



University
of Glasgow

Dementia and Brain Health (doesn't need to be confusing)

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Conflicts of interest / disclosures

I chair the Scottish Funding Council Brain Health ARC

Join us: <https://www.brainhealtharc.com/>

I chair the Scottish Dementia Research Consortium

Join us: <https://www.sdrc.scot/>



- **Definitions**
- **Societal impact**
- **Biology**
- **Diagnosis and Treatment**
- **Scottish Brain Health ARC**



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**Questions to test
your brain health**



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Brain Health

Alzheimer
Dementia

Alzheimer's disease

Age related
cognitive decline

Vascular dementia

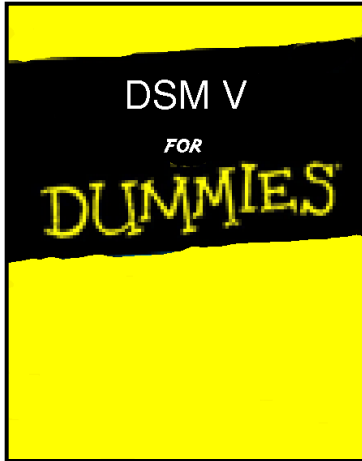
Dementia

Mild Cognitive
Impairment

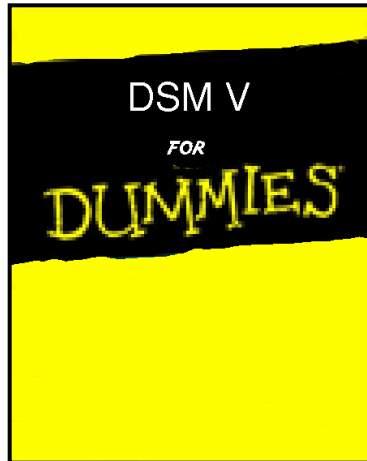
Lewy Body
Disease

Subjective
cognitive
impairment

Frontotemporal
dementia

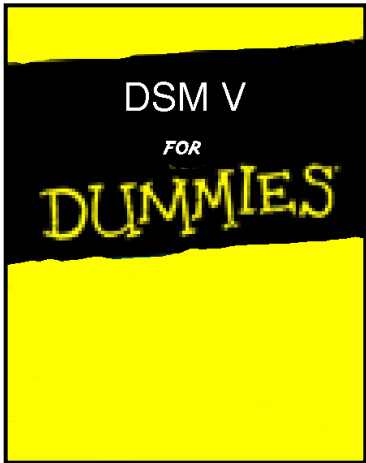


Dementia is a chronic, progressive, neurodegenerative syndrome characterised by a decline in cognitive function across multiple domains, sufficient to cause functional impairment.



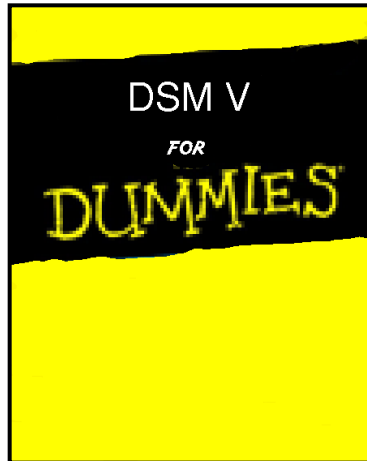
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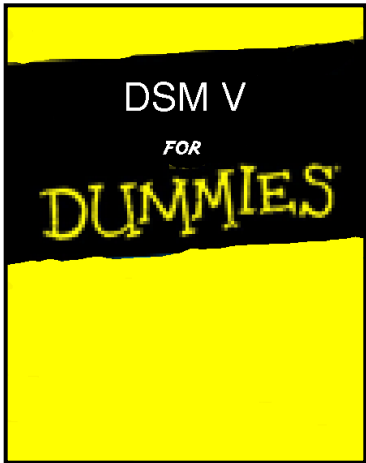
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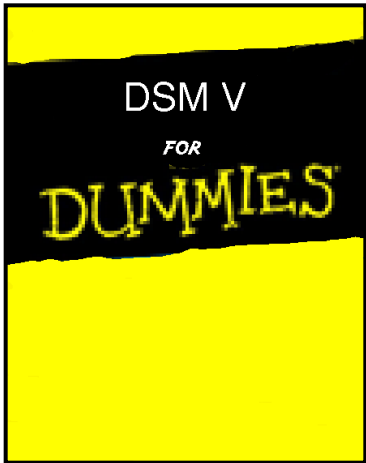
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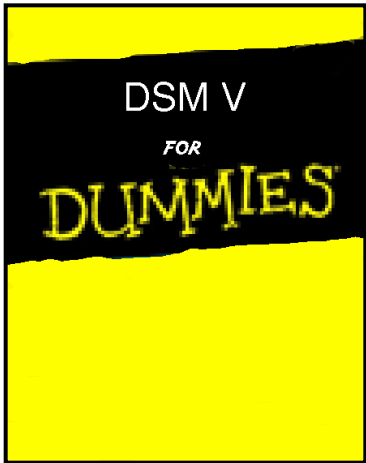
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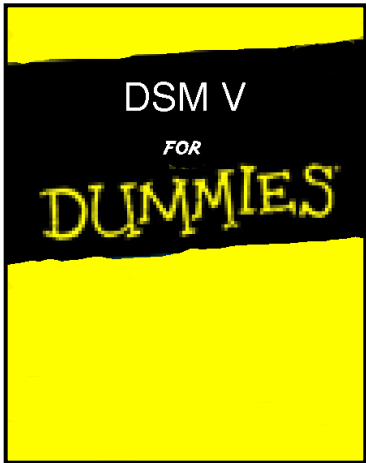
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Brain Health

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Vascular dementia

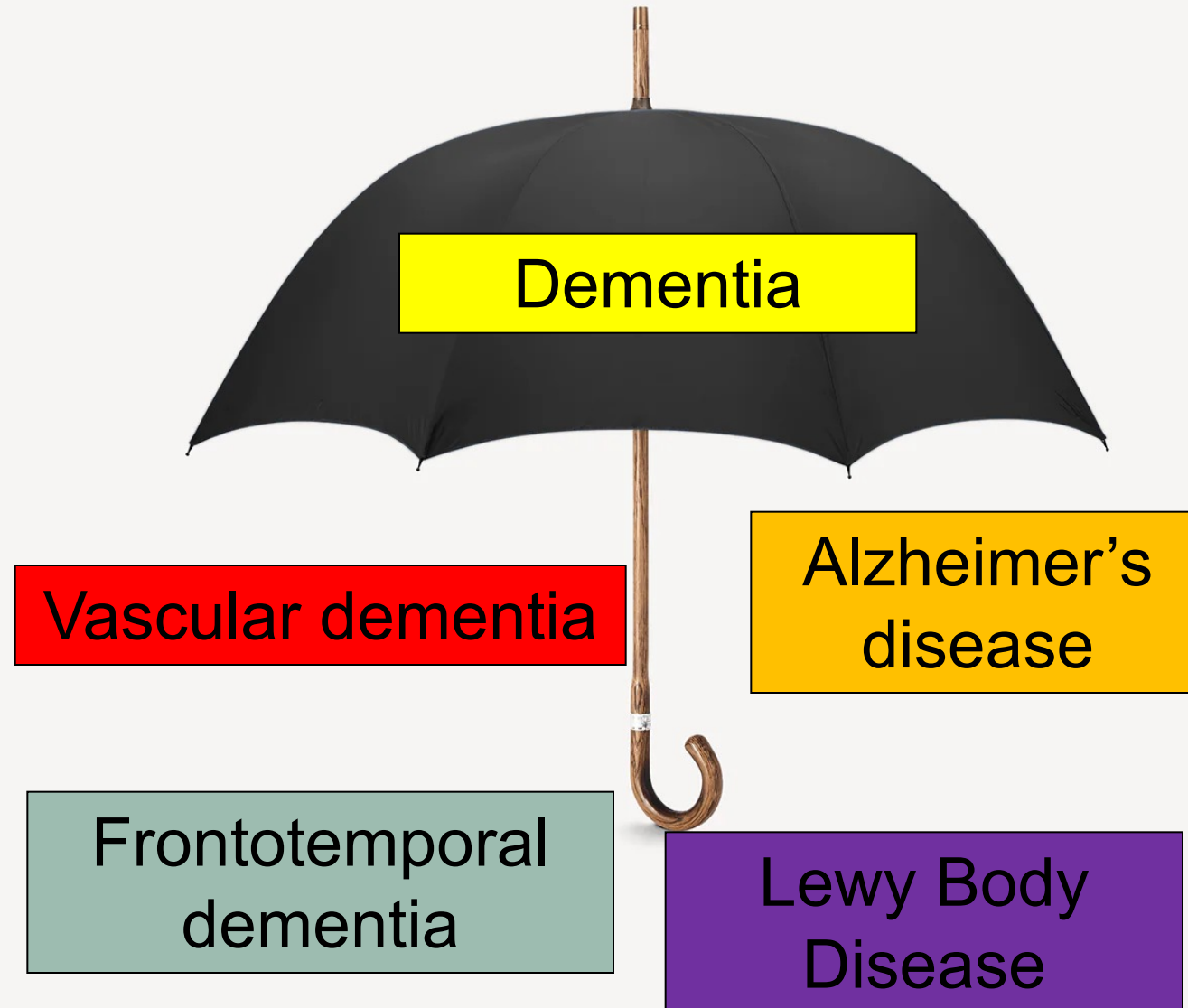
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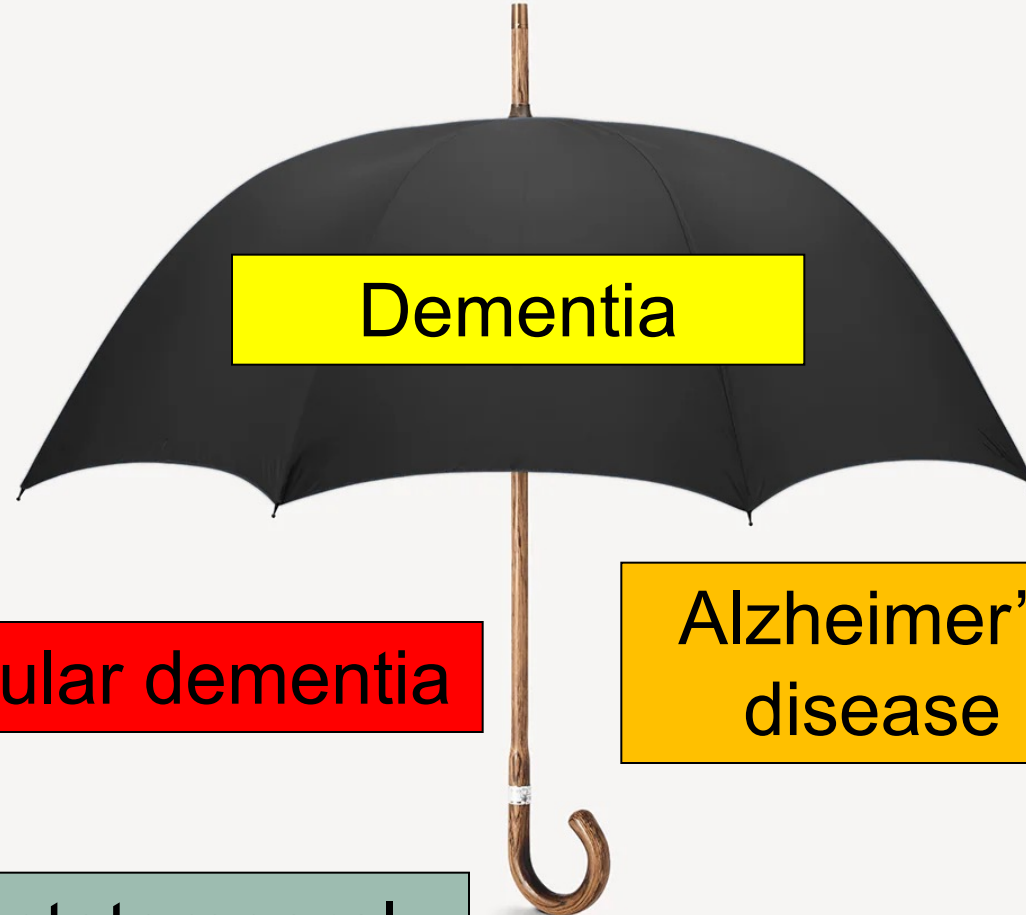
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Frontotemporal
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Mild Cognitive
Impairment



Dementia

Vascular dementia

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Lewy Body
Disease



Brain Health

Mild Cognitive
Impairment

Dementia

Vascular dementia

Alzheimer's
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Frontotemporal
dementia

Lewy Body
Disease



Brain Health

Mild Cognitive
Impairment

Dementia

Just getting
old

Vascular dementia

Alzheimer's
disease

Frontotemporal
dementia

Lewy Body
Disease



Brain Health

Mild Cognitive
Impairment

Dementia

Vascular dementia

Frontotemporal
dementia

Alzheimer's
disease

Lewy Body
Disease





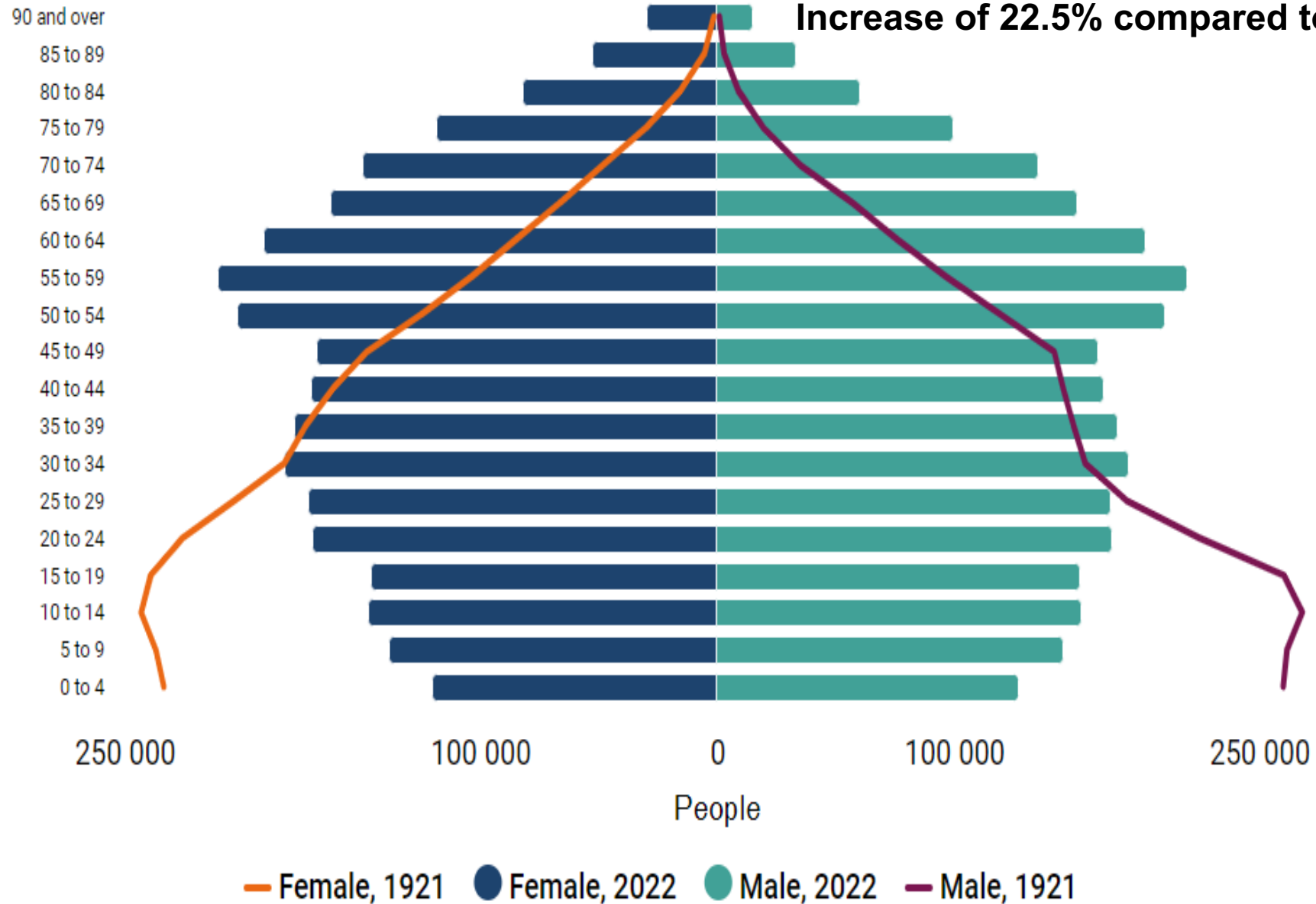
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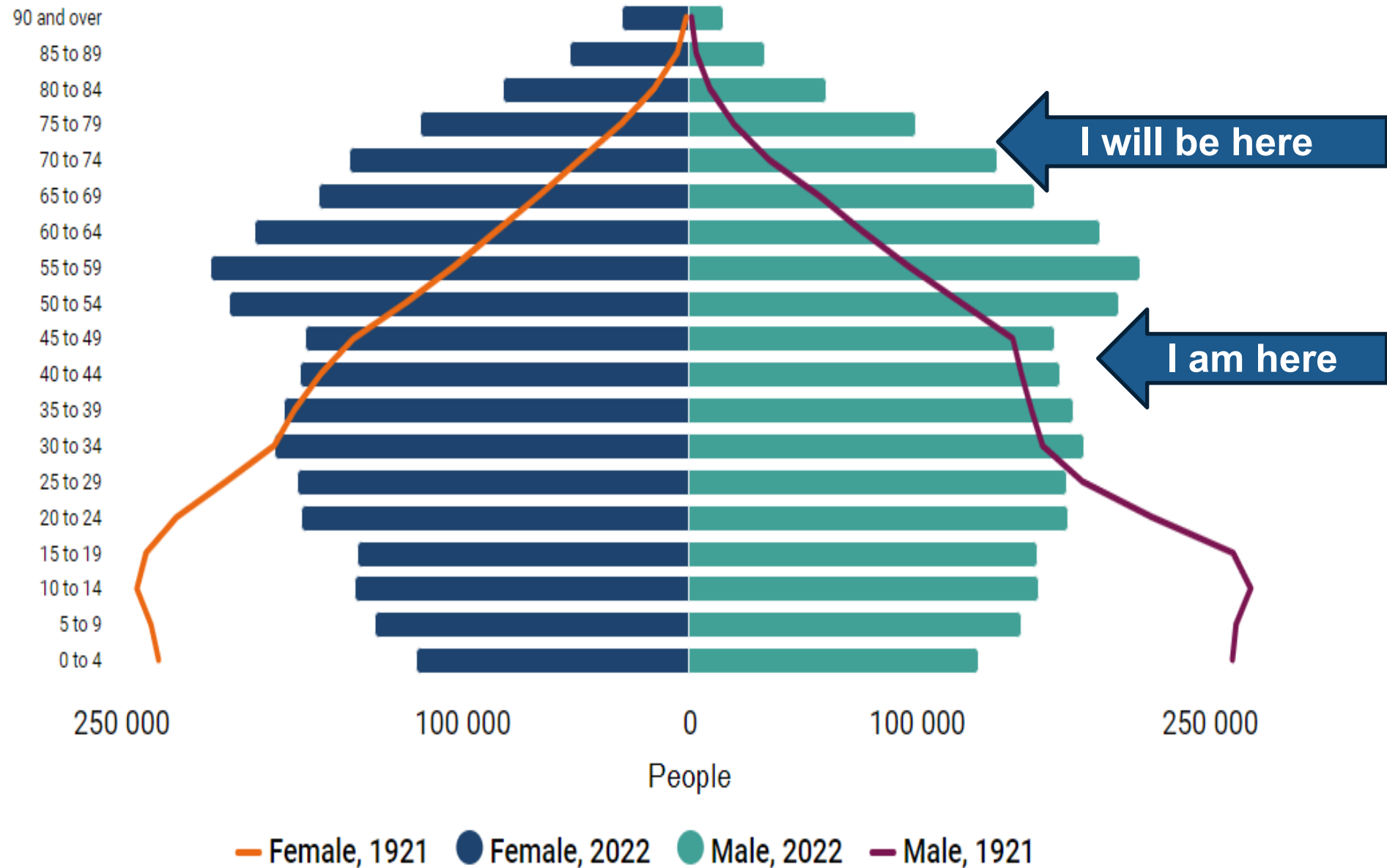


1,091,000 people aged over 65

20% of population

Increase of 22.5% compared to 2011







Ignatz Leo Nascher
1863-1944

Geriatrics: *geras* - old age,
iatrikos - relating to physicians

is a term I would suggest ...
to cover the same field in old age
as covered by the term paediatrics in children

to emphasize the necessity of considering
senility and its diseases apart from maturity
thus, assigning a separate place in medicine

IL Nascher, Geriatrics.
New York Medical Journal 1909

CHOCOLATE CAN HALT DEMENTIA



**JENNIFER
ANISTON
ENGAGED**
...just a
few days
before
ex-hubby
Brad Pitt



SIMPLE WAY TO FIGHT OFF DEMENTIA

Solving puzzles is an effective
as taking drugs say experts



3P BLOOD PRESSURE PILL BEATS DEMENTIA

ARTHRITIS DRUG WILL FIGHT OFF DEMENTIA

DEMENTIA CAUSED BY STRESSFUL LIFESTYLE

Breakthrough in fight for cure



SUGAR SPEEDS UP DEMENTIA

It makes the cruel
condition more
severe say experts

EAT CURRY TO BEAT DEMENTIA

Spice ingredient is
able to boost your
memory, say experts

DEMENTIA RISK 'RISES IF YOU LIVE NEAR A BUSY ROAD'

Millions exposed to noise and fumes more
likely to develop disease, says major study



PUZZLES BEST WAY TO FIGHT DEMENTIA

DEMENTIA RISK FROM SLEEPING TABLETS

Personers on pills taken by 15m are 50%
more likely to be hit, warns researchers

DAILY DRINK TO BEAT DEMENTIA

£3.50 vitamin
cocktail stops
memory loss



COFFEE FIGHTS ALZHEIMER'S

Just three cups a
day could slash
risk of the disease

EAT SALADS TO BEAT DEMENTIA

Daily helping will
boost memory and
stop brain ageing

LOSE WEIGHT TO BEAT DEMENTIA

Earlier people
decline of faster
rate, say experts



HOW BLOOD PRESSURE DRUG BEATS DEMENTIA



90,000 Scots living with dementia

3,000 under 65

Commonest cause of death and disability (11.3% deaths)

70% of care-home residents

Total cost £25 Billion (UK 2021)

50% increase over next 20 years

1 in 3 born today will get dementia



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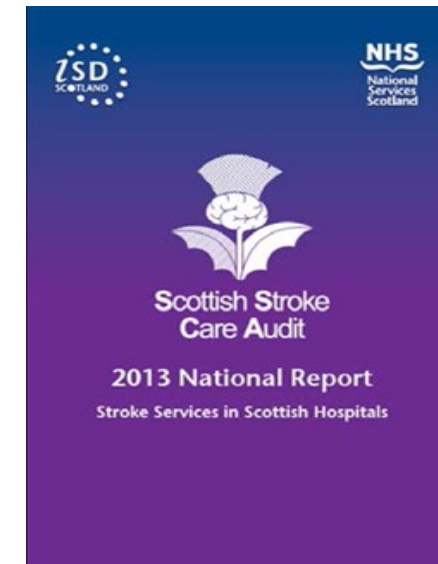
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[illegible]

Scottish Dementia Data Index





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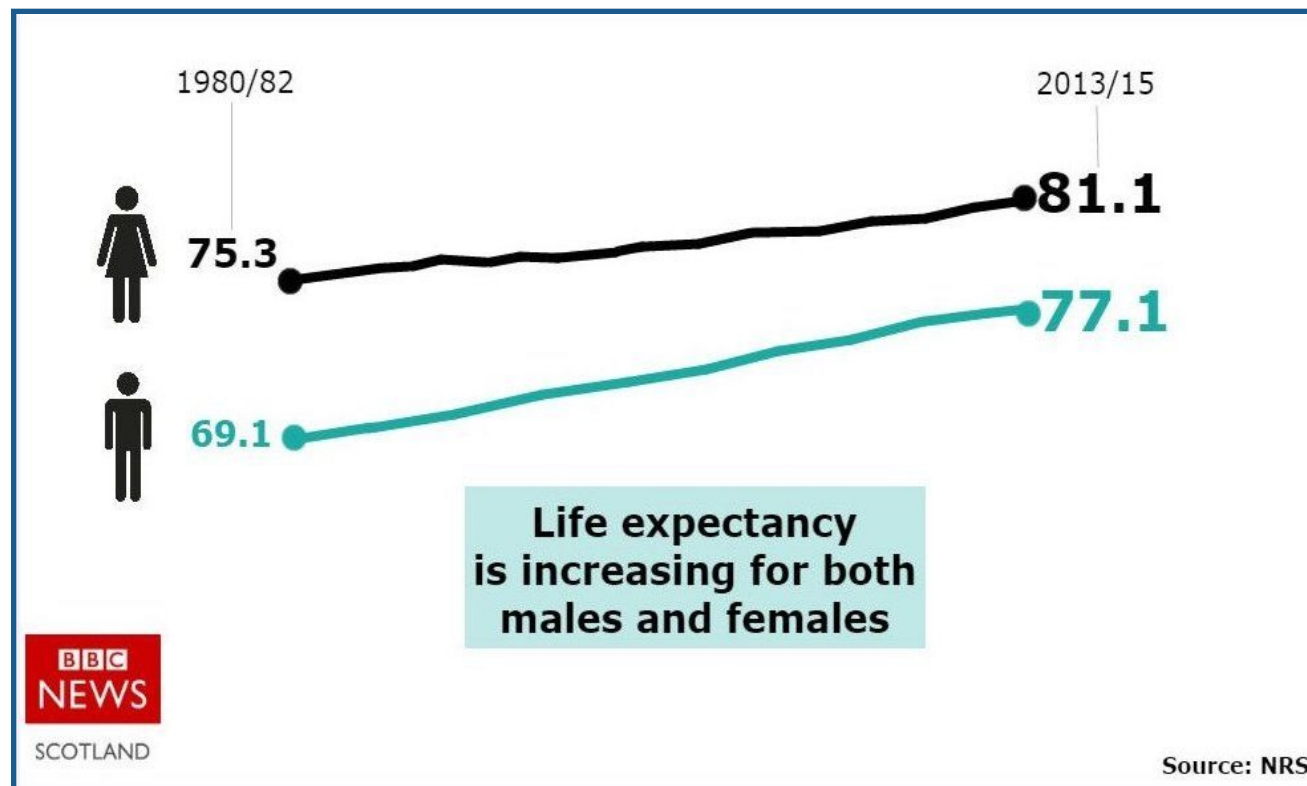
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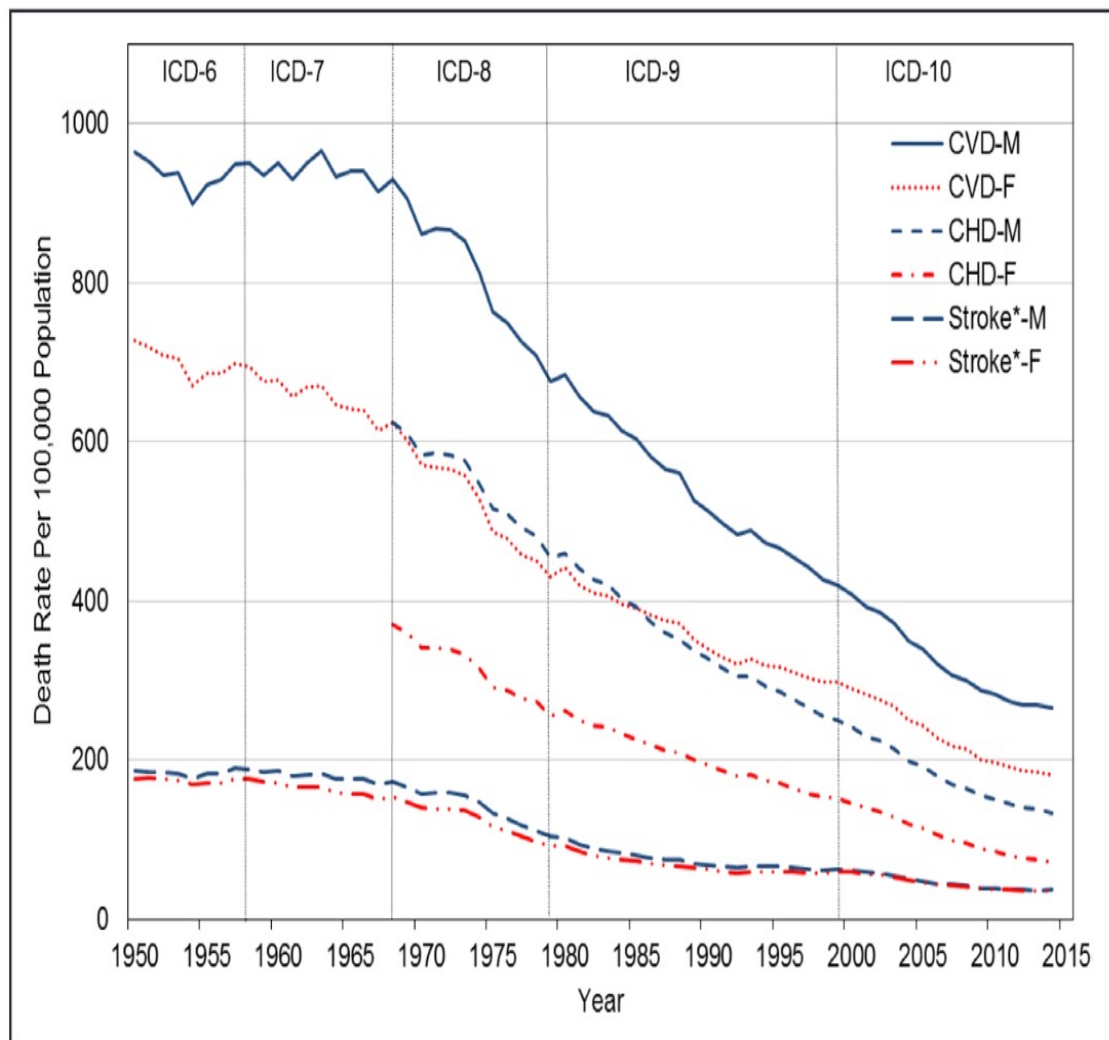
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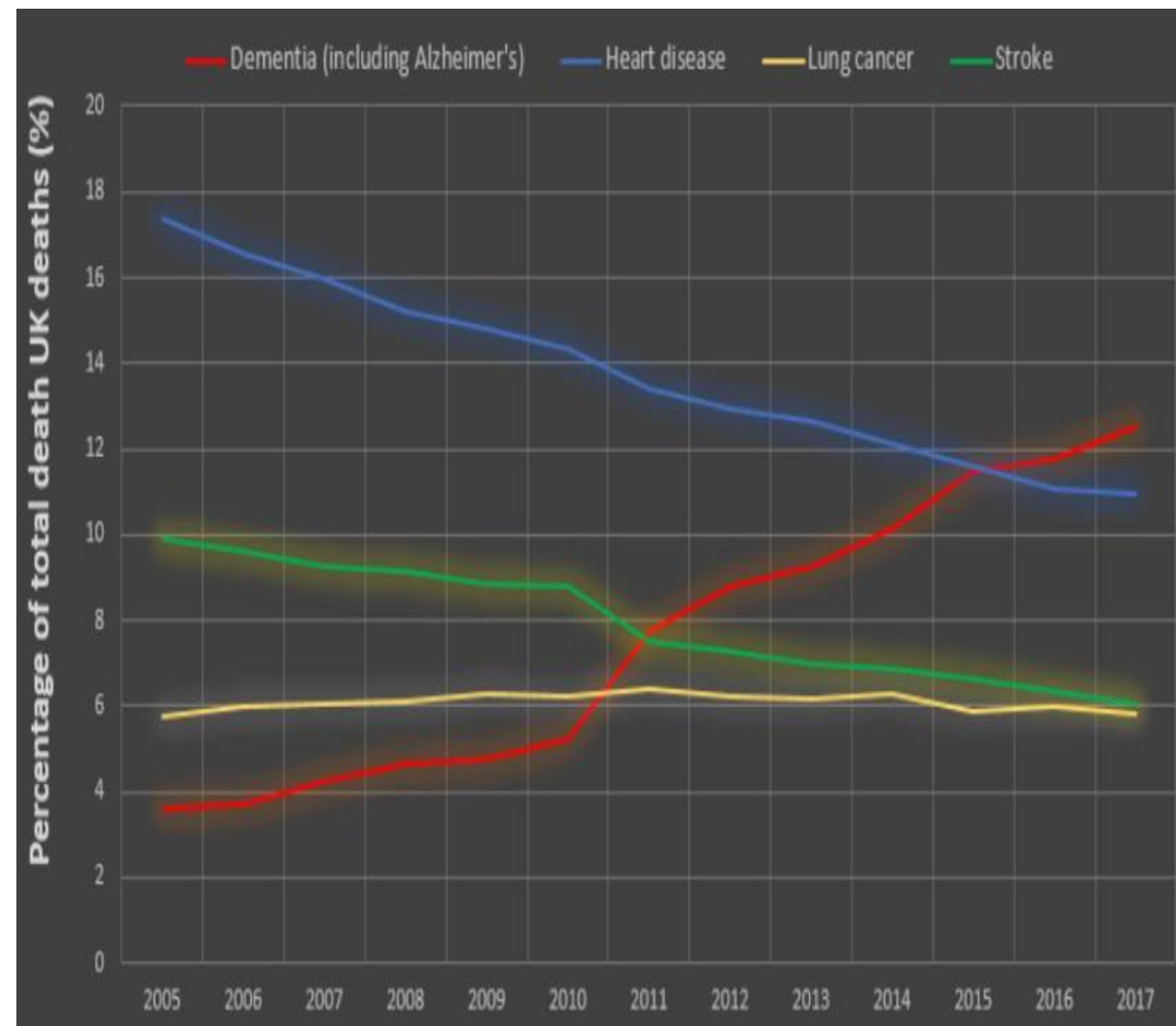
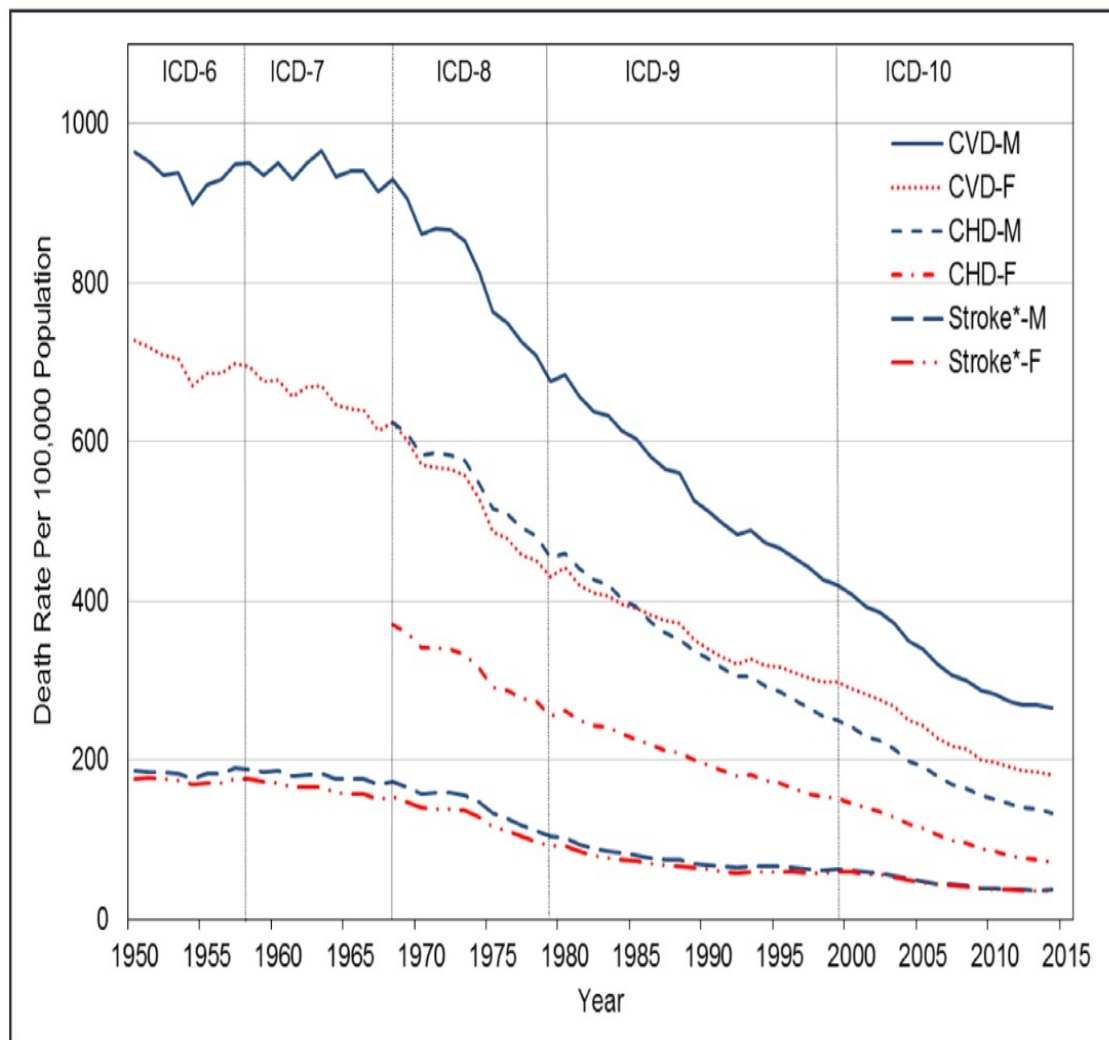
Competing risks



As early death from cardiovascular disease falls.....



As early death from cardiovascular disease falls.....





- Dementia is a disease of high income countries
- New cases of dementia are increasing the UK
- Dementia is predominantly a disease of women
- Dementia is inevitable with ageing
- Dementia can happen at any age
- Dementia is unique to humans and other large primates
- Dementia is recognised internationally



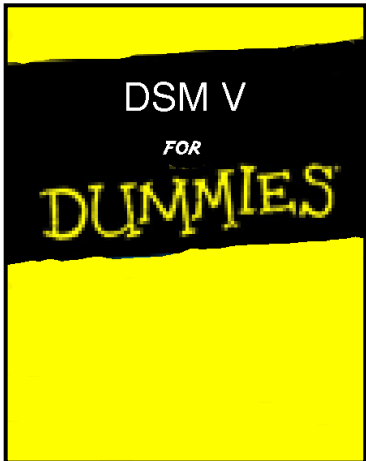
- Dementia is a disease of high income countries **Fake news**
- New cases of dementia are increasing the UK **Fake news**
- Dementia is predominantly a disease of women **Fake news(-ish)**
- Dementia is inevitable with ageing **Fake news**
- Dementia can happen at any age **News**
- Dementia is unique to humans and other large primates **Fake news**
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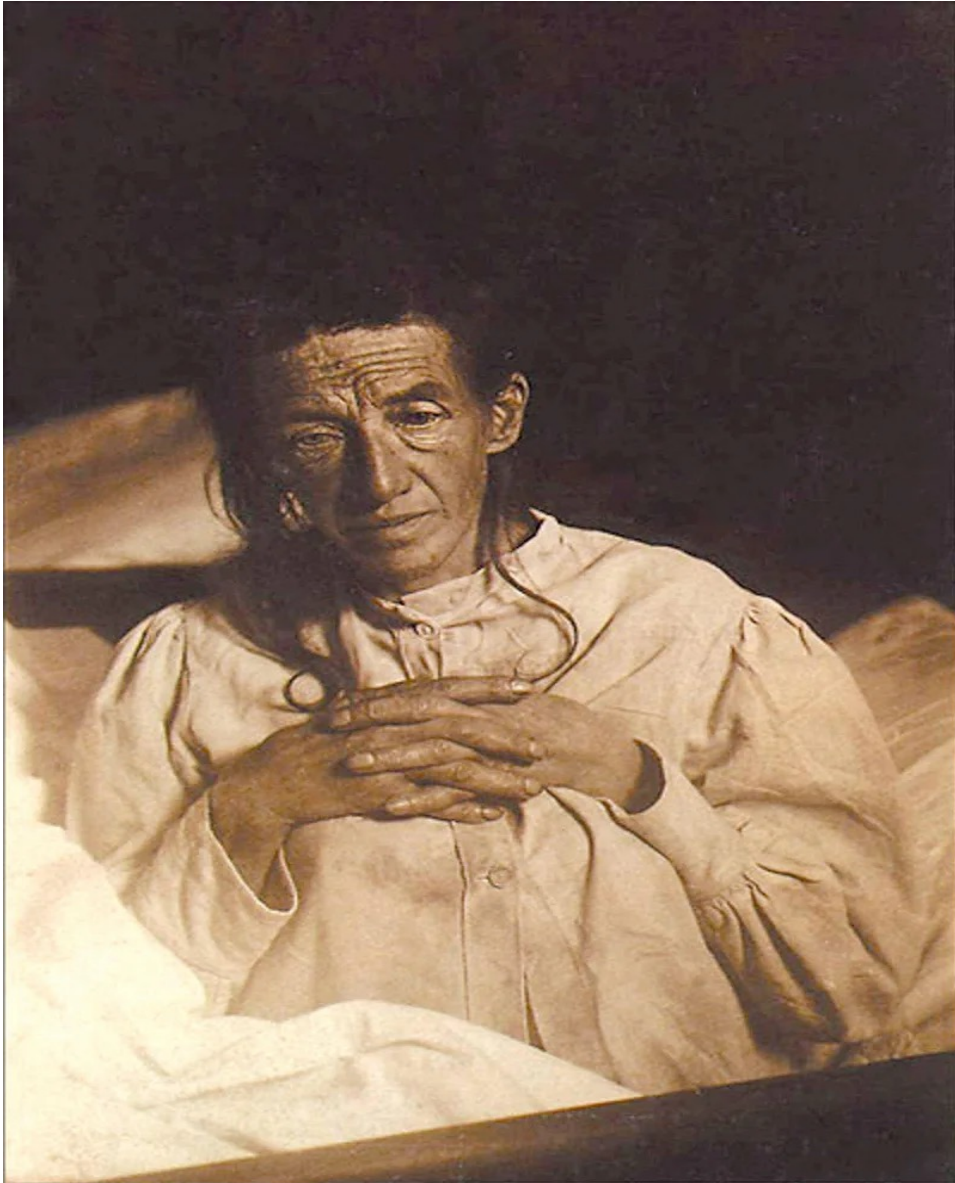
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Healthy
Brain

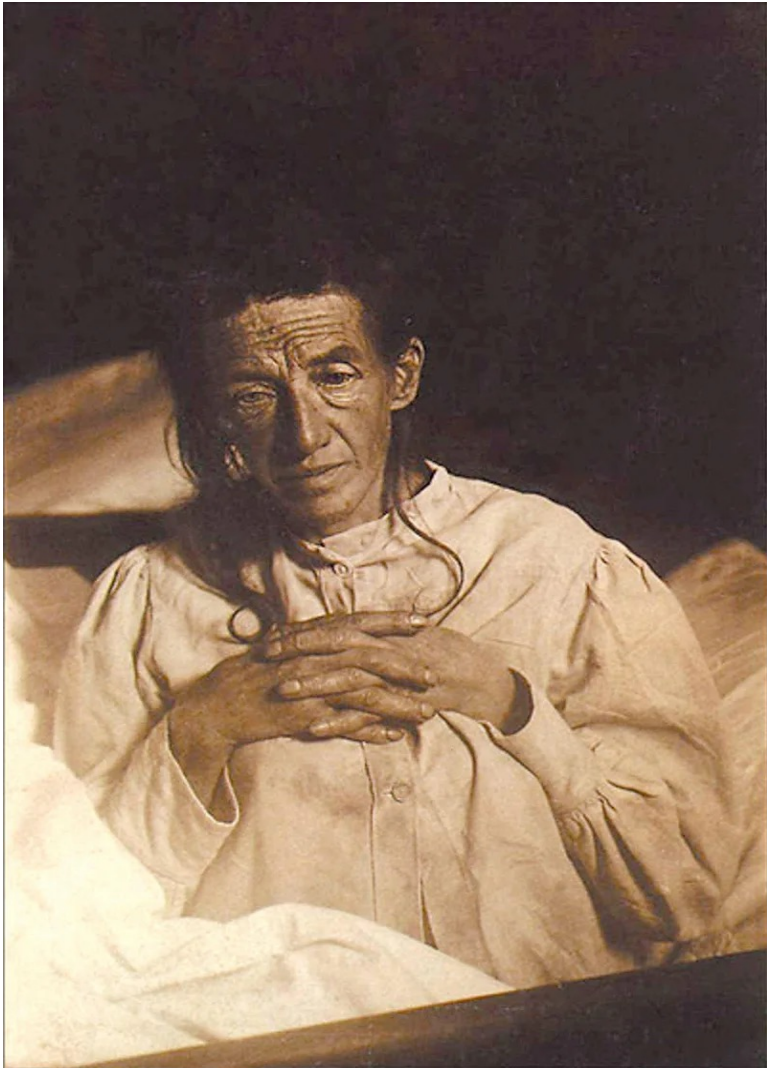
Severe
Alzheimer's





Who
are
these
people?





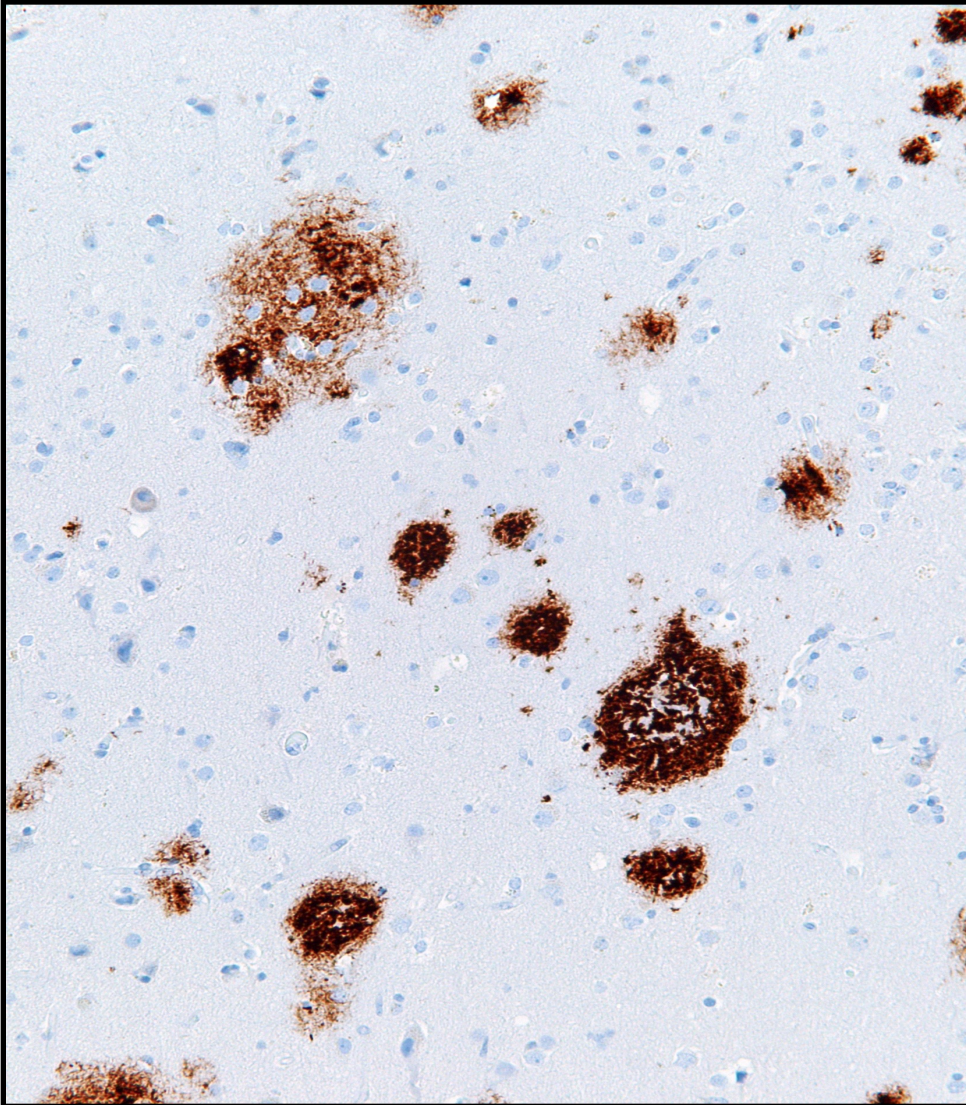
Auguste Deter

Memory loss and hallucinosis

Five year admission Frankfurt Psychiatric Hospital

1906 Alois Alzheimer presented the case

Autopsy findings of amyloid plaques and neurofibrillary tangles



Amyloid beta protein

Extracellular

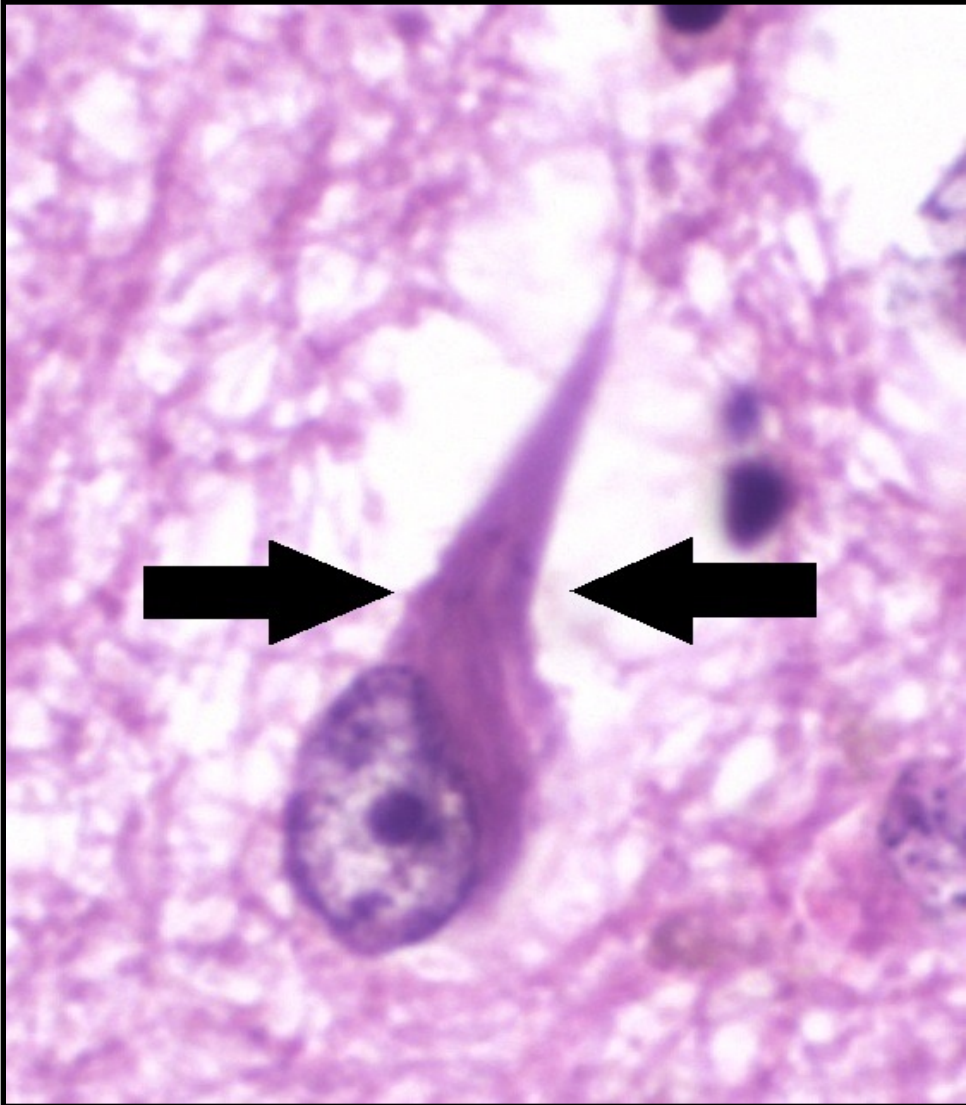
Purpose not clear

Form sheets (plaques) of misfolded proteins

Disrupt brain cell function

Neurotoxic

Increase with age



Tubulin associated unit (TAU) protein

Intracellular

Maintain the health of brain cells

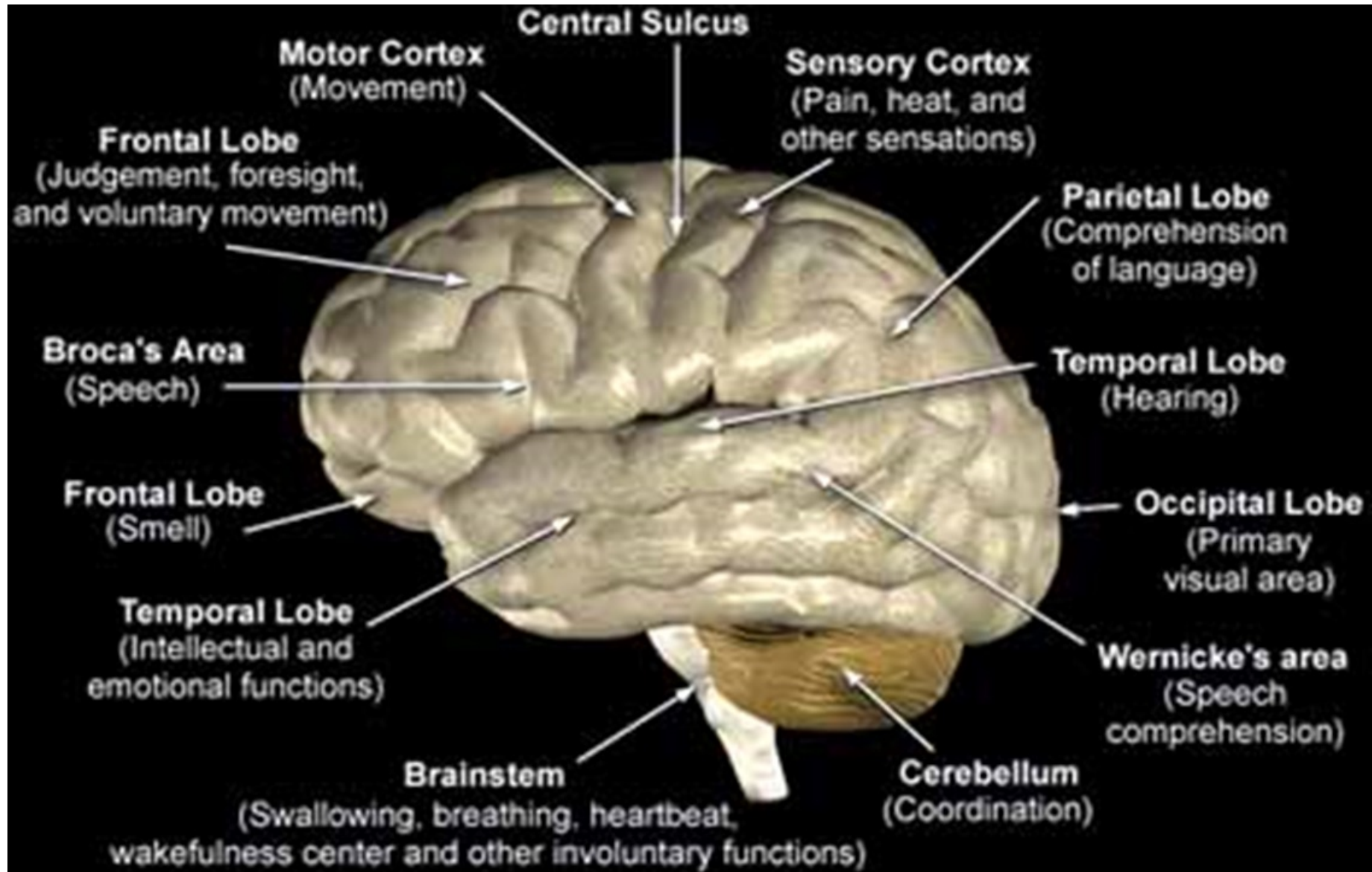
TAU forms aggregates (neurofibrillary tangles)

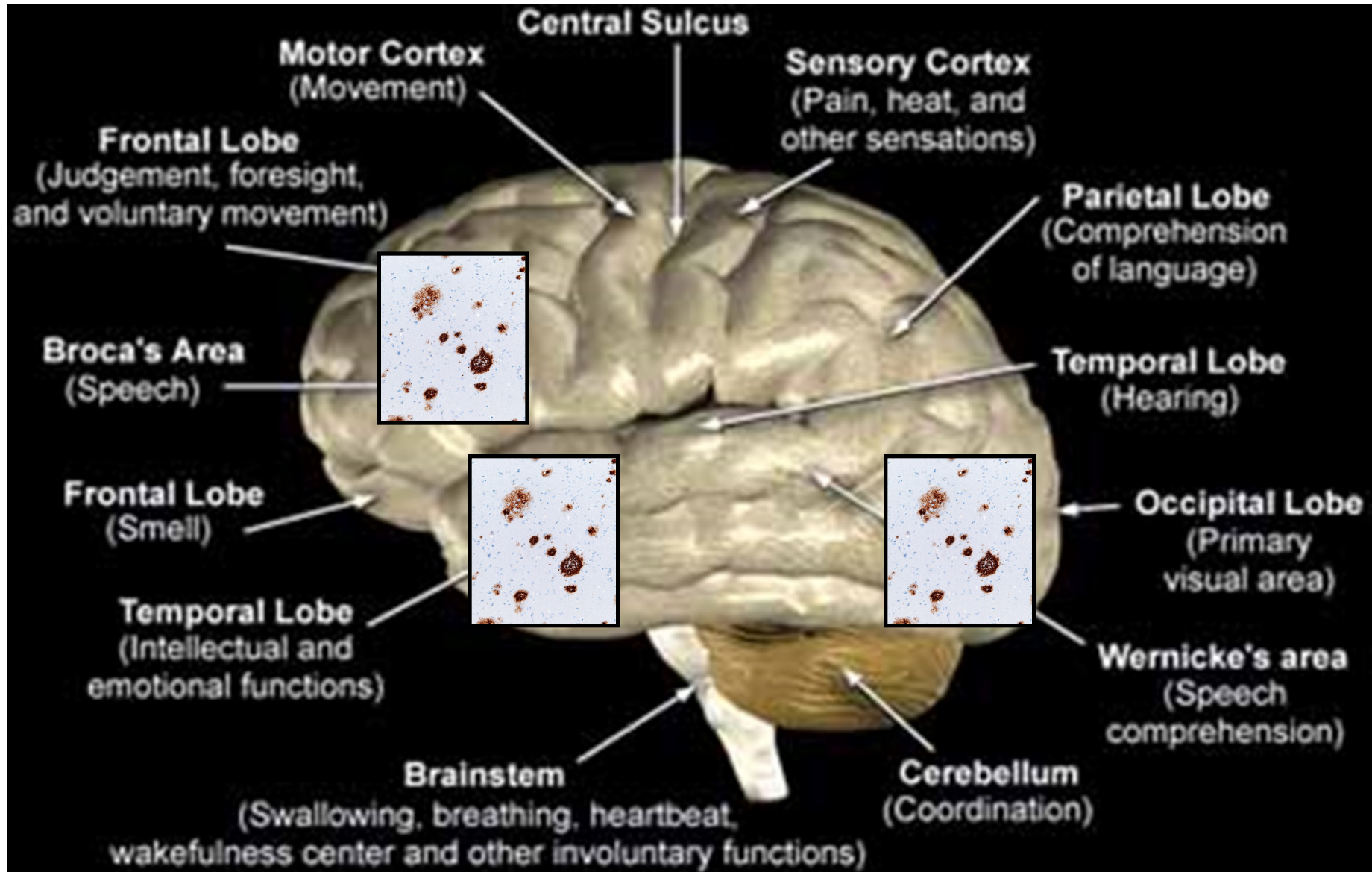
Neurotoxic

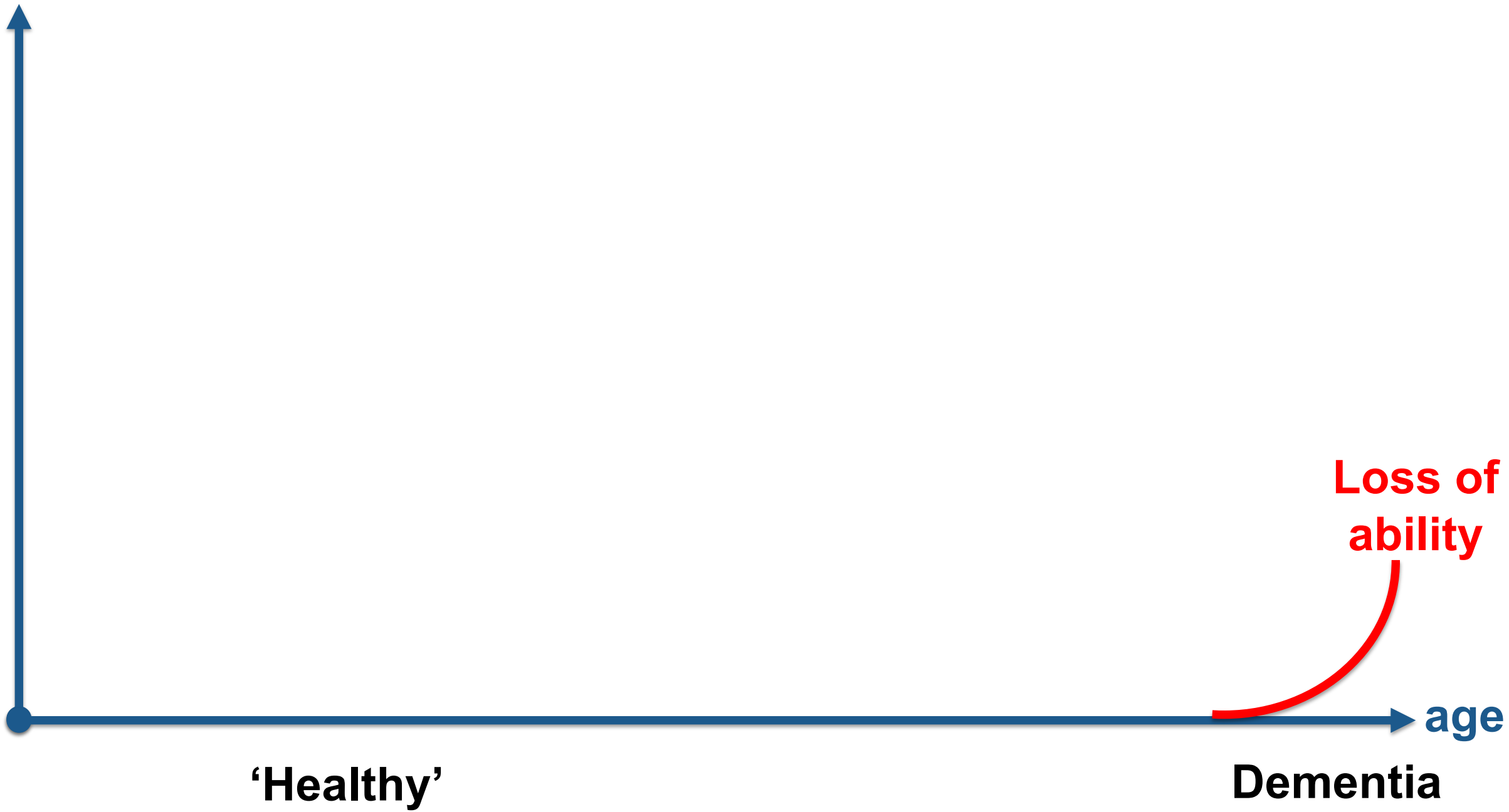
Seen in various dementia types

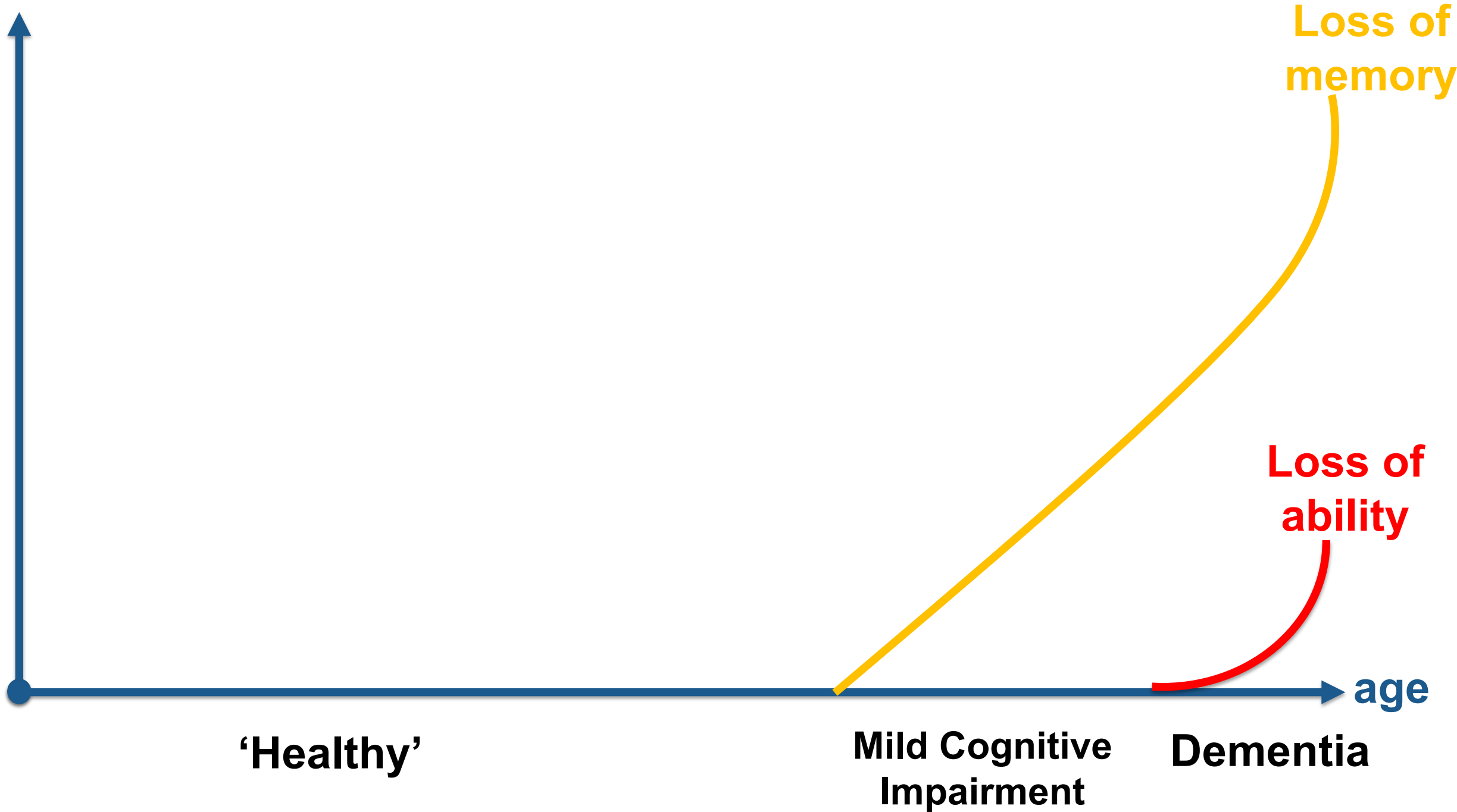


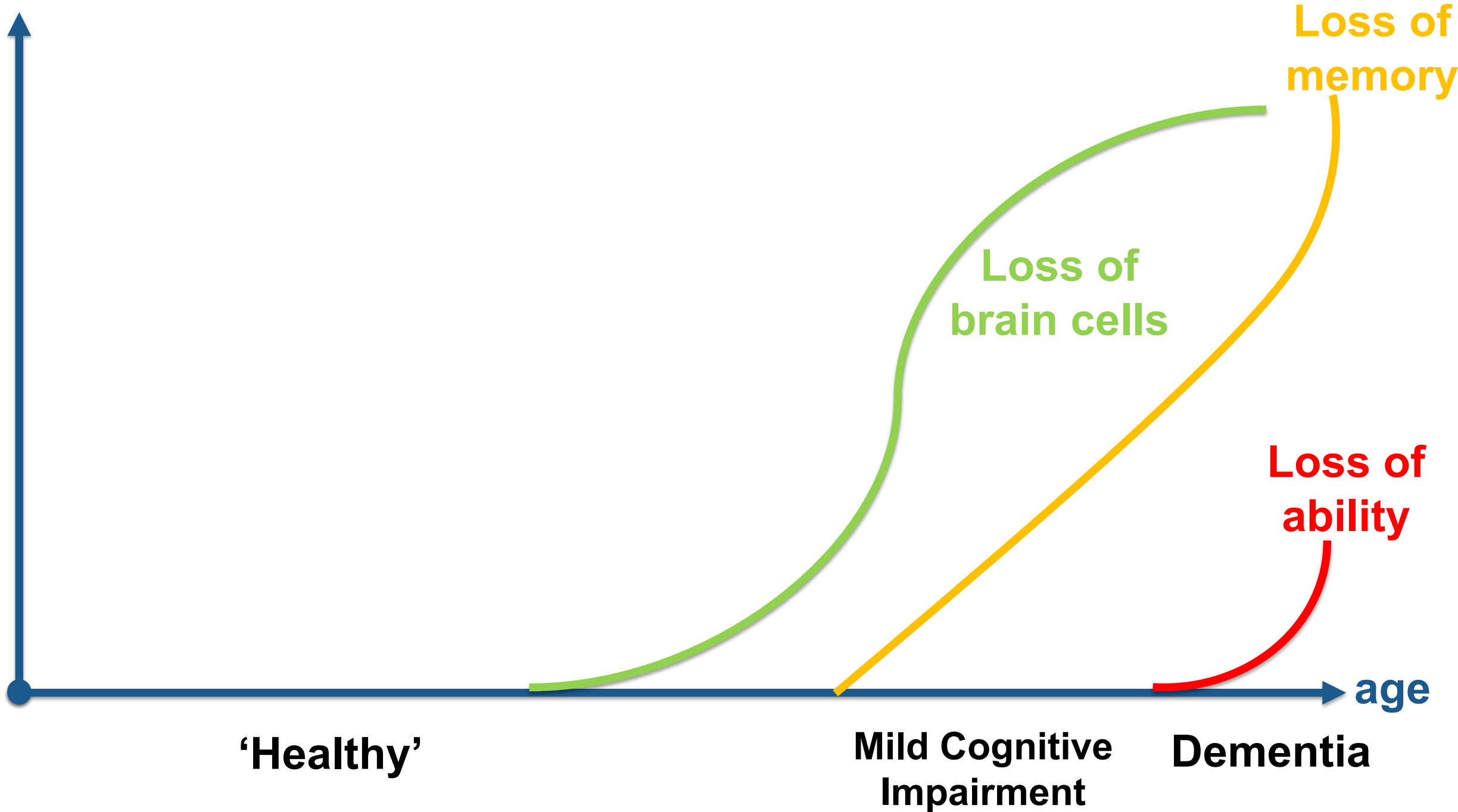
Location, location, location

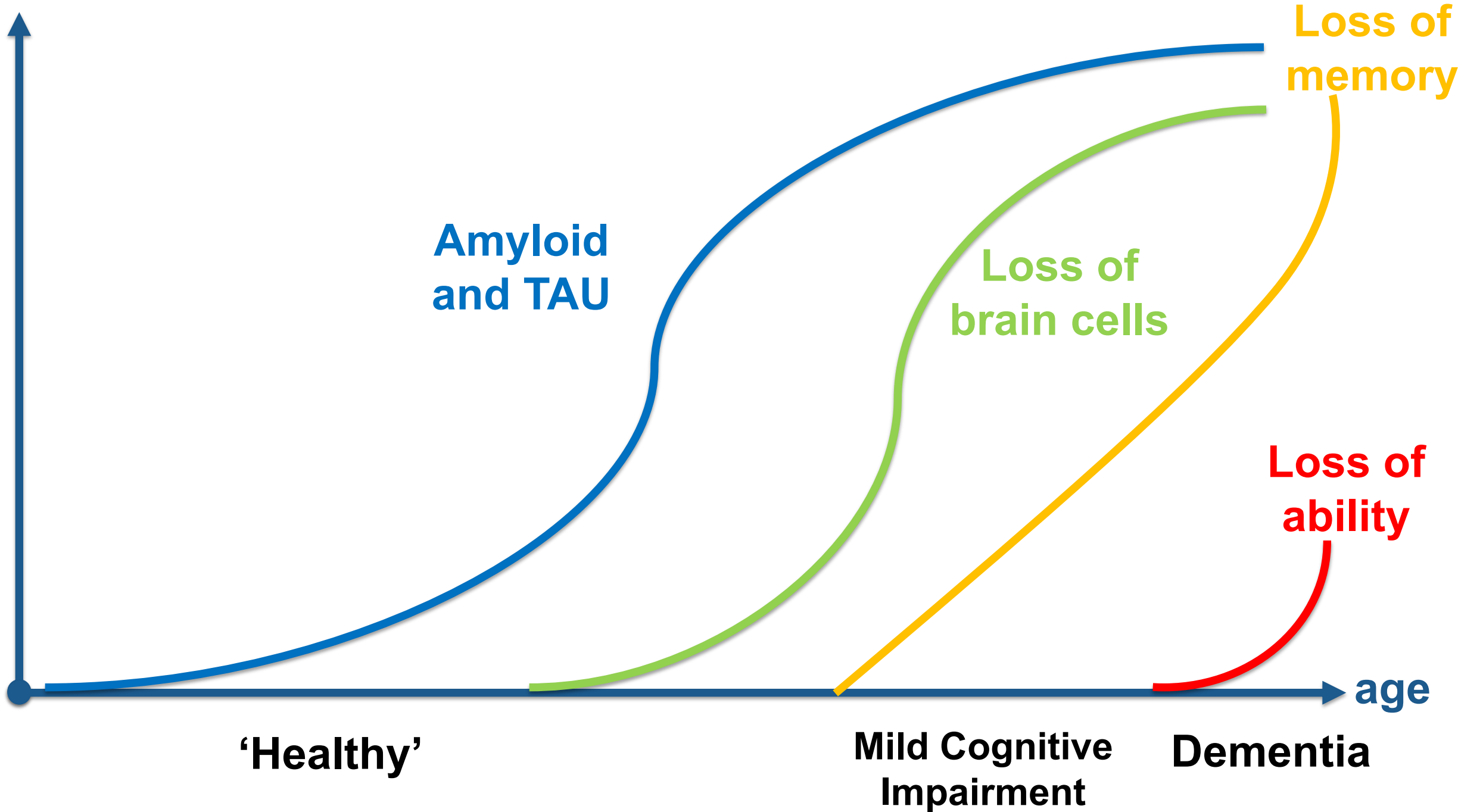


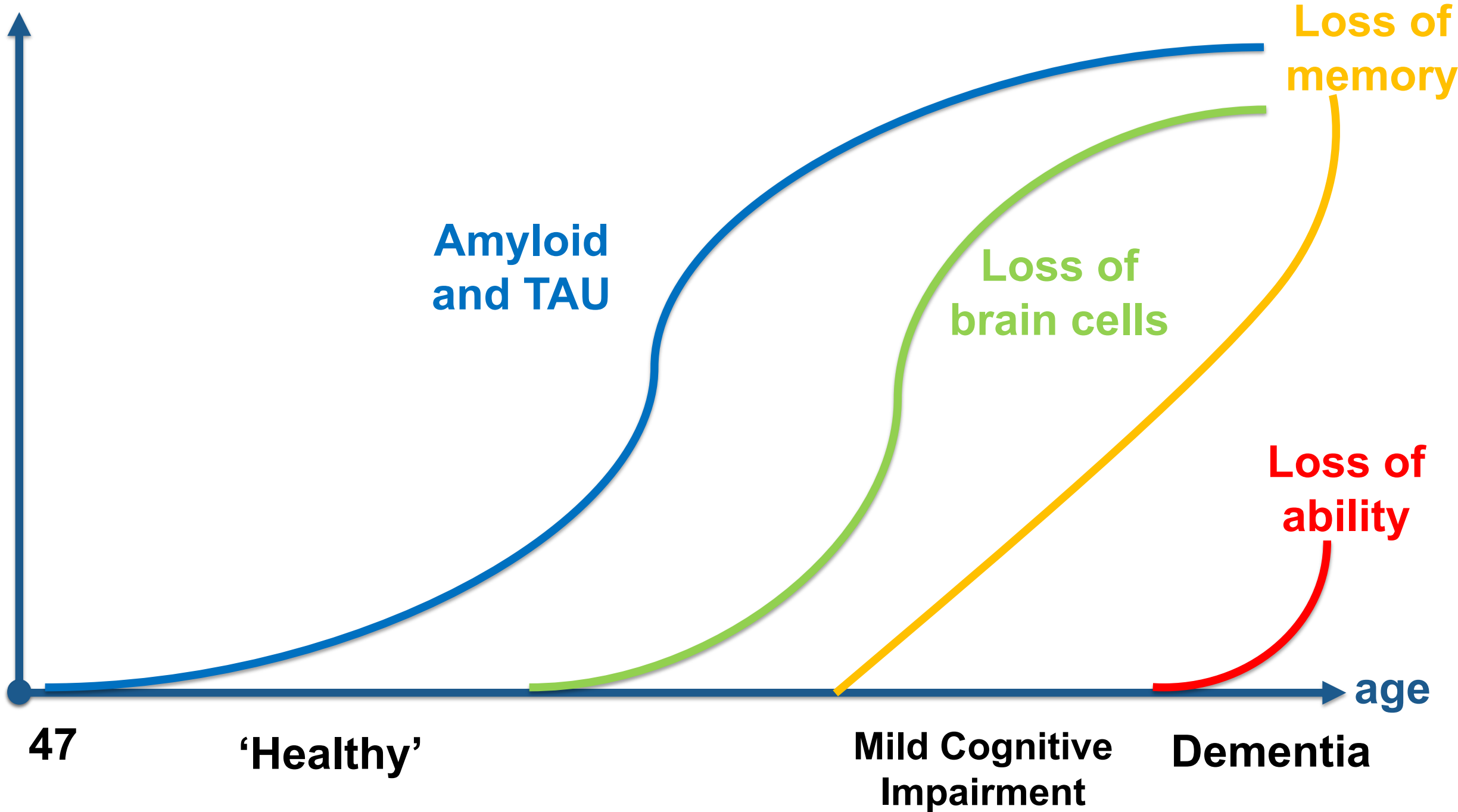














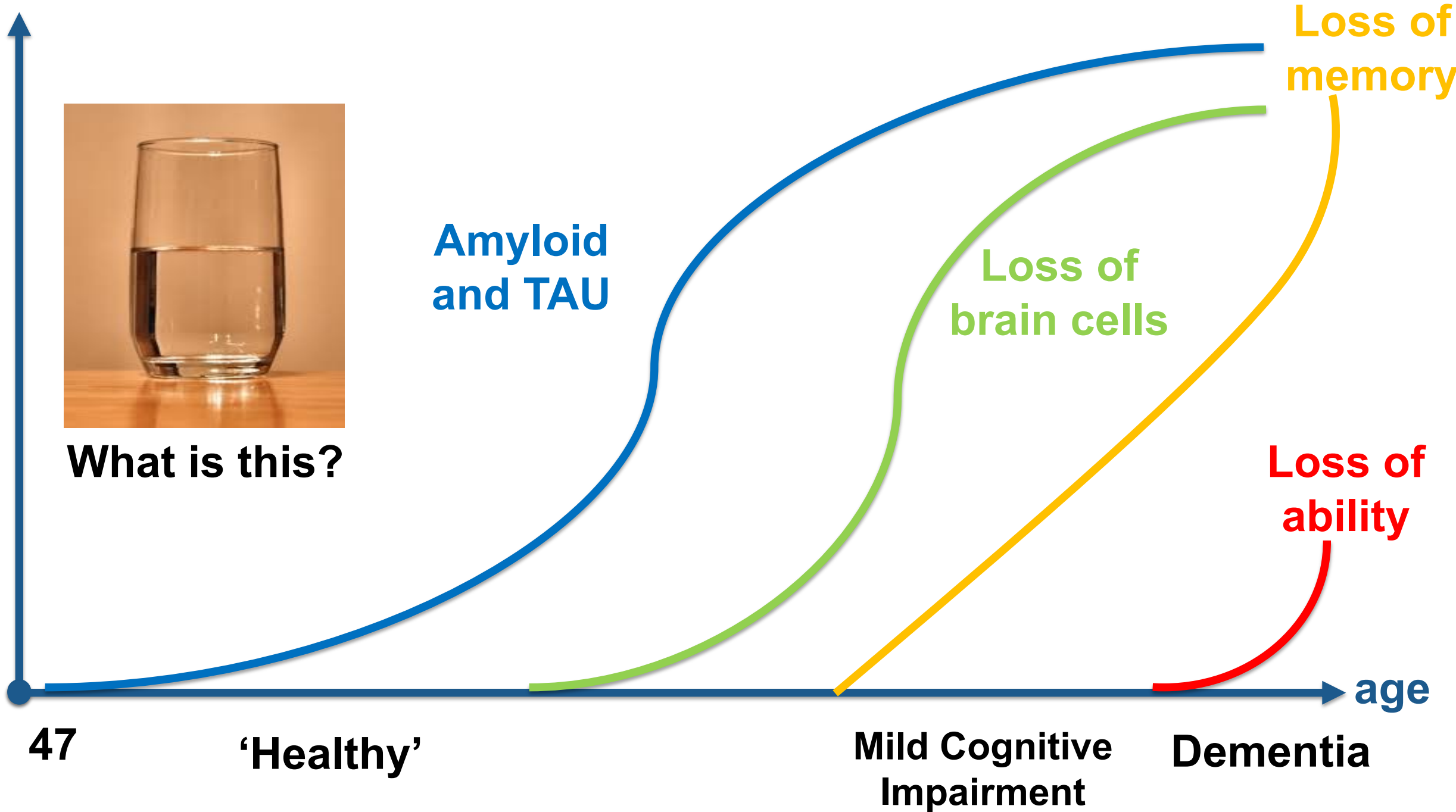
What is this?

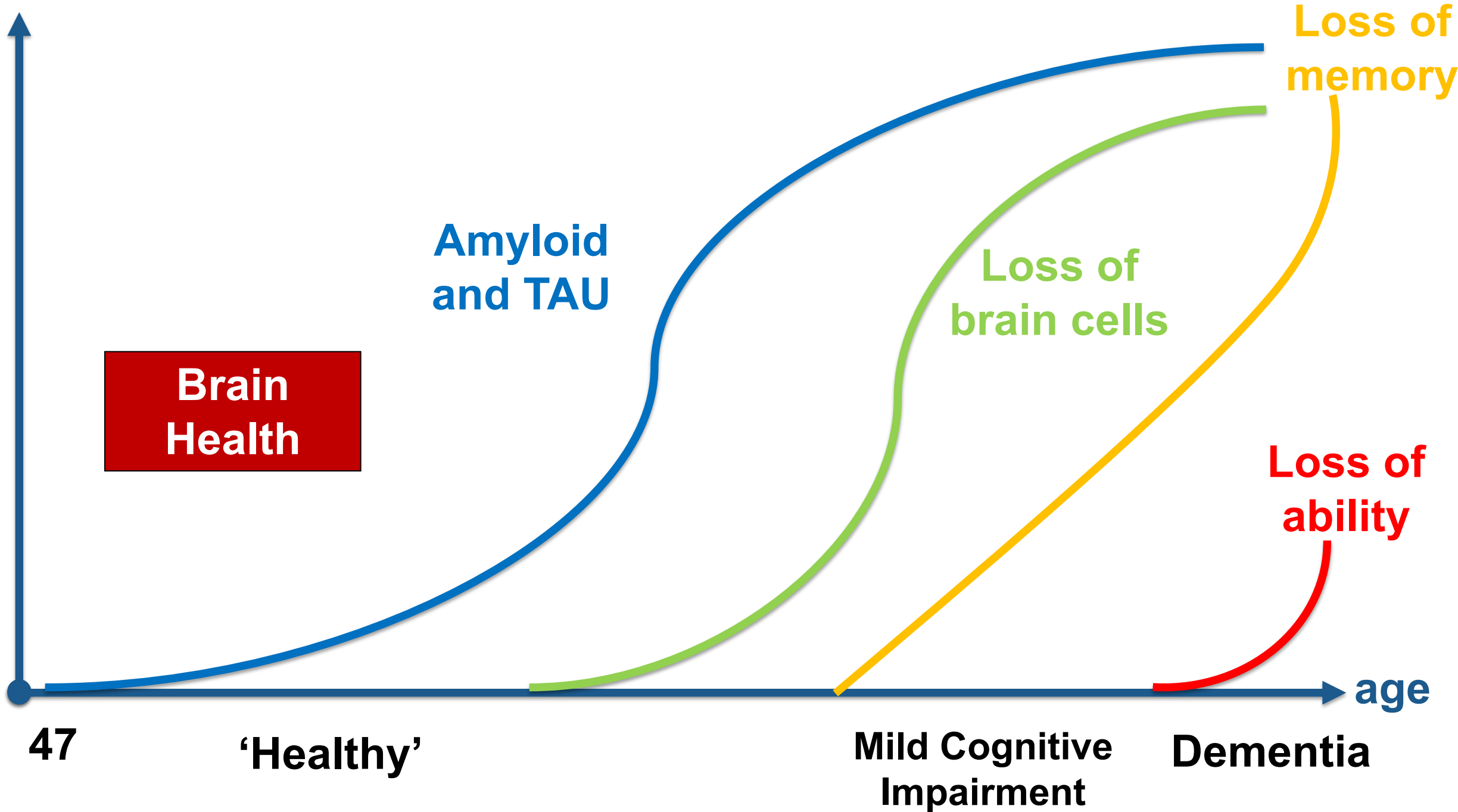
Amyloid
and TAU

Loss of
brain cells

Loss of
memory

Loss of
ability







**Brain
Health**

Mild Cognitive
Impairment

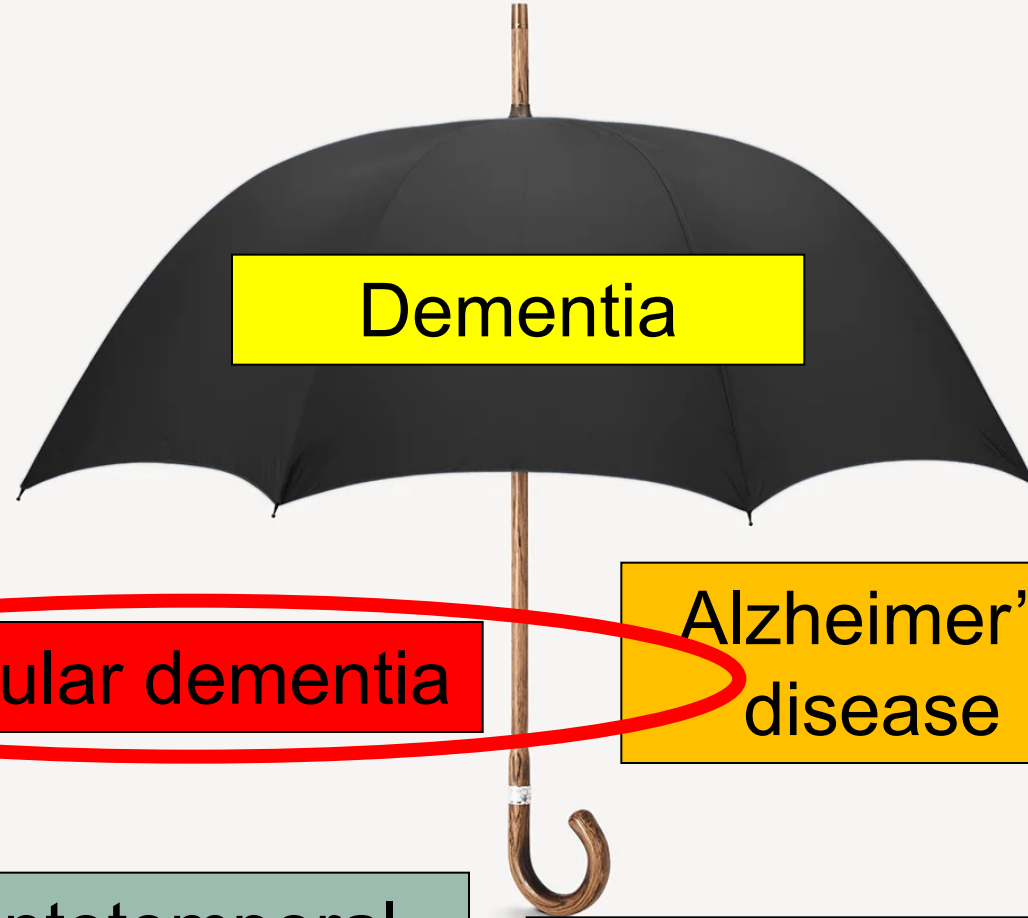
Dementia

Vascular dementia

Alzheimer's
disease

Frontotemporal
dementia

Lewy Body
Disease





Cerebrovascular disease

Interruption of brain blood supply

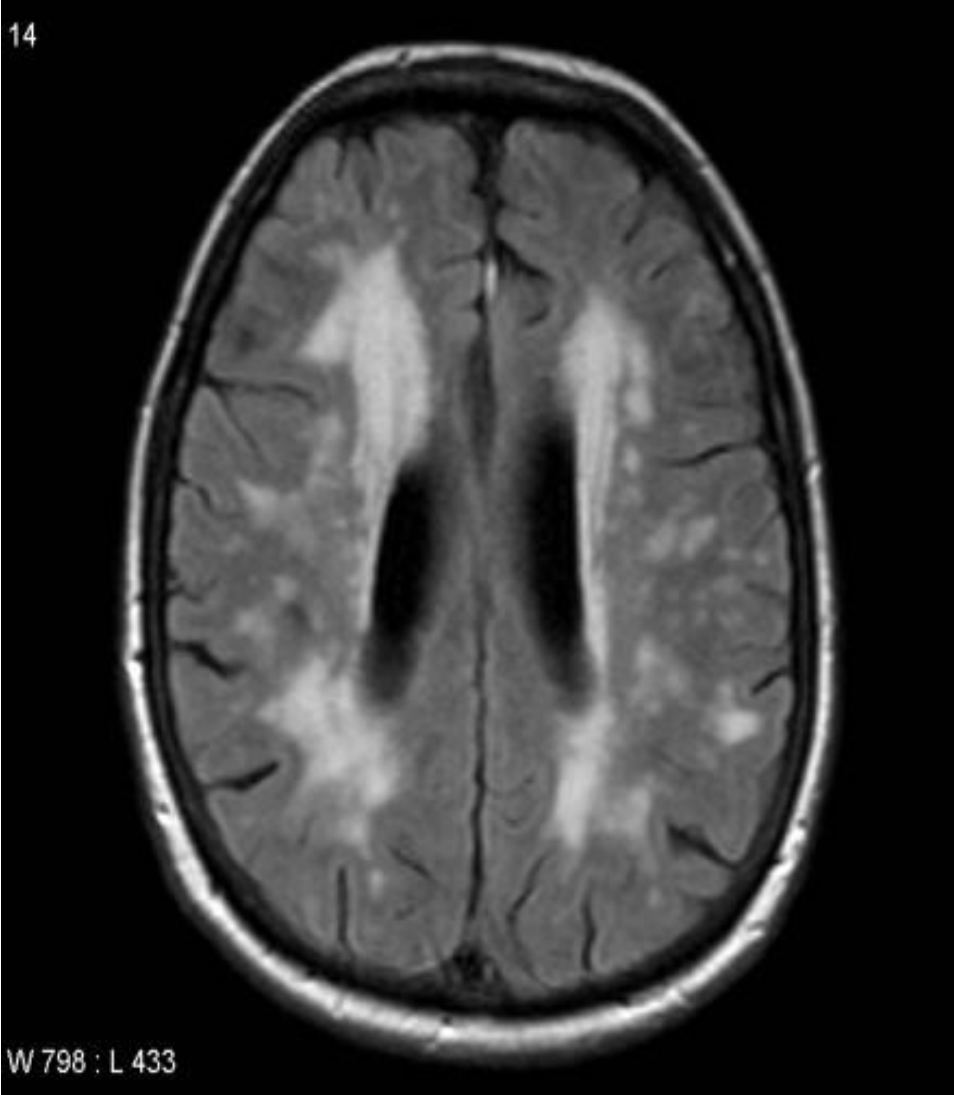
Blockages or bursts

Direct and indirect damage to brain cells

Cumulative disruption to connections
(and brain waste clearance)

Increases with age

14



Cerebrovascular disease

Interruption of brain blood supply

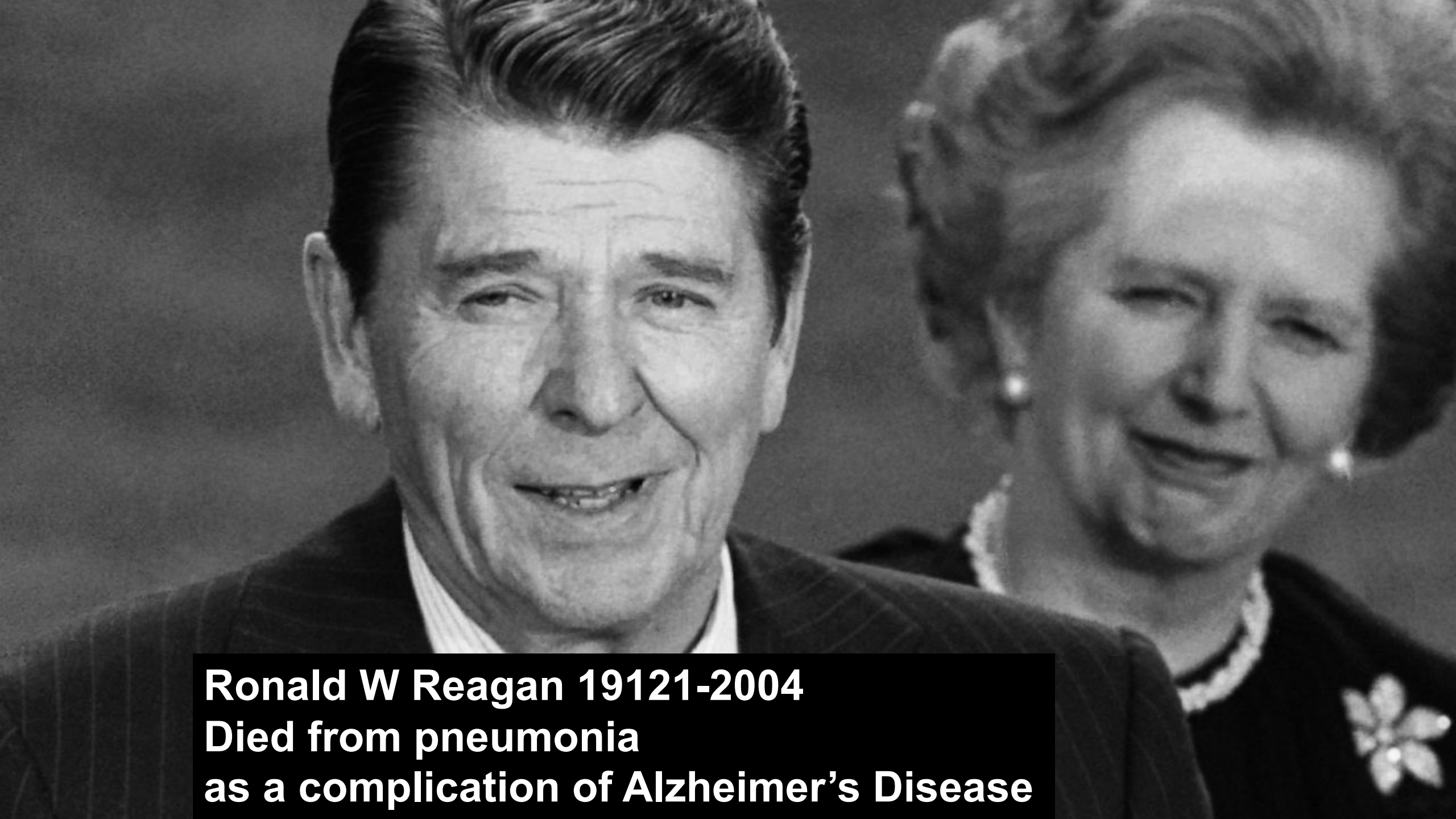
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Ronald W Reagan 19121-2004
Died from pneumonia
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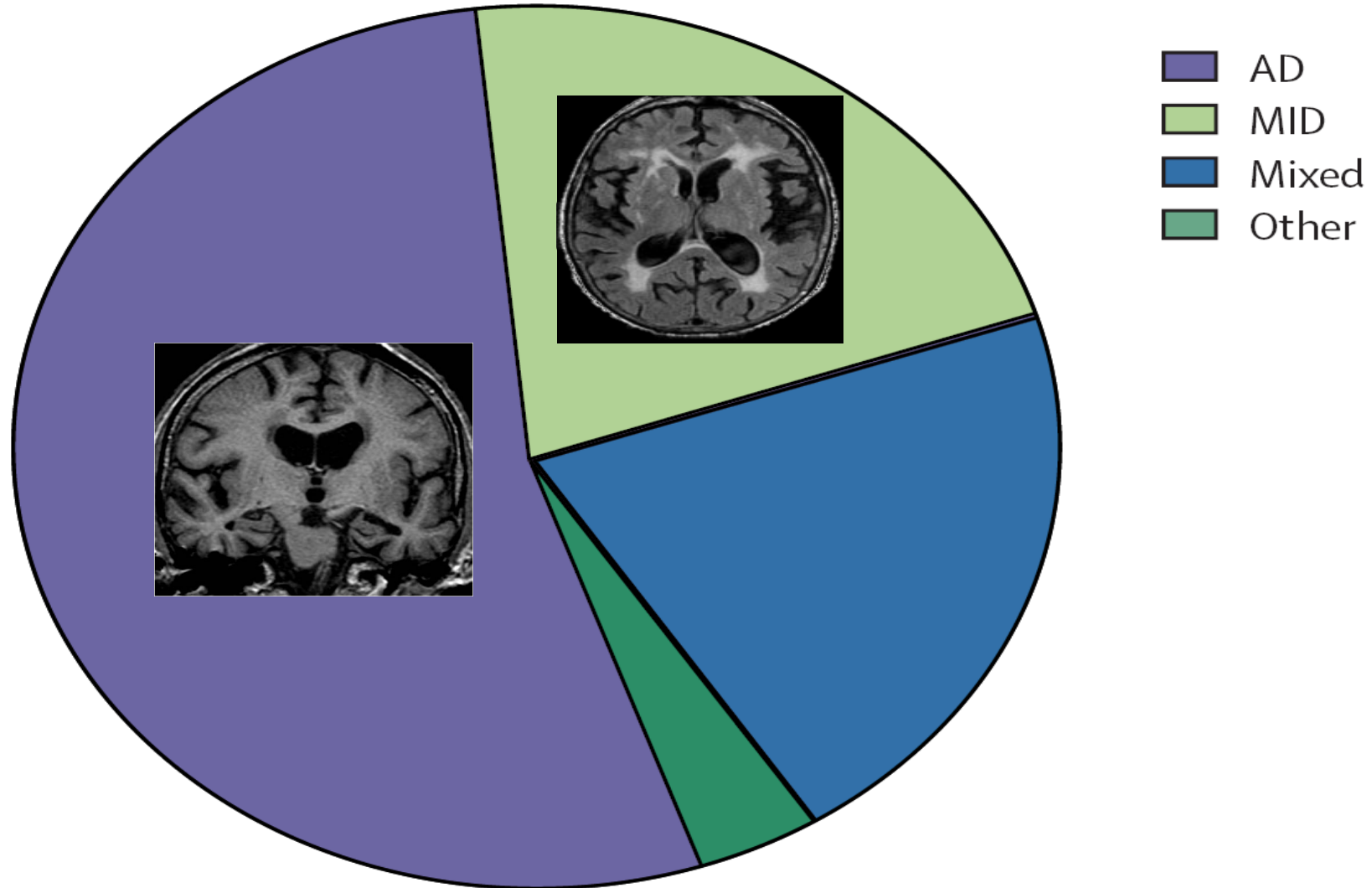


Ronald W Reagan 1921-2004
Died from pneumonia
as a complication of Alzheimer's Disease



Margaret H Thatcher 1925-2013
Died from stroke
and vascular dementia

1990s





- Disconnect between autopsy findings and symptoms during life
- Interplay of vascular and neurodegenerative factors
- *ie most dementia is a 'mix'*



- Disconnect between autopsy findings and symptoms during life
- Interplay of vascular and neurodegenerative factors
- *ie most dementia is a 'mix'*
- Lifestyle factors in younger age may influence dementia
- *ie dementia is not inevitable*



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Alzheimer's disease dementia

Gradual onset and decline

Memory and language difficulty:
repetitive, misplaces, forgets appointments,
longer term memories usually preserved
word finding difficulty,

Other issues emerge over time

Apathy common

May lack insight into problems

14

Vascular dementia

Can be 'step wise' with sudden declines

Any cognitive domain

Insight often well preserved

Often associated with neurological deficit

Personality relatively well-preserved

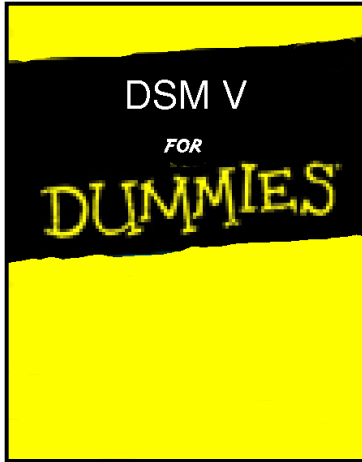
Marked emotional symptoms (eg lability)



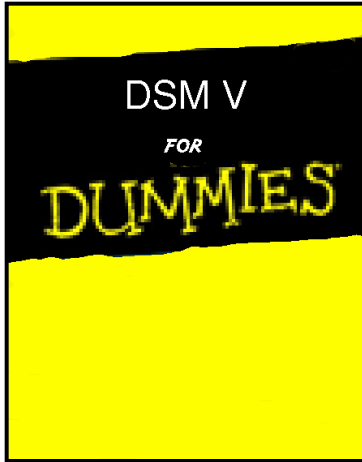
$\div 2$

Without looking at one, draw a 50p coin...





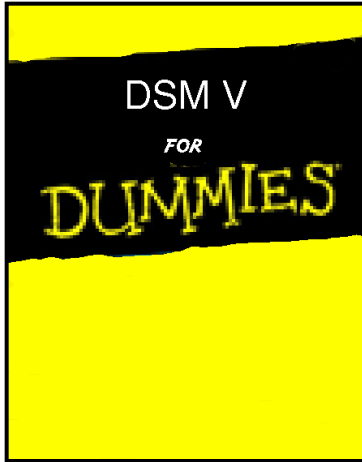
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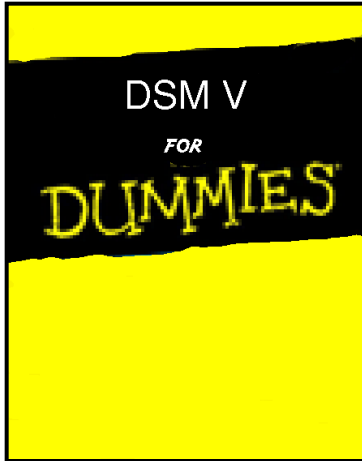
Clinician



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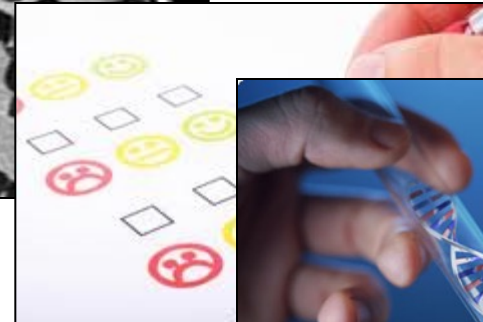
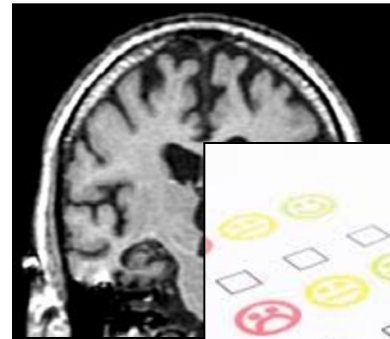
Multidisciplinary
expertise



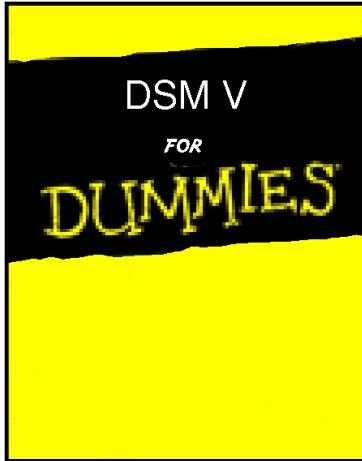
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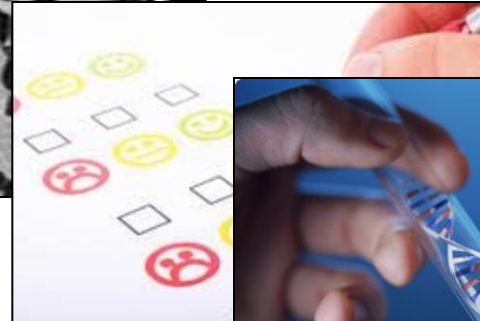
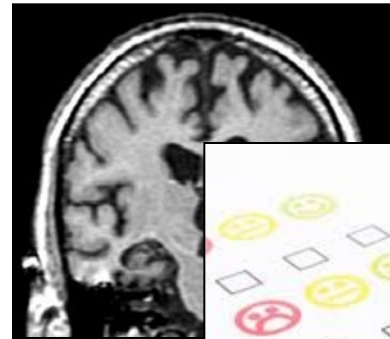
Specialist
investigations



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Multidisciplinary
expertise



Specialist
investigations



Time



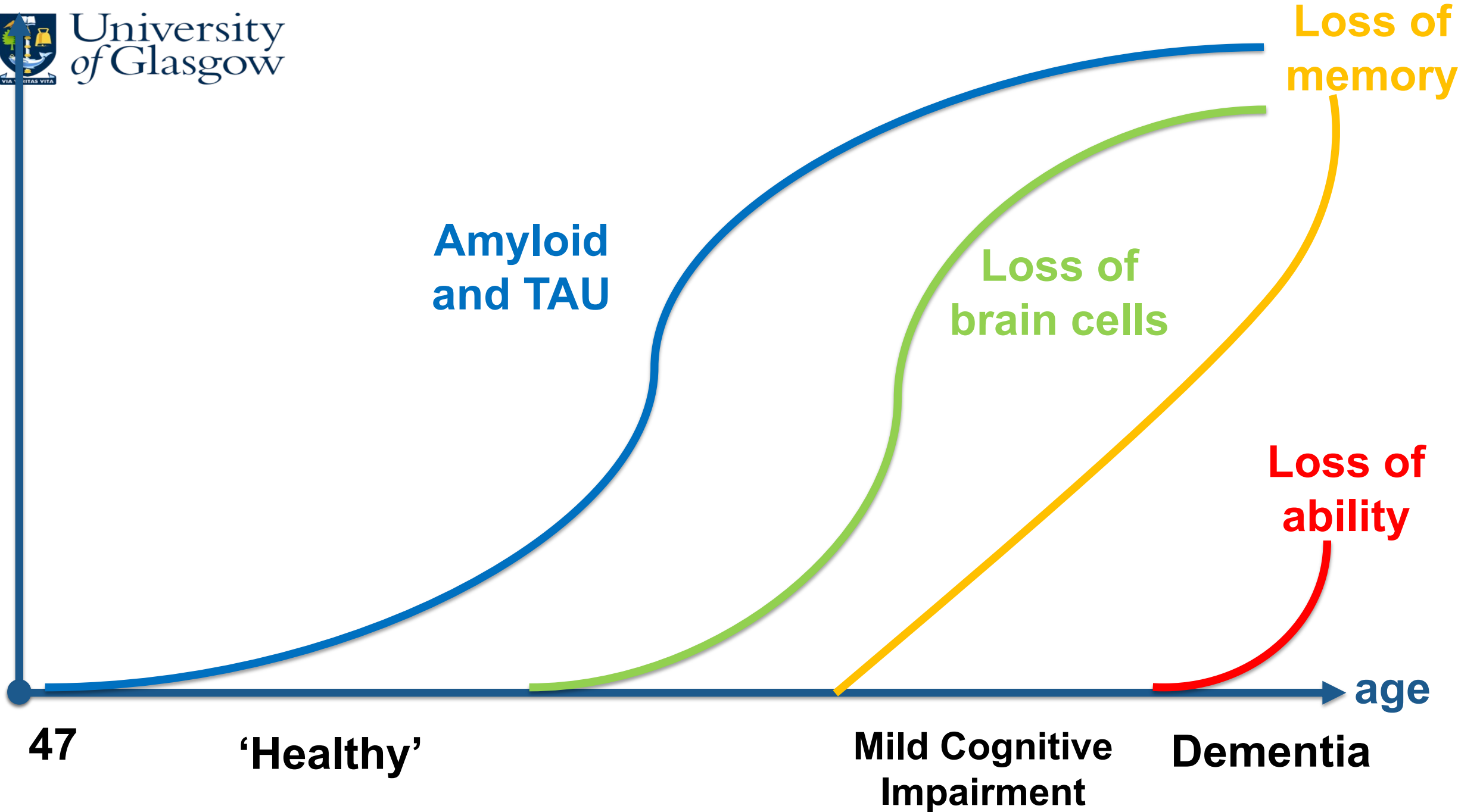
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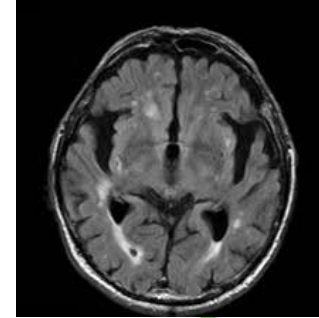
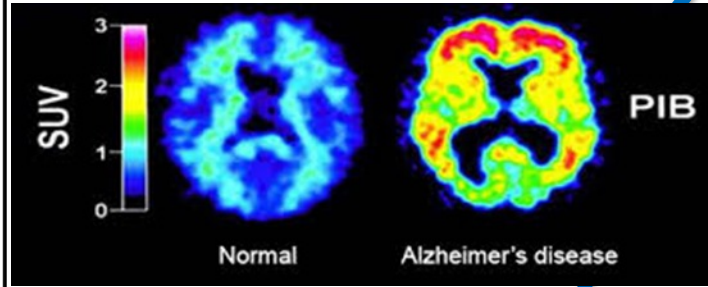


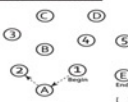
Specialist
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Time





VIDEO-PATENT EXECUTIVE		Copy rectangle		Draw CLOCK (five past four)	
					
NAMING   		MEMORY Read list of words, subject must repeat them in the forward order. Read list of letters, the subject must tap with his hand at each letter A. No penalty if A is missed. Serial 7 subtest starting at 90			
ATTENTION Read list of digits (1 digit) and 1. Subject has to repeat them in the forward order. Subject has to repeat them in the backward order.		LANGUAGE Repeat: "I can run very slowly around animals when it's dark and windy."			
ABSTRACTION How many words can you think of that begin with the letter S?		DELATED RECALL Read list of words, subject must repeat them in the forward order.			
Optional Orientation: 1. Date 2. Month 3. Year 4. Day 5. Place 6. City		Optional Orientation: 1. Date 2. Month 3. Year 4. Day 5. Place 6. City			

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'Healthy'

Mild Cognitive
Impairment

Dementia

age



University
of Glasgow

BBC

For you



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iPlayer

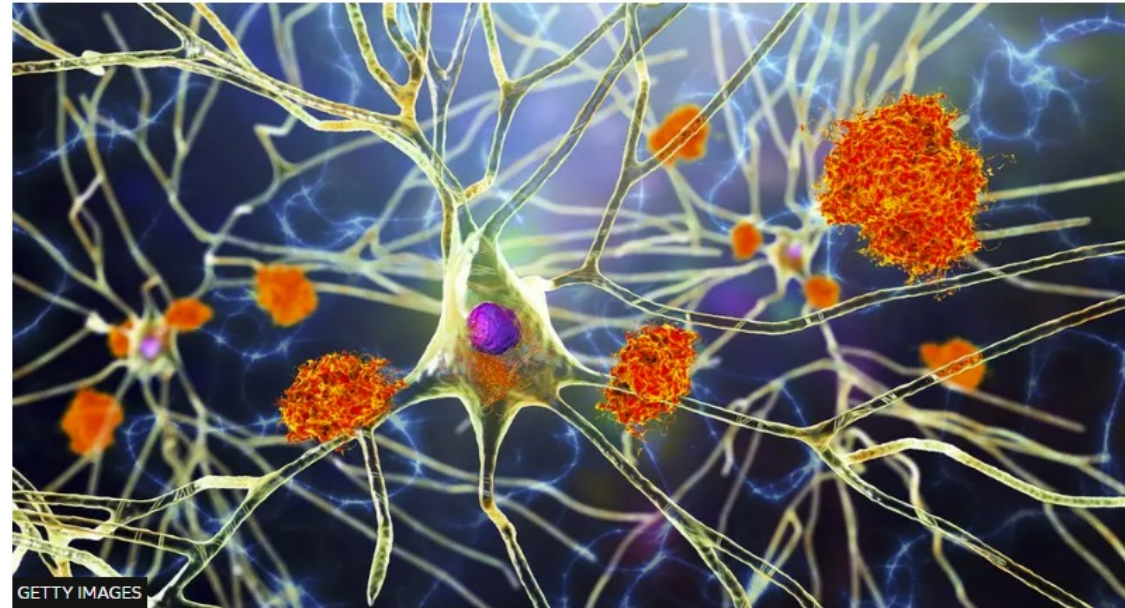
NEWS

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Health

Alzheimer's: Thousands to trial blood tests for dementia

4 April · 271 Comments



GETTY IMAGES

Brains with Alzheimer's are known to feature proteins called amyloid and tau

By Fergus Walsh

Medical editor





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[Health](#)

NHS not ready for new Alzheimer's drugs lecanemab and donanemab, warns charity

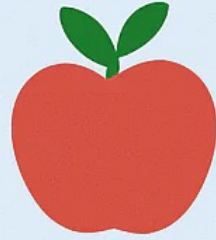
🕒 12 February



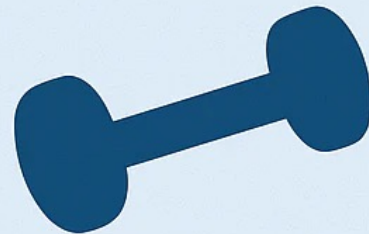
GETTY IMAGES



University
of Glasgow



**PREVENTION
IS BETTER
THAN CURE**





Air pollution



Boxing



Poor sleep



Surgery



Vaping



Social Media



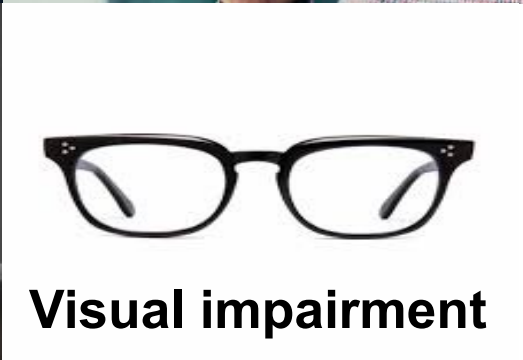
Lack of education



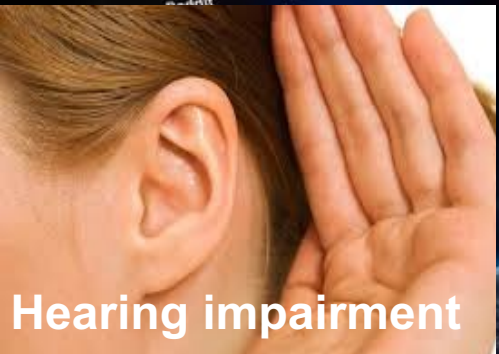
Alcohol



Depression



Visual impairment



Hearing impairment



Obesity



Diabetes



LDL cholesterol



High blood pressure



Smoking



Social isolation



Heavy metals



Inactivity



Air pollution



Boxing



Poor sleep



Surgery



Vaping



Social Media



Lack of education



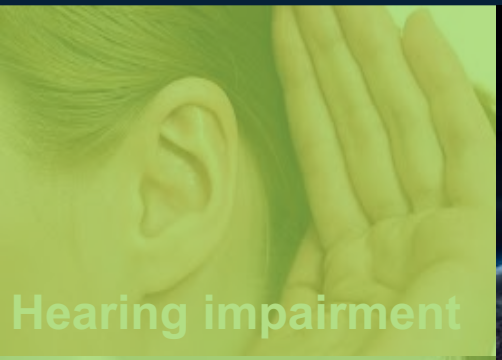
Alcohol



Depression



Visual impairment



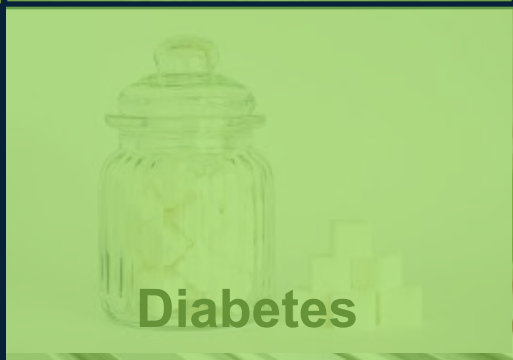
Hearing impairment



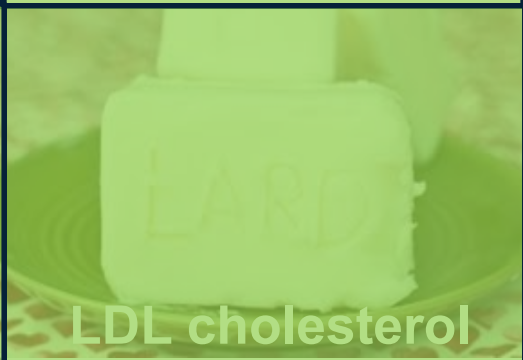
5G



Obesity



Diabetes



LDL cholesterol



High blood pressure



Smoking



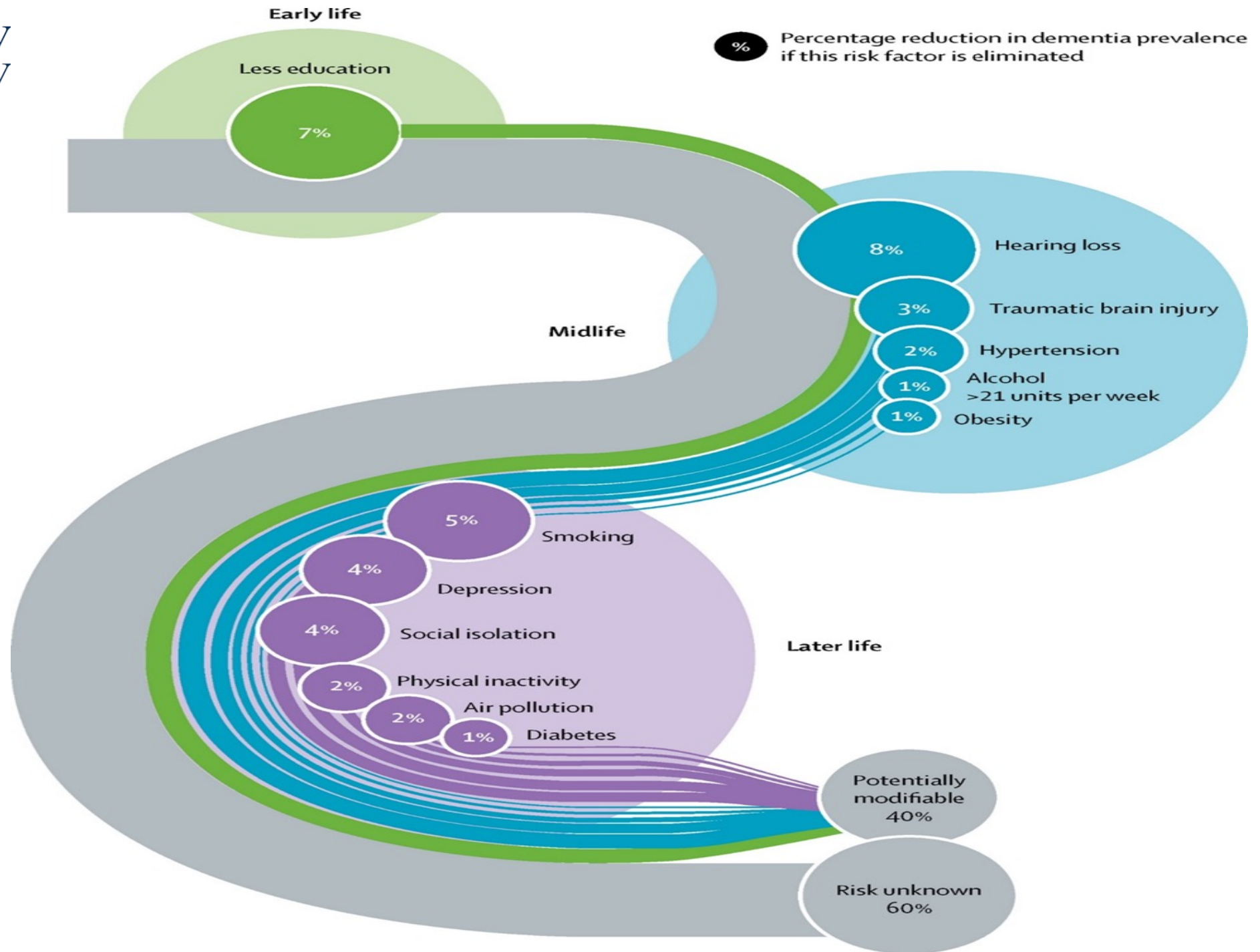
Social isolation



Heavy metals



Inactivity





Visual impairment

Alcohol

Fatigue

Stroke

Anaemia

Caregiver strain

Diabetes Mellitus





Visual impairment

Alcohol

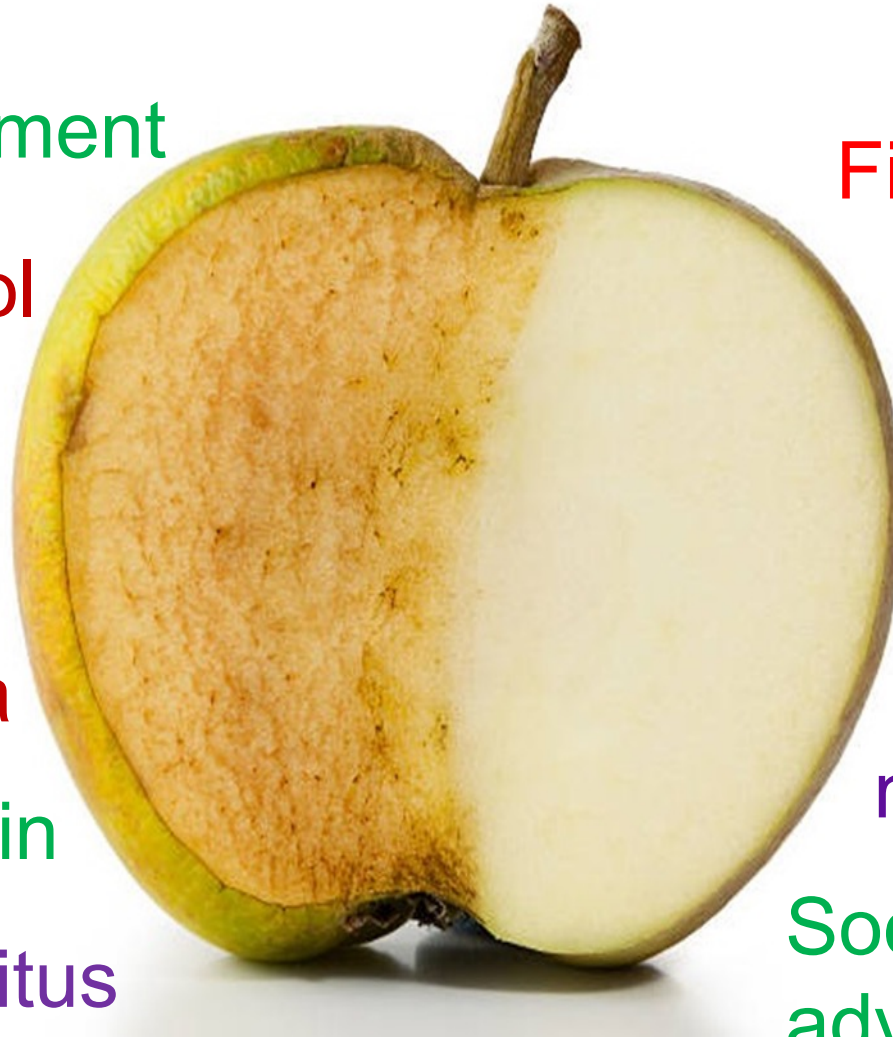
Fatigue

Stroke

Anaemia

Caregiver strain

Diabetes Mellitus



Fitness

Education

Healthy
lifestyle

Social
networks

Socioeconomic
advantage

DO'S

Diet: eat plenty of green leafy veg, plant-based diet, fish, nuts



Running/exercise



Good sleep habits



Socialise;
join a club

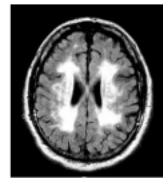
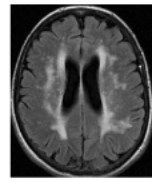
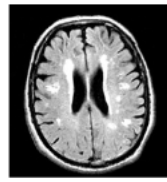
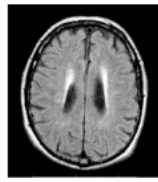
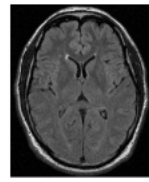


Seek help if
you feel low

Keep your
mind active



Avoid air pollution



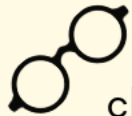
Healthy Living: WHAT CAN YOU DO?

Get your BP checked;
take your BP tablets



Get your cholesterol
checked; take your tablets

Get your blood sugar
checked; avoid diabetes



Get your eyesight
checked; wear glasses

Get your hearing checked;
wear hearing aids



DONT'S



Don't smoke



Avoid excessive alcohol



Diet: don't eat too much red
meat, fatty foods, salty foods



Don't be inactive



Don't be isolated



Don't bang
your head

Avoid
weight gain





- **Definitions**
- **Societal impact**
- **Biology**
- **Diagnosis and Treatment**
- **Scottish Brain Health ARC**



- **Definitions**
- **Societal impact**
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University
of Glasgow



Creating and supporting new cross sectoral, multidisciplinary collaborations to improve Scotland's brain health, making us the 'go to' destination for brain health research, and finding solutions to challenges associated with brain ageing.



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Scottish Funding Council
Comhairle Maoineachaidh na h-Alba





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of Glasgow



Mrs Wendy Chambers



Prof Frank Gunn
Moore



Dr Jodi Watt



Dr Fiona Kerr



Prof Bettina Platt



Dr Tom Russ



Prof Craig Ritchie



Prof Debbie Tolson



Dr Terry Quinn

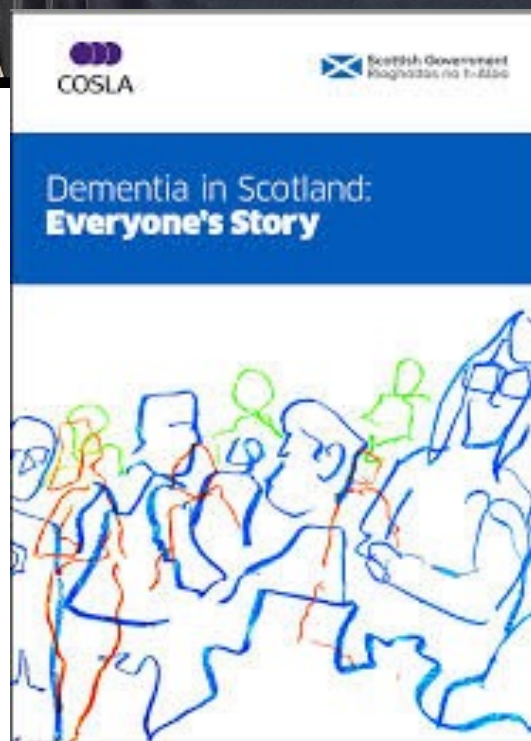


Ms Stina Saunders



University
of Glasgow

Shaping policy





Shaping policy



University
of Glasgow

Creating community



EuGMS 
European Geriatric Medicine Society
Fostering geriatric medicine across Europe



Shaping policy



Creating community

Supporting Early Career Researchers



Brain Health Alliance
Webinar Series

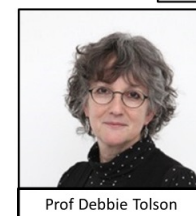
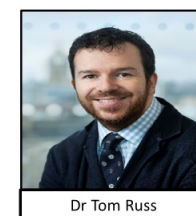
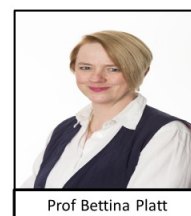
DIFFERENCES BETWEEN ACADEMIA & INDUSTRY

with Dr Stina Saunders (Research Fellow, University of Edinburgh) and Dr Sophie Bradley (Director, Sosei Heptares)

1-2 PM
1 March, 2024

Online
via Zoom





Shaping policy



Creating community

Brain Health Alliance
Webinar Series

**DIFFERENCES BETWEEN
ACADEMIA
& INDUSTRY**

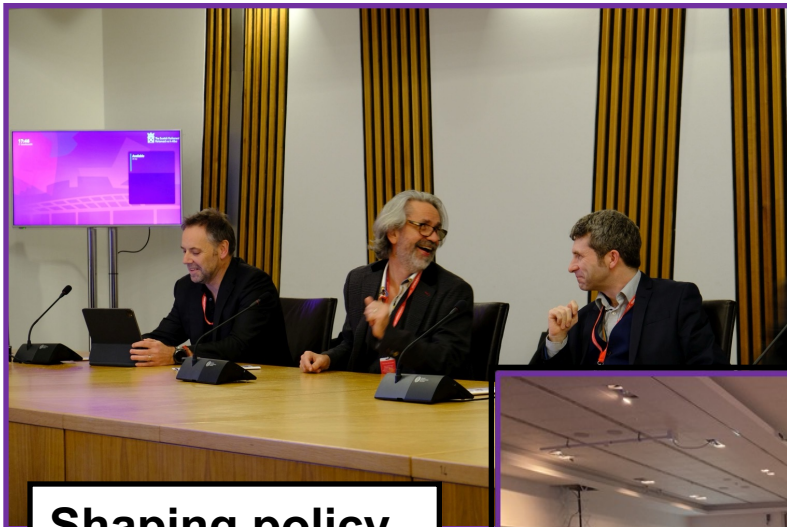
with Dr Stina Saunders (Research Fellow, University of Edinburgh) and Dr Sophie Bradley (Director, Sosei Hantaro)

**Supporting
ECRs**



Sharing resources





Shaping policy



Creating community

Brain Health Alliance
Webinar Series

**DIFFERENCES BETWEEN
ACADEMIA
& INDUSTRY**

with Dr Stina Saunders (Research Fellow, University of Edinburgh) and Dr Sophie Bradley (Director, Sosei Hironaka)

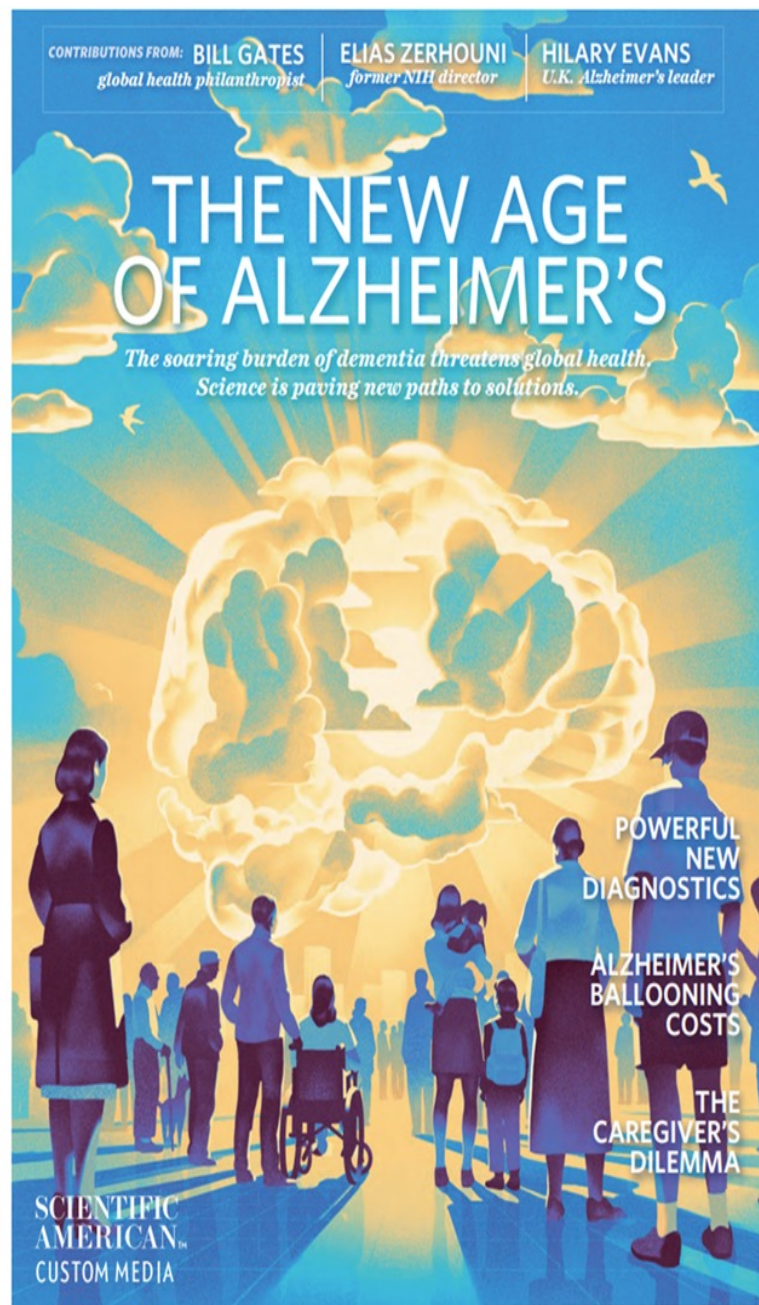
**Supporting
ECRs**

**GLOBAL
ALZHEIMER'S PLATFORM
FOUNDATION**

**Sharing
resources**

BBC
RADIO
SCOTLAND

**Daily
Record**

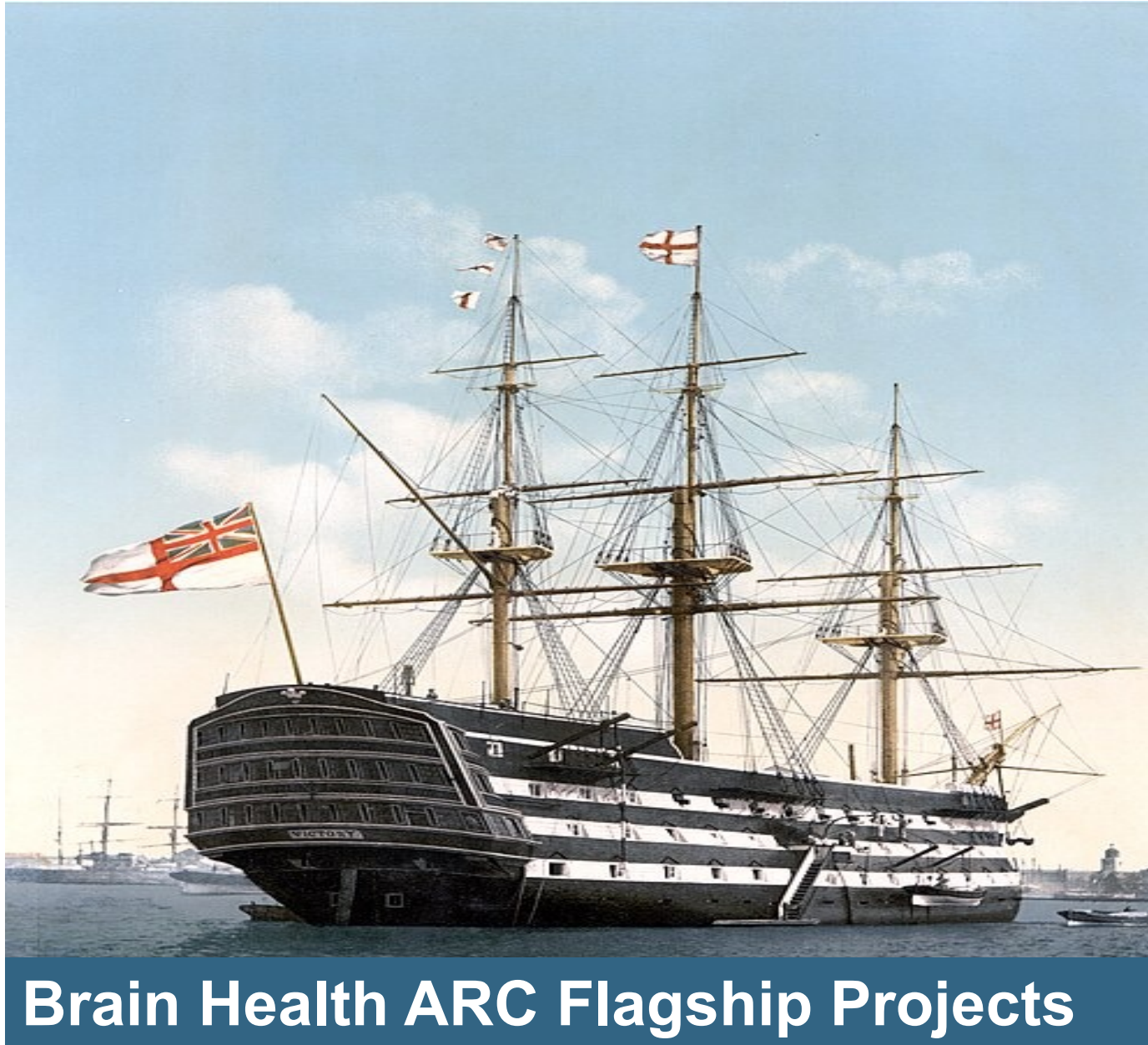


ALZHEIMER'S ASSOCIATION
AAIC > 25

that's tv



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of Glasgow



Brain Health ARC Flagship Projects

**Data
Challenge**

**Research
prioritisation**

**Language
Guide**

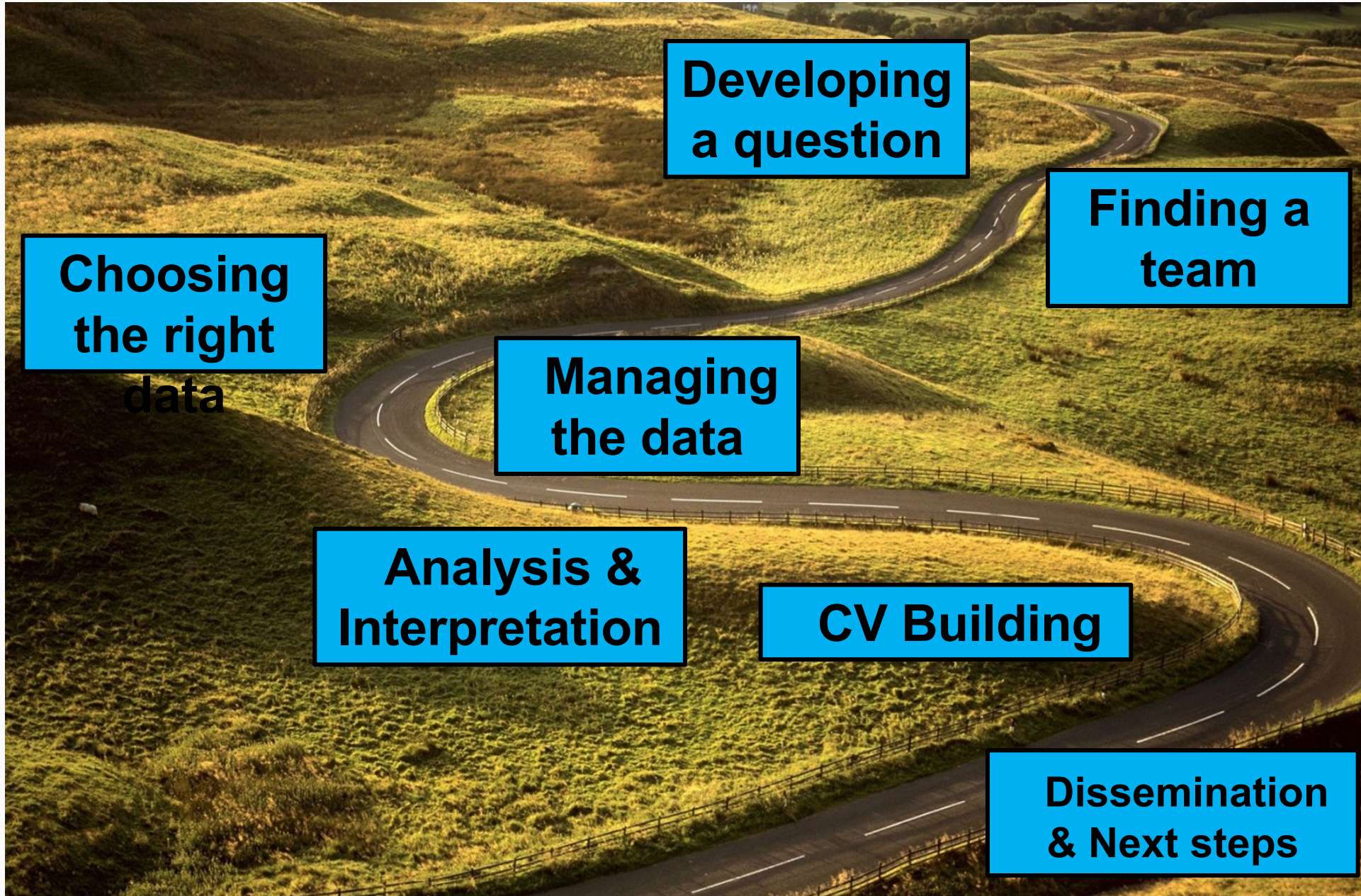


Open data?





- 1,000+ participants
- 24% from traditionally understudied populations
- 25 blood-based biomarkers
- 15 digital tests
- 4 cognitive tests
- 80,000 test results
- Exclusive access for one year



End to
end
support
for data
projects

- **100+** individual researchers
- **29** institutions
- **6** new project teams
- **5** prize winners
- **10** papers submitted
- **4** grants





Cardiovascular disease is as important as amyloid and tau for predicting dementia

Physical frailty influences age of dementia

Dementia blood tests change throughout the day

Dementia blood tests vary by sex and ethnicity

AI can accurately predict dementia risk





**How can I keep my
brain healthy ?**

**What does
'advanced dementia'
actually mean ?**

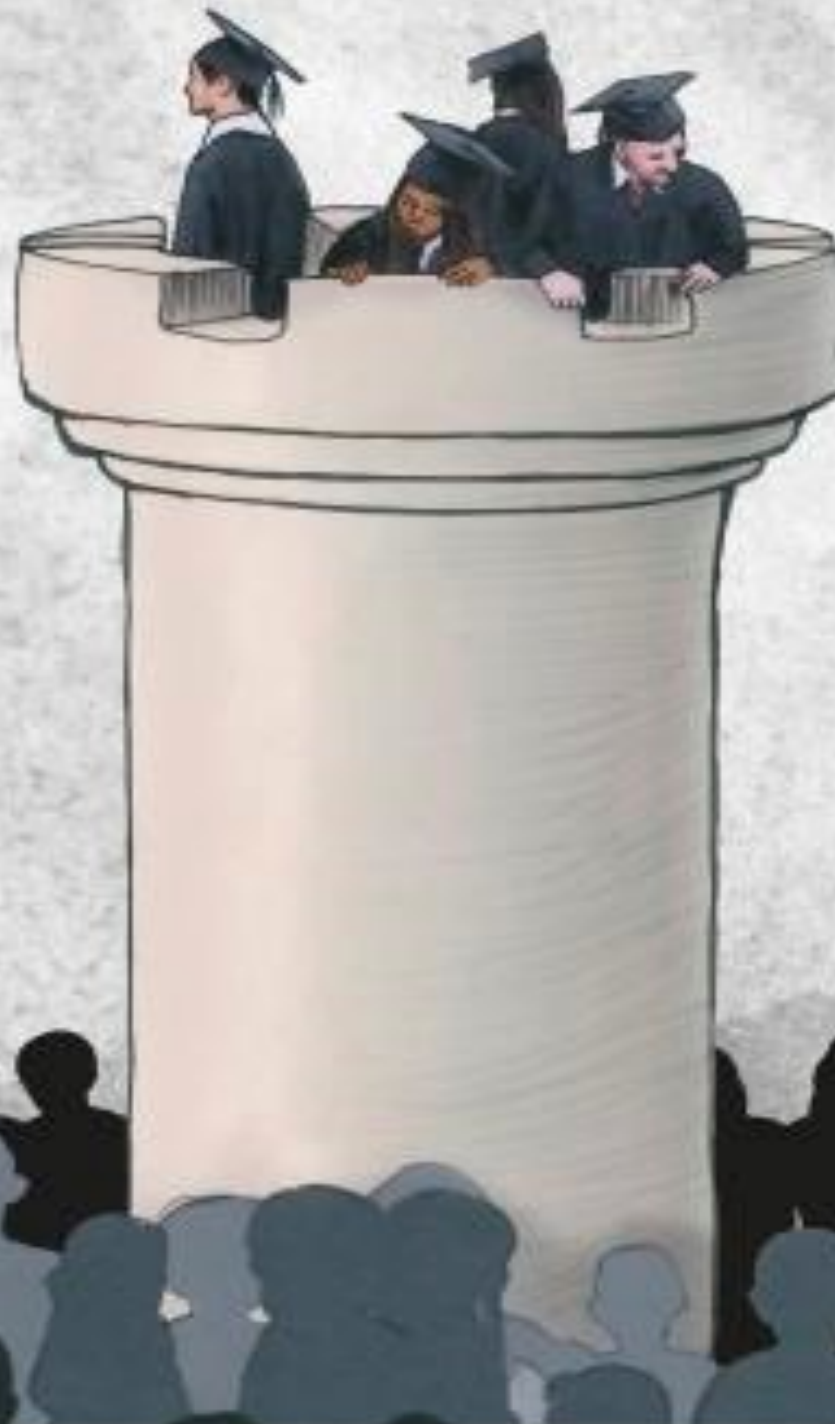
**When will he stop
talking and just get on
with the session ?**

?

**Do these new
Alzheimer
drugs work in
other
dementias?**

**Should I be worried
about ultra processed
food for my brain
health?**

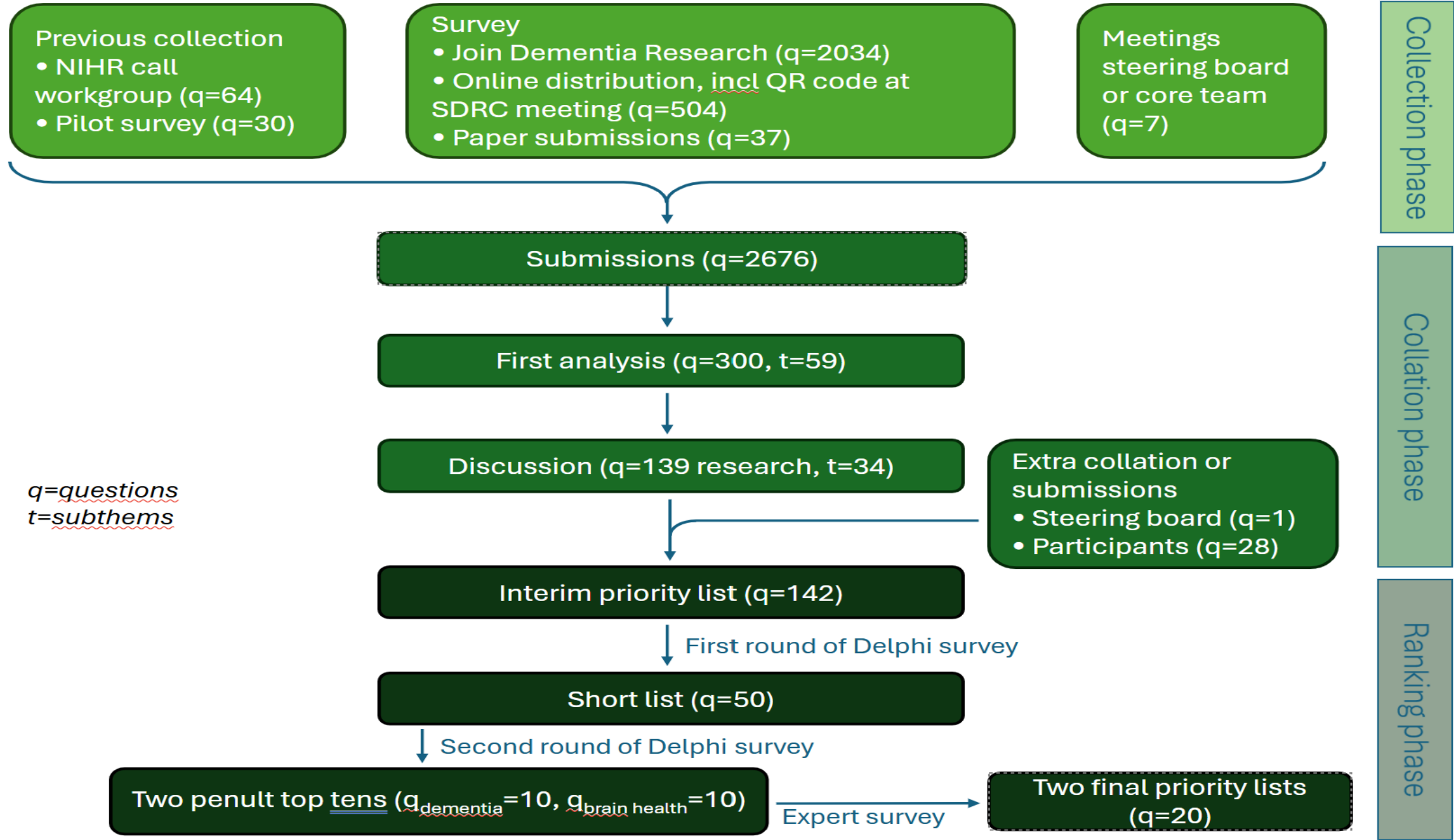
**What is another word
for thesaurus ?**



**Experts can
help prioritise**



**Experts can
help prioritise**



1. How much can people at risk for dementia reduce this risk?
2. What stimulating and lifelong learning activities are best for brain health?
3. How can we prepare our health care system for the future ?
4. Which is the one most important factor contributing to brain health?
5. What is the role of diet in brain health and how can we intervene?
6. What is the role of sleep in brain health and how can we intervene?
7. What is the role of physical activity in brain health and how can we intervene?
8. What is the role of stress and anxiety in brain health?
9. What brain health interventions work during childhood, mid-life and old age?
10. Why do some people with high risk, keep good brain health?

- 1. What are ways to diagnose dementia early?**
- 2. What new treatments for preventing or stopping dementia can be developed?**
- 3. How can we optimise the brain health and care path in Scotland?**
- 4. Are there existing drugs that can be repurposed to help prevent dementia?**
- 5. What support will let people live independently for as long as possible?**
- 6. How can we improve care for people living with advanced dementia ?**
- 7. What support do caregivers need and do the current services meet their needs?**
- 8. How can we ensure that all health professionals, provide dementia friendly care?**
- 9. How can brain scans best be used in brain health care?**
- 10. What can we learn from other countries' dementia and brain health care systems?**



**She is now in
an 'old folks'
home**

**The stroke
patient in
ward 8**

**We assessed 20
senile dementia
and 20 normals**



“Well, I want to get the language right, but I don’t know what to say...”

DEMENTIA LANGUAGE GUIDELINES



Guidelines for the ethical and inclusive
communication about/portrayal of
dementia and people with dementia

ALZHEIMER'S  ASSOCIATION®

ne responsible
rtia

Société Alzheimer Society

PERSON-CENTRED LANGUAGE

December 2012

**CHANGING
THE
NARRATIVE**
ENDING AGEISM TOGETHER



Positive language

An Alzheimer's Society
guide to talking about
dementia

April 2018
alzheimers.org.uk



GUIDELINES FOR AGE-INCLUSIVE COMMUNICATION

ALZHEIMER'S ASSOCIATION INCLUSIVE LANGUAGE GUIDE

Guidance for Describing Social Identities and Characteristics of Individuals



Outdated/stigmatising	Why it can be harmful	More respectful alternative
<i>Sufferer, victim, afflicted</i>	Positions the person as helpless and/or defined by their diagnosis	Person living with dementia
<i>Demented</i>	Highly offensive and stigmatising. Often used colloquially in a harmful way.	Avoid entirely – use above.
<i>Burden (on carers/family)</i>	Dehumanising – frames the person with dementia as the problem, rather than recognising problems with the system or unmet support needs.	Use other terms e.g. ‘challenges in caregiving’, ‘impact on families’, ‘support needs’
<i>Fading away, empty shell, not all there, lost their mind</i>	Positions the person as helpless and only their diagnosis.	Avoid entirely - these imagery-focused concepts are offensive and not useful or medically precise.



- **Definitions**
- **Societal impact**
- **Biology**
- **Diagnosis and Treatment**
- **Scottish Brain Health ARC**

Conflicts of interest / disclosures

I chair the Scottish Funding Council Brain Health ARC

Join us: <https://www.brainhealtharc.com/>

I chair the Scottish Dementia Research Consortium

Join us: <https://www.sdrc.scot/>



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Dementia and Brain Health (doesn't need to be confusing)

Terry Quinn

School of Cardiovascular and Metabolic Health, University of Glasgow



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