

# The Brain, Brain Health and Dementia

## A Short Guide





# Contents

---

<b>Introduction</b>	4
<b>1 The Brain</b>	5
<b>2 Brain Health</b>	10
<b>3 What is Dementia?</b>	13
<b>Summary and References</b>	27

---

The Dementia Services Information and Development Centre,  
6th Floor, Mercer's Institute for Successful Ageing (MISA),  
St James's Hospital, James's Street,  
Dublin 8, D08 E9P6

[www.dementia.ie](http://www.dementia.ie)

© 2022 Dementia Services Information & Development Centre  
First edition published 2017  
Second edition published 2022

Original design: Identikit Design Consultants, Dublin

Printing: Murphy Print and Design, Killarney, Co. Kerry

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior permission of the publisher.

### **Photo credits**

Almay, iStock photo

## Acknowledgements

---

Thank you to all those who provided such valuable advice for the original resource book 'The Brain from the Fantastic to the Forgetful' which is summarised in this booklet.

# Introduction

---



Almost one in three young people knows somebody with dementia (ASI, 2022) and as our population ages, more young people will be affected by dementia in their families, friendships and communities.

*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 creating a dementia inclusive 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 thousands 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-absorbing 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, for example, run or play sport.
- 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.

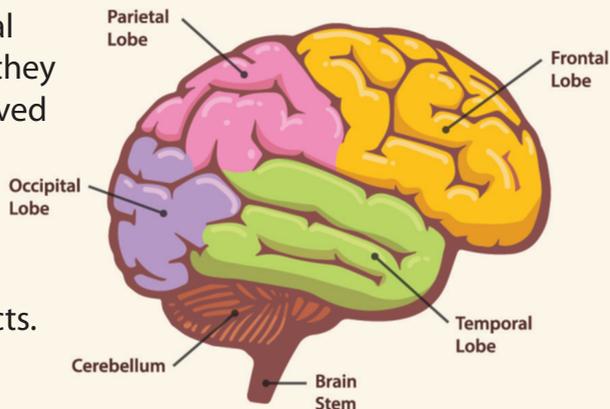
## Where are my brain lobes?

**Frontal lobes:** Place your hands on the front part of your head. These are your frontal lobes and they occupy one-third of your entire brain. They are involved in complex tasks, such as planning, reasoning and managing attention.

**Temporal lobes:** Place your hands over your ears and towards your eyebrows. These are your temporal lobes. 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. These are your parietal lobes. 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. These are your occipital lobes. The occipital lobes receive and make sense of visual information; they are also involved in colour perception and recognising moving objects.



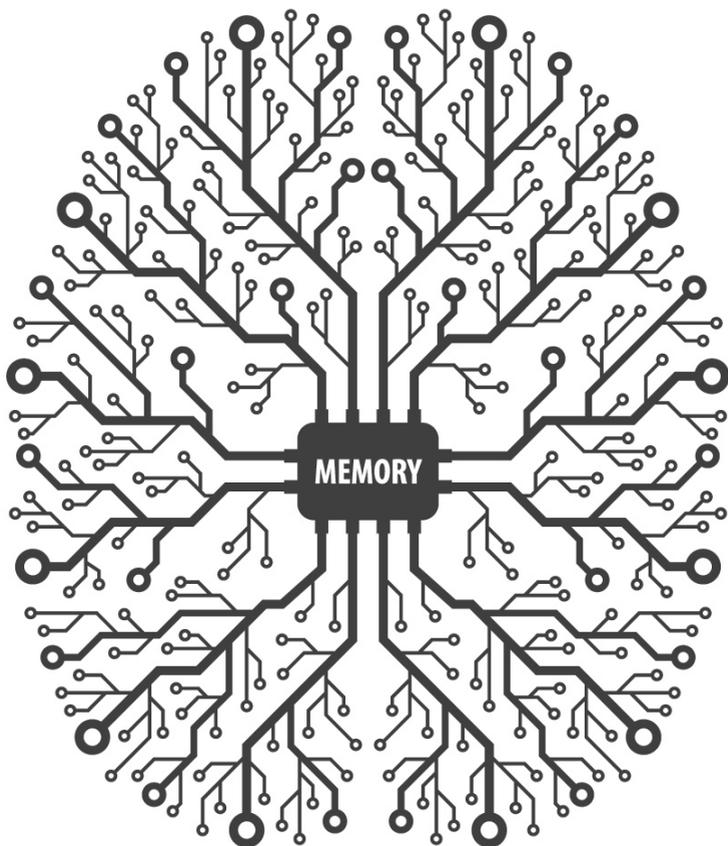
## THE BRAIN

---

### 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 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 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. This is why people with dementia can often remember events from their past really well.

# Brain Health

---

Legally, in Ireland, you are recognised as an adult at age 18, but your brain does not finish developing and maturing, especially in the parts of the brain involved in decision making, until your mid-twenties. Younger people can use this to their advantage to learn about and participate 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 socially active and eating a healthier diet.

## Dementia risk

Brain health is also important in the new science of dementia prevention. In the most recent research on dementia prevention, researchers provided an updated list of risk factors associated with an increased risk of developing dementia.

## BRAIN HEALTH

---

The 12 risk factors are: less education, high blood pressure, hearing impairment, smoking, obesity, depression, physical inactivity, diabetes, low social contact, excessive alcohol consumption, traumatic brain injury and air pollution (Livingstone et al., 2020). These factors combined account for up to 40% of dementia risk.

### 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. For example, every time we learn a new skill, learn a new fact or learn a new sport, 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.

Challenge your brain, the more brain connections you have, the more resilient 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 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 homecare, 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.

For more information on brain health please see:

- Website: <https://alzheimer.ie/aboutdementia/brain-health/>

# 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 older, but as age is a strong risk factor it does occur mainly in people who are over 65.

## **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.

## WHAT IS DEMENTIA?

---

### How many people in Ireland live with dementia?

In Ireland, there are an estimated 64,000 people living with dementia and this is expected to rise to 150,000 by 2050 (ASI, 2022).



## WHAT IS DEMENTIA?

---

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

Yes it is true people under the age of 65 can get dementia, this is called young onset dementia.

In Ireland, there are an estimated 4,000 people living with young onset dementia.

### **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 60% 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 the most common cause of dementia, it is not the only one. There are over 100 diseases that may cause dementia including vascular dementia, Lewy body dementia and fronto-temporal dementia.

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.



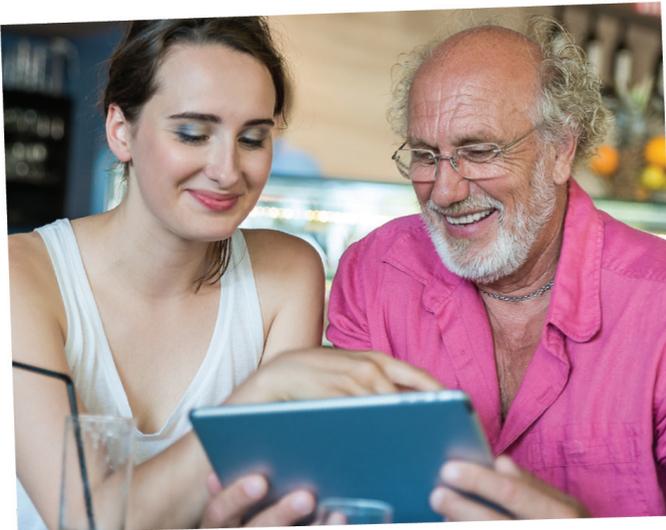
## WHAT IS DEMENTIA?

---

### 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 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 often 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 family member and make a photograph album for them of all the memories you have 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 family member 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 this. 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 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 there are lots of things that you can do to help.

## WHAT IS DEMENTIA?

---

### **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 homecare, 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, A94 N8Y0



## The Dementia Services Information and Development Centre

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

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](mailto:dsidc@stjames.ie)



## Dementia Café - Irish Dementia Café Network

A dementia cafe is a welcoming, once monthly meeting for anyone who is affected by dementia.

The Irish Dementia Cafe Network is a network of dementia cafes around Ireland.

- Website: <https://www.dementiacafe.ie>

## Dementia Understand Together

Understand Together is a public support, awareness and information campaign led by the HSE. The campaign wants to build on the range of dementia specific programmes already in place around Ireland.

- 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://alzheimer.ie/creating-change/self-advocacy-groups/irish-dementia-working-group-3/>

# 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 building a more dementia friendly community in Ireland and will help to create a dementia inclusive generation- a generation that is more aware of dementia and more supportive of people living with dementia in Ireland.

# References

---

1. Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S. G., Dias, A., Fox, N., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Ogunniyi, A., Orgeta, V., Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *Lancet* (London, England), 396(10248), 413–446.
  - [https://doi.org/10.1016/S0140-6736\(20\)30367-6](https://doi.org/10.1016/S0140-6736(20)30367-6)
2. The Alzheimer Society of Ireland. (2022). Facts and figures.
  - <https://alzheimer.ie/creating-change/awareness-raising/dementia-in-the-media/>



The Dementia Services Information and Development Centre,  
6th Floor, Mercer's Institute for Successful Ageing (MISA),  
St James's Hospital, James's Street,  
Dublin 8, D08 E9P6

01 4162035

[www.dementia.ie](http://www.dementia.ie)

