

UNIVERSITY OF
BIRMINGHAM



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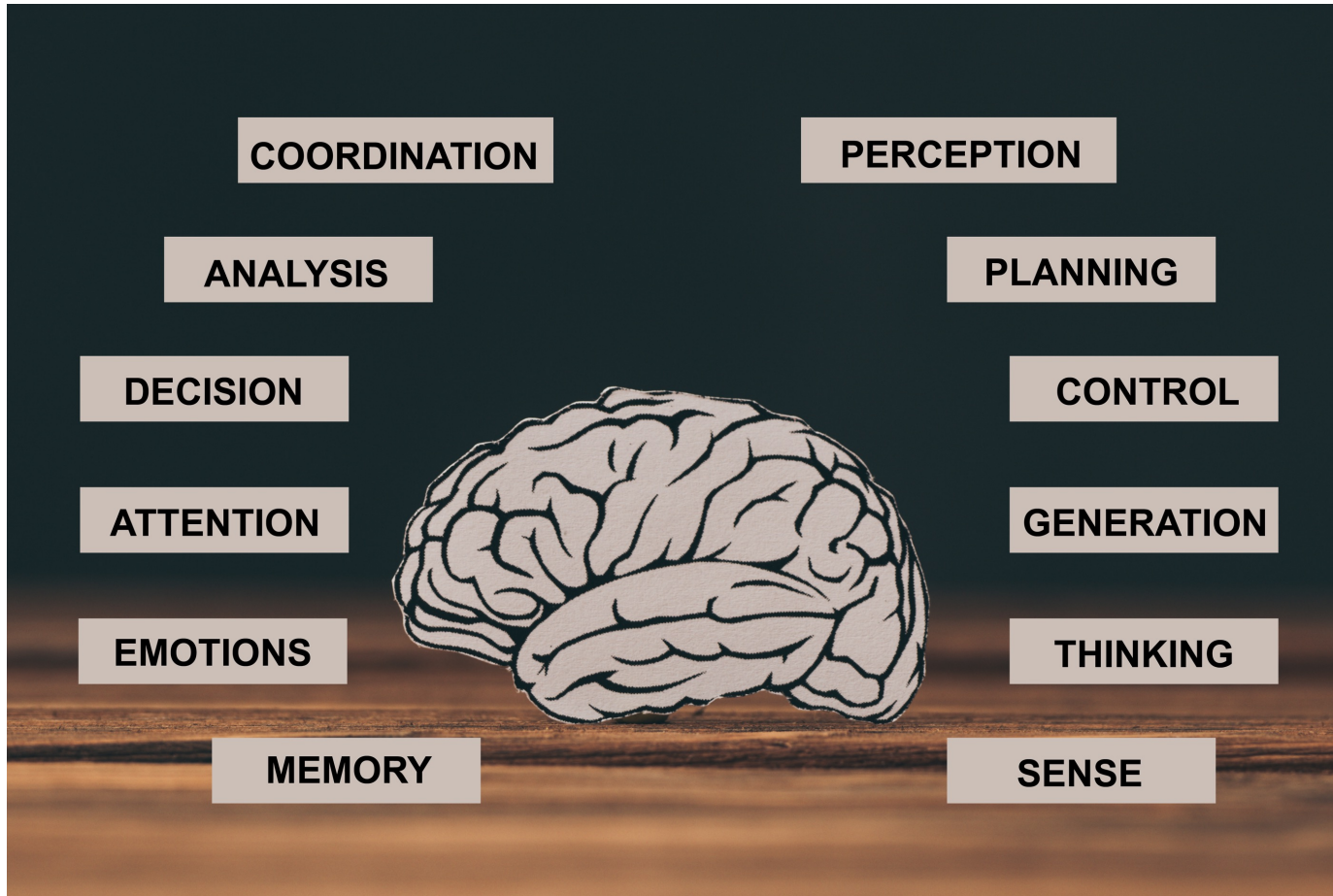
When the brain gets confused: Delirium or Dementia?



What do we mean by confusion?



Cognition

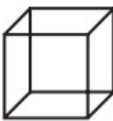
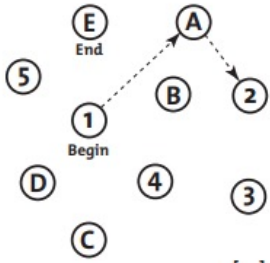

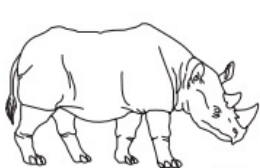
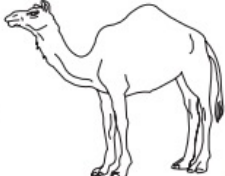


Not just memory

Whole brain
'higher' function

MONTREAL COGNITIVE ASSESSMENT (MOCA)

NAME : _____
 Education : _____ Date of birth : _____
 Sex : _____ DATE : _____

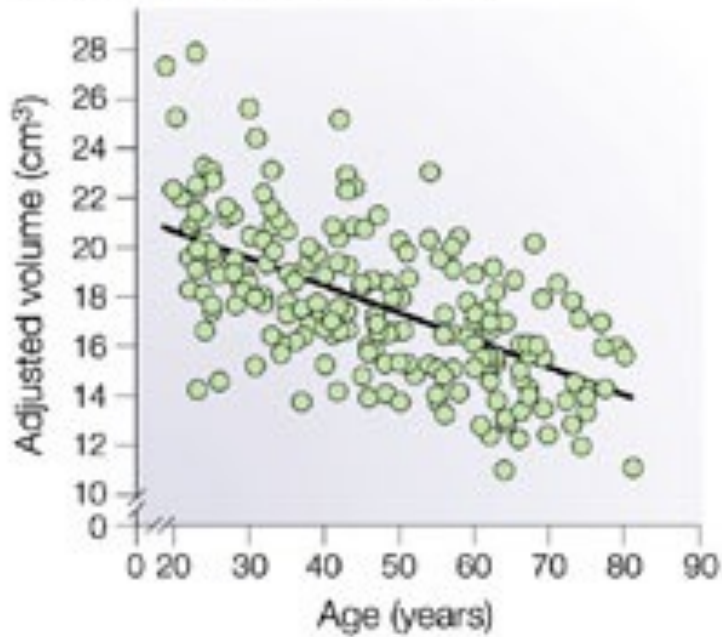
VISUOSPATIAL / EXECUTIVE			Copy cube	Draw CLOCK (Ten past eleven) (3 points)	POINTS	
	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	___/5	
NAMING						
			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	___/3		
MEMORY		Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes.	FACE VELVET CHURCH DAISY RED	No points		
		1st trial 2nd trial	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
ATTENTION		Read list of digits (1 digit/ sec). Subject has to repeat them in the forward order [] 2 1 8 5 4 Subject has to repeat them in the backward order [] 7 4 2				___/2
		Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors [] FBACMNAAJKLBAFAKDEAAAJAMOF AAB				___/1
		Serial 7 subtraction starting at 100 [] 93 [] 86 [] 79 [] 72 [] 65 4 or 5 correct subtractions: 3 pts, 2 or 3 correct: 2 pts, 1 correct: 1 pt, 0 correct: 0 pt				___/3
LANGUAGE		Repeat : I only know that John is the one to help today. [] The cat always hid under the couch when dogs were in the room. []				___/2
		Fluency / Name maximum number of words in one minute that begin with the letter F [] _____ (N ≥ 11 words)				___/1
ABSTRACTION		Similarity between e.g. banana - orange = fruit [] train - bicycle [] watch - ruler				___/2
DELAYED RECALL		Has to recall words WITH NO CUE	FACE VELVET CHURCH DAISY RED <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Points for UNCUED recall only		
Optional		Category cue Multiple choice cue				___/5
ORIENTATION		[] Date [] Month [] Year [] Day [] Place [] City				___/6
		© Z.Nasreddine MD Version November 7, 2004 Normal ≥ 26 / 30	TOTAL _____ /30 Add 1 point if ≤ 12 yr edu			
www.mocatest.org						

What happens to the brain as we age?

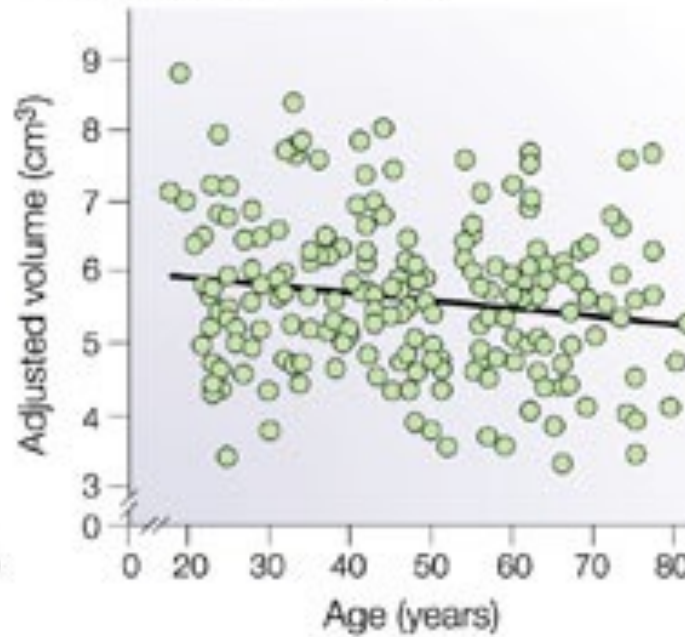
It gets smaller...

But 'brain cells' stay the same

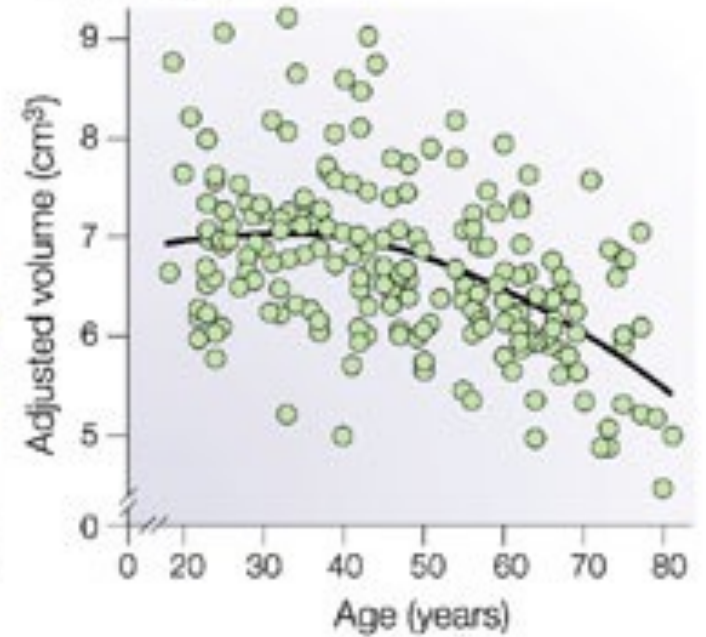
a Lateral prefrontal cortex

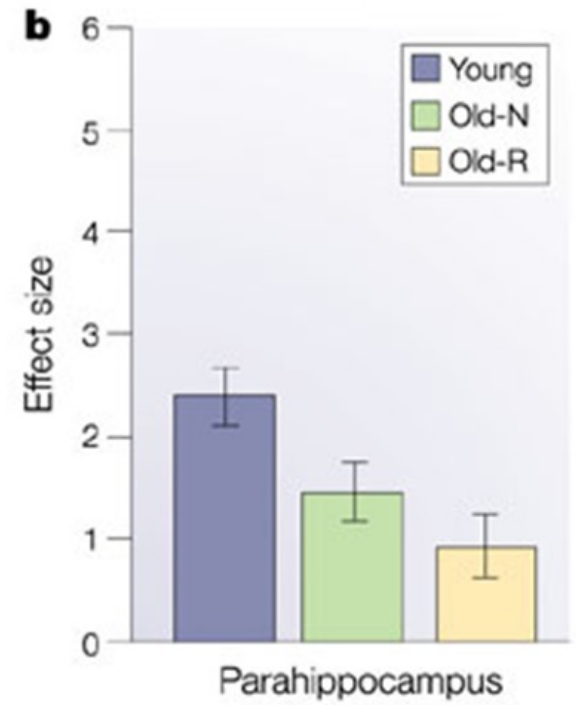
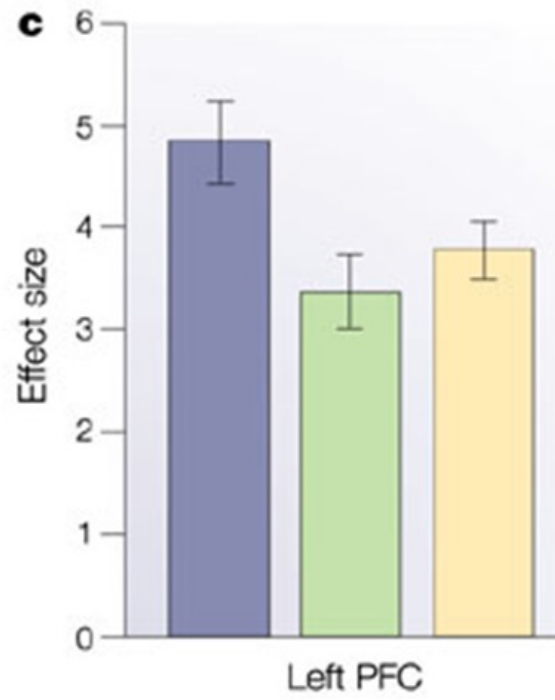
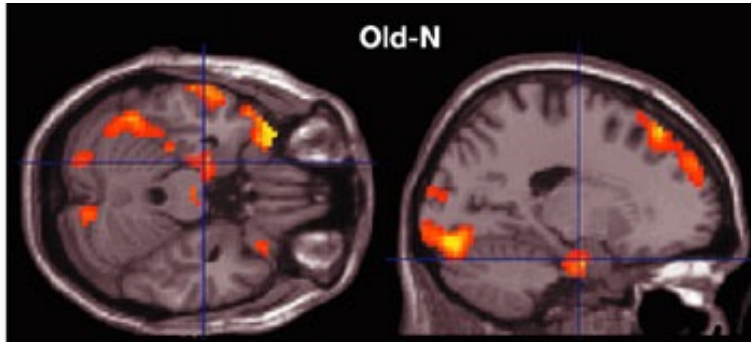


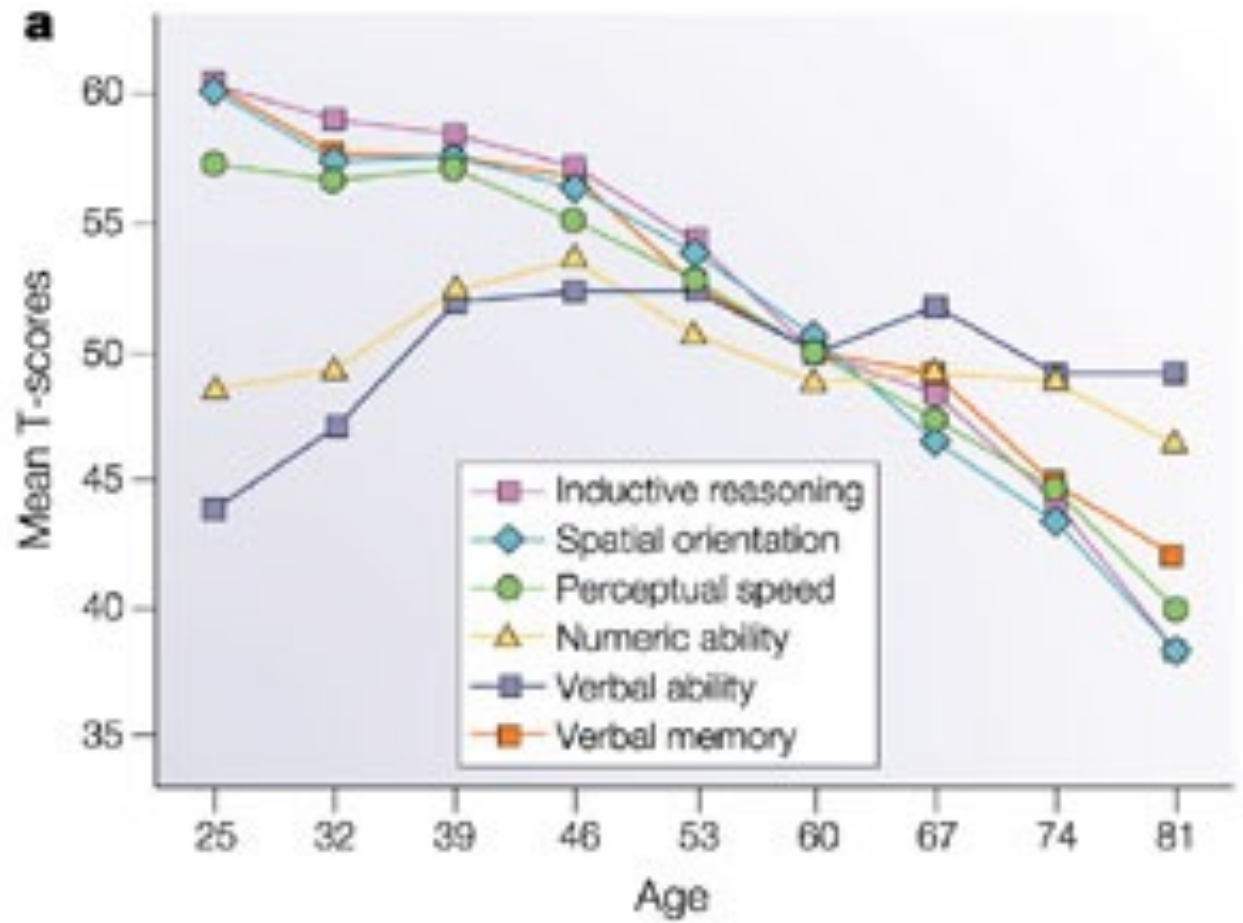
b Primary visual cortex



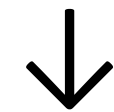
c Hippocampus







Verbal ability
 Numeric ability



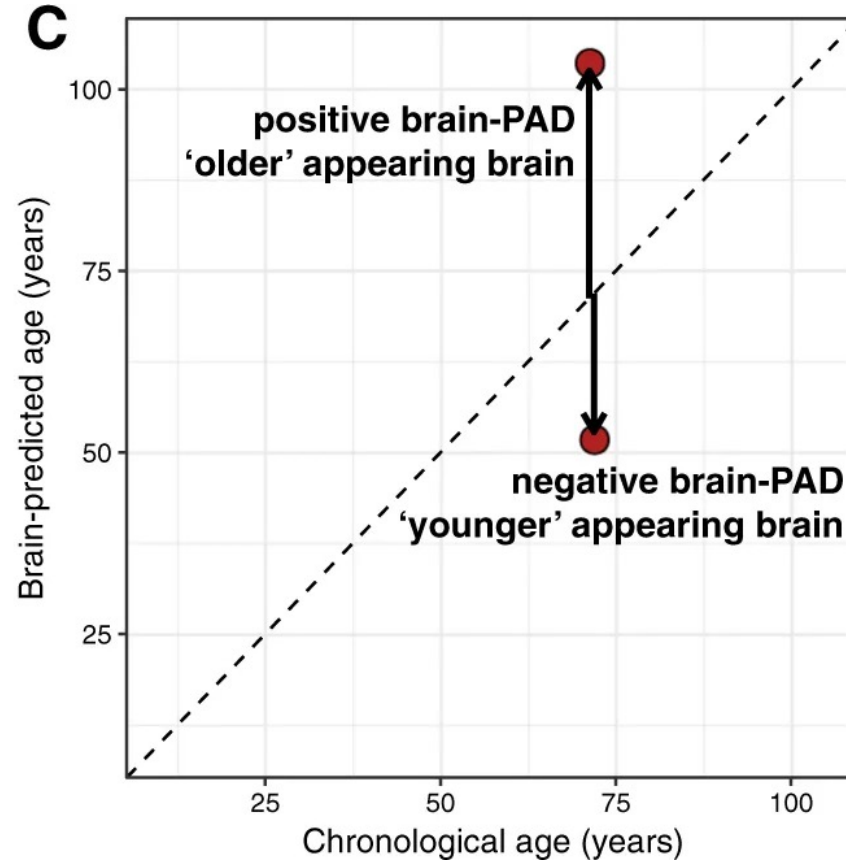
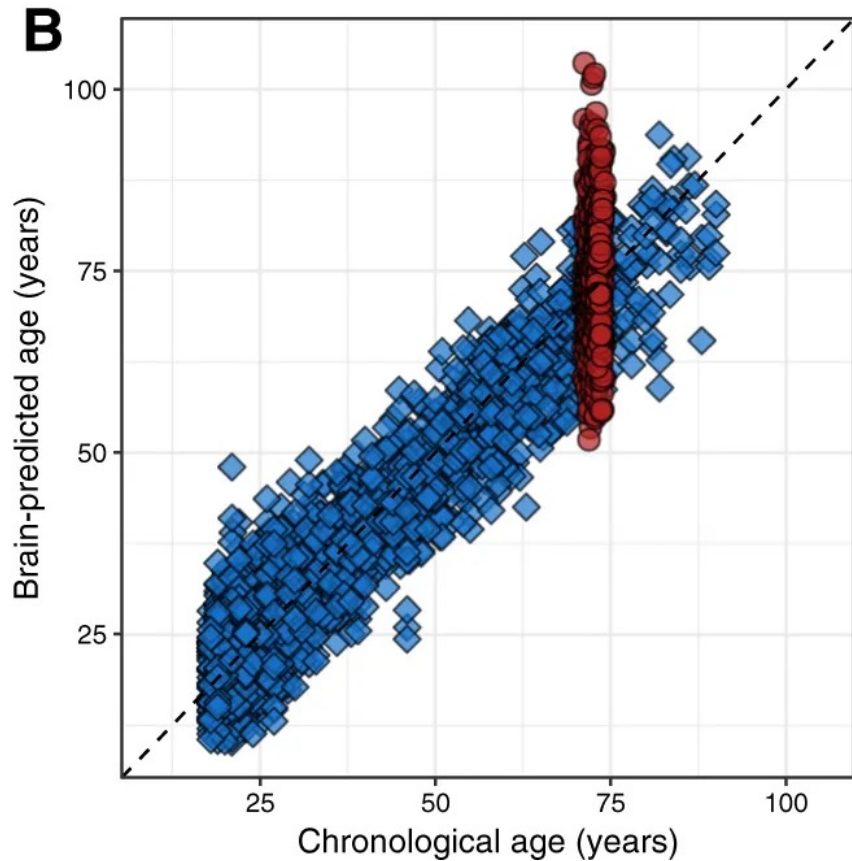
Perceptual speed
 Verbal memory



So, when does this become abnormal?

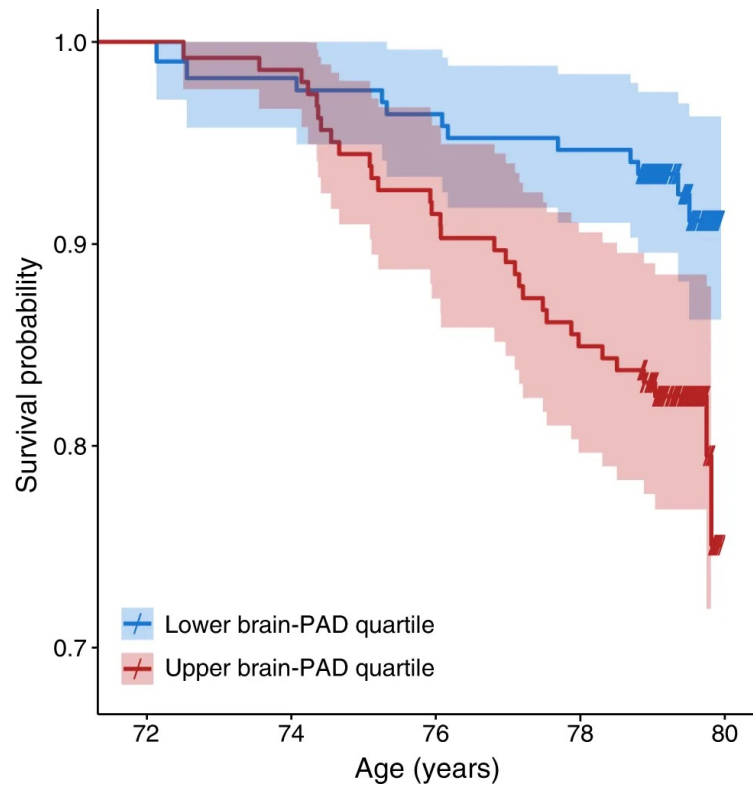
“Well, what do you expect at my age?”

So we can 'age' your brain



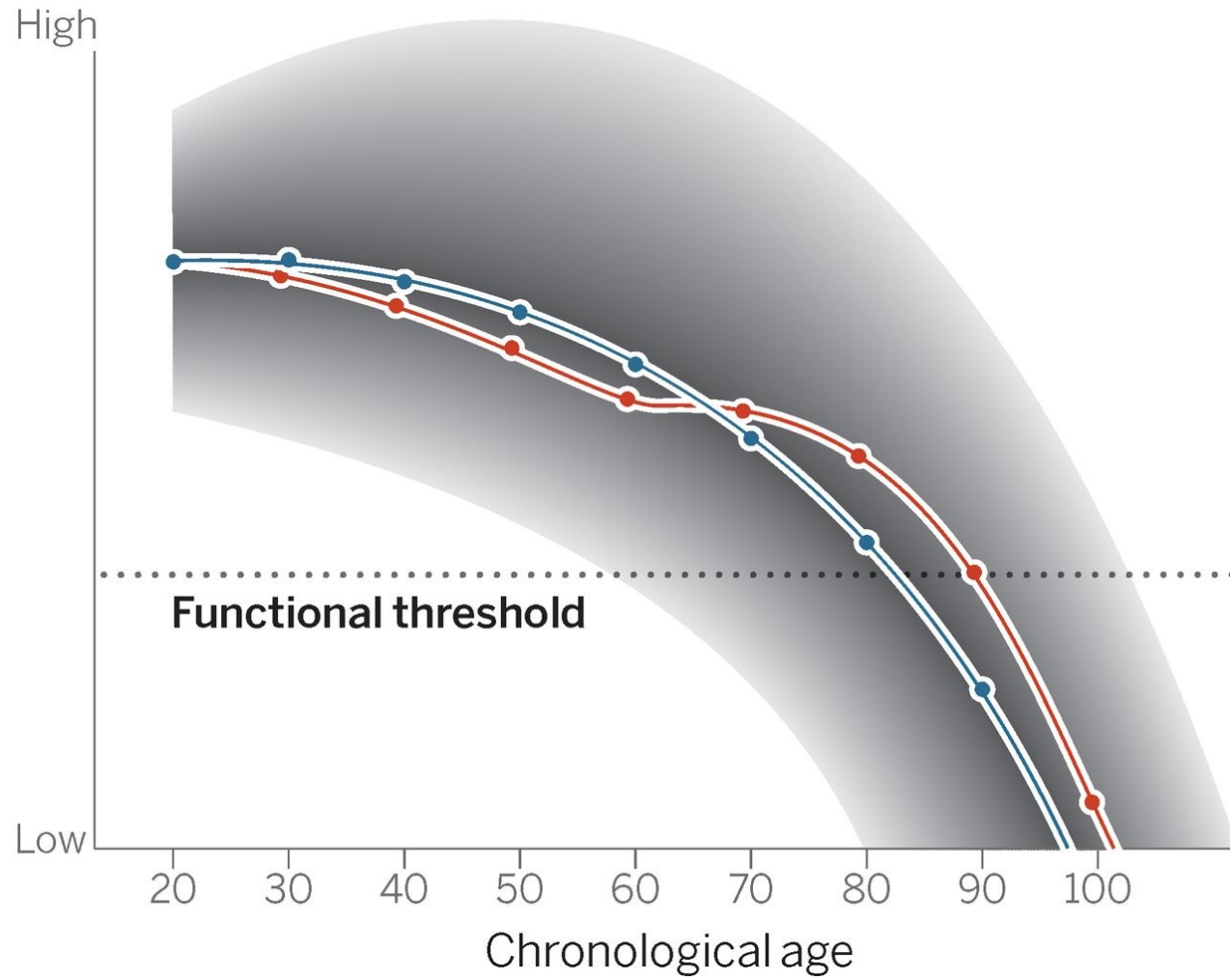
Brain-predicted age difference (brain-PAD) – from 2001 healthy individuals, aged 18–90 years

Lothian birth cohort 1936 overlaid in red

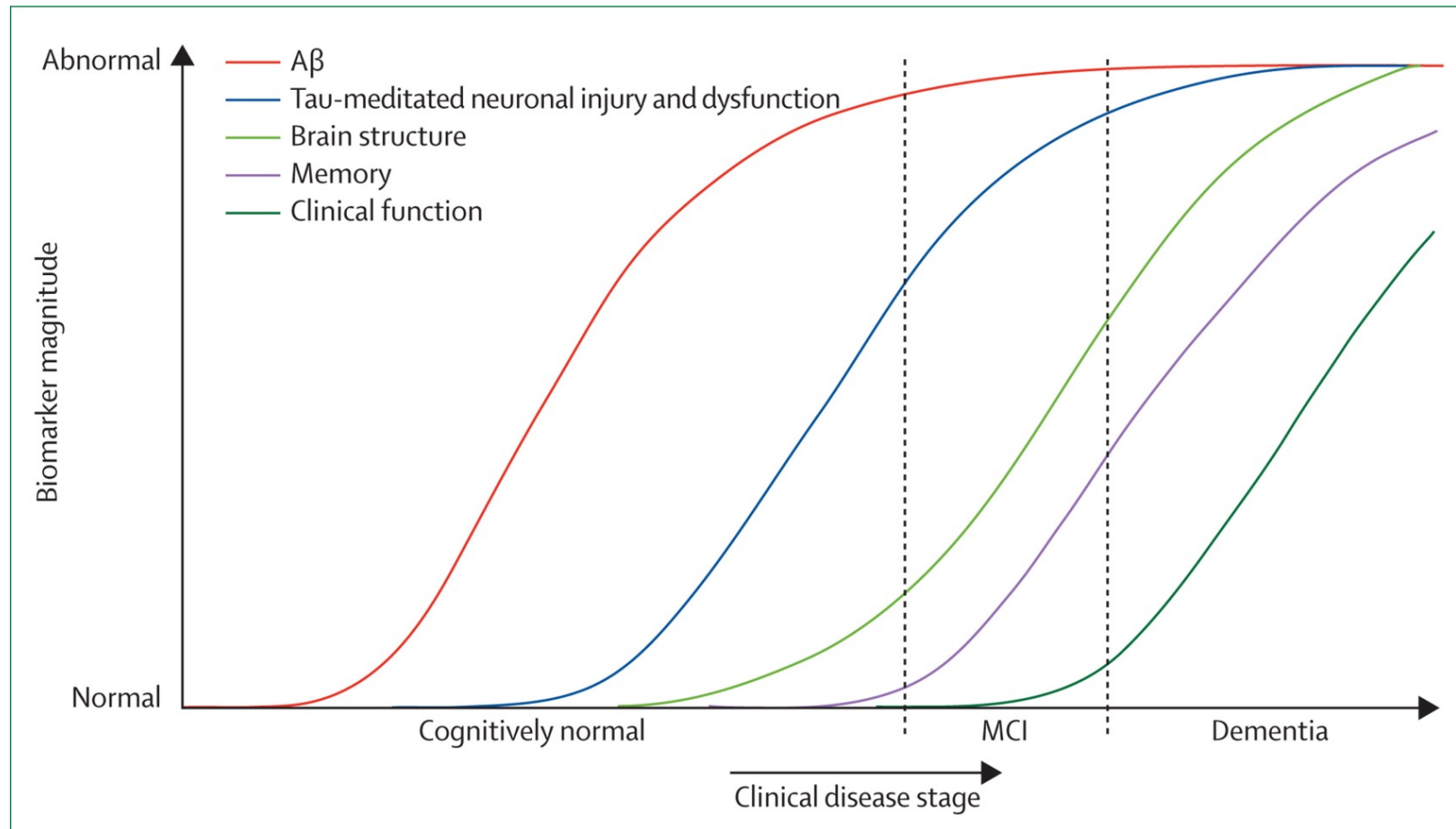


Brain predicted age difference predicts survival over 8 years
So good marker of 'physiological' age, as opposed to
chronological age

Cognition



What is normal cognitive ageing?



Dementia

“The normal brain surveys time past, present and future. The failing brain stands on ‘two minute island of time’”



Dementia

What?

Chronic syndrome

Global impairment (not just memory)

Affects everyday function

Causes

Alzheimer's disease

Vascular disease

Lewy body dementia, fronto-temporal dementia

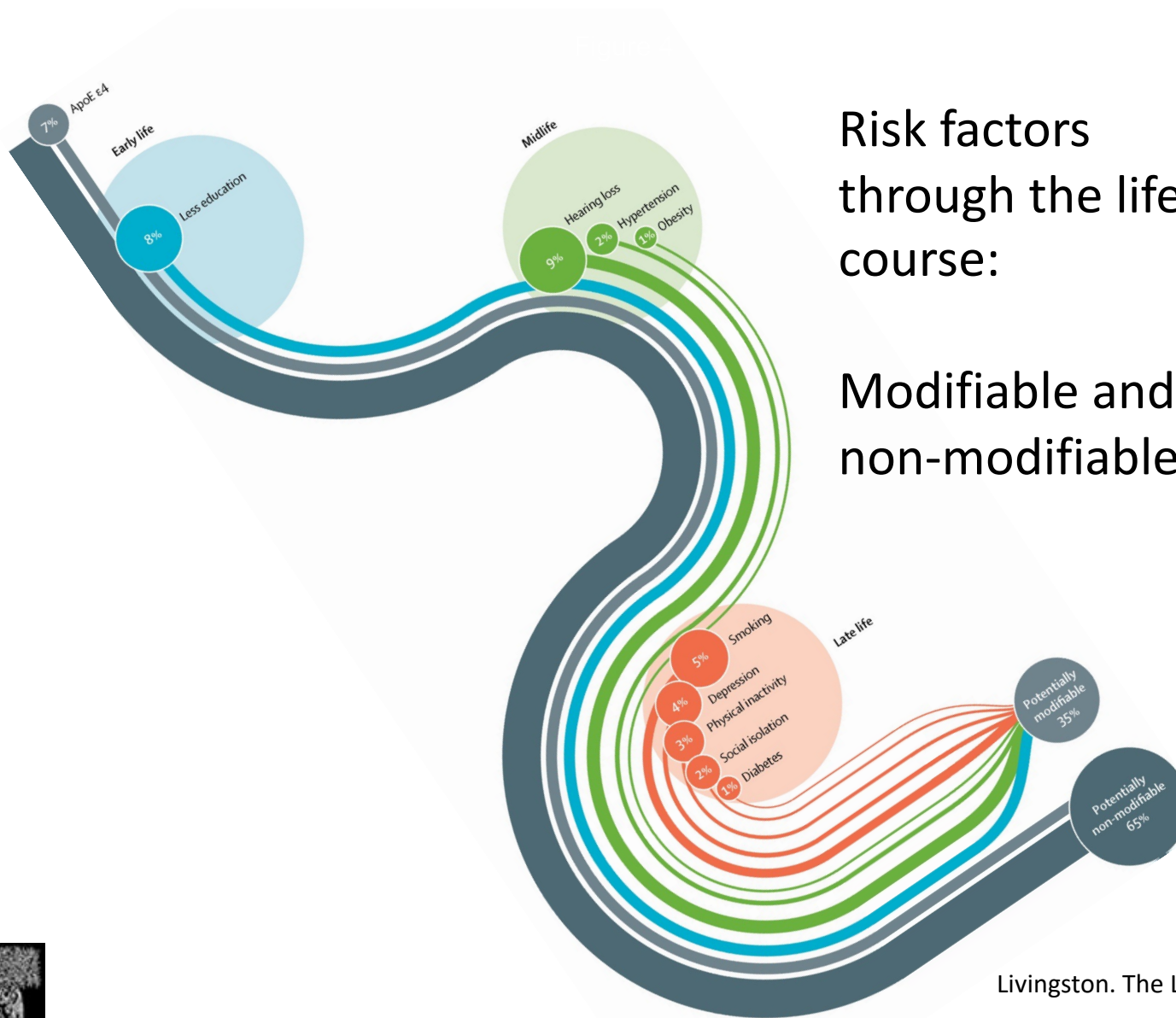
Posterior cortical atrophy (Pratchett)

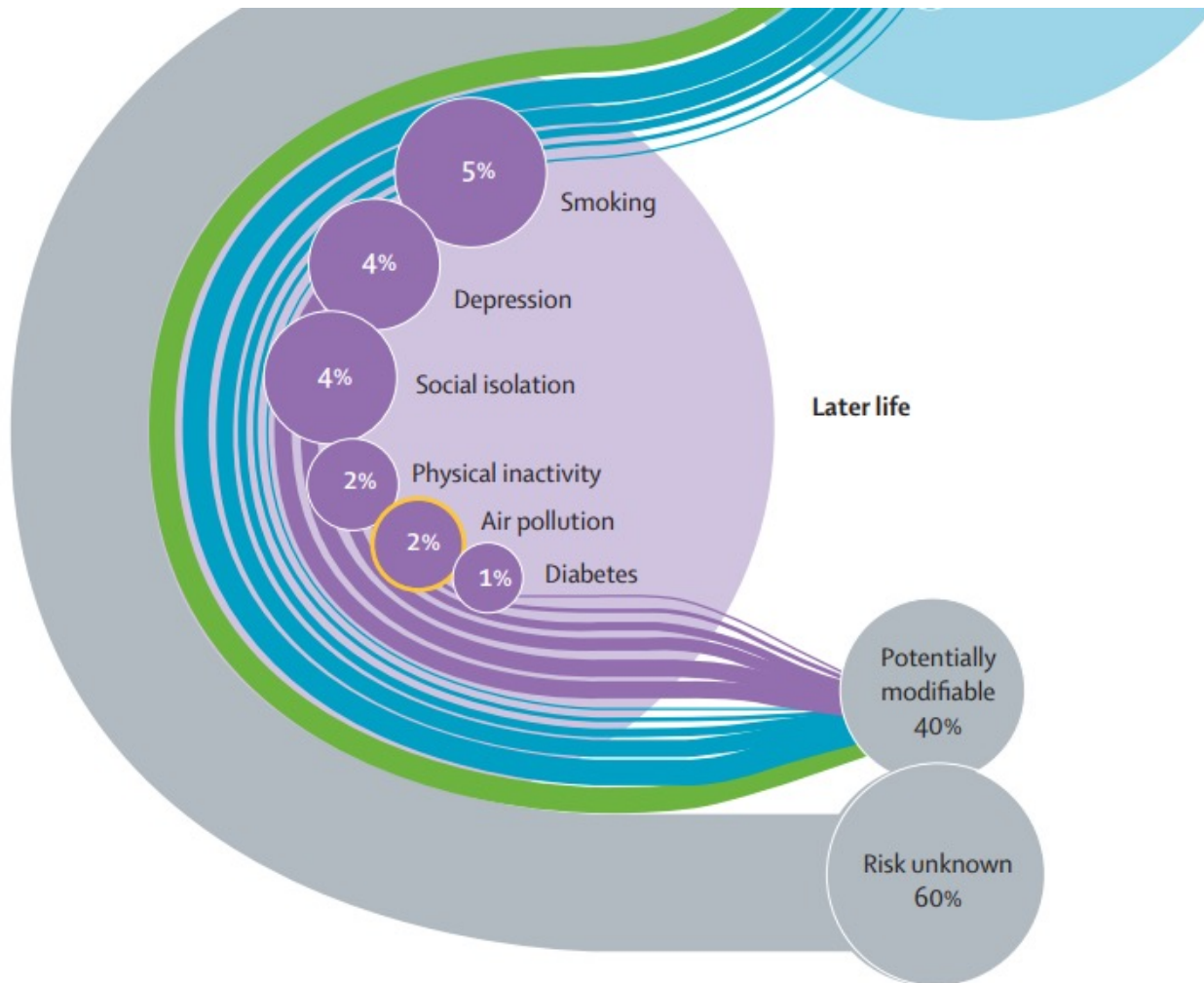
Intervention

Diagnosis (underdiagnosed)

Drugs

Support





Livingston G, Huntley J, Sommerlad A, et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. *The Lancet* 2020.

Monoclonal antibodies as a glimmer of hope?

Mab to β amyloid aggregates

Aducanumab - 2022

Lercanumab - 2022

Donanemab – 2023

Small clinical effect, good biological effect, side effects (bleeding, encephalopathy)

Delirium

“delirium is an **acute** onset syndrome with disturbance in **attention**, **awareness**, and **cognition**”

Seen in older people, driven mainly by infection or surgery

2 engrained ageist biases in health care

Confused old people must have a UTI

Old people are allowed to be confused

Why is it important to recognise?

Common, but not diagnosed

Associated with worse mortality

Associated with dementia and institutionalisation in survivors

Hip fracture + surgery
=
Innate immune activation

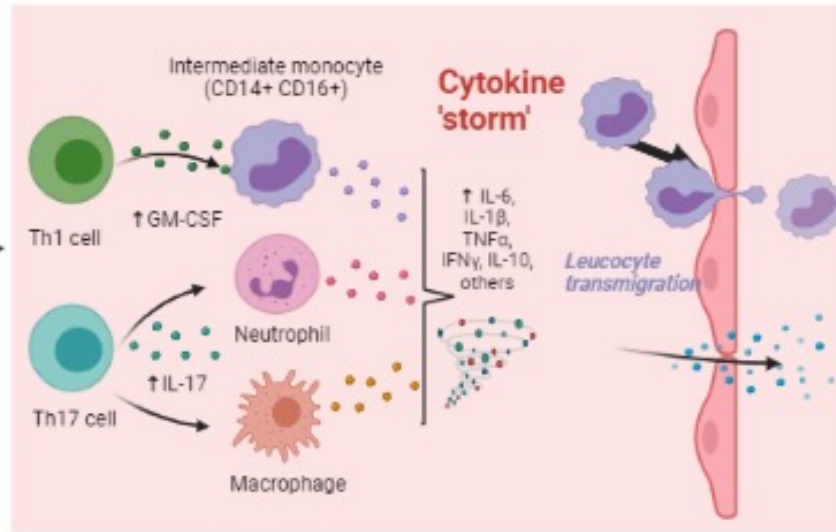
?Amplified immune inflammatory response

Pain

"Anaesthetic"

Delirium

Altered alertness and arousal



Inattention

Cognitive impairment

Acute onset

↑ Vulnerability

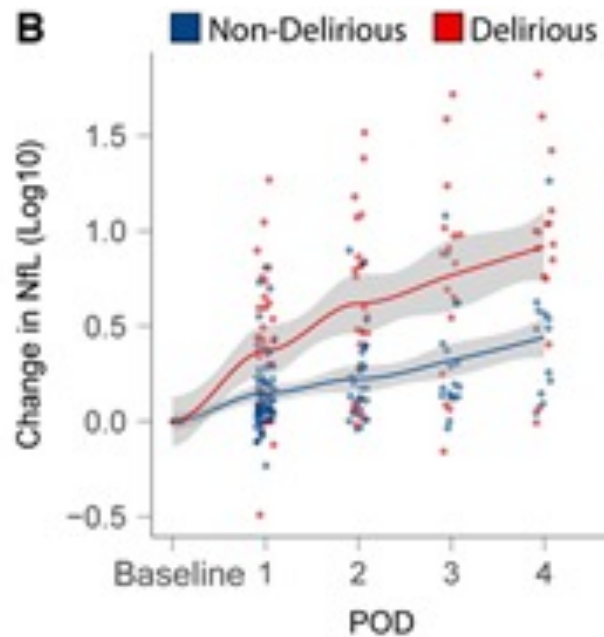
Ageing, male sex, frailty
Neurodegeneration
Exaggerated biological ageing?

“My daughter died some years before the heart surgery, and she, I get chills, she was present nearly every evening in my room. It was so real that I still carry it with me...”

“Apparently I was lying in a coffin and I remember saying to myself; at least I could have been covered by a duvet. It is the strangest feelings”

“There was this pipe along the ceiling. It was fully packed with crawling animals...I think I panicked, screamed out in such a tone of voice...”

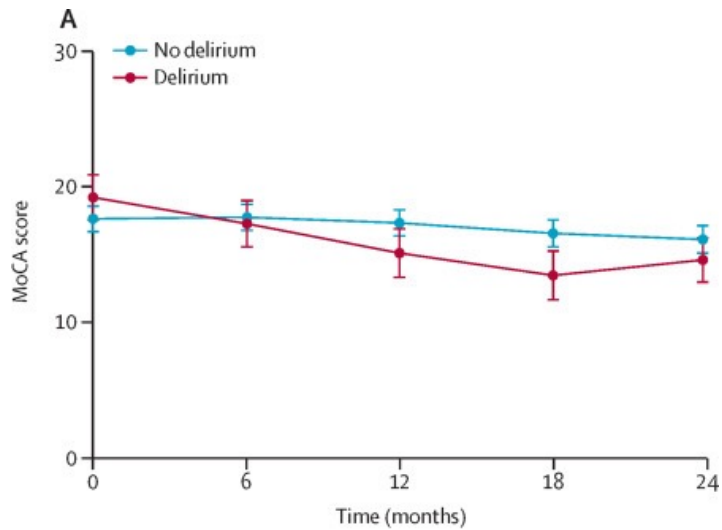
Delirium is acute brain injury



Neurofilament light (NFL) is a sensitive biomarker for neuroaxonal injury

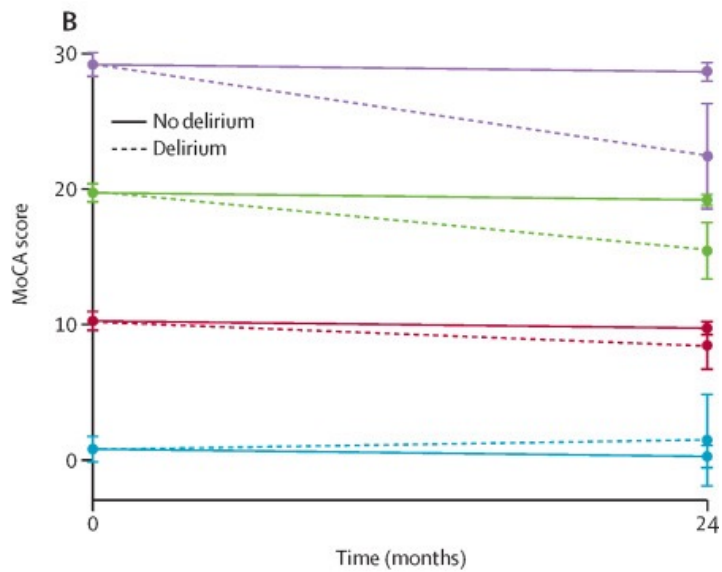
Lots of evidence now this goes up in delirium

Delirium increases risk of dementia



Delirium leads to greater decline in cognition

This appears to have greater effect in those with good baseline cognitive function



Hip fracture surgery

Innate and adaptive immune activation



Amplified immune inflammatory response

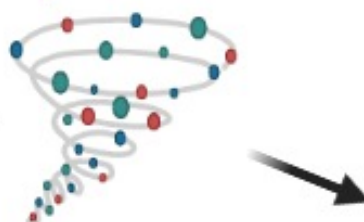
Monocytes



Neutrophil



Macrophage



Anti TNF
Lidocaine

Delirium



Altered alertness and arousal

Inattention

Cognitive impairment

Acute onset

Lidocaine

Pain

↑
Vulnerability

Ageing
Cellular senescence
Neurodegeneration



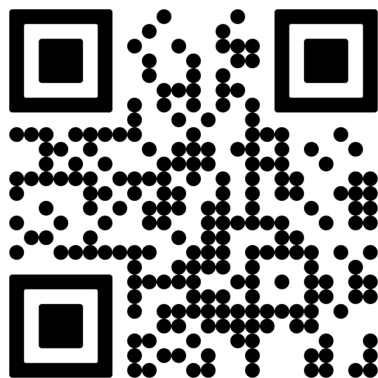
European Delirium Association Conference

6 - 8 September 2023
University of Birmingham

[Homepage](#) [Conference Programme](#) [Registration](#) [Abstract Submission](#) [Keynote Speakers](#) [Sponsorship](#) [Conference Venue](#) ▾
[Social Events](#)

European Delirium Association Conference

Wednesday 6 - Friday 8 September 2023
University of Birmingham





European Delirium Association Conference

6 - 8 September 2023
University of Birmingham

ZINE WORKSHOP

The European Delirium Association in partnership with University of Birmingham are inviting you to find your creative voice, in order to share your lived experience of delirium.

You will have the opportunity to do this with activities that include writing, making a collage, drawing and much more during a facilitated workshop. It is our hope that you would be willing to share the outputs from the workshop in order to raise awareness about delirium.

This free workshop is for people who have had personal experience of delirium, for family members of those who have experienced delirium and health and social care staff to share their lived experience.

Wednesday 6th September 2023

2pm—5pm

University of Birmingham

Teaching and Learning Building

academic.conferences@
contacts.bham.ac.uk

Thank you

UNIVERSITY OF
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INSTITUTE OF
INFLAMMATION
AND AGEING

