

Most people are aware that a stroke can cause physical effects, but stroke can also affect you in ways which are harder to see. After a stroke, you may have difficulties with your mental processes (cognition), like your memory or how you understand the world around you. This factsheet explains the cognitive problems that can happen and suggests some tips to help you cope.

What are cognitive problems?

Every day, your brain has to **organise** and **process information** in many different ways, so you can carry out routine tasks and activities. When a stroke happens, a number of your **mental processes** can be affected, from the way you **think** to your **memory**, **attention**, **perception** and **understanding**.

After a stroke, many people have **cognitive problems** and it's thought that **some** cognitive **loss** probably happens in **most stroke survivors**. As different parts of the **brain** control the **functions** of the **body**, problems after a stroke vary from person to person, depending on the **area** of the **brain** affected, the **extent** of the **damage** and how quickly any treatment is given.

Some of the most common areas of cognition that stroke can affect are:

- memory
- attention
- perception
- executive functioning
- social cognition
- communication (see our factsheet *F3 Communication problems after stroke*)

Memory

Memory is your ability to **take in**, **store** and **retrieve** information. Memory is **not one single process** that either works or doesn't – instead there are several different types or areas of your memory.

We **store** different types of information in different ways. **Visual memory** (information like faces and pictures) is usually more affected after a stroke in the right half of the brain. **Verbal** or **language memory** (information such as names, stories, and conversations) tends to be affected after a stroke in the left half of the brain.

Memory can also be divided into **layers** based on **how long** we remember information for. Your **immediate** or **working memory** stores things that have happened in the last few seconds. Your **short term memory** stores things from the recent past, while your **long term memory** stores things from the distant past.

Finally, memory also works in two **directions**. **Anterograde memory** acts **forwards**, for example remembering to do something (like take a tablet) or learning new information. **Retrograde** memory acts **backwards**, recalling past information.

How can stroke affect memory?

Problems with memory are **very common** following a **stroke**, with the majority of people being affected to some degree. After a stroke, it's possible you may have a **mixture of problems** affecting the **stores, layers and direction** of your memory. This is because memory involves lots of **different brain functions** controlled by several different areas of the brain. **Damage** to any of these areas is **likely** to have an **impact** on your memory.

Although **memory** can be affected in a **number of ways**, after a stroke it is perhaps most **common** for **short term memory problems** to arise. Remembering **new information** can also be very difficult for many people, and the **speed** at which people use their memory may appear **slower than usual**. Having some memory problems after a stroke is **not the same** as having **dementia**. Dementia is a combination of specific cognitive problems, including memory loss (see our factsheet *F29 Dementia after stroke*).

Memory problems may not be as **severe** as you think. Sometimes other **health conditions** (such as high blood pressure) **contribute** to these problems. Once they are treated you may feel better. **Depression** and **tiredness** are both common after stroke and can also lead to cognitive problems. You may find it **helps** to **rest** and to see your **GP** if you are feeling low or **depressed**. **Stress** can also make things more difficult so finding ways to **relax** will help.

Exercising has been shown to **help** people with their **recovery** by **increasing their energy**, improving their **mood** and helping them **sleep better**. See our factsheets *F10 Psychological effects of stroke*, *F18 Tiredness after stroke* and *R7 Exercise and stroke* for more information.

Attention

We are constantly receiving information and signals from all around us through our senses, and our '**attention**' is our ability to **select** and **focus** on one piece of **information** from the many possibilities we are offered from the world around us. To do this we have to **ignore** or **filter** out some of the information we receive, for example if you are talking to someone in a restaurant and need to focus on the person you are talking to, you will need to filter out the music playing, and other people's conversations around you.

As well as focusing on the world around us, our attention can also be directed **internally** towards our thoughts or memories. Sometimes we **choose to attend** to something, for example, listening to a conversation, while at other times our **attention** may be drawn to something **involuntarily**, for example, jumping when we hear a loud noise.

How can a stroke affect attention?

For many aspects of daily living, such as **driving**, filling in **paperwork** and **cooking**, we need to be able to **concentrate**. This means giving something our **undivided attention**. Memory problems can cause attention problems, and likewise, attention problems can impact on memory.

After a stroke, you may have **difficulty** in **selecting** what requires **attention** and what does not, and you could become **easily distracted**. You might feel as though you '**switch off**' from conversations or events happening around you.

You might also find it hard to **focus** on the task at hand or to **filter** out **distracting information**, like background noise. Your ability to **multi-task** could be affected too,

for example, you might need to avoid talking when driving in heavy traffic in order to concentrate on the road.

You might also find your **attention** is focused **internally** on **feelings** and **sensations** like fear or pain, making it hard to respond to things going on around you. If you have poor attention, you might experience **irritability**, **memory problems**, fatigue, impulsiveness and difficulty in **planning ahead**.

Perception

Perception is the way you understand, or 'perceive' the world around you. For this to happen, your brain receives **information** from your **senses**, then **organises** it in a way that you can understand.

After a stroke, problems can arise at different **stages** of your perception – from **picking up information** in the first place (for example if you are experiencing reduced sensation) through to **interpreting** that information or **accessing memory** about it (for example when you see a face but don't recognise who it is). We receive **information** about our environment through our **senses** – sight, taste, sound, smell and touch.

To **understand** the information from our senses, we **attend** to it (spend time thinking about it), and use our personal **memories** and our **knowledge** of the world to form our own **perception**.

How can stroke affect perception?

Lack of awareness: many people who have had a **stroke** have a lack of awareness of one side of their body, resulting in them struggling to **wash** or **dress** properly on that side. This is caused by the brain having **difficulty processing** and **responding** to sensory **information** from that area of the

body. Some people find that they don't **recognise** a paralysed limb as their own.

Some people have **difficulty responding correctly** to things on one side of space. This is known as **hemi-inattention**. If you are experiencing this, you find that you **bump** into **objects** more than before.

Recognising information: some perceptual problems are more **complex** than others. **Agnosia**, for example, can affect your **recognition** of different sorts of information like familiar **sights**, **sounds** and **words**.

In some cases you might have trouble **recognising** familiar **faces**, possibly even your own – this is known as **prosopagnosia**. Or you might find it **difficult** to **recognise sounds**, like a telephone ringing – this is known as **auditory agnosia**.

As well as agnosia, there are other **perceptual problems** that can arise. Some people have **right/left confusion**. If you have this and you are asked to move your right leg, you may move your left leg and believe it is the right one.

Some people do not recognise or **deny** all or part of their condition (**anosognosia**). If you have been told you are doing this, or if you know there is a problem with your senses and your movement, but it doesn't concern you, you could cause yourself **harm**, especially if you **refuse help** and attempt to carry out tasks that you may not be able to do.

Apraxia: If you are having trouble with **planning** and **carrying out** a series of **actions** and yet you have no **weakness** or **sensory loss**, it is likely that you have **apraxia** (also known as **dyspraxia**). This can make everyday tasks, like pouring drinks from a bottle into a cup, very difficult.

A large number of perceptual problems involve **vision**. For more information, see our factsheet *F37 Visual problems after stroke*.

Other cognitive problems

Decision-making (executive functioning)

This includes **putting ideas together**, **thinking** under pressure, concentrating, **planning**, making **judgments**, forming concepts and reaching a decision.

A stroke can affect decision-making and planning by **slowing down** the speed it takes to think about and **process information**. It can also be difficult to switch from one train of thought to another, or to **hold in mind a concept** while trying to plan. For some people it can be hard to **problem solve** or correct an error and rethink an idea.

Social cognition

Social cognition is our **understanding** of **social situations**, for example being able to see **someone else's point of view**, or being **patient** and knowing when to talk and when to listen.

When social cognition is affected after a stroke, it becomes **difficult** for you to **understand** how you should **behave socially**. You may act **impulsively** (quickly and without thinking things through) or show a **lack of concern** for another person's situation because you haven't understood how they are feeling.

What help is available for cognitive problems after stroke?

Some cognitive problems **resolve** themselves in **time**, particularly **visuospatial problems** (your visual perception of where things are in your surrounding environment often

improves gradually over a few months). However, other problems may be more **persistent**, recovering a little but not fully.

Unfortunately there is **no cure** for cognitive problems, so finding **practical ways of coping** is important. An **occupational therapist (OT)** can help you with this. If your problems are **severe**, you may be referred to a **clinical neuropsychologist**, who can identify your **specific problems** and suggest practical ways to cope with them.

What tests are involved?

After a stroke you should have a **routine test** to assess your cognition. There are several **different** tests available and they are all quite **brief** (about ten minutes). The most common types of test are the Mini Mental State Examination (MMSE) and the Short Orientation-memory-concentration test. An **OT** or **speech and language therapist (SLT)** will carry out these tests by having a relaxed conversation with you.

They will be **checking** a number of things, for example **orientation** – do you know what time and day it is and where you are? They will also briefly check your **attention**, **memory**, **language** and your awareness of yourself in the environment around you (your '**spatial awareness**' skills). More **detailed tests** may be carried out **later** if your rehabilitation is not going as well as hoped for, so that medical staff can plan how **best** to **help** you.

If you have **severe memory problems** your **GP** may refer you to an outpatients' **memory clinic** or arrange for a **specialist memory nurse** to visit you at home. However, these services are not available in all areas.

Although a discharge **plan** should have been drawn up for you in hospital to **assess**

your **safety**, you may also need other **formal assessments**. These should be carried out **before** you can return to activities that are **cognitively demanding**, like **driving**.

How can I help myself?

Talking to people about **how you feel** may help with unpleasant emotions brought about by cognitive difficulties. These might be **friends** or **family**, or even a **qualified counsellor** with specialist knowledge. It is normal to feel anxious, upset and even angry after a stroke.

Meeting new people in a similar situation can also be a great way to **gain support** and **increase your confidence**. Support groups such as **stroke clubs** are an excellent place to start. Contact us for details of stroke clubs in your area.

Tips for coping with cognitive problems

Tips for memory problems

There are a **number** of things you can do to **cope** with **memory loss**.

- Break tasks down into **simple steps**.
- Try to keep to a **routine** as far as possible, doing certain tasks at **set times** of the day or on set days of the **week**.
- Use **prompts** to **jog** your **memory**. For example, leave letters that need posting beside the front door so you see them when you go out.
- Leave **notes** to yourself in appropriate places around the house. For example, stick a **large** piece of **paper** on the front door to **remind** you to turn the cooker off and lock the door whenever you go out.

- Keep a **page-a-day diary** or **calendar** and note the time of even the smallest task, for example when you turn on the oven, feed the cat, or phone someone.
- Try to make a habit of always putting things away in the **same place**. **Label objects** like cupboards and jars, to remind yourself where they go.
- Wear your **glasses** on a chain around your neck.
- Use a **pillbox** with separated compartments for each day.
- If something needs doing, make a **note** of it or do it **immediately**.
- **Programme** useful **telephone numbers** into your phone or leave them nearby where you can easily find them.
- Use **repetition** to help remember things, for example if you meet a new person, repeat their name to yourself several times.
- Play **memory games** to practise using your memory. Try card games, identifying familiar people in photographs or hiding household objects then finding them again.
- Arrange to have a **newspaper delivered daily** to help remember which day it is.
- Set up **direct debits** for bills to avoid forgetting to pay them.
- Use a **tape recorder** or dictaphone.
- Put your **name** on your **things** in case you accidentally leave them somewhere.
- Use **labels** with the **date** that you **open food** if you are storing for future use.

- If you are caring for somebody with memory problems and they ask the same question repeatedly, try putting a **'dry wipe' board** in a prominent place and write the question and the answer on it.

Tips for attention problems

- Ask anyone who is giving you information or asking you to do something to **keep it simple**.
- **Minimise noise** and other background distractions.
- While listening to a TV or radio programme, **make notes** on the key points. This may help with concentrating and selecting.
- **Pace yourself**. These problems can be made worse by stress or fatigue. Do not try to do too much at one time.
- **Repeat back** things you have been told in your **own words**.

Tips for perception problems

If you have trouble recognising familiar faces, possibly even your own, try the following.

- **Explain** to as many people as possible your difficulties and what they mean. People will be less likely to feel offended and **more likely to help**.
- Use other **identifying features** such as hair, clothes, age, body-shape, gender, voice and topics of conversation to help recognise people.
- **Practise often** – even using **photos** and studying identifying features can help.

If you are having difficulties with everyday tasks due to a **lack of awareness** of one

side of your body, try the following tips.

- **Remind yourself verbally** to check that you have washed or dressed **both** sides of your body.
- Use a **check list** or a **picture** of your **body** and tick off the limbs that you have washed and dressed as you go.
- Try to **use** your **affected side** as much as possible as this may help you to improve awareness of that side.

If you have difficulty accepting you have a disability, try the following tips.

- Although difficult, it may help if you are told **frequently** by as many people as possible that there is a problem.
- **Take** part in **therapy**, even if you don't want to, as this will help you to recover and reduce the likelihood of harm.
- Try to **remember** that people have your **best interests** at heart. Ask people you trust to explain what is happening.

If you find it difficult to **recognise common sounds**, try the following tips.

- Use **visual clues** to help you respond to common household noises, for example use a telephone or door bell with a **flashing light** system.
- Use your **sense of touch** to respond to alarms, for example use a vibrating watch or alarm clock.
- Think about your **safety**. Use a smoke alarm with flashing lights and a **vibration alert system** that you can place under your pillow or mattress.

If you are experiencing right/left confusion, it may help to try the following tips.

- Take your **time** – don't rush things.
- Put your **hands** out in **front** of you with your thumbs at a right angle to your fingers. Your **left** fingers and thumb will form the **letter L**.
- **Wear** a **ring** on your **right hand** to help to remind you that 'r' is for 'ring' and 'right'.

If you are having trouble with **planning** and **carrying out** a series of **actions**, try the following tips.

- Seek an **assessment** from an **occupational therapist (OT)** or a **physiotherapist** – your GP can refer you to see one. OTs and physiotherapists can suggest tools that may help you, like adapted scissors or a **computer**.
- Lay out **objects** you use regularly such as your clothes, in an **orderly way**. If everything is **jumbled** together you may find it much **harder** to identify the individual items you need.
- **Avoid** carrying out **actions** when you are tired.

If you are having **difficulty responding correctly** to things around you, for example bumping into objects, try the following tips.

- Make sure the **lighting** in your room is **good**. This will make it easier to see things around you.
- Make sure your room is tidy and clutter-free.
- Ask an **OT** to **assess** your living space and to make it as **safe** as possible for you to move around in.

Tips for other cognitive problems

- Practise doing crosswords, sudokus and other **puzzles** as often as possible
- **Read** poems and newspapers regularly.
- **Write down** plans and refer to them often.
- If you don't understand someone, **ask** them to **repeat** themselves or explain what they are asking of you.
- If you have a mobile phone or computer, use its **organisational tools** – like task lists, calendars, reminders and alarms.
- If you have been told you are acting impulsively, try to **think before you act** or ask someone else for advice.
- **Listen** to your friends and family – if they have concerns about your behaviour, remember they want what is best for you.
- If you have been told that you aren't listening to or understanding others, ask people to be more **direct** when they are explaining something to you.
- Ask people to tell you **gently** when you have misunderstood them or have not shown empathy. Being aware of these difficulties may help you to overcome them with time and practice.

Useful resources

The Brain Injury Workbook

By Trevor Powell and Kit Malia.

From **Headway** (see *Useful organisations*) This is a book of stimulating activities, primarily for professionals to use with their clients but also for people with cognitive problems, their carers or relatives. Price £29.95.

Coping with memory problems

By L Clare and B A Wilson

This book explains memory problems, coping strategies and roles of the specialists. 1997, price £14.50, Available from Pearson, online at www.psychcorp.co.uk or by telephone: 0845 6308 888

LifeBook

By **Age UK** (see *Useful organisations*).

This is a free book that you can use to record all sorts of important information about your life to help you feel organised and to help you find information easily.

Coping with memory problems after brain injury – practical strategies

By **Headway** (see *Useful organisations*).

Booklet explaining practical ways to manage memory problems, with a list of websites that supply memory aids.

Useful organisations

All organisations listed are UK wide unless otherwise stated.

Age UK

207–221 Pentonville Road,
London N1 9UZ

Tel: 0800 1696 565

Website: www.ageuk.org.uk

Age Cymru: tel: 0800 169 65 65,

website: www.agecymru.org.uk

Age NI: tel: 0808 808 7575, website:

www.geni.org.uk

Age Scotland: tel: 0845 125 9732,

website: www.agescotland.org.uk

Provides information on stroke, depression and dementia

Alzheimer's Society

Devon House,
58 St Katharine's Way,
London E1W 1JX
Tel: 0845 3000 336,

Website: www.alzheimers.org.uk

Give information about memory loss, memory aids, and the mini-mental state examination (MMSE).

Brain & Spine Foundation

3.36 Canterbury Court,

Kennington Park,

1–3 Brixton Road,

London, SW9 6DE

Telephone: 0808 808 1000,

Website: www.brainandspine.org.uk

Provides information about stroke and memory problems Their helpline is run by neuroscience nurses and other health professionals.

Headway – the brain injury association

Bradbury House,

190 Bagnall Road,

Old Basford,

Nottingham,

Nottinghamshire NG6 8SF

Tel: 0808 800 2244

Website: www.headway.org.uk

Provides information about memory problems, cognition and decision making

Glossary of terms

Agnosia = loss of the ability to recognise familiar sensory information

Anosognosia = denial, or lack of knowledge of a disability

Anterograde = moving forward

Apraxia = trouble planning and carrying out a series of actions with no weakness or sensory loss

Attention = the ability to select and focus on one piece of information out of several

Auditory agnosia = inability to recognise familiar sounds

Cognition = the mental processes needed to carry out everyday tasks

Dyspraxia = (see apraxia)

Executive functioning = the ability to make decisions

Hemi-inattention = lack of perception of one side of the body or the space on that side of the body

Neglect = (see hemi-inattention)

Perception = taking in and being aware of information

Prosopagnosia = inability to recognise familiar faces

Retrograde = moving backwards

Visuospatial = visual perception of spatial relationships among objects

Disclaimer: The Stroke Association provides the details of other organisations for information only. Inclusion in this factsheet does not constitute a recommendation or endorsement.

For further information, phone the Stroke Helpline on 0303 3033 100, email info@stroke.org.uk or visit our website www.stroke.org.uk
If you are unhappy about any aspect of The Stroke Association, please make your views known to us immediately. We will happily discuss any issues and how they can best be resolved.

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For references used, visit www.stroke.org.uk/information/our_publications

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