changes such as those listed opposite.

Some people who have had a relative with dementia are concerned that they, or their family, are at greater risk. Overall, the impact of these genes in the most common types of vascular dementia is small. This means that there is a fairly low risk of inheriting vascular dementia. However, researchers think there are some genetic factors which may lead to the common types of vascular dementia. These are generally linked to underlying diseases such as high blood pressure, diabetes or heart disease. If someone's parents have had these diseases then they are more likely to develop them when they get to the same age. For more information see factsheet 405, Genetics of dementia.

People from some ethnic groups are more likely to develop cardiovascular disease and vascular dementia than others. Those from an Indian, Bangladeshi, Pakistani or Sri Lankan background living in the UK have higher rates of stroke, diabetes and heart disease than white Europeans. For people of African-Caribbean descent, their risk of diabetes and stroke (but not heart disease) is also higher. Although some of these differences in risk may be inherited, the majority appears to be due to cultural differences in lifestyle factors such as diet, smoking and physical activity.

There is also good evidence that staying mentally and socially active throughout life may reduce dementia risk. Research has shown that poor mental health (such as a history of depression) may increase a person’s risk of vascular dementia. Anyone who thinks they may have depression – for example, if they have had a persistently low mood for several weeks or more – should seek support from their GP.

For more information see factsheet 450, Risk factors for dementia and booklet 35, Dementia: Reducing your risk.
What is vascular dementia?

Diagnosis

Anyone who is concerned that they may have dementia should seek help from their GP. If someone does have dementia, an early diagnosis has many benefits, such as:

- providing an explanation for the symptoms
- allowing access to treatment, advice and support
- being able to prepare for the future and plan ahead
- being able to start treatments and lifestyle changes. These can prevent further strokes, which could otherwise accelerate the progression of the underlying disease.

There is no single test for vascular dementia. The GP will first need to rule out conditions that can have similar symptoms, such as depression. Symptoms could also be caused by infections, thyroid problems, vitamin deficiencies (which can be diagnosed from a blood test), and side effects of medication.

When someone visits the GP with concerns that they may have dementia, the doctor will talk to them about their medical history (for example high blood pressure or diabetes). This will include questions about dementia or cardiovascular disease in close family members. The doctor will probably do a physical examination and will ask about how their symptoms are currently affecting their life. There may also be some tests of mental abilities. It is often helpful if a close friend or family member also goes to these medical appointments. They may be able to describe subtle changes that the person being assessed has not noticed themselves, such as starting to struggle with daily activities.

The GP may feel able to make a diagnosis of vascular dementia at this stage. If not, they will generally make a referral to a specialist health professional to continue the assessment. This might be an old-age psychiatrist (who specialises in the mental health of older people) based in a memory service, or a geriatrician (who specialises in the healthcare of older people) in a hospital.
The specialist will look at the symptoms of the person being assessed in more detail. They may be able to identify the underlying diseases causing dementia by the way the symptoms developed – either in steps or more gradually. There will also be a wider range of tests to assess their thinking and mental abilities. In someone with vascular dementia, these tests might show slower speed of thought and difficulties thinking things through, which are often more common than memory loss.

A person suspected of having vascular dementia will usually have a brain scan to look for any changes that have taken place in the brain. A scan may rule out a tumour or build-up of fluid inside the brain. These can have symptoms similar to those of vascular dementia.

There are different types of brain scans which can be used in the assessment process for dementia. A CT (computerised tomography) scan may show evidence of a recent stroke. An MRI (magnetic resonance imaging) scan may show changes in the brain, such as infarcts or damage to the small vessels of the subcortical region. A brain scan can be very helpful in diagnosing the specific type of dementia that someone has – for example, vascular dementia, Alzheimer’s disease or mixed dementia.

It may be clear from assessment that somebody’s symptoms have been caused by vascular disease in the brain. For example, they may have developed within a few months of a stroke, or a brain scan may show a pattern of disease that explains the dementia symptoms. If this is the case, a diagnosis of vascular dementia will be made. If someone is given a diagnosis of dementia, this should be communicated clearly to them, and usually also to those closest to them, along with a discussion about the next steps.

For more information on the assessment process, and how a diagnosis is made, see factsheet 426, Assessment and diagnosis.
Treatment and support

There is currently no cure for vascular dementia: the brain damage that causes it cannot be reversed with drugs or other treatments. However, there is a lot that can be done to enable someone to live well with the condition. This will probably involve a combination of drug and non-drug treatments, as well as social support and activities.

Everyone should have a chance to talk to a health or social care professional about their dementia diagnosis. This could be a psychiatrist or mental health nurse, a clinical psychologist, occupational therapist or GP. Information on what support is available and where to go for further advice can be very useful for helping someone to stay physically and mentally well.

Control of cardiovascular disease

If the underlying cardiovascular diseases that have caused vascular dementia can be controlled, it may be possible to slow down the progression of the dementia. For example, after someone has had a stroke or TIA, treatment of high blood pressure can reduce the risk of further stroke and dementia. For stroke-related dementia in particular, effective treatment can prolong the periods when the symptoms don’t get significantly worse.

In most cases, a person with vascular dementia will already be on medications to treat the underlying cardiovascular disease. These can include tablets to reduce blood pressure, prevent blood clots and lower cholesterol. If someone has a diagnosed heart condition or diabetes they will also be taking medicines for these. It is important that they continue taking any medications and attend regular check-ups as recommended by a doctor. It is also important that they tell their GP if they are experiencing unpleasant side effects from their medication. Often, the GP can suggest another drug which is just as effective but doesn’t cause side effects.
Someone with vascular dementia will also be advised to adopt a healthier lifestyle, particularly to increase their levels of physical activity and, if they are a smoker, to quit. They should try to eat a healthy, balanced diet that contains lots of different foods – particularly fruit, vegetables and oily fish. They will also be advised to limit the amount of salt used in cooking and at the table, as this increases blood pressure. Maintaining a healthy weight and keeping within recommended levels of alcohol will also help. The GP should be able to offer advice in all these areas.

You can also find more information in factsheets 511, Eating and drinking, and 529, Physical activity and exercise.

**Other treatment and support**

Support for vascular dementia includes treatment for symptoms, help coping with lost abilities, and support to keep up enjoyable activities. For someone who has had a stroke or has physical difficulties, treatment will also include rehabilitation.

The drugs that are routinely prescribed for Alzheimer’s disease do not have benefits for vascular dementia, and so are not recommended for it. These drugs may, however, be prescribed to treat mixed dementia (Alzheimer’s disease and vascular dementia).

If someone is depressed or anxious, talking therapies (such as cognitive behavioural therapy) or drug treatments may also be tried. Counselling can also help people adjust to the emotional difficulties associated with having dementia.
Someone with vascular dementia can remain independent and cope with their cognitive symptoms. As their symptoms progress, they may need more support. Someone with memory problems may find it helpful to do the following things:

- Break complex tasks down into smaller steps. This should help to make them easier to follow.
- Make sure their environment is not too busy or noisy. This should make it easier to concentrate.
- Have a regular routine – this can help to cope better with daily tasks.
- Use pill boxes or automated dispensers to keep track of when medication should be taken.
- Use personal electronic devices (such as smartphones and tablets) to set reminders for daily tasks.

For more information see factsheet 526, *Coping with memory loss*.

It is important that a person with any type of dementia stays active and continues to do things they enjoy. Keeping mentally active (cognitive stimulation) is known to help with memory and communication. Life story work, in which someone shares their life experiences and makes a personal record, may help with memory, mood and wellbeing. Many people enjoy more general reminiscence activities as their dementia progresses.

People who have physical difficulties, for example after a stroke, will usually benefit from rehabilitation. This could mean working with a physiotherapist (especially for help with weakness, coordination, movement and balance), occupational therapist (for everyday activities) or speech and language therapist (for all aspects of communication).

The details of the support that is available, and how people are referred, can vary around the country. GPs or memory clinics should be able to provide information about what is available in the local area.
As vascular dementia progresses, changes in behaviour – such as agitation or aggression – become more likely. These are often a sign of distress. There are many potential reasons why someone might be in distress. For example, they might be in pain, they may have misunderstood something or someone, or they may be frustrated or under-stimulated. If possible, try to work out the cause behind their behaviour. General non-drug approaches (such as social interaction) often help and should generally be tried before any additional drugs are considered – particularly antipsychotics.

These behaviours can also be distressing for anyone caring for someone with dementia. Support for carers is particularly important at such times. For more information see factsheet 523, **Carers – looking after yourself**.
Other useful organisations

Age UK
0800 678 1602 (advice line, 8am–7pm every day)
0800 169 8787 (general enquiries)
contact@ageuk.org.uk
www.ageuk.org.uk

A charity which provides information and advice for older people in the UK. They can offer support to find services in your area.

British Heart Foundation
0300 330 3311 (Heart Helpline, 9am–5pm Monday–Friday)
supporterservices@bhf.org.uk
www.bhf.org.uk

The UK’s leading heart charity and the biggest funder of heart research in the UK.

Diabetes UK
0345 123 2399 (Careline, 9am–6pm Monday–Friday)
helpline@diabetes.org.uk
www.diabetes.org.uk

The UK’s leading diabetes charity. They care for, connect with and campaign on behalf of all people affected by and at risk of diabetes in local communities across the UK.

NHS Health Check
www.nhs.uk/conditions/nhs-health-check

The Health Check is a mid-life check-up for those aged 40–74. At the check, a person’s blood pressure, cholesterol, and body mass index will be measured and results given, along with advice and support. This could reduce the risk of diabetes, heart or kidney disease, stroke and dementia.
What is vascular dementia?

Stroke Association
0303 3033 100 (Stroke Helpline, 9am–5pm Monday, Thursday and Friday, 8am–6pm Tuesday and Wednesday, and 10am–1pm Saturday)
helpline@stroke.org.uk
www.stroke.org.uk

The leading charity in the UK changing the world for people affected by stroke. For more about the Act FAST campaign to recognise the symptoms of a stroke visit www.stroke.org.uk/fast
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