NIA/AGS U13 2014

Post-delirium brain pathology – the same or different from AD?

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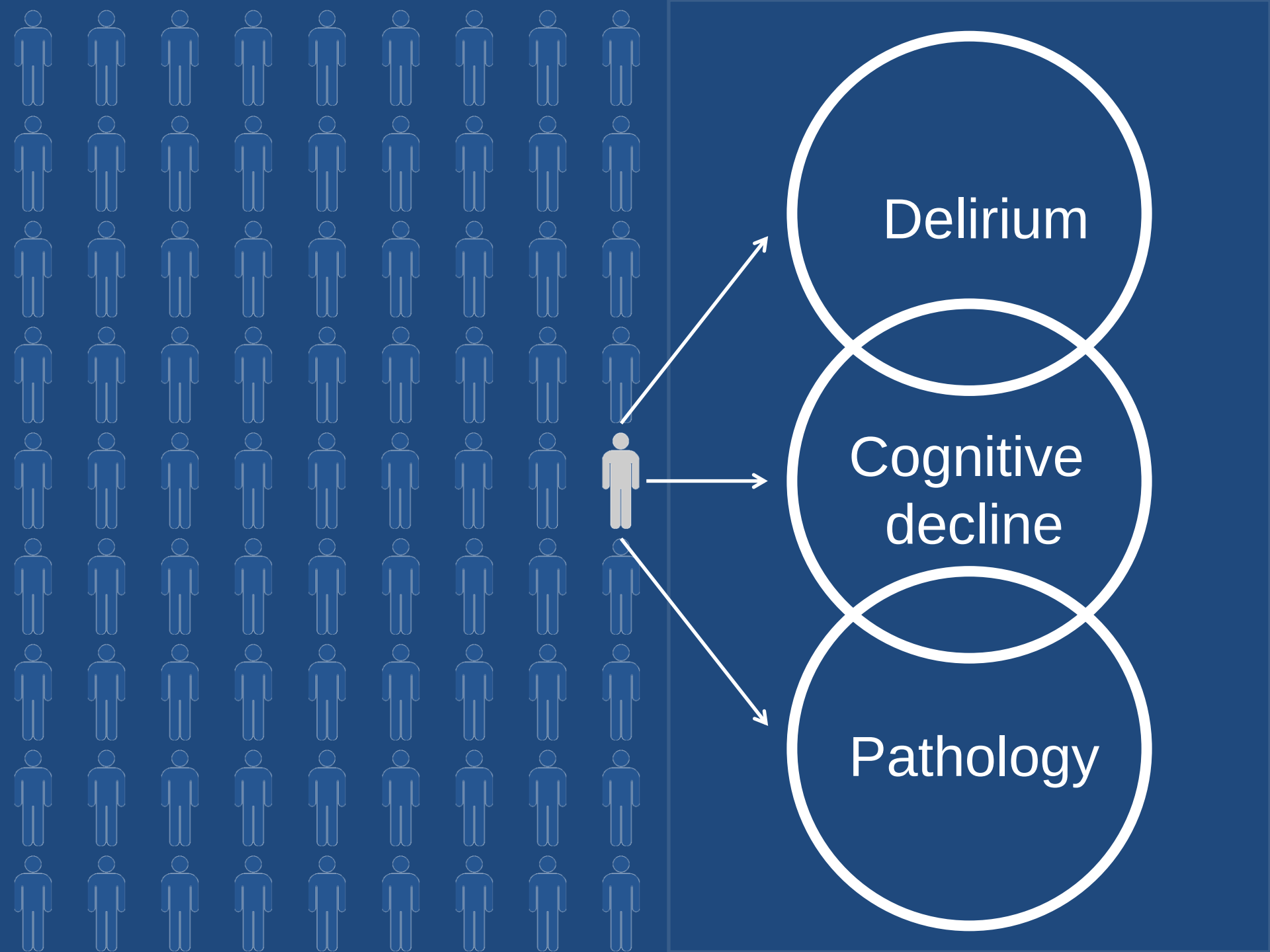
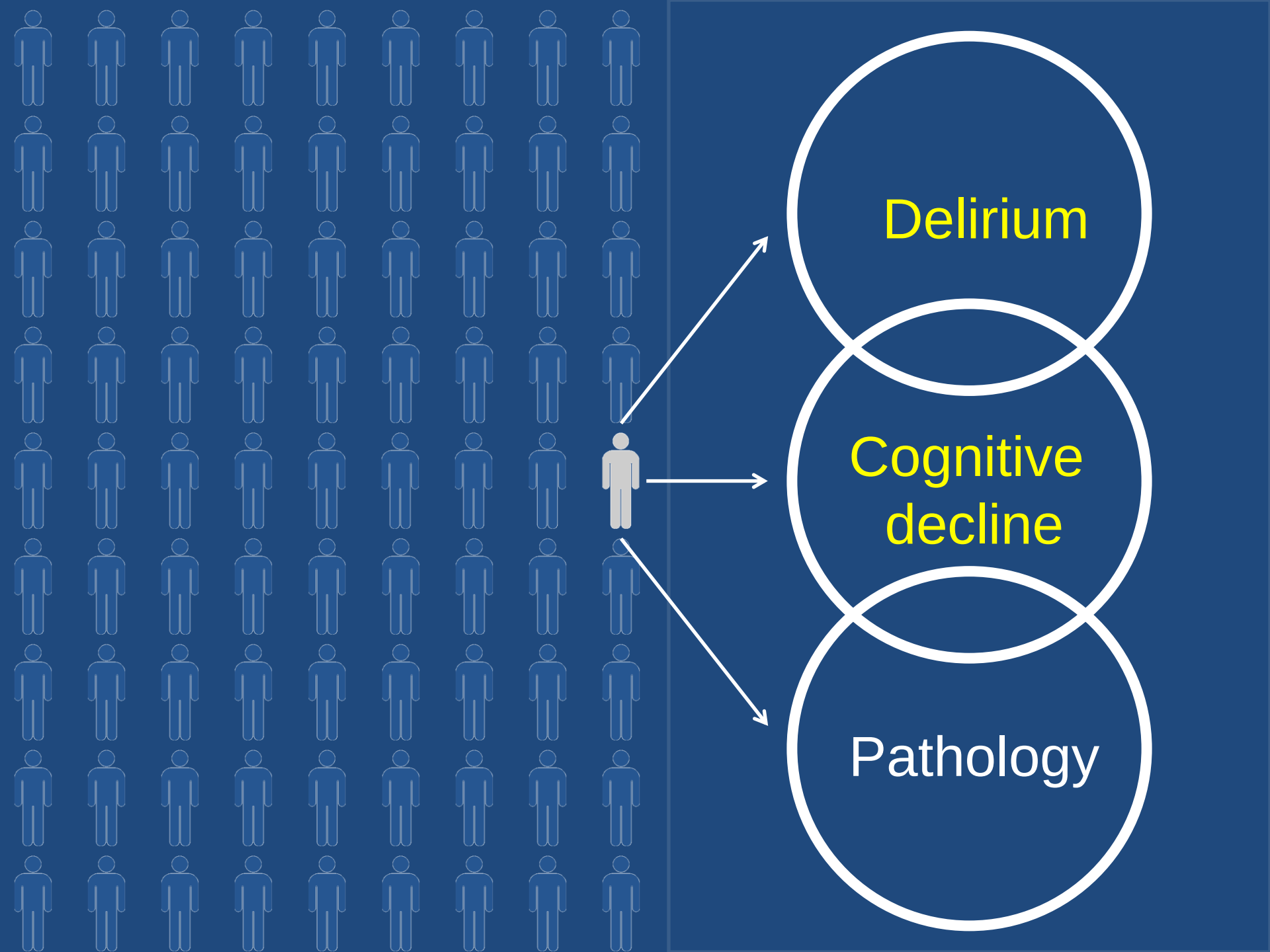

Delirium
Cognitive decline
Pathology


Delirium
Cognitive decline
Pathology

A central question

The most common problem in acute geriatric medicine...

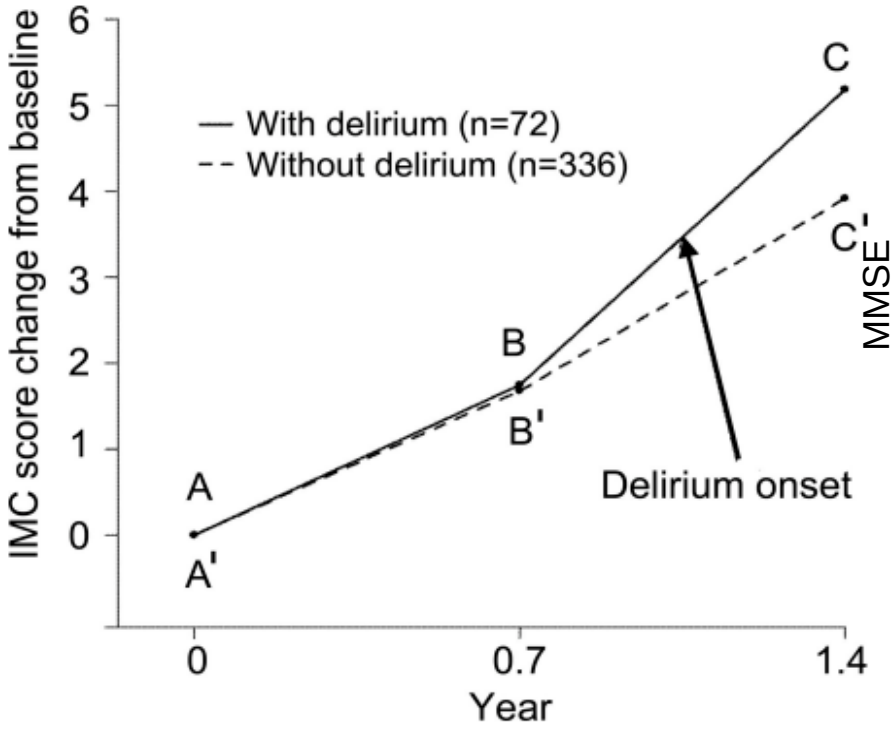
... a public health challenge costing £23 billion?

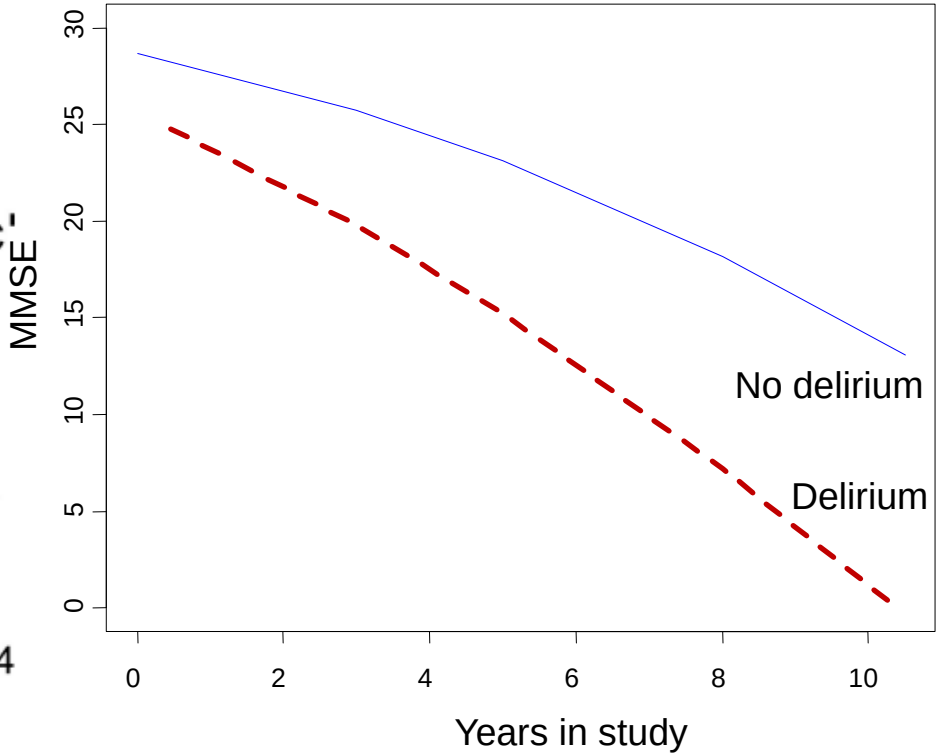
Delirium: long-term outcomes

- Systematic review
- Outcomes
  - Death HR 2.0
  - Dementia OR 13

- But selection bias?
- But undiagnosed dementia?

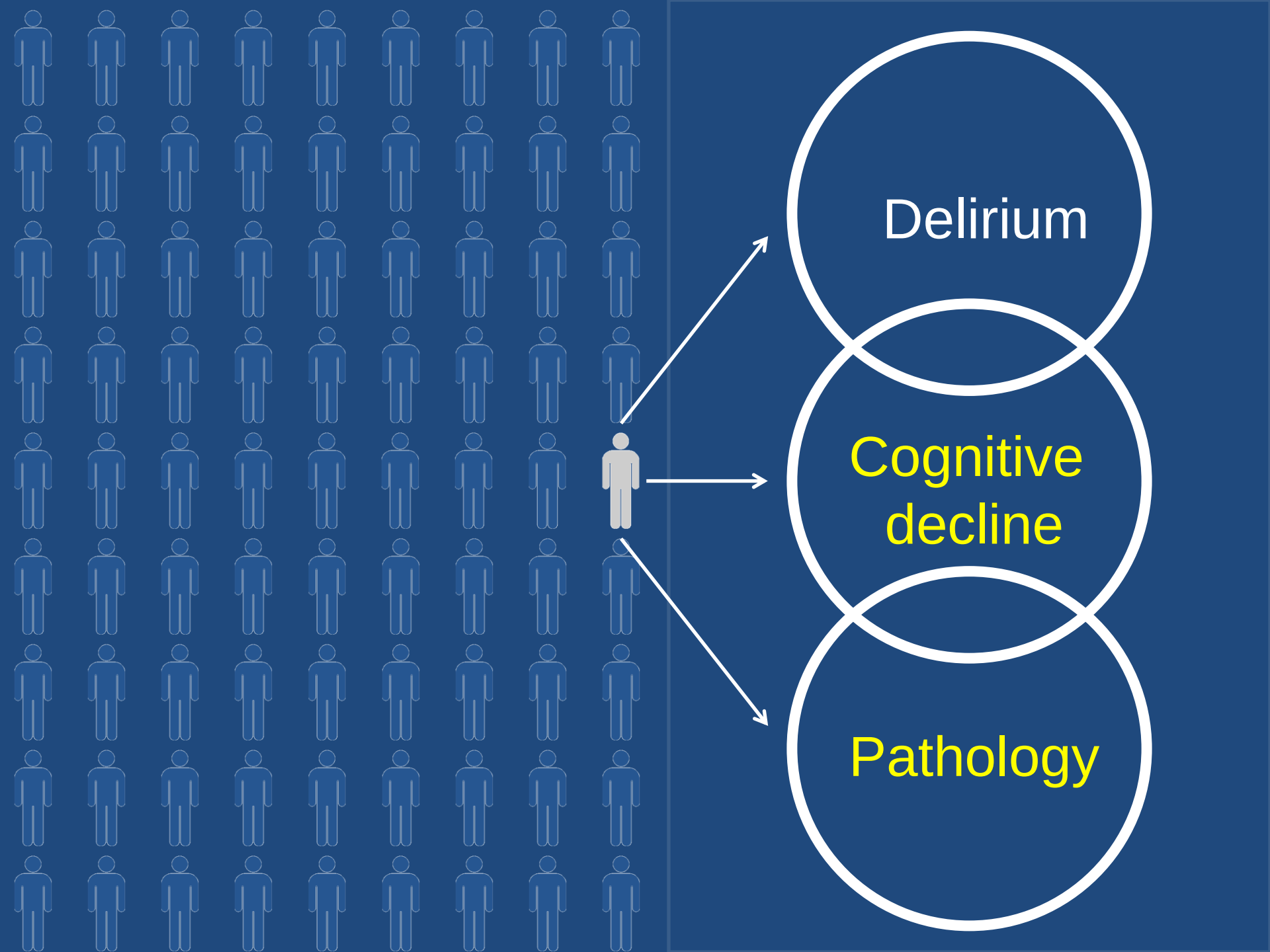
Cognitive trajectories





Fong 2009 Neurology

Davis 2012 Brain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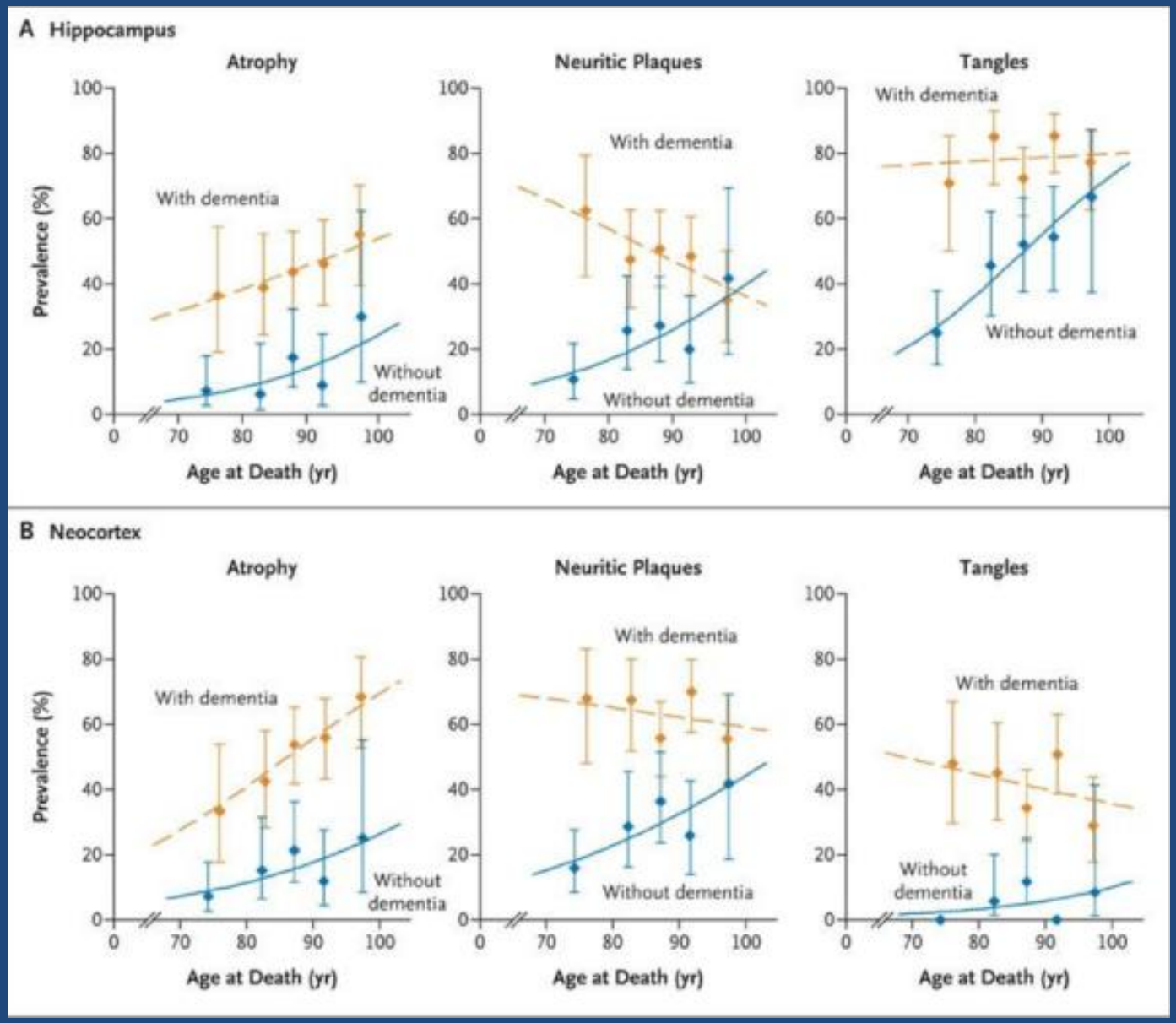


Savva 2009 NEJM

EClipSE

Study	Total sample	Site	Age sample	Years follow-up	Donors
Vantaa 85+	553	Vantaa, Finland	≥85	10	290 (52%)
CC75C	2,166	Cambridge, UK	≥75	25	241 (11%)
CFAS	18,226	UK multicentre	≥65	10	456 (3%)

Delirium

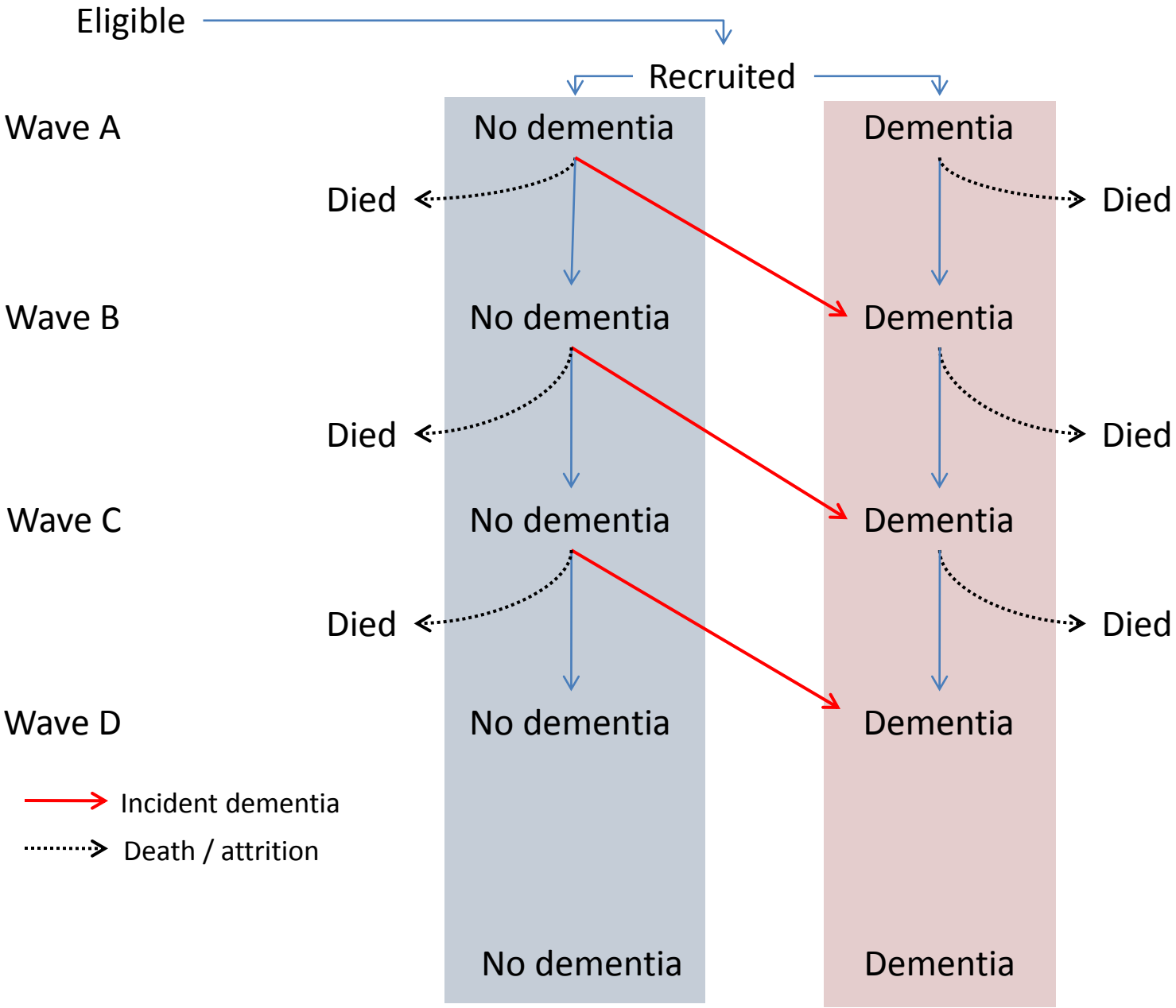
Vantaa 85+ retrospective interview, case notes review

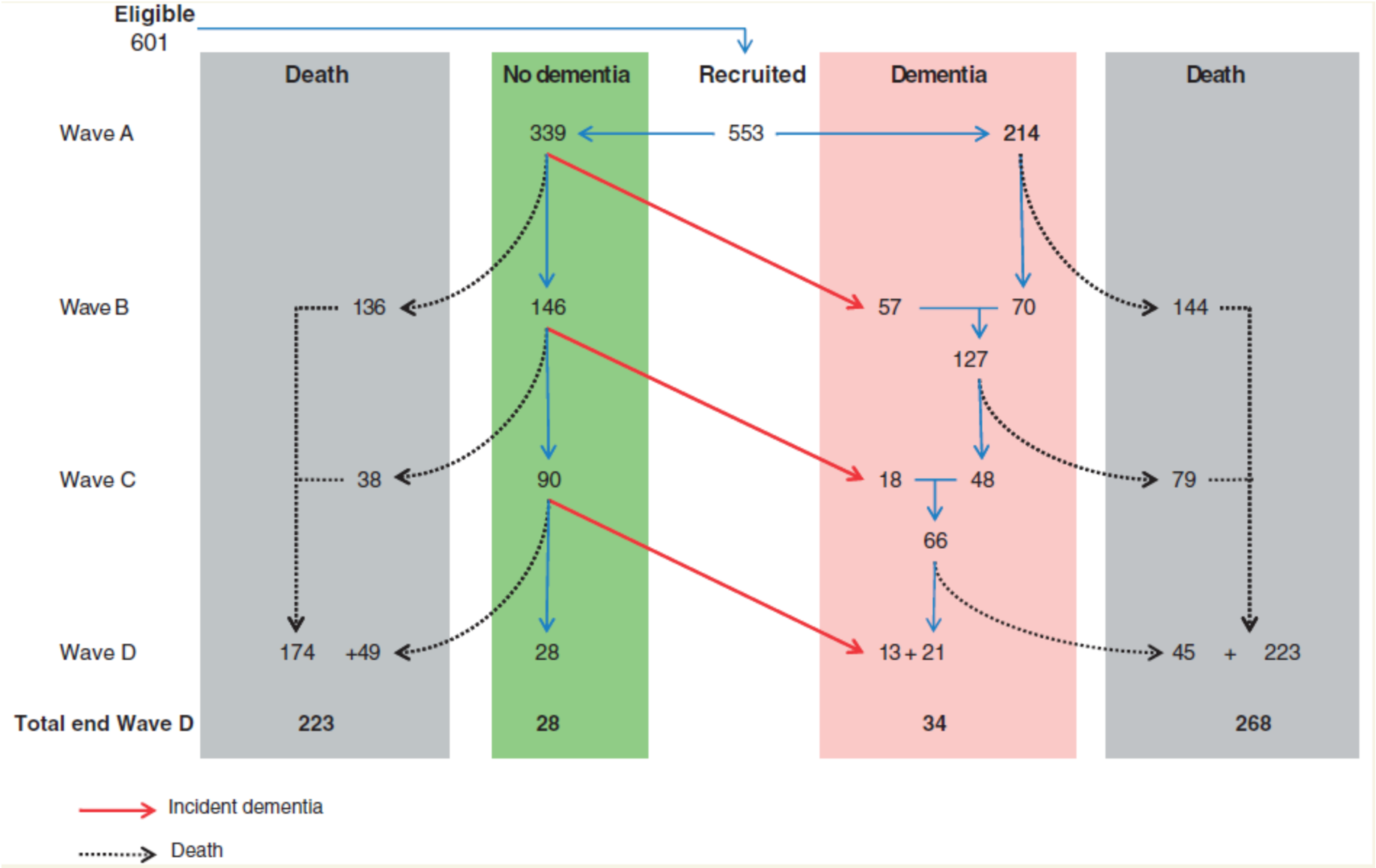
CC75C / CFAS retrospective interview

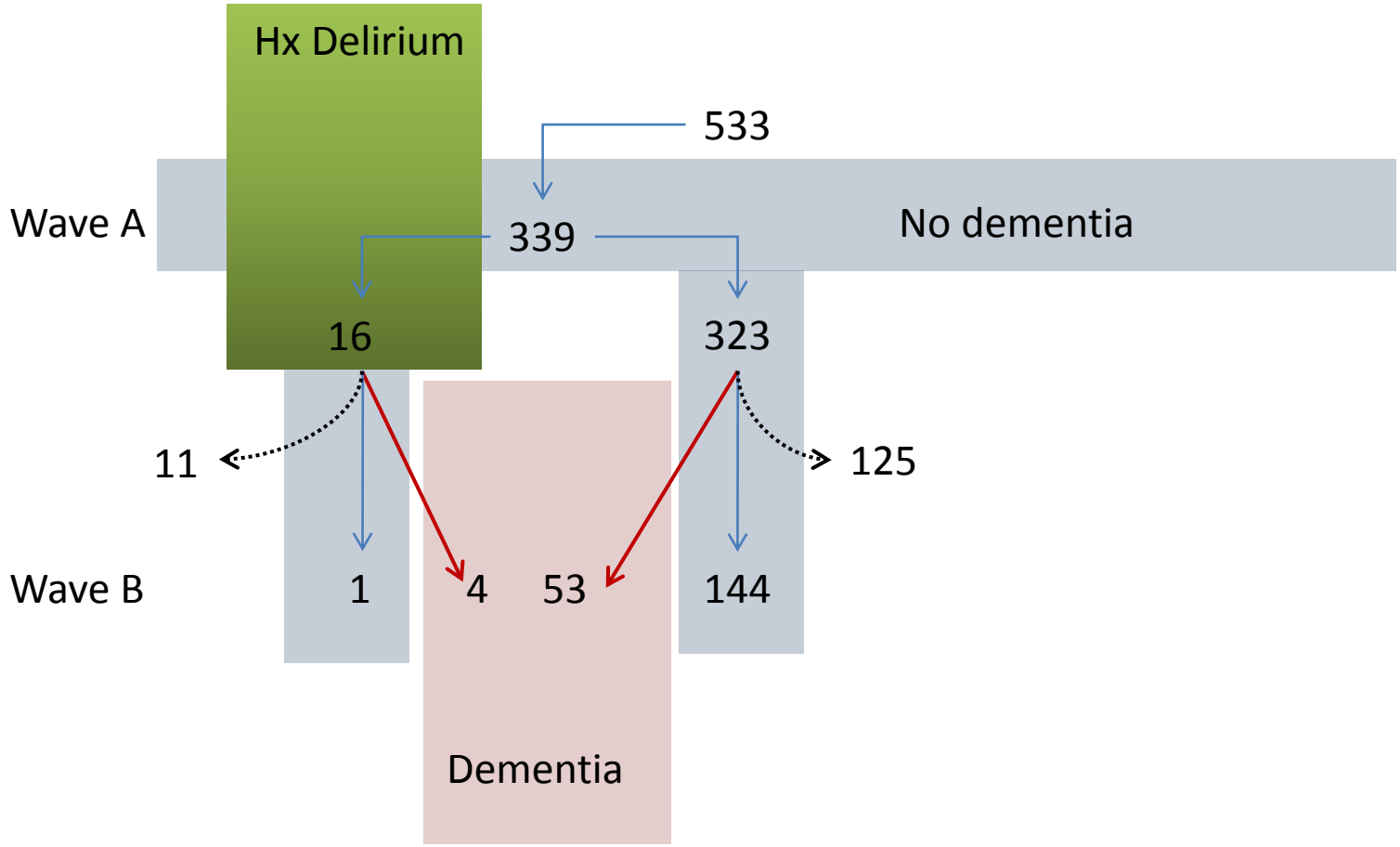
Vantaa 85+ Cohort Study

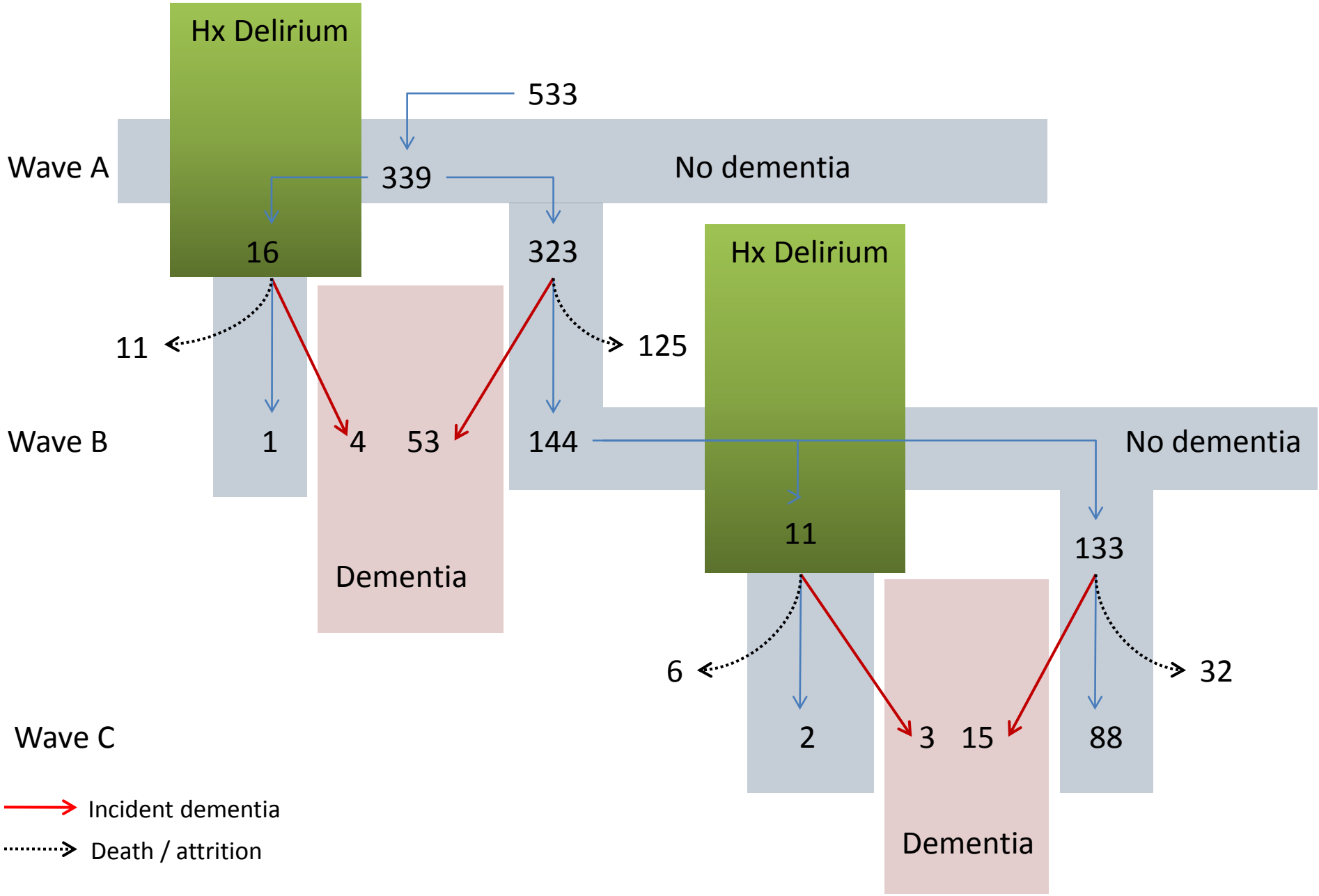
- Population-based
- Southern Finland
- All residents age ≥85 years
- Recruited 1991
- Follow-up 1994, 1996, 1999, 2001
- Cognitive and functional assessment each wave
- 52% autopsy

- Retrospective delirium assessments


Eligible
Recruited
Wave A
No dementia
Dementia
Died
Died
Wave B
No dementia
Dementia
Died
Died
Wave C
No dementia
Dementia
Died
Died
Wave D
No dementia
Dementia
No dementia
Dementia
Incident dementia
Death / attrition

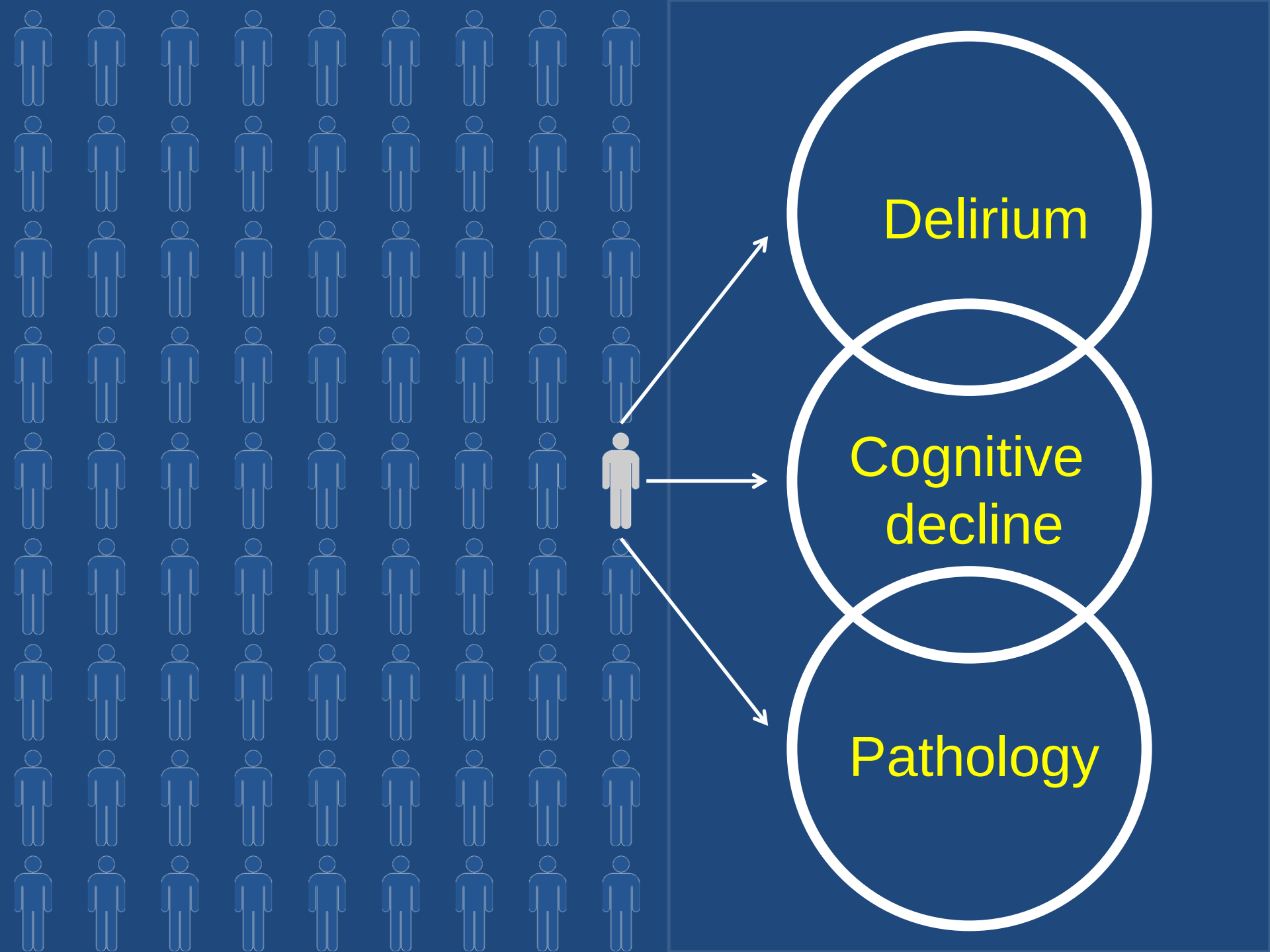

Eligible
601
Death
No dementia
Recruited
Dementia
Death
Wave A
339
553
214
Wave B
136
146
57
70
144
127
Wave C
38
90
18
48
79
66
Wave D
174
+49
28
13 + 21
45
+
223
Total end Wave D
223
28
34
268
Incident dementia
Death


Hx Delirium
533
Wave A
339
No dementia
16
323
11
125
Wave B
1
4
53
144
Dementia
Incident dementia
Death / attrition


Hx Delirium
533
Wave A
339
No dementia
16
323
Hx Delirium
11
125
Wave B
1
4
53
144
No dementia
11
133
Dementia
6
32
2
3
15
88
Wave C
Dementia
Incident dementia
Death / attrition

Participant characteristics

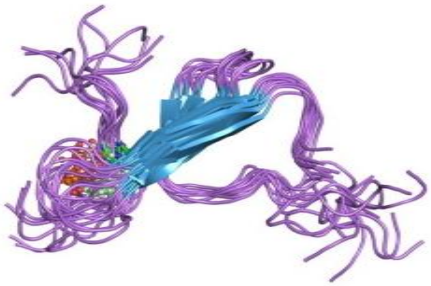
	No delirium	Delirium	P
N	708	279	
Age at death; mean (SD)	89 *(6.7)*	90 *(5.8)*	0.03
Sex; female (%)	472 *(66)*	210 *(75)*	<0.01
Years of education; median (IQR)	9 *(6-13)*	9 *(8-14)*	<0.01
Pathology; N (%)			
Neurofibrillary tau	346 *(50)*	166 *(59)*	<0.01
Amyloid plaques	344 *(50)*	138 *(42)*	0.62
Vascular	358 *(56)*	139 *(57)*	0.54
Lewy bodies	67 *(10)*	27 *(10)*	0.99

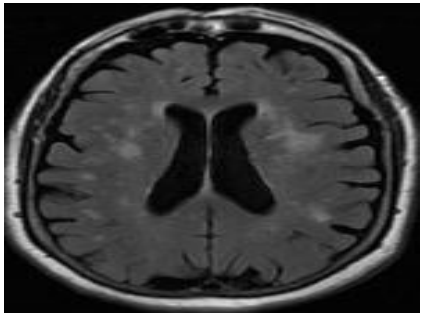

Delirium
Cognitive decline
Pathology

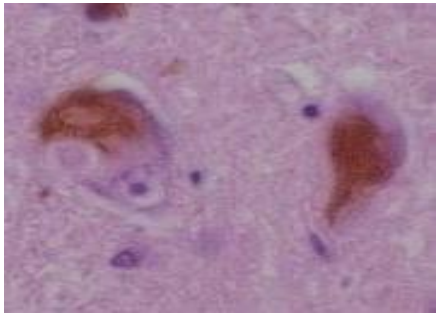
Hypothesis

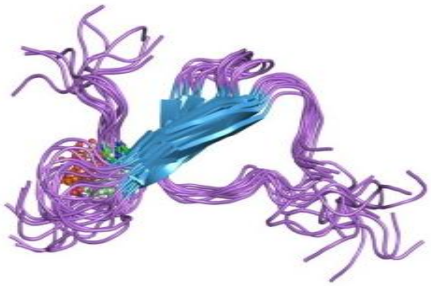
Accelerated cognitive decline due to delirium

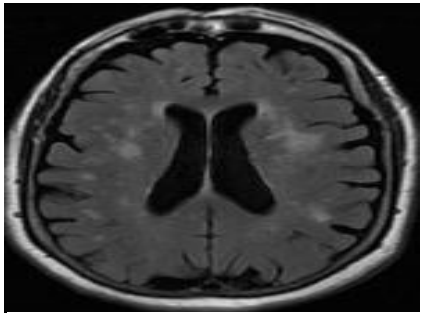
... acts independently from classical dementia pathology

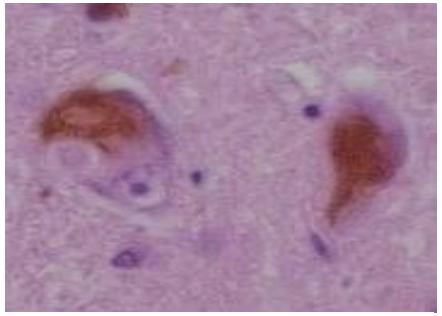




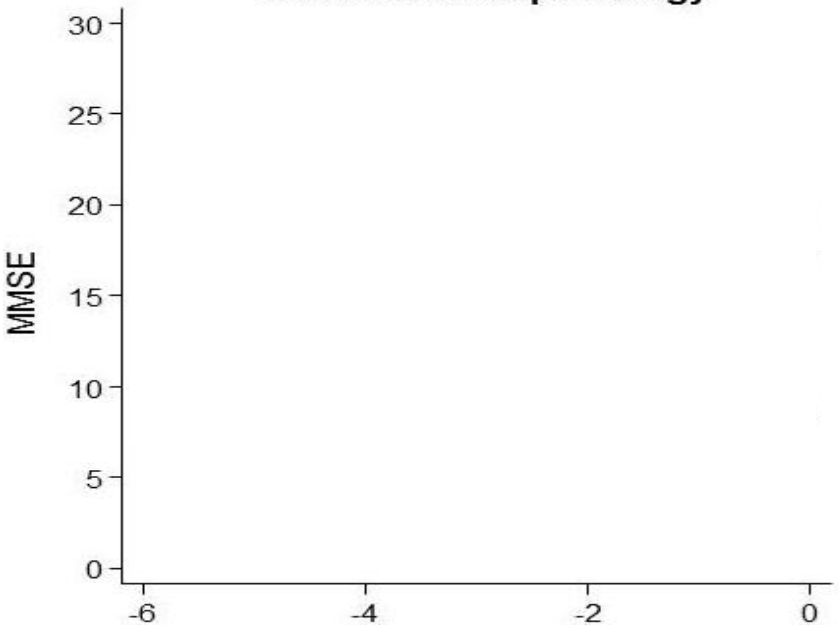




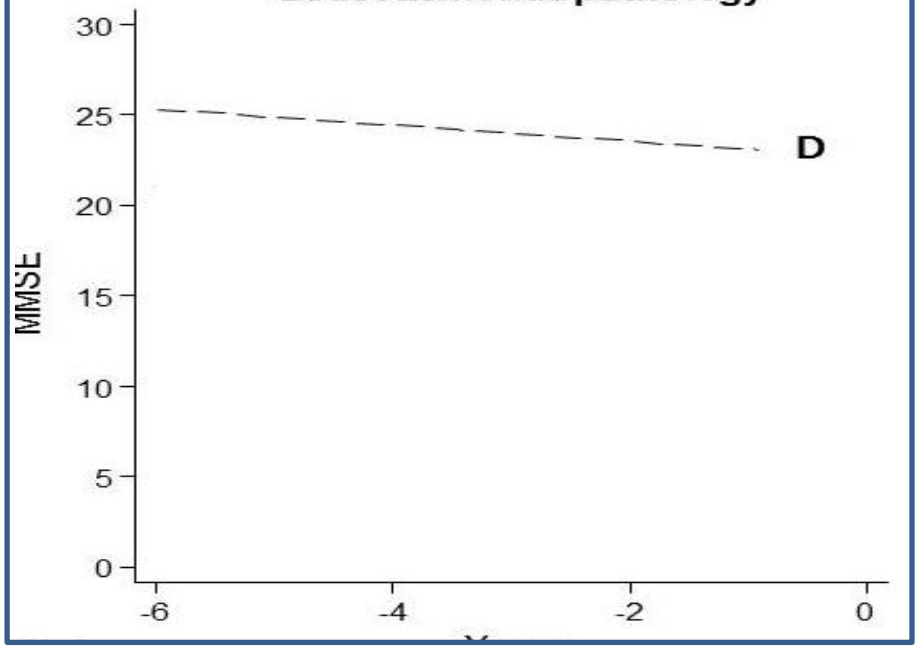


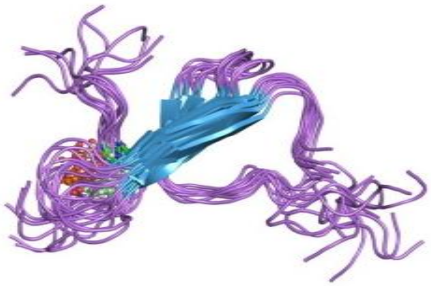


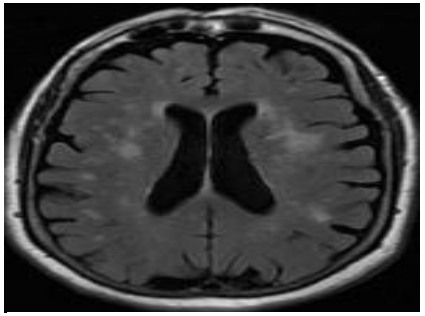
Most dementia pathology

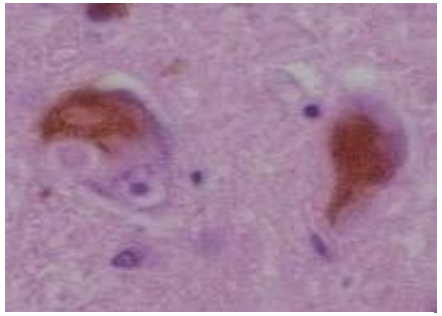


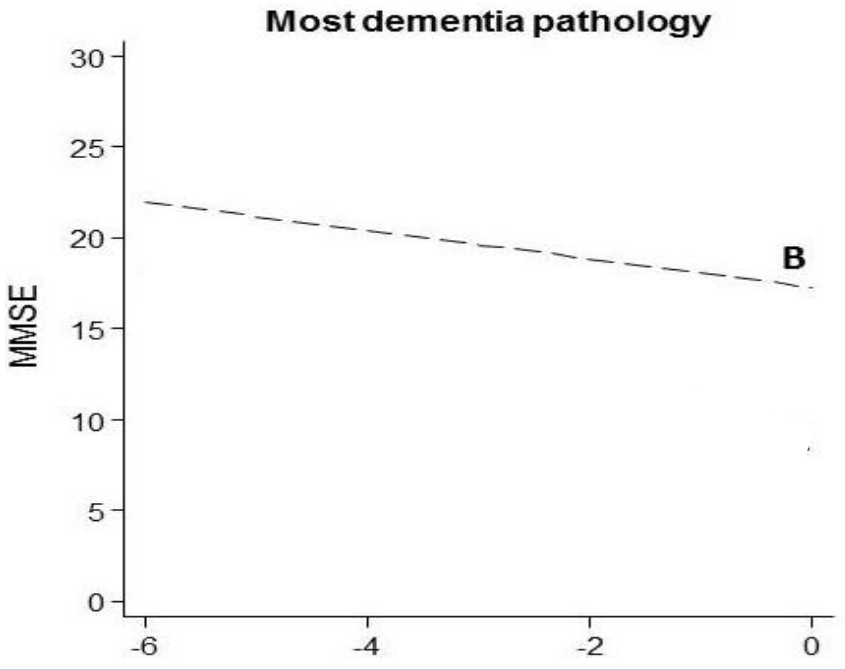
Least dementia pathology










Most dementia pathology
MMSE
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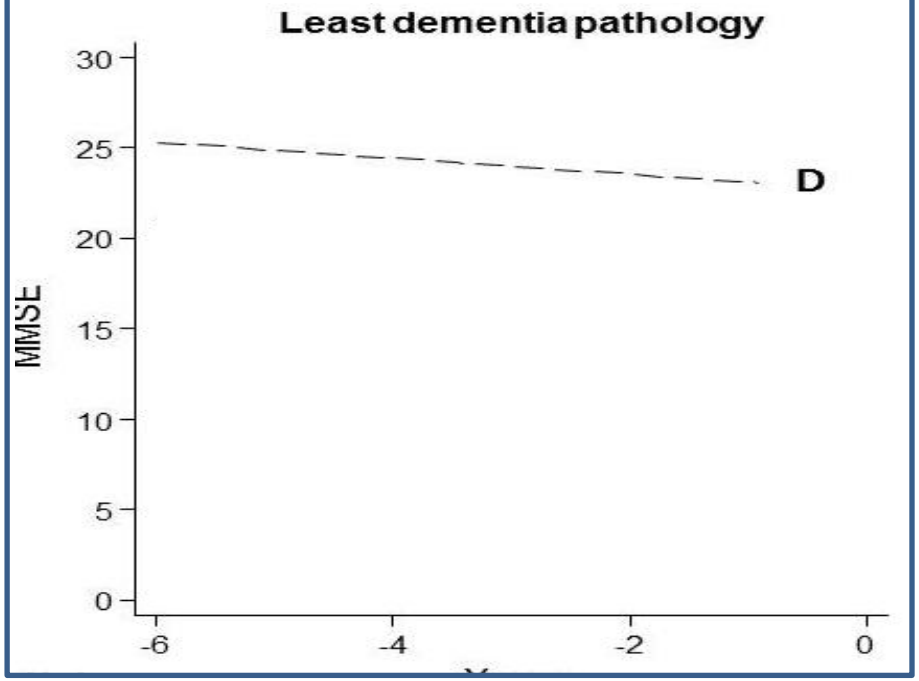
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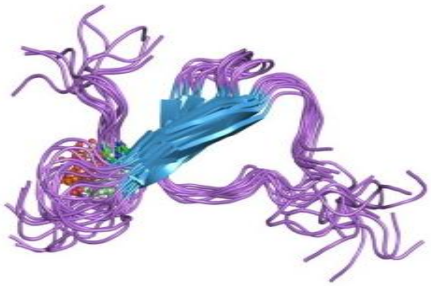

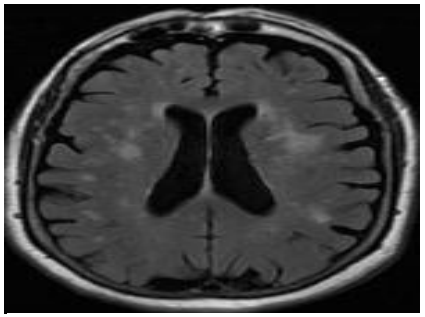

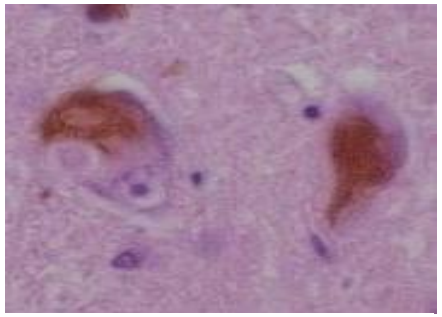

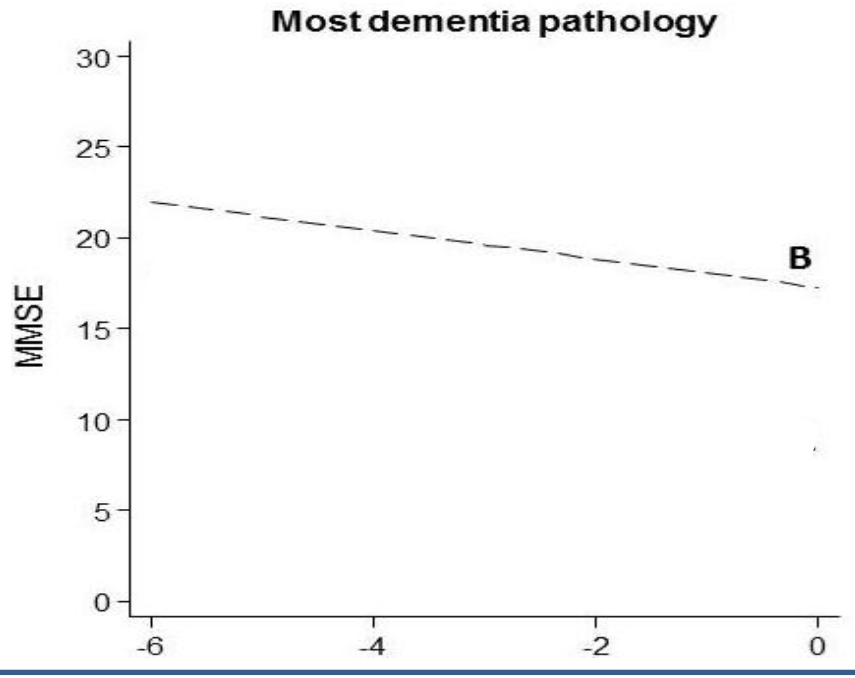
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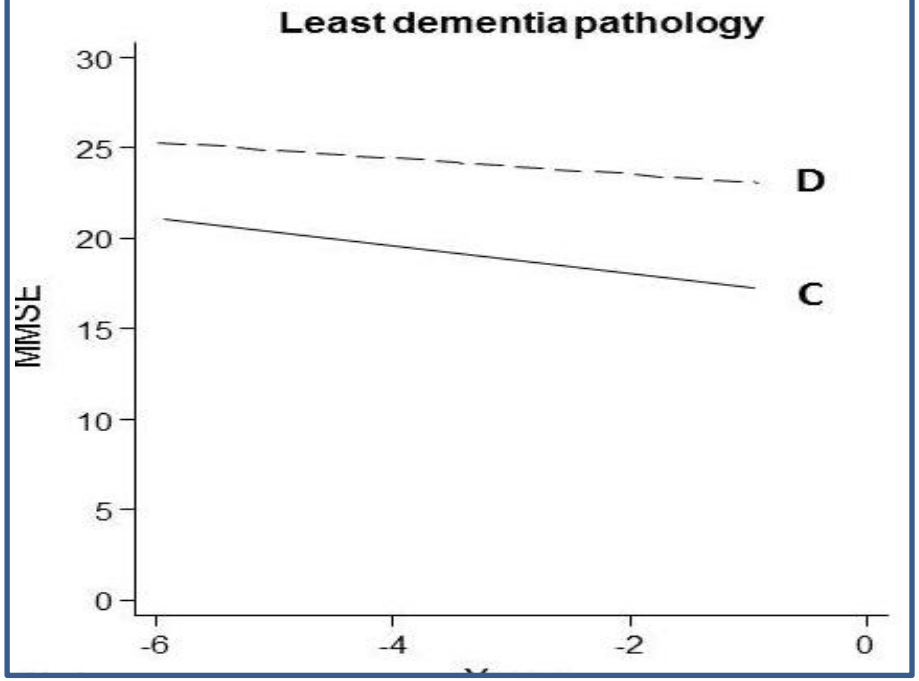
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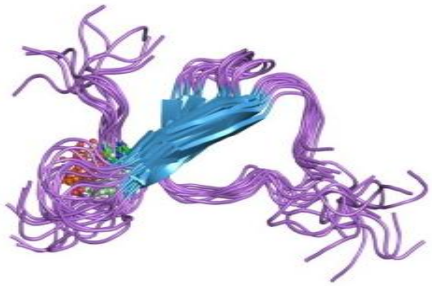

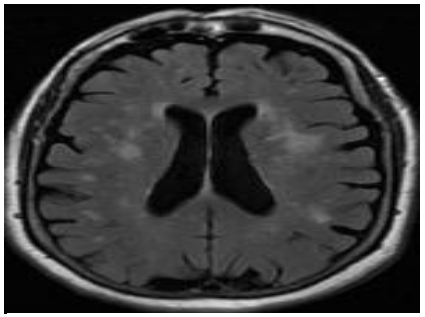

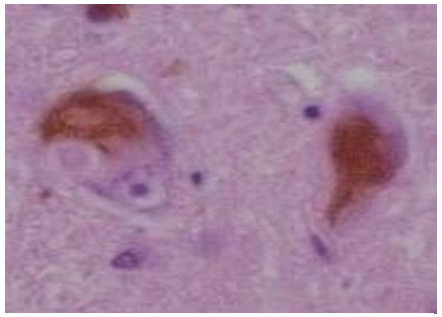

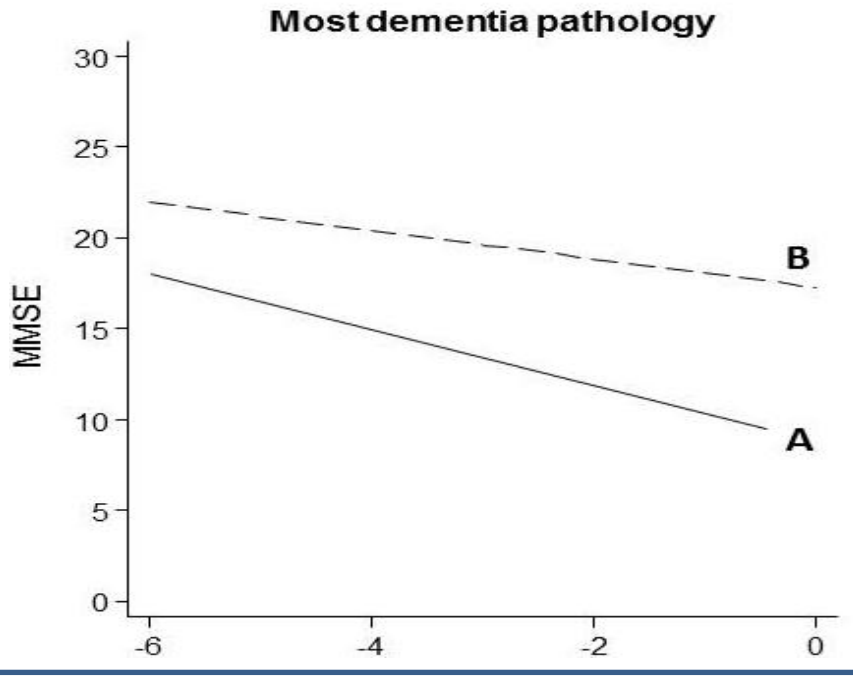
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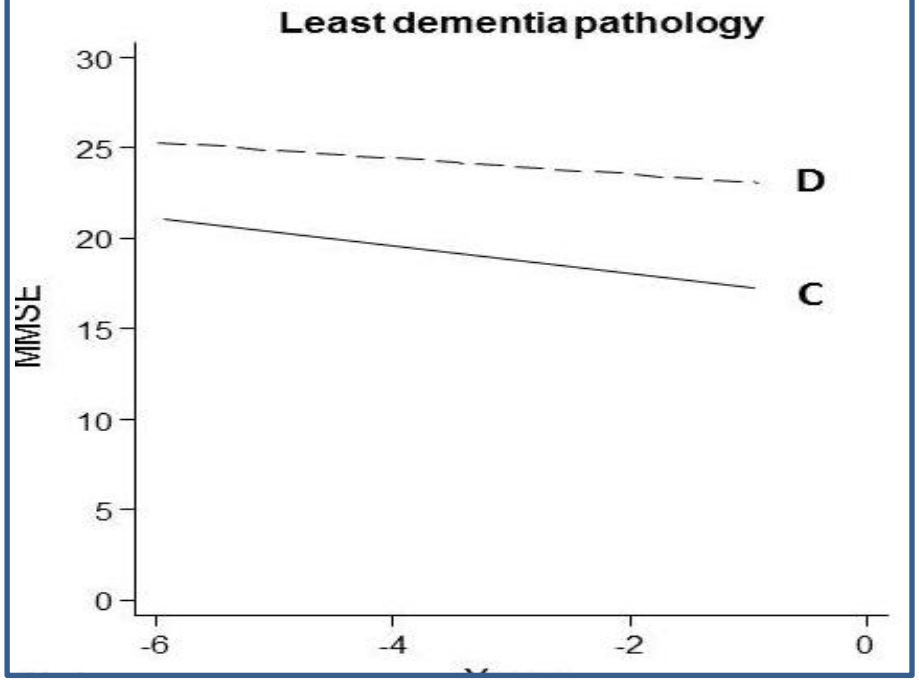
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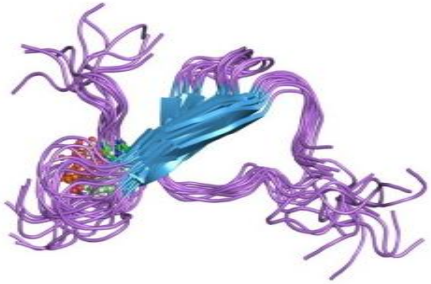

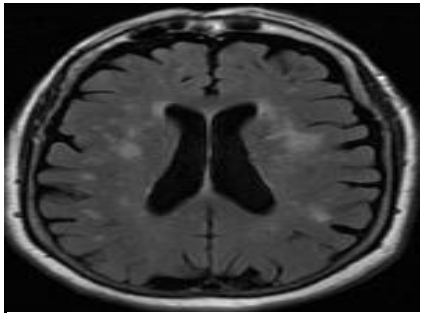

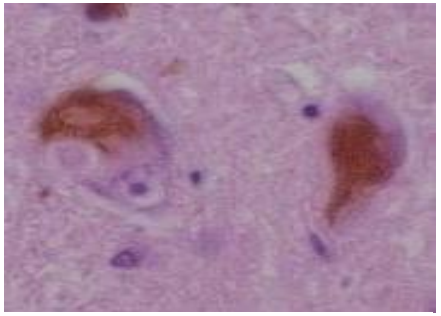

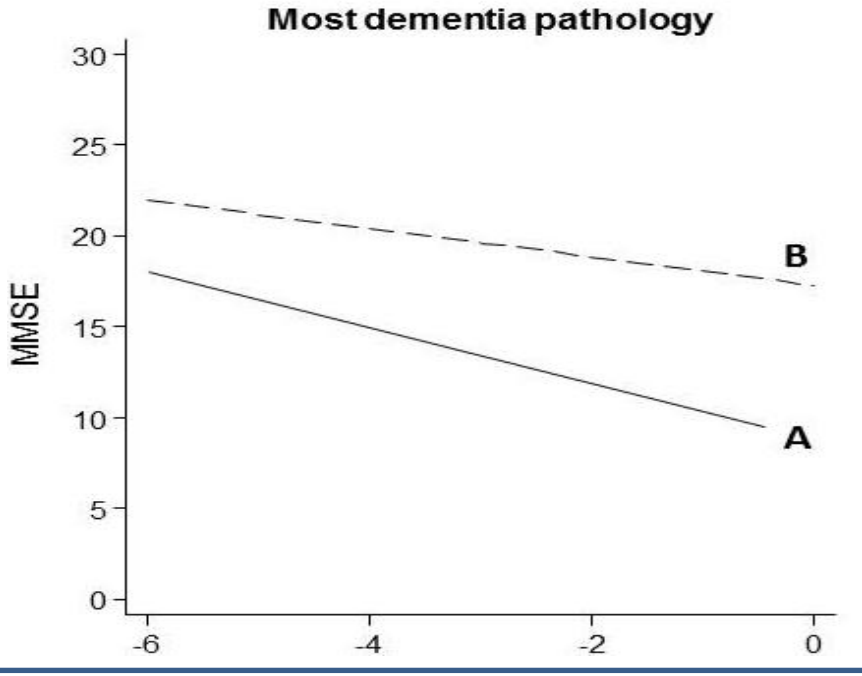
Most dementia pathology
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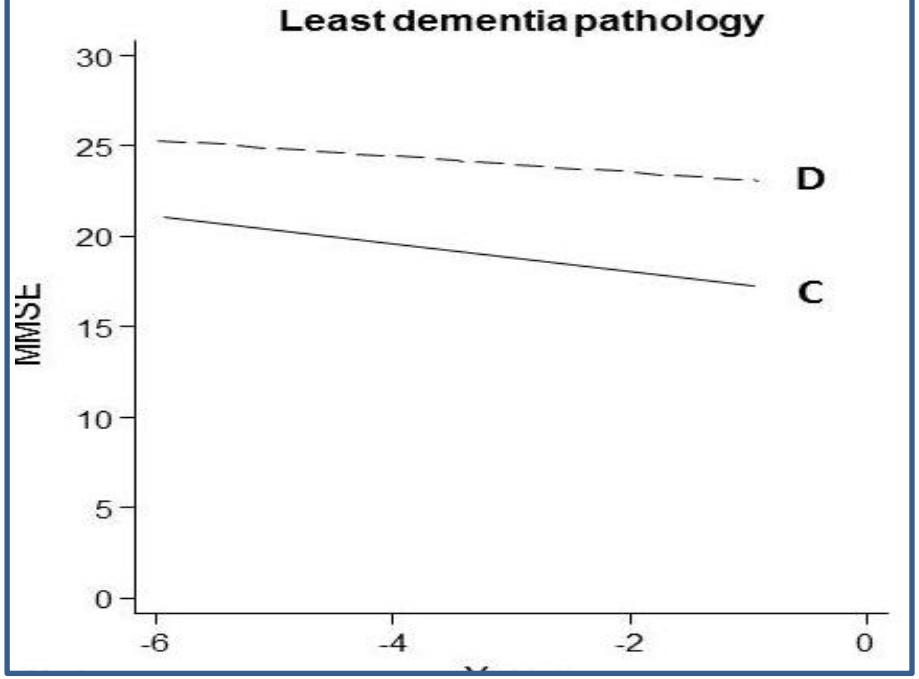
Least dementia pathology
MMSE
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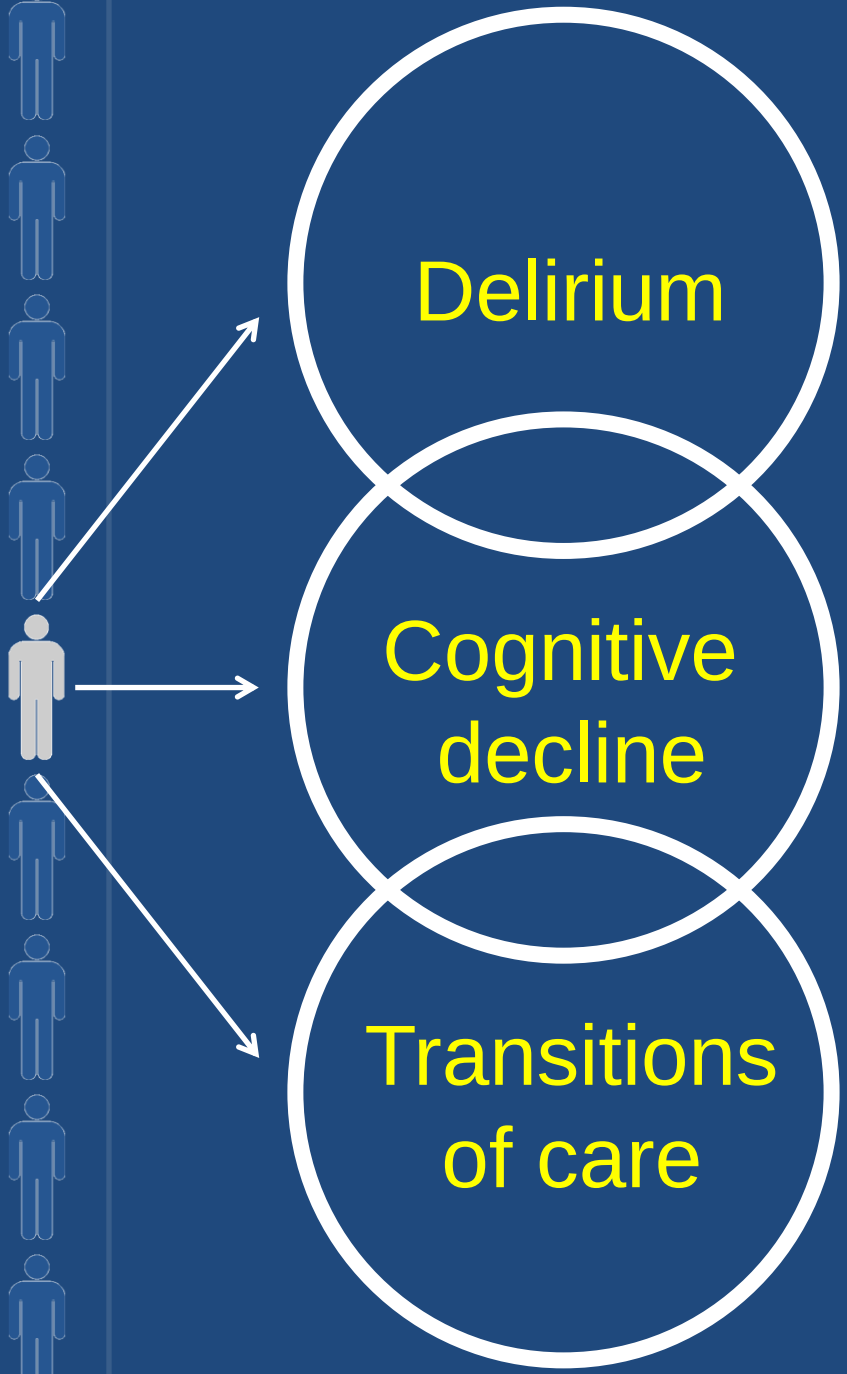
Delirium is a determinant of cognitive decline

Independent but additive to classical dementia pathology



Collaborators

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wellcome trust
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UNIVERSITY OF CAMBRIDGE