

# Brain Health and dementia risk

National  
Intellectual Disability  
Memory Service

**Professor Sean Kennelly**

**Clinical Director NIDMS**

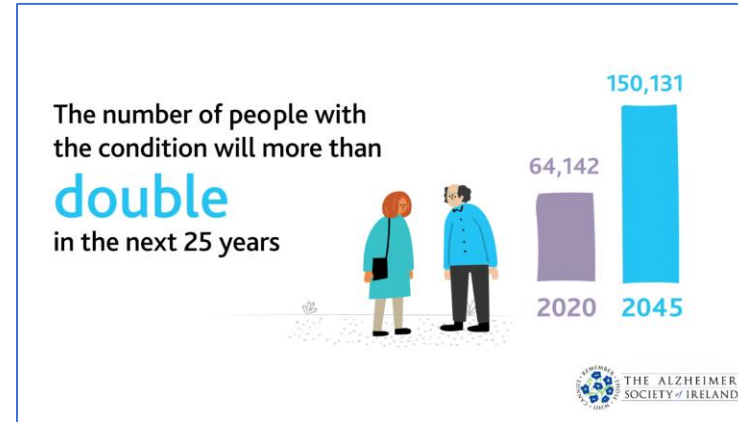
**Memory Assessment and Support Service,  
Tallaght University Hospital, Dublin**

# DEMENTIA IN IRELAND



THE ALZHEIMER  
SOCIETY OF IRELAND

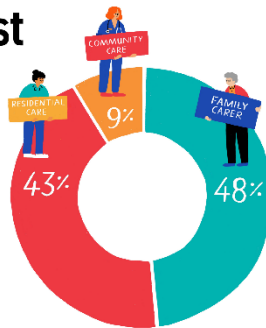
>63% live in Community



THE ALZHEIMER  
SOCIETY OF IRELAND

The annual cost  
of dementia is  
**€1.69 billion**

Ref: Cahill, S. O'Shea, E.  
and Pierce, M. (2012)  
Creating Excellence in  
Dementia Care report.  
Trinity College Dublin/  
NUI Galway



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SOCIETY OF IRELAND

It is essential we develop better  
**preventative, diagnostic, therapeutic, and social care solutions** for people living with  
dementia and their supporters

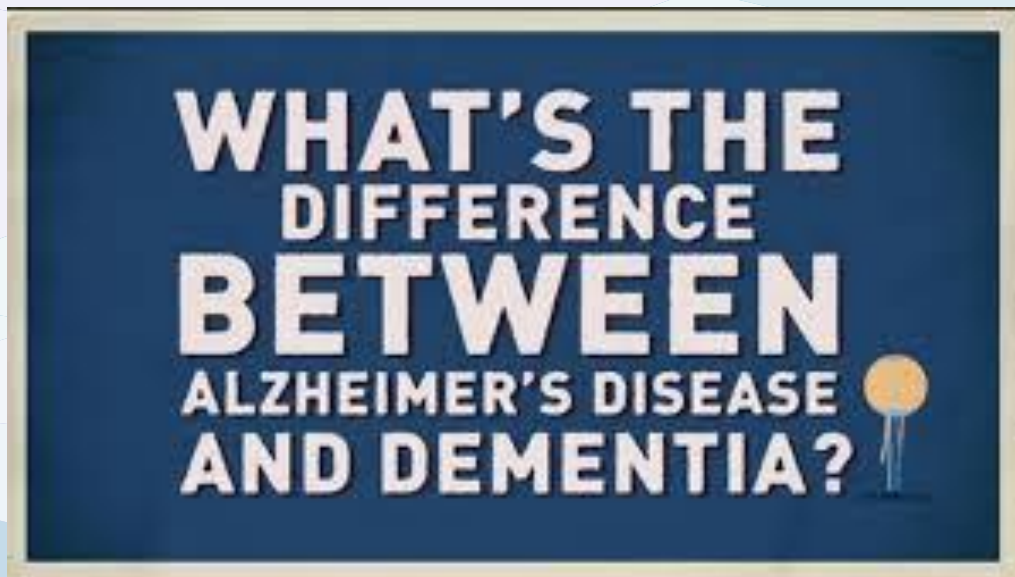
# WHAT IS DEMENTIA?

- Memory or thinking difficulty which causes impairment in daily activities
- Umbrella term- not a diagnosis in its own right



Diagnosis of dementia is made  
on the basis of functional loss  
rather than “just” memory  
loss/ cognitive performance

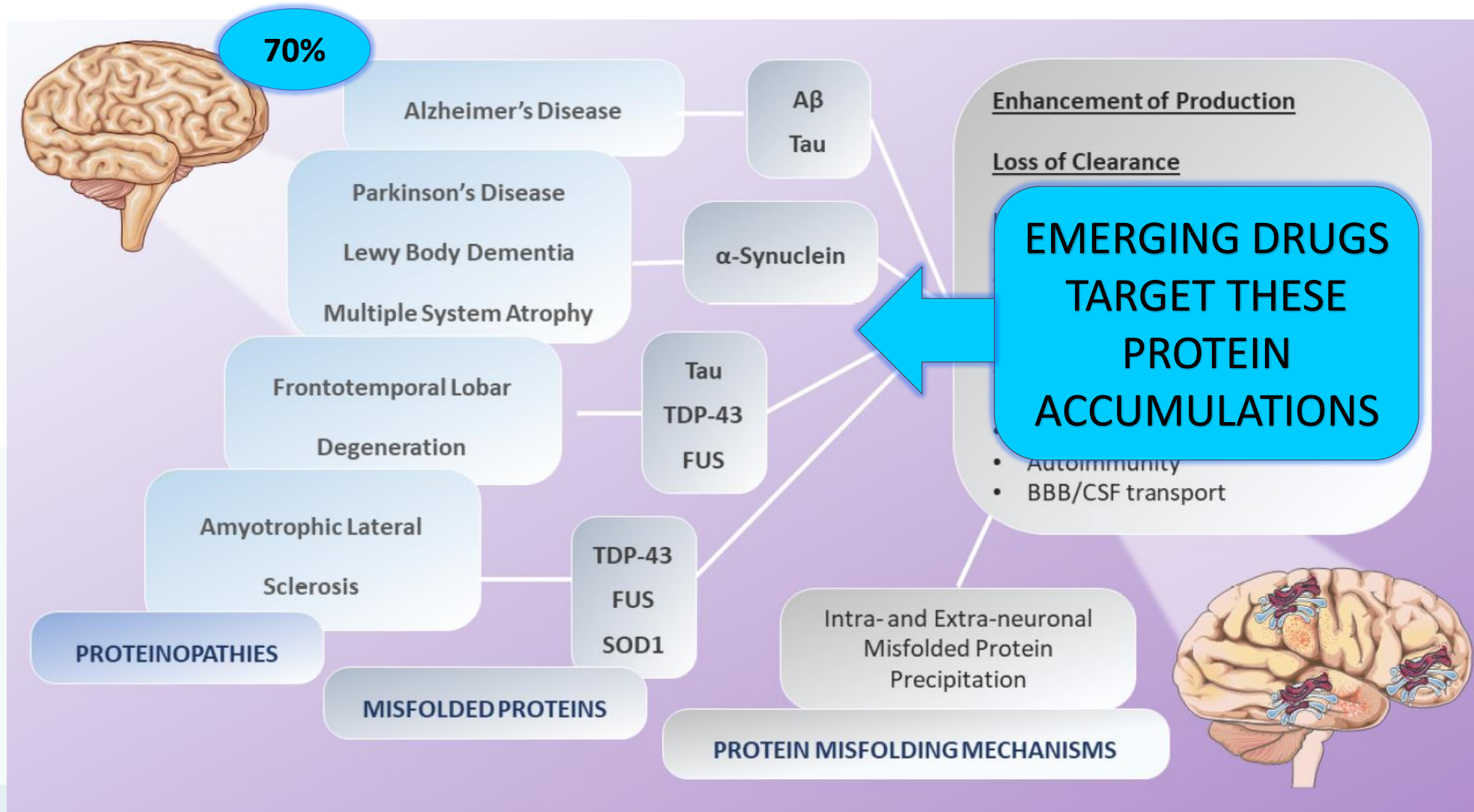
# Alzheimer's disease is most common cause of dementia



## **Other causes of Dementia:**

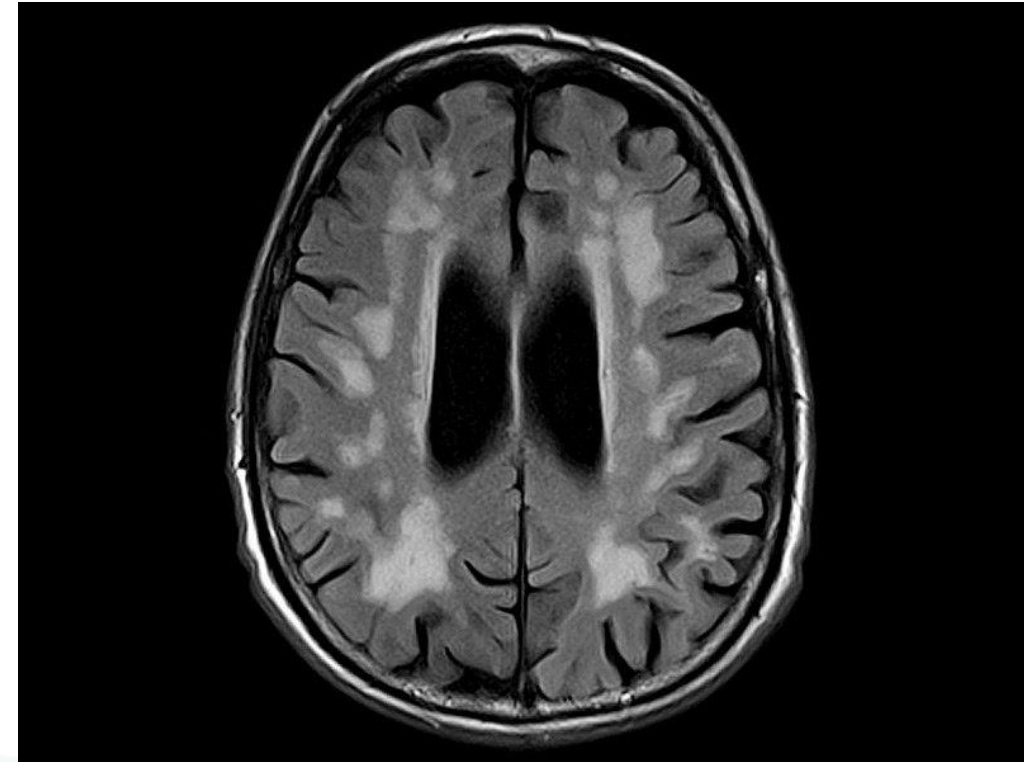
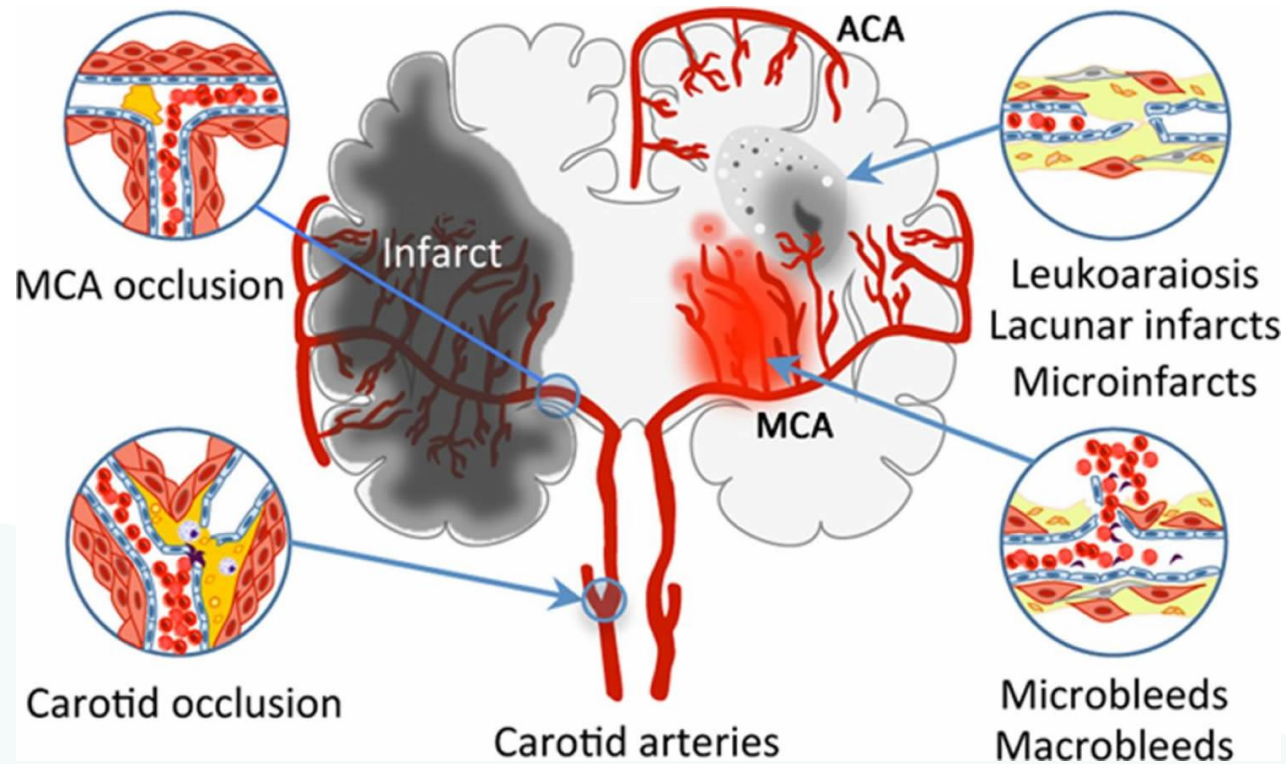
- Stroke/ Vascular disease
- Parkinson's related dementia
- Frontotemporal Dementia
- Many other unusual causes

# Alzheimer's disease and other dementia's are caused by the accumulation of toxic proteins in the brain



# VASCULAR DEMENTIA

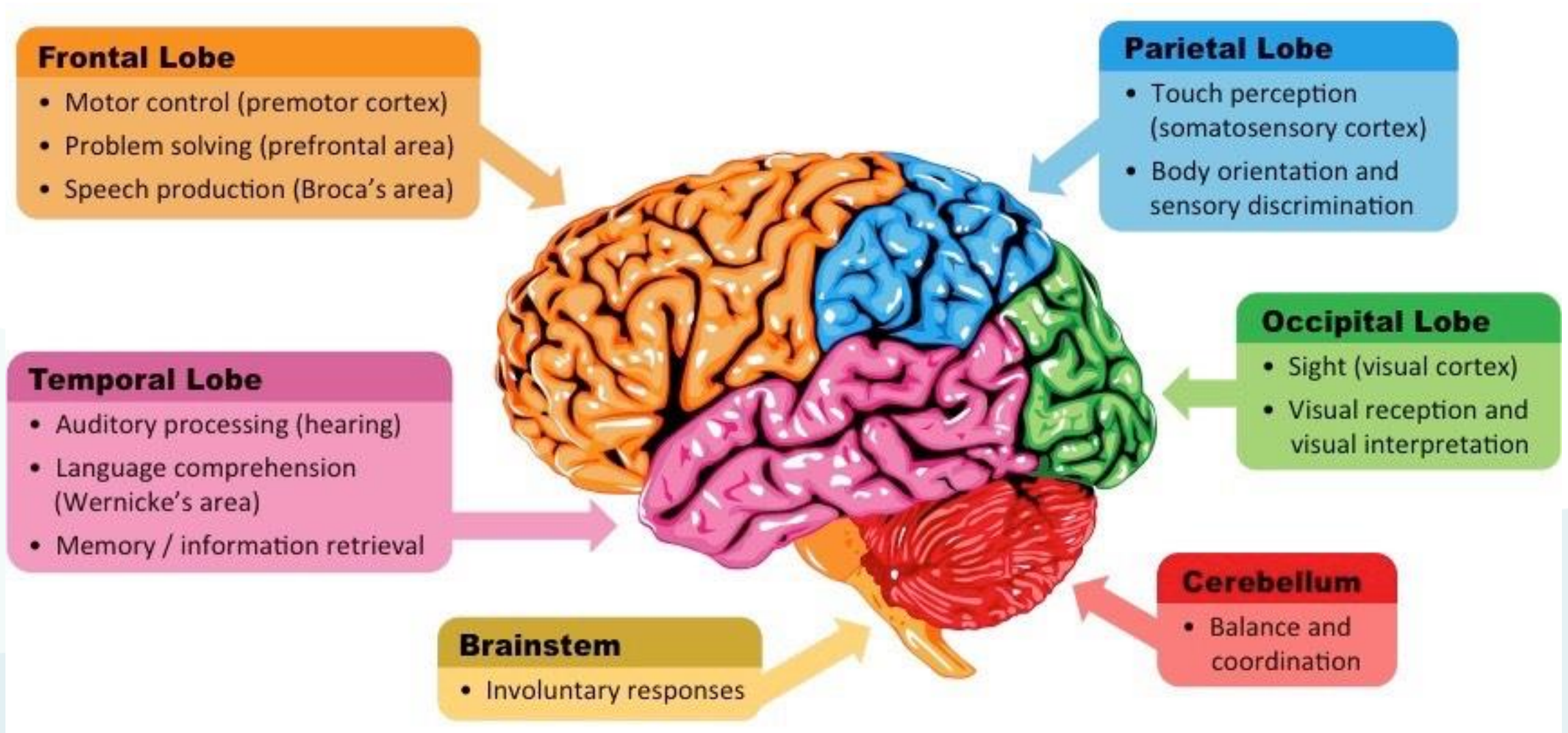
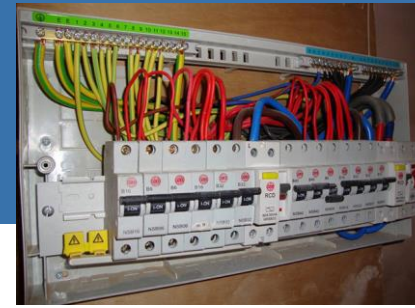
15%



**Healthy Heart = Healthy Brain**

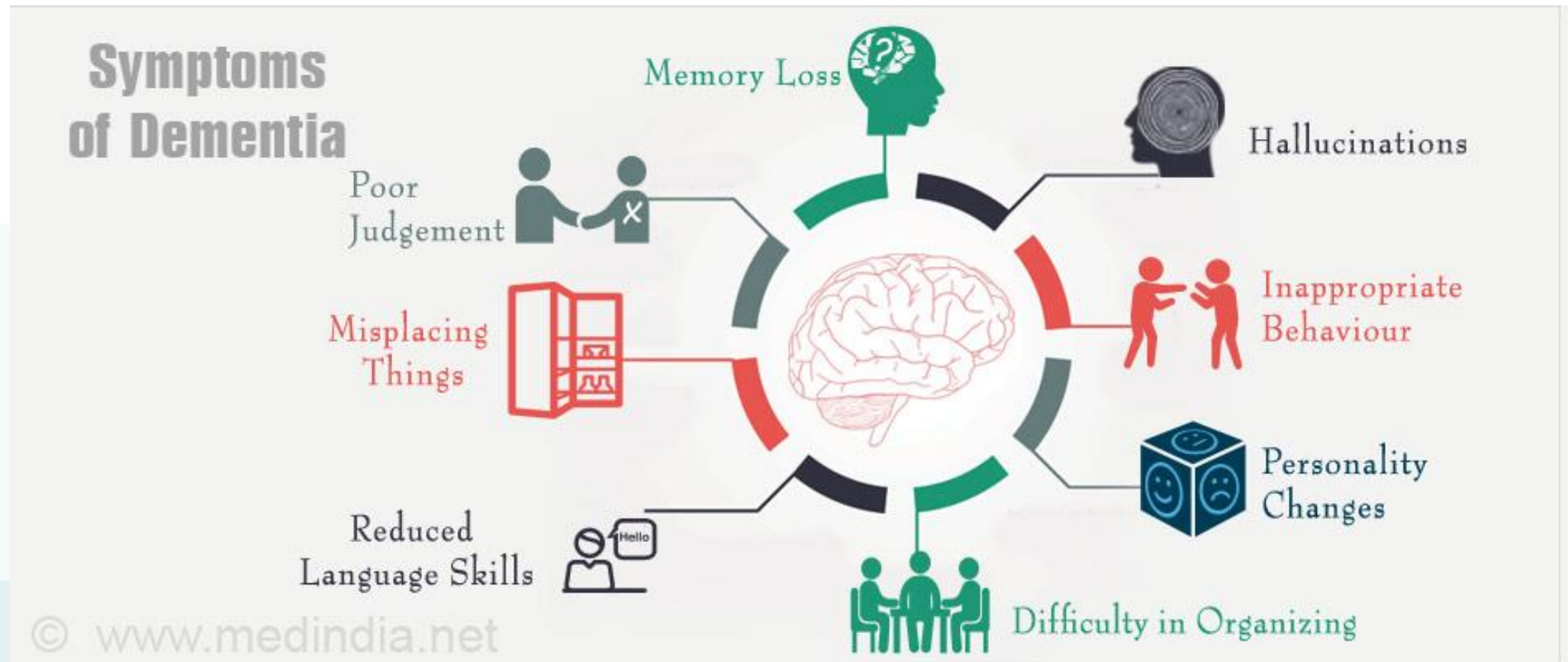
**MRI Scan**

# THE BRAIN IS LIKE A FUSE BOARD!

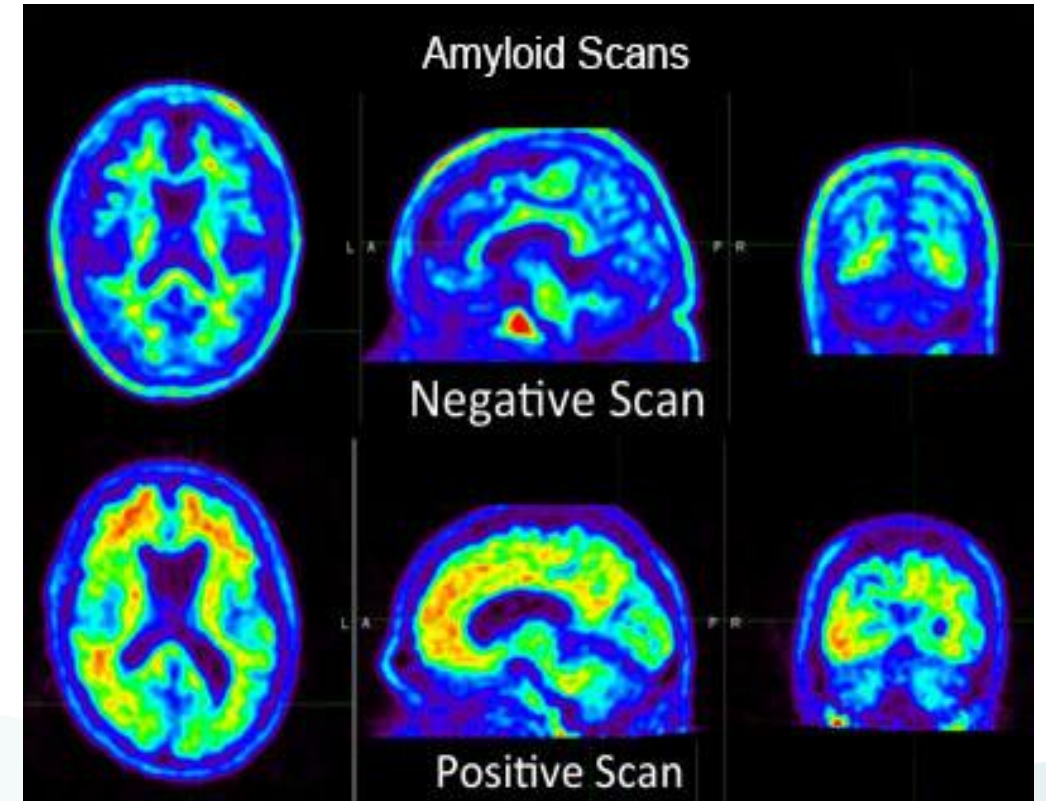
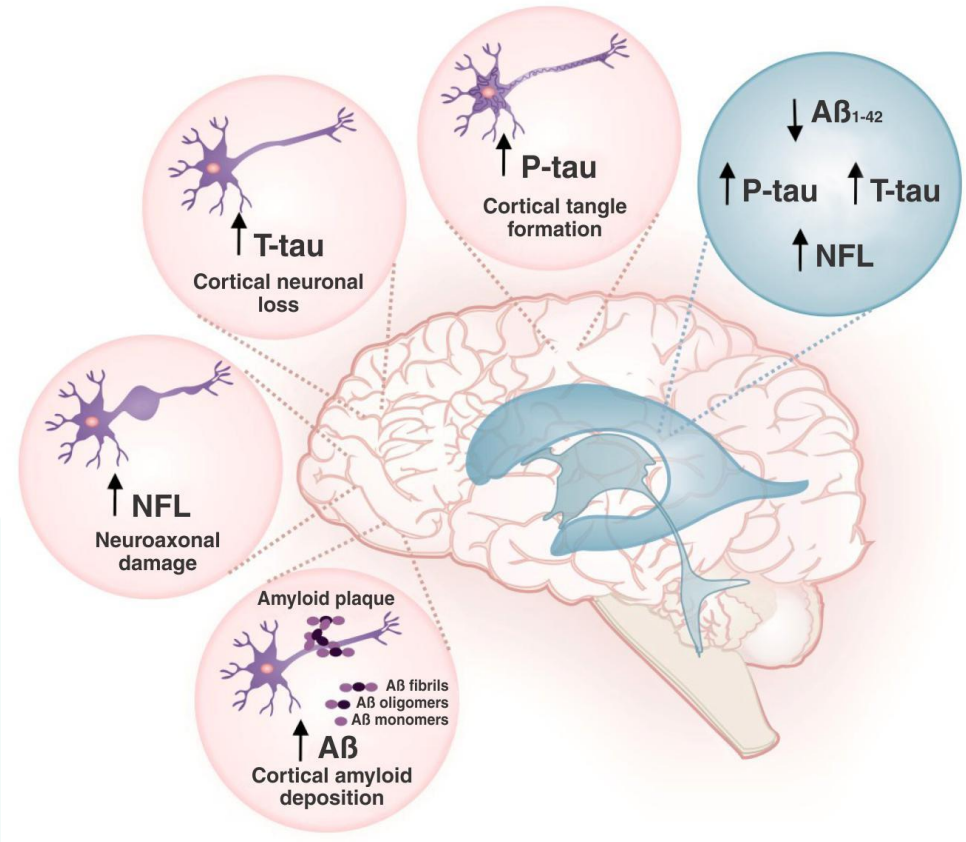


# SYMPTOMS OF DEMENTIA

Presentation of dementia depends on what part of brain is most affected first



# BIOMARKERS OF ALZHEIMER'S DISEASE



**Can be evident 15-25 Years before  
onset of Clinical Symptoms**

# ALZHEIMER'S DISEASE

But almost half of people have  
AD proteins in their brains at age  
90 but don't have dementia

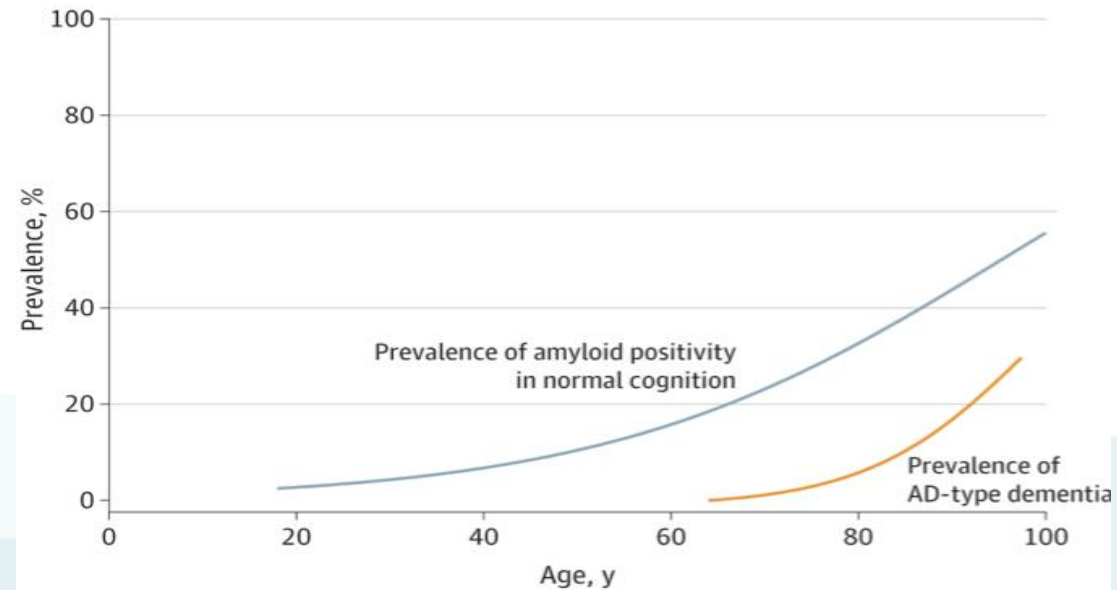
May 19, 2015

## Prevalence of Cerebral Amyloid Pathology in Persons Without Dementia A Meta-analysis

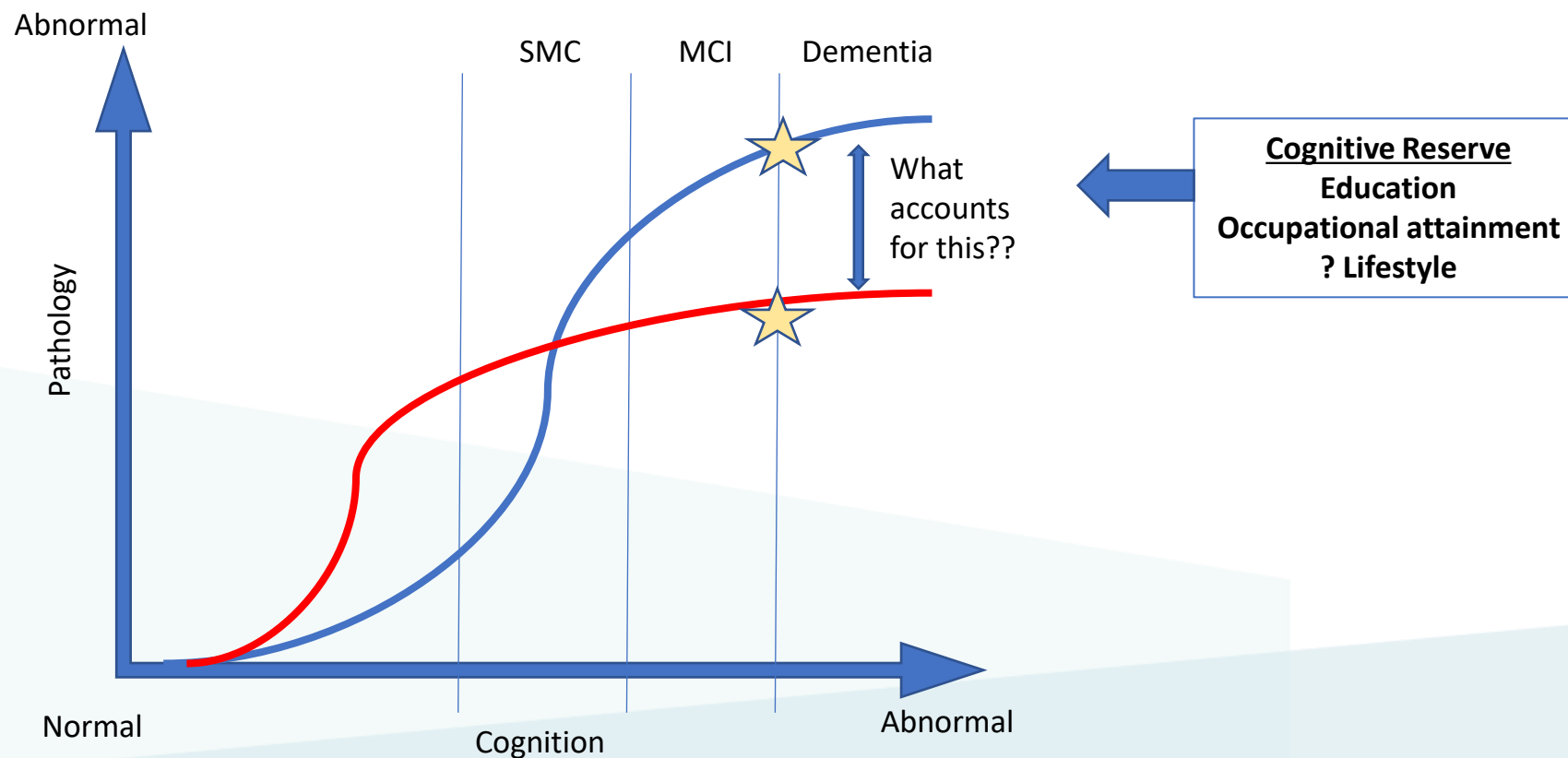
Willemijn J. Jansen, MSc<sup>1</sup>; Rik Ossenkoppele, PhD<sup>2,3,4,5</sup>; Dirk L. Knol, PhD<sup>6</sup>; et al



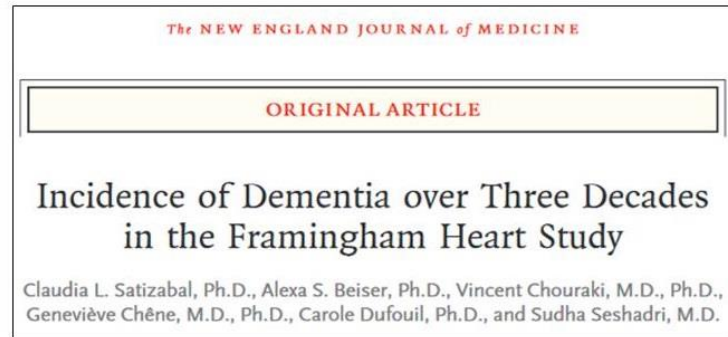
JAMA<sup>®</sup>



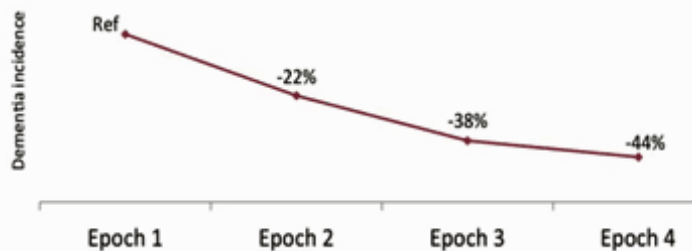
# BRAIN HEALTH AND COGNITIVE RESERVE



# AGE-ADJUSTED LIFETIME RISK OF DEMENTIA DECLINING!!



- Progressive decrease in the incidence of dementia in FHS participants



- Mean age at dementia onset (years)

80      82      84      85

**TABLE. 5-Year age- and sex-adjusted cumulative hazard rates for dementia**

Span	HR per 100	Percent decline
1970s to early 1980s	3.6	–
Late 1980s to early 1990s	2.8	22
Late 1990s to early 2000s	2.2	38
Late 2000s to early 2010s	2.0	44

HR, hazard rate.

## Similar reported:

- UK
- Sweden
- Netherlands
- Germany

**Likely due to better vascular risk treatments**

# BY TARGETING CERTAIN MODIFIABLE RISK FACTORS 40% DEMENTIA IS POTENTIALLY PREVENTABLE

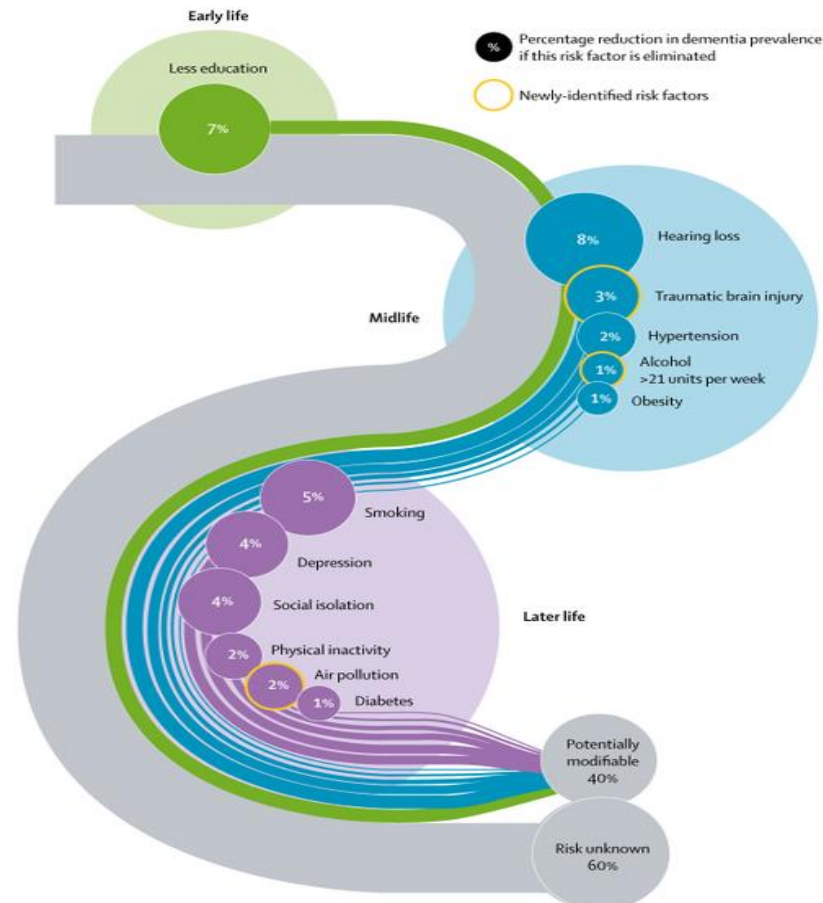
60%

## Non-Modifiable

Age  
Genetics  
Gender  
Ethnicity

### Risk factors for dementia

An update to the Lancet Commission on Dementia prevention, intervention, and care presents a life-course model showing that 12 potentially modifiable risk factors account for around 40% of worldwide dementias



40%

## Modifiable

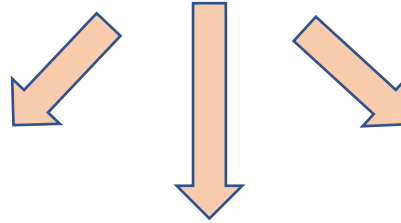
- Hearing Loss
- High BP (midlife)
- Diabetes (midlife)
- Obesity (midlife)
- Smoking
- Sedentary Lifestyle
- Depression
- Social Isolation
- Low Education
- Head injury
- Excess Alcohol
- Air Pollution

# MEMORY ASSESSMENT SERVICES IN TALLAGHT UH



## Centralised reception for all ARHC service referrals

**Stream 1: General Geriatric Med clinic:**  
**Routine** Primary referral for memory issues, MMSE  $\leq 21$ , history of functional decline, multiple co-morbid conditions, Age  $\geq 65$ , Usually hospital catchment area



**Stream 3: Memory Assessment Service: Routine/ Urgent** Primary referral for memory issues. Age  $>40$ , National Catchment, atypical features (behaviour/ Speech/ Motor)

**Stream 2: Rapid Access ARDH or ICT: Urgent** Primary referral for BPSD symptoms, NH listing. Age  $\geq 65$ , usually hospital catchment area, +/- previous formal diagnosis of dementia

## Post-diagnostic support services

Brain Health  
Clinic

Carers Education  
+ Support Group

Post-diagnostic  
Clinic



NIDMS

# Thank you

National  
Intellectual Disability  
Memory Service



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Twitter: @SPKennelly



National  
Intellectual Disability  
Memory Service

# Brain Health in People with an Intellectual Disability

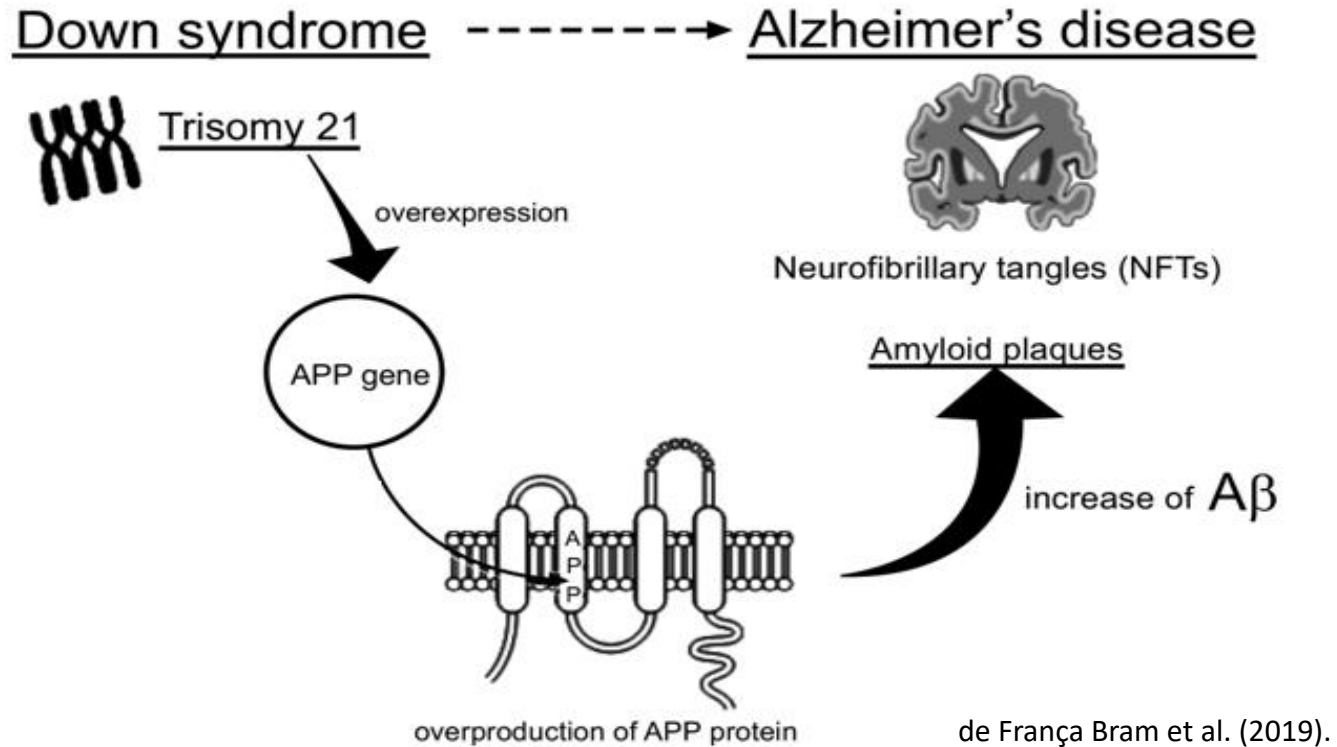
Marianne Fallon

Chartered Health Psychologist, Brothers of Charity Services, Ireland  
Training and Education Officer, National Intellectual Disability Memory Service

Dr Eimear McGlinchey

Assistant Professor in Intellectual Disability, TCD  
Senior Atlantic Fellow for Equity in Brain Health at the Global Brain Health Institute

# Down syndrome, Dementia and Brain Health



de França Bram et al. (2019).



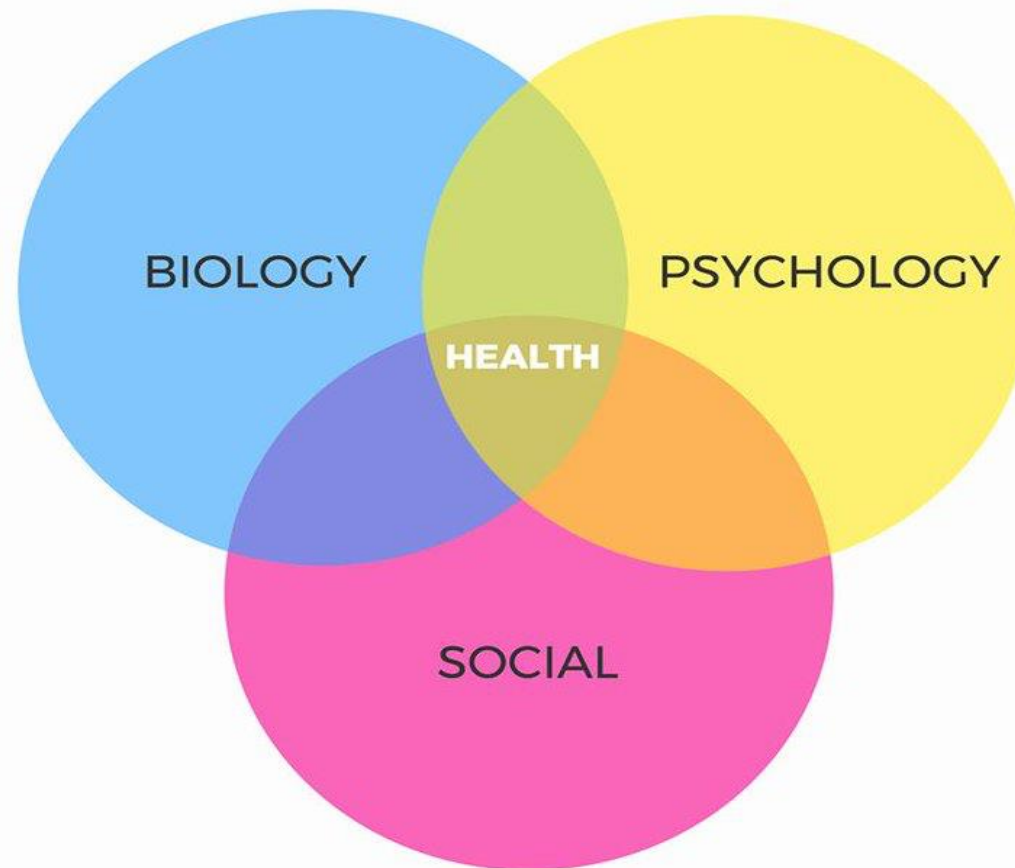
What things are important to  
maintain brain health?

Share your thoughts in the chat box

# Health Psychology

Engagement in Research, Clinical Practice, Education, and Training to Improve Health

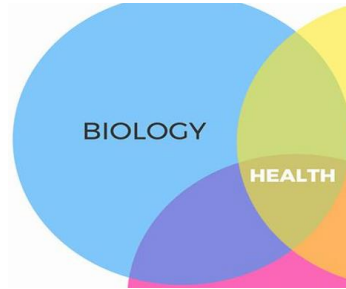
## #ThisIsHealthPsych



<https://societyforhealthpsychology.org/>

@nidmsirl

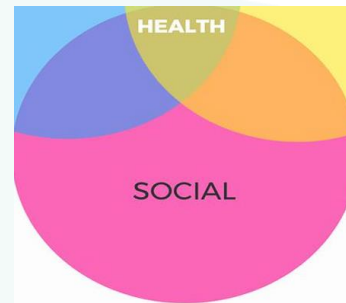
# Elements of the Biopsychosocial (BPS) Model



How our bodies function



How we feel, think and cope



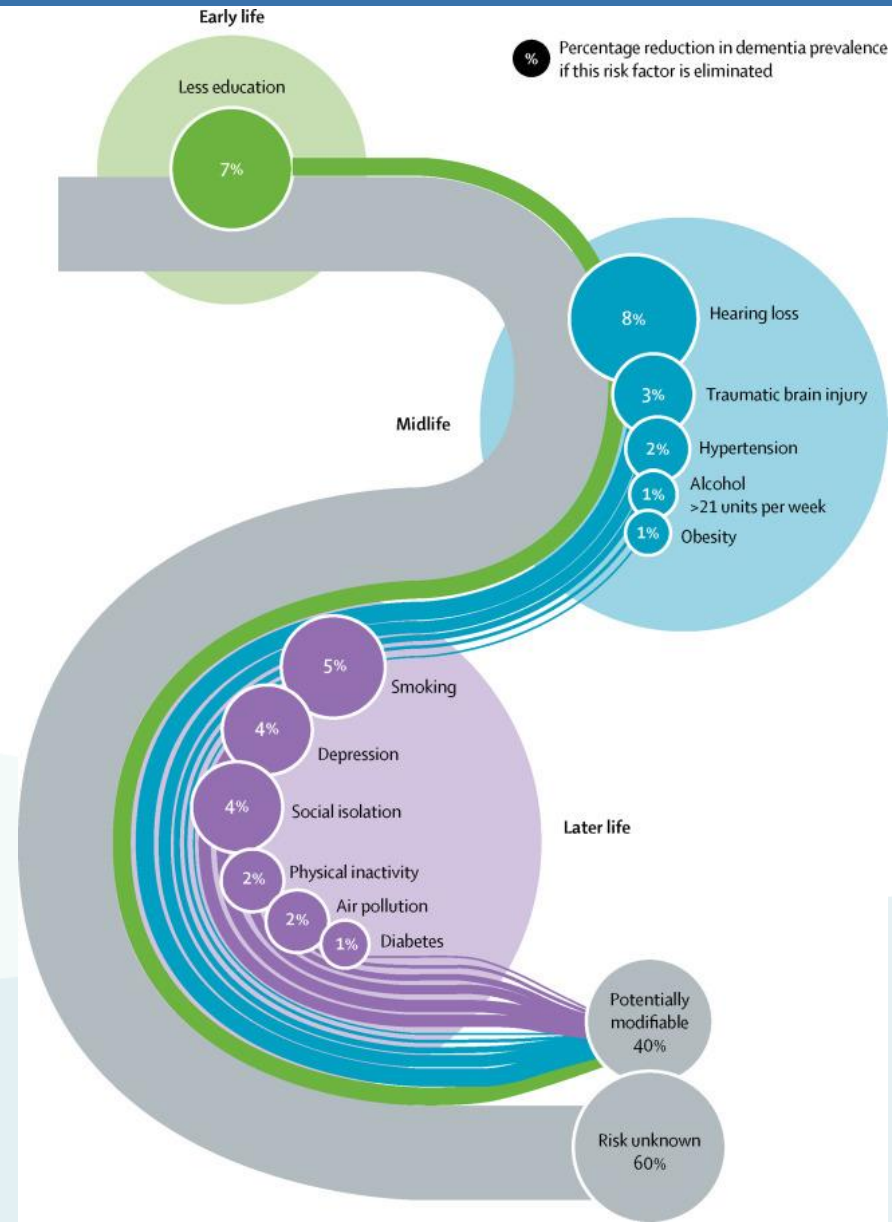
The sources of social support in our lives

Engel (1977)

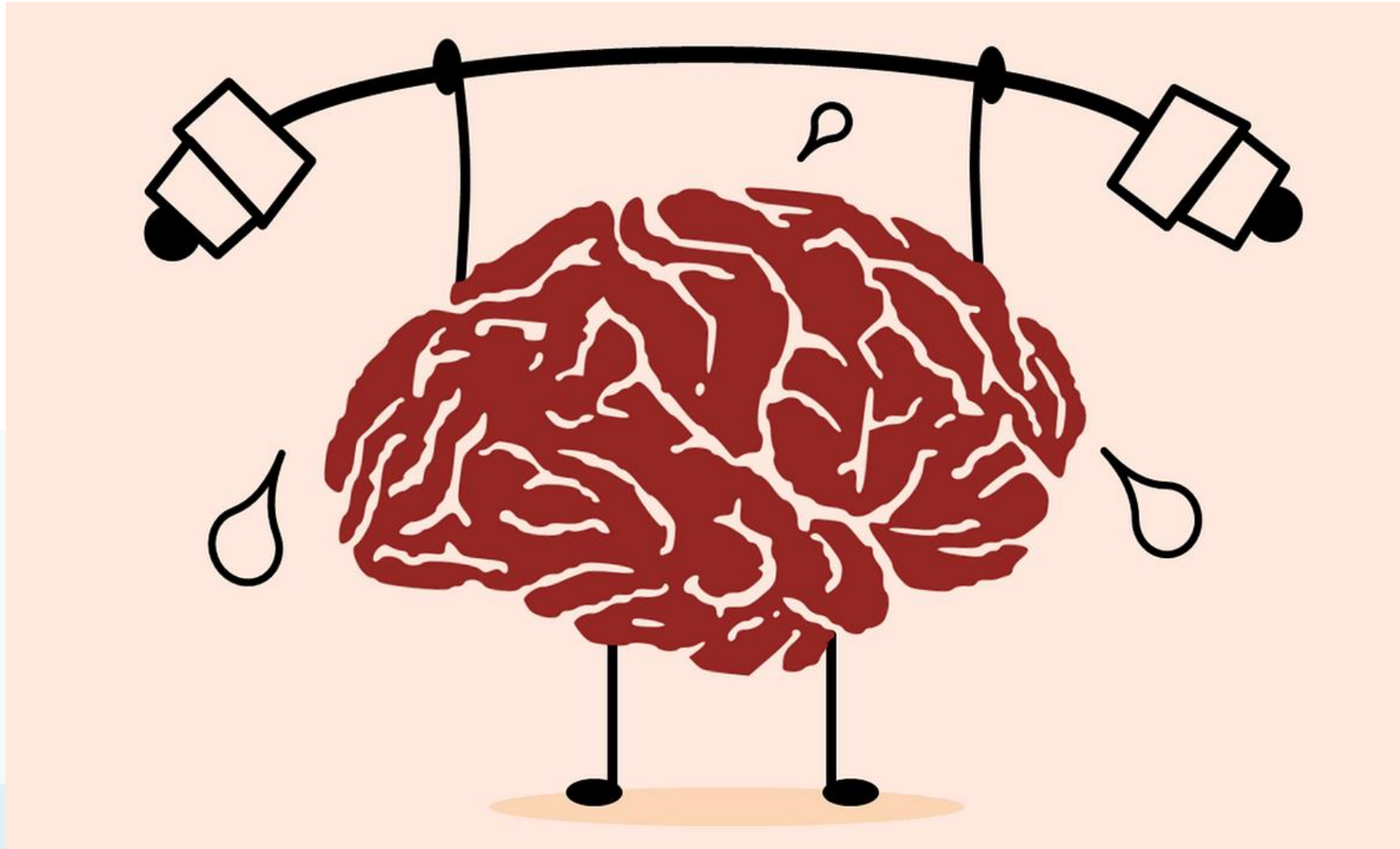
# Risk Factors for onset of dementia over the Lifespan

## Lancet Commission Report 2020

Livingston et al. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. The Lancet, 396(10248), pp.413-446.



# The Biology of Brain Health



# Reduce Hearing Loss

- Adds 8% to the overall risk of developing dementia
- People with ID have higher risk of hearing loss
- Low levels of hearing testing and use of hearing aids
- Recommend: Hearing screening every 3 years
- Support use of hearing aids



# Promote Metabolic Health

Poor Metabolic Health consists of:

High blood pressure (>130/85)

Abnormal cholesterol levels (↑ LDL, ↓ HDL)

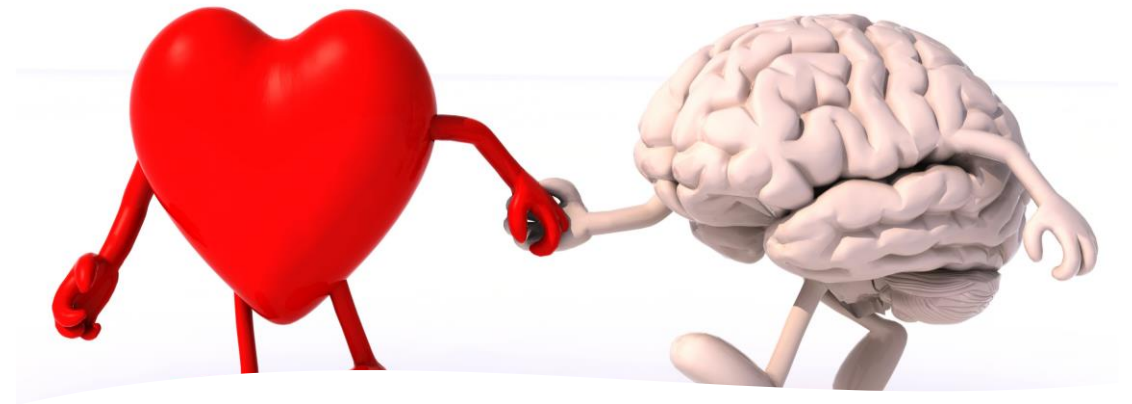
Excess Fat around the waist

High blood sugar levels

**3/5 factors = Metabolic Syndrome**

This can lead to: Cardiovascular Disease, Type 2 Diabetes

Image from [www.psychologytoday.com](http://www.psychologytoday.com)



# Healthy Behaviours: Nutrition

## The Mediterranean Diet

- Plant based
- Fruit, Vegetables, Wholegrains, Nuts, Seeds, Healthy Fats, Fish
- Moderate Dairy Intake
- Limited Meat Intake

Eat all the colours of the rainbow!



# Health Behaviours: Physical Activity

At least 30 minutes per day, five days a week

Any activity counts

Take part in fun activities with friends and family

Build activity into everyday life



# Health Behaviours: Sleep

- Sleep is critical for good brain health
- Sleep Apnoea or poor sleep?
- Support a good sleep routine
- Our brains need to rest and restore each night
- 7-8 hours sleep needed per night



# Smoking and Alcohol

## Don't Smoke!



## Only drink within safe limits

Image from: Health Research Board, National Alcohol Diary Survey 2013

A standard drink is:



½ pint  
of beer



100mls of wine  
[7.5 glasses per bottle]



1 pub measure  
of spirits



The recommended  
amount is up to **11**  
**standard drinks**  
a week for women



The recommended  
amount is up to **17**  
**standard drinks**  
a week for men

# The Psychology of Brain Health



Image from: [www.thescienceofpsychotherapy.com](http://www.thescienceofpsychotherapy.com)

# Depression



Identified as a risk factor for developing dementia over time

Depression can arise from:

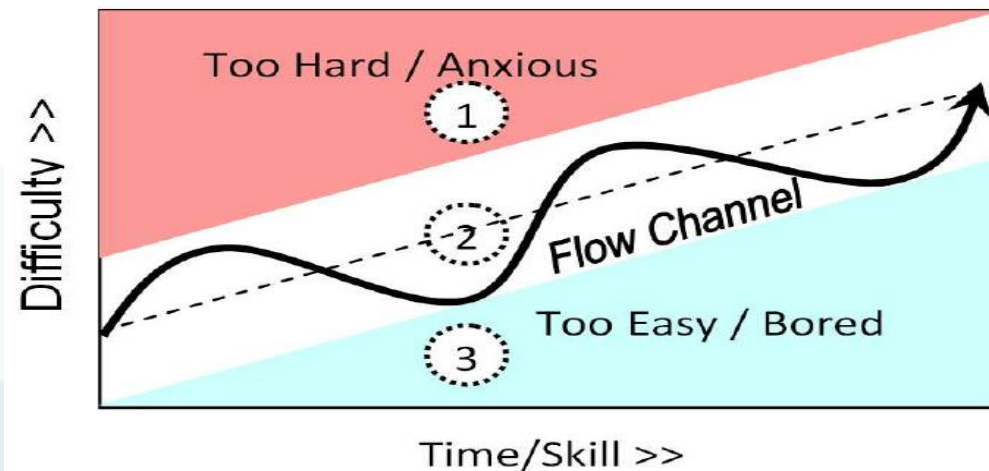
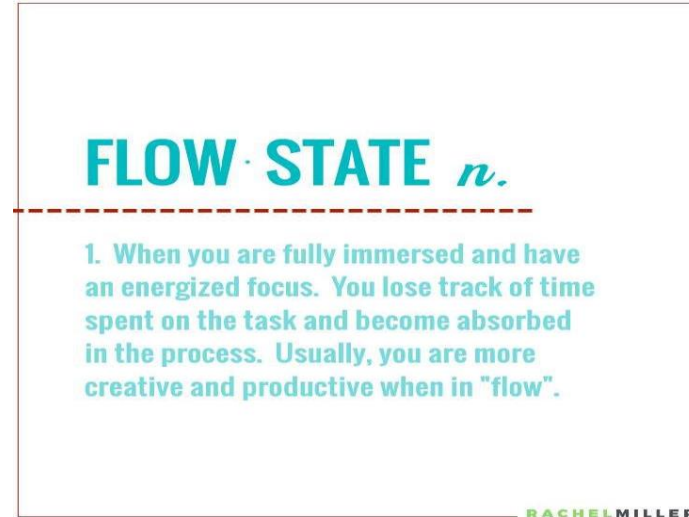
1. Stressful or upsetting Life events
2. Poor quality of life/chronic illness
3. Medication side effects

Increases overall risk of developing dementia by 4%

Ensure depression is treated

# Promoting Happiness & Life Satisfaction

- Hungarian Psychologist Csikszentmihalyi (1990) – concept of flow
- Important part of creativity and well-being in our lives
- Participate in enjoyable engaging activities
- Be challenged but not frustrated- be in the 'the flow'!



Images from: [www.rachelmiller.com](http://www.rachelmiller.com) & [www.thealternative.org.uk](http://www.thealternative.org.uk)

# Social Factors for Brain Health



# Social Factors for Brain Health

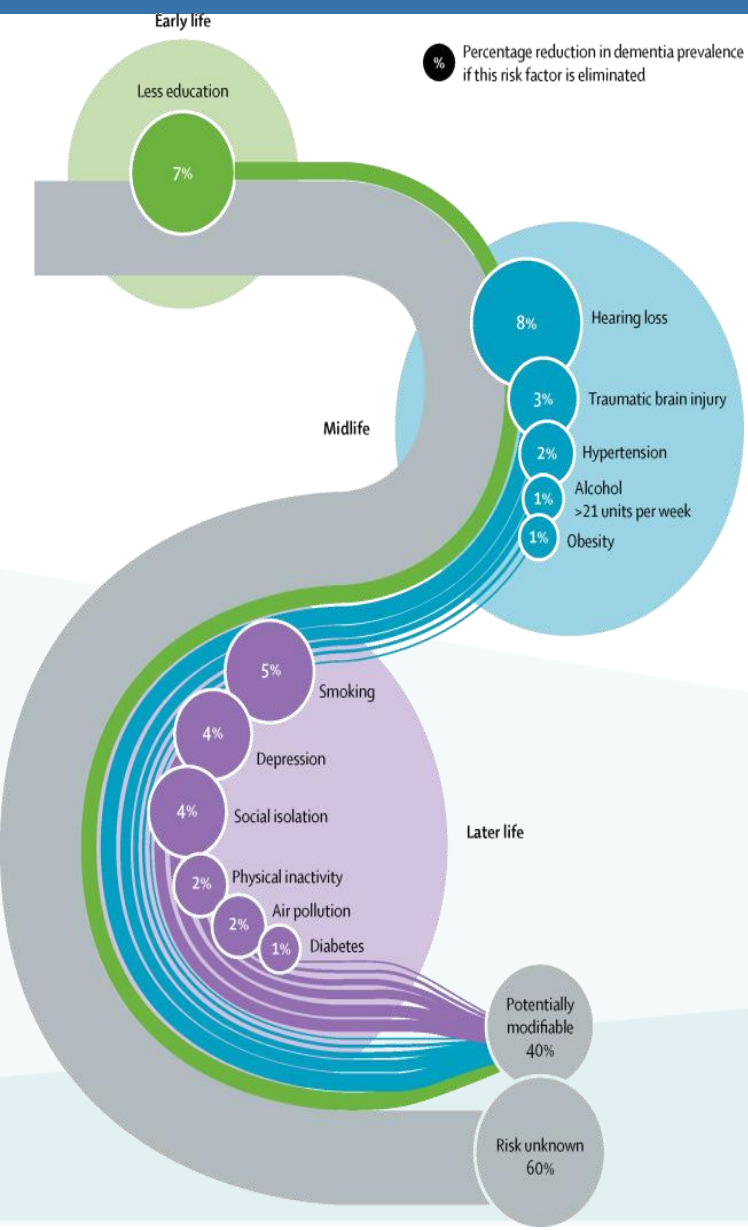
Social Isolation and Feeling Lonely are risks for cognitive decline

Staying socially connected is very important

- Meaningful social roles (big or small)
- Work
- Lifelong learning
- Being present in community



# What does data from Ireland tell us?



<https://assets.gov.ie/9674/abcdfeef1474423b983e531d2bde645d.pdf>

	Intellectual Disability	General Population
<b>Education</b>	32% none, 51% some primary	43% Secondary, 34% HE
<b>Hearing Loss</b>	10% (22% for people with DS)	
<b>Hypertension</b>	18.7%	40%
<b>Alcohol</b>	62% never drink alcohol	12% problem alcohol use
<b>Obesity</b>	36% (overweight) 43% (obese)	33% obese
<b>Smoking</b>	7%	14%
<b>Depression</b>	10-16%	11%
<b>Social Inclusion</b>	7% employment, 56% difficulty	
<b>Physical Inactivity</b>	85% underactive	39% low PA
<b>Diabetes</b>	9.3%	11%

McGlinchey et al, 2019

# The National Intellectual Disability Memory Service

**1** **Information**

**2** **Brain Health Check**

**3** **Assessment**

**4** **Diagnosis and Treatment**

**5** **Post Diagnostic Support**

**6** **Research**

# Accessible Brain Health Information

## Tips for Keeping your Brain Healthy!



**Keep moving!**



**Keep your heart healthy**



**Spend time with family and friends**



**Try something new**



**Get enough sleep**

## Tip 2: Keep Your heart healthy



Stay active to keep your heart healthy.



Get your blood pressure checked to see how well your heart is pumping blood around your body.



Eat healthy foods to feed your heart and brain.



Check your weight and get help to lose weight if you need to.

# Brain Health Promotion at NIDMS



**Keeping your  
brain healthy**

**National Intellectual  
Disability Memory Service**

Brain Health Check

Personal Prevention Plan

Opportunity for early intervention

It is never too early, never too late

Positive Focus - Start the conversation

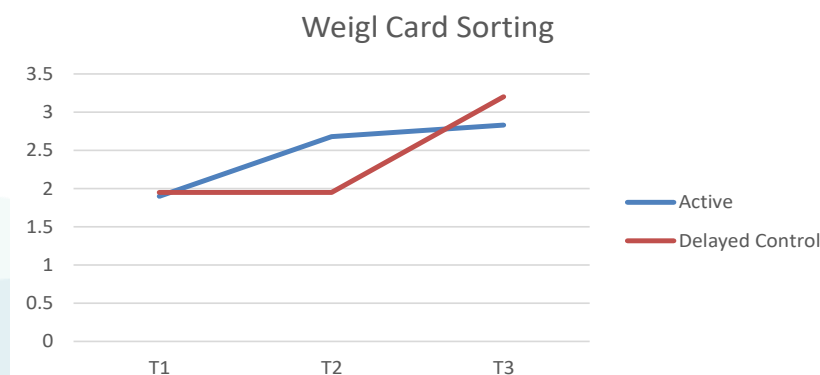
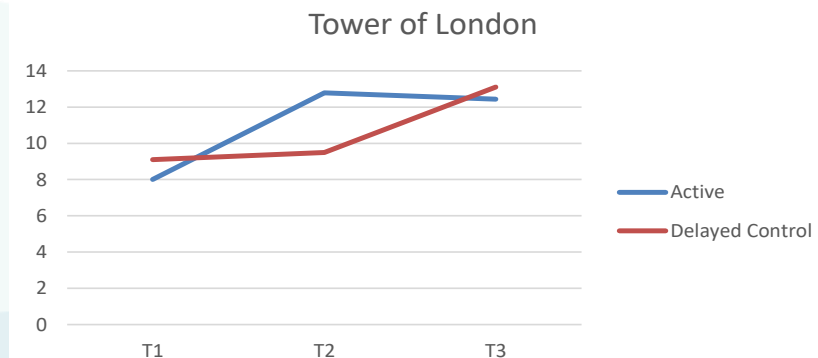
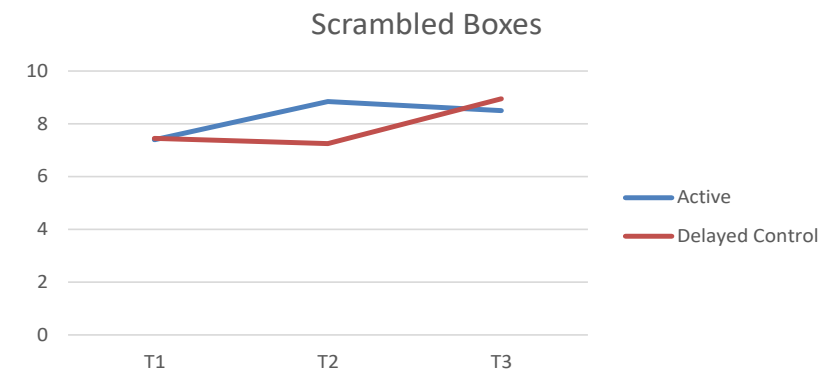
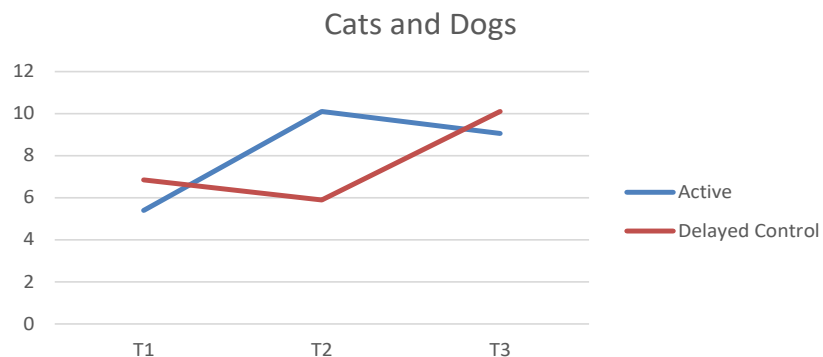


# The BEADS Study

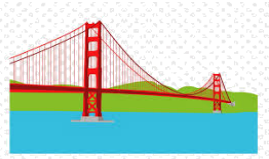
## Brain Exercises for Adults with Down Syndrome

### Computerised Cognitive Training

- Intervention Study
- Effects on Executive Function
- It was feasible
- Potential Platforms: HappyNeuron; Cognifit



# Brain Health Promotion



## Building Bridges



- Connecting with people in San Francisco
- Tea Breaks
- Talk about brain health
- Share tips on brain health



- Brain Health Club
- Advisory role in research
- Build Connections
- Games / tips on brain health

# In Conclusion

It is possible to keep your brain healthy as you age...

Remember to promote:

**Biological**  
**Psychological**  
**Social**  
Brain Health

And have fun doing it!

