

The Brain, Brain Health and Dementia

A Short Guide



DEMENTIA SERVICES
INFORMATION AND
DEVELOPMENT CENTRE

*promoting excellence
in dementia care*

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‘Never trust anything that can think for itself
if you can’t see where it keeps its brain’.

J.K. Rowling

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Introduction



As our population ages, more young people will come into contact with people living with dementia in their families, friends and communities and sometimes it can be difficult for young people to know how to interact with people living with dementia.

The Brain, Brain Health and Dementia - A Short Guide is a dementia awareness booklet developed by the Dementia Services Information and Development Centre. It provides an opportunity for young people to learn about the brain, memory, brain health and dementia. By providing young people with the opportunity to learn about dementia we are not only contributing to building a dementia friendly generation, we are also supporting the wider aim of building dementia friendly communities in Ireland.

The target audience for this booklet is young people, however the information may also be relevant for adults including parents, grandparents and other family members.

The Brain

Dr Gerald Edelman, who won the Nobel Prize in Physiology and Medicine in 1972, once stated, 'every human brain is unique'. It is involved in everything you do, how you think, how you act, how you get along with other people; it is your organ of personality and judgement and it works seamlessly every day.



Your brain is more powerful, more complex and much smarter than any computer ever built, and it has more connections than there are stars in the universe. It deals with hundreds of messages every day from the world around you and also from your body, and it tells each part of your body what to do. Your brain thinks, remembers, solves problems and coordinates all actions at the same time, even when you're asleep.

Your brain sits in your skull at the top of your spinal cord. It is wrapped in three layers of tissue and floats in a special shock-proof fluid to prevent it from getting bumped on the inside of your skull as your body moves around.

The adult brain weighs about 1.5kg and is about 2% of the total body weight. The average human brain is 140mm wide, 167mm long and 93mm high.

The brain has three main parts:

- 1 The cerebrum** has two parts – the left and the right cerebral hemispheres. The cerebrum is the biggest part of your brain and controls voluntary movements. Without it, you would not be able to run or play football.
- 2 The cerebellum** is much smaller than the cerebrum and controls balance, movement and coordination. So, when you're balancing on one foot, it's your cerebellum that's helping you to do that.
- 3 The brain stem** connects your brain to your spinal cord and controls the automatic actions of your body such as breathing and all the other functions that you need to stay alive and kicking.

Brain lobes

The cerebral cortex covers both of your brain hemispheres and is divided into four lobes called the **parietal lobe**, **frontal lobe**, **temporal lobe** and **occipital lobe**. Each cerebral hemisphere is divided into these four lobes by sulci and gyri. The sulci or fissures are grooves and the gyri are the bumps that can be seen on the surface of your brain.

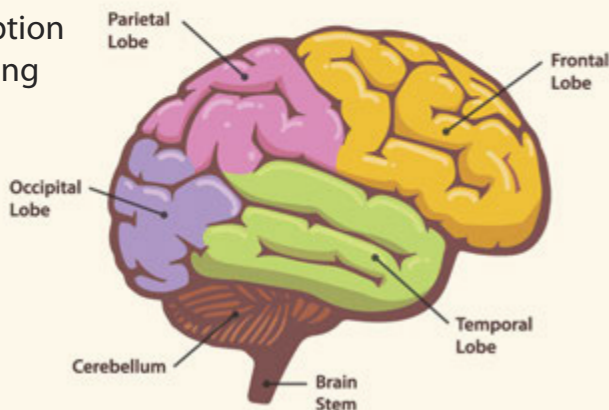
Where are my brain lobes?

Frontal lobes: Place your hands on the front part of your head. This is your frontal lobe and it occupies one-third of your entire brain. It's involved in complex tasks, such as planning, reasoning and managing attention.

Temporal lobes: Place your hands over your ears and towards your eyebrows. This is your temporal lobe. The temporal lobes are involved in several functions, including memory, speech, visual and auditory perception and emotional responses.

Parietal lobes: Place your hands on the middle of your head. This is your parietal lobe. The parietal lobes process sensory and spatial information and are also involved in cognition and speech.

Occipital lobes: Place your hands at the back of your head. This is your occipital lobe. The occipital lobes receive and make sense of visual information; they are also involved in colour perception and recognising moving objects.

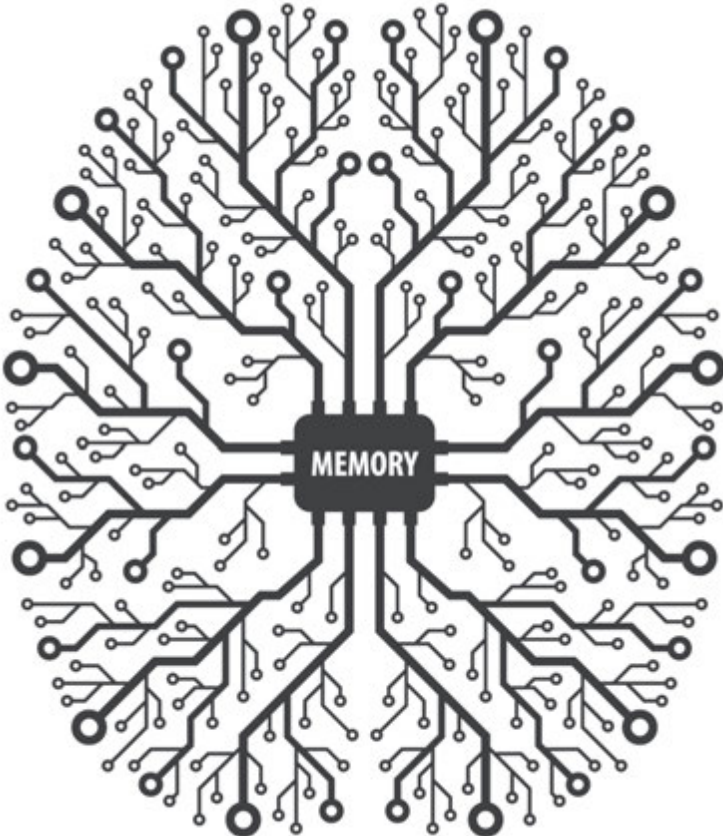


THE BRAIN

What is memory?

Your memory is like a computer database. Much like a database, your memory processes, saves and finds what you enter into it.

Your memory stores facts, sounds, tastes, smells, what you see, your emotions and personal memories, for example, your first day at school.



THE BRAIN

Your memory systems

Short-term memory

Short-term memory is your brain's ability to process and remember information at the same time. It only holds a very small amount of information and for a short period of time.

Short-term memory often becomes impaired or doesn't function as it should for people who are living with dementia. Finding their way home or remembering names can be difficult as these tasks are controlled by our short-term memory.

Long-term memory

Long-term memory is like the archives of your computer where you file memories or information away to be retrieved later.

Events that happened a long time ago are often easier to retrieve because your memory has been rehearsing these memories and playing them back for many years. Long-term memory is the memory store people living with dementia have the most access to and that is why they can remember events from the past very well.

Brain Health

You might be a legal adult at 18, but your brain is not fully developed until your mid-twenties and, it is important that you use this to your advantage and engage in healthy brain behaviours.

We can, no matter what age we are, have a healthier brain if we engage in behaviours that are brain-friendly, such as exercise, new learning, remaining social active and having a healthier diet.



Dementia risk

Brain health is also important in the new science of dementia prevention. A number of risk factors have been identified that may increase our chances of developing dementia. Some of these risk factors have a strong associated risk such as age and genetics, while others, like aluminium pots and pans, are weaker.

BRAIN HEALTH

According to recent research, there are changes we can make to our lifestyles at any age, which might have the potential to reduce our risk of developing Alzheimer's disease by up to 30% (Norton et al., 2014). These include reducing high blood pressure or hypertension, keeping a healthy weight, eating a healthy diet, engaging in new learning, not smoking and exercising for a minimum of 150 minutes per week.

Brain plasticity

Brain plasticity, also called neuroplasticity, refers to the brain's ability to change throughout life. The human brain has an extraordinary ability to reshape itself by forming and strengthening new connections between neurons. Every time we learn a new skill, for example, learning a sport or learning a new fact, our brain changes.

Research tells us that the brain never stops learning, so no matter what age you are, it is never too late to engage in new learning.

Don't get stuck in a brain rut, challenge your brain. The more brain connections you have, the stronger your brain will be. Your brain will be fitter, happier and healthier and will be able to look after you when you are older and may even protect you against developing dementia.

Information, opportunities and resources



Hello Brain

Hello Brain is funded by the European Commission to promote brain health research and healthy ageing. Hello Brain provides user-friendly information about how to keep your brain healthy.

For more information about Hello Brain, please see:

- Website: <http://www.hellobrain.eu/en>

The Dementia Services Information and Development Centre

The Dementia Services Information and Development Centre (DSIDC) is a national centre of Excellence located on the 6th floor of the Mercers Institute for Successful Ageing in St James's Hospital.

For more information on brain health and dementia risk reduction please see:

- Website: <http://www.dementia.ie/information/brain-health-and-dementia-risk-reduction>

What is Dementia?

Dementia is not a mental illness nor is it contagious; it is an umbrella term that describes a group of conditions that damage a person's brain.

Do all older people get dementia?

No, dementia is not a normal part of growing old, so not everybody will get dementia. However, the older you are, the higher chance you have of developing dementia.

Is there a cure for dementia?

At the moment there is no cure and no vaccination against dementia although there are scientists and researchers around the world working very hard to try to find a cure.

The Dementia Discovery Fund was established in 2015 and some of the most influential pharmaceutical companies like GlaxoSmithKline, Johnson & Johnson and Pfizer are cooperating to try to find a cure by 2025.

WHAT IS DEMENTIA?

How many people in Ireland live with dementia?

In Ireland, there are an estimated 55,000 people living with dementia, and this is expected to rise to 94,000 by 2031 and 152,000 by 2046 (Pierce et al., 2014).



WHAT IS DEMENTIA?

I've heard young people can have dementia too, is this true?

Yes, this is true, but young onset dementia is quite rare.

In Ireland, there are an estimated 4,000 people living with dementia who are aged under 65.

I've heard a lot about Alzheimer's disease; is it dementia too?

The most common type of dementia is Alzheimer's disease, and over 50% of people living with dementia have Alzheimer's disease.

What exactly causes Alzheimer's disease is still a puzzle waiting to be solved. We know that it mostly affects people aged over 65 years old, but genetics, lifestyle and environment also have a role to play.

WHAT IS DEMENTIA?

Are all dementias Alzheimer's disease?

While Alzheimer's disease is the most well-known and by far the most common type of dementia, it is not the only one. There are over 100 different types of dementia, including vascular dementia where the brain is damaged because of a stroke or a number of smaller strokes. Other less common forms of dementia include Lewy body dementia where abnormal structures develop in brain cells; and frontotemporal dementia where the frontal and temporal parts of the brain are damaged.

All of these different types of dementia will affect people in a different way, so it's important to remember that every person is unique.



WHAT IS DEMENTIA?

What is it like for people who live with dementia?

People with dementia are the same as you and I, they may be a little older than you and their brain may not work as well as it once did, but they are normal people who also have good and bad days just like you do.

People living with dementia can still do lots of things; they may still be able to work, drive, cook, clean and look after themselves, especially in the early stages of the condition. Dementia can affect people's memory, language and behaviour. Let's take a look at how dementia might affect some of these areas.



WHAT IS DEMENTIA?

Memory

The reason why some people living with dementia find it difficult to remember your name, or what day it is, is because dementia affects short-term memory.

Think of a hole in your coat pocket; each time you put something in there, like your keys or mobile phone, it just falls out again. That is how dementia affects your short-term memory. No matter how much information a person takes in during the day, or how often a family member reminds the person about it, the information just goes right through the holes in their brain and they just cannot remember it when they need to.

The person's memory for everyday events may be a little foggy but their memory for events that happened a long time ago is often very good and it is really interesting to listen to their stories from the past.

WHAT IS DEMENTIA?

What you can do to help

Take photographs of you and your relative and make a photograph album for them of all the good times you shared together. You could also include photographs of the past in order to prompt conversation. These are activities the entire family can get involved in.

You could use memory aids such as post-it notes, phone reminders, checklists and calendars. All of these will help the person to remember messages or appointments they have throughout the day.



WHAT IS DEMENTIA?

Language

People living with a dementia can sometimes have problems following conversations. They might forget certain words they would like to use or they may mix up the meaning of words. They might also repeat themselves quite a lot and this often happens because the person has a memory impairment and they just can't remember what they said previously.

All of these situations are quite common, but it doesn't mean you should stop having these conversations – they might just be a little different from now on. Here are some tips to help you.

What you can do to help

- Speak slowly and carefully
- Use plain language
- Limit distractions – so, turn off the TV/radio when having a conversation
- Discuss one topic at a time
- Be patient and allow the person time to speak
- Don't give complicated instructions
- Repeat what you've said if necessary

WHAT IS DEMENTIA?

Behaviour

If you have a close relative who has dementia and he/she forgets your name or shouts at you or behaves in a strange way, it doesn't mean they love you any less or that you are responsible, it's just the way their dementia is affecting their brain.

Sometimes the person might find it difficult to control their emotions and their mood might change, so they might cry or become upset when there may not be any particular reason for this. Sometimes people with dementia can feel very scared, overwhelmed or tired and this can manifest in lots of unusual behaviours.

What you can do to help

We all have good and bad days, but for a person living with dementia, sometimes their bad days are really bad days and their behaviours might reflect that. If they are having a bad day, you might ask them if they would like to go for a walk or watch their favourite movie, listen to their favourite music or simply just to have a chat.

If you feel sad, worried or upset about anything we've talked about so far, talk to your parents, a relative or a close friend who you know will understand about how you are feeling, it is completely normal to feel like this. What's happening to the person with dementia is not your fault and, while you will not

WHAT IS DEMENTIA?

be able to cure the person with dementia, there are lots of things that you can do to help.

Human rights and the voice of the person living with dementia

People living with dementia have the same human rights as every other citizen but they are often treated unfairly and may not be treated with dignity and respect. Around the world, people living with dementia are involved in promoting awareness of dementia, their human rights and influencing policy.



Information, opportunities and resources



The Alzheimer Society of Ireland

The Alzheimer Society of Ireland is a registered charity that supports people living with dementia and their families by providing support services such as respite care, day care centres, advocacy and family carer training. It also operates the Alzheimer National Helpline, which is an information service for people who would like to know more about dementia and what services and supports are available in their community.

- Helpline: 1800 341 341
- Website: <http://www.alzheimer.ie>
- Address: National Office, Temple Road, Blackrock, Co. Dublin



The Dementia Services Information and Development Centre

The Dementia Services Information and Development Centre (DSIDC) is a national centre of excellence, located on the 6th floor of the Mercers Institute for Successful Ageing in St James's Hospital. It is a national centre that provides education and training for both healthcare professionals and family carers, undertakes psychosocial research and also offers an information and consultancy service.

If you would like more information about The Dementia Services Information and Development Centre or to visit our Education Centre, please see:

- Website: <https://www.dementia.ie>
- Phone: 01 416 2035
- Email: dsidc@stjames.ie



The Alzheimer Café

The Alzheimer Café provides opportunities for people with dementia and their families to come together in a relaxed and informal atmosphere for tea, coffee, cake and a short educational talk. The service is provided free of charge and there are now lots of Alzheimer Cafés right around the country.

- › Website: <http://www.alzheimercafe.ie>

HSE Understand Together

Understand Together is one of the campaigns that will implement the National Dementia Strategy. The aim of the campaign is to increase awareness, knowledge, and understanding about dementia and to help make society more inclusive for people living with dementia.

If you would like more information about the work being undertaken by Understand Together, please see:

- › Website: <http://www.understandtogether.ie>



The Irish Dementia Working Group

The Irish Dementia Working Group is a group of people living with dementia who work to raise awareness about dementia and advocate for the rights of all those affected by dementia. Since the group was founded in 2013, they have spoken both in Ireland and in Europe and they are also represented on the EU Working Group of People with Dementia.

If you would like more information about the Irish Dementia Working Group, please see:

- Website: <https://www.alzheimer.ie/Get-Involved/Campaigning/Advocacy.aspx>
- Phone: 01 207 3813

Summary

The information in this booklet is aimed at helping young people to understand the brain and how it works, to understand what dementia is and the role some lifestyle factors might play in increasing the risk of developing dementia later in life.

The booklet has also been written to help younger people to positively interact with people living with dementia either in their families or in their local community. Information is also provided in the booklet on opportunities, supports and resources available on dementia in their communities.

We hope the information provided will help to contribute to creating a more dementia friendly community in Ireland and will help to build a dementia-friendly generation - a generation that is more aware of dementia and more supportive of people living with dementia in Ireland.

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