Cognitive trajectory in stroke

Dr Terry Quinn
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Conflict of interest/disclosure

Some data unpublished
No cameras please

Conflict of interest/disclosure

I am not a:

vascular neurologist with an interest in dementia, subspecialty training in psychiatry and substantial expertise in neuropsychology assessment

Conflict of interest/disclosure

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I am not a:

vascular neurologist with an interest

in dementia,

Conflict of interest/disclosure

I am not a:

vascular neurologist

Conflict of interest/disclosure

I am not a:

neurologist

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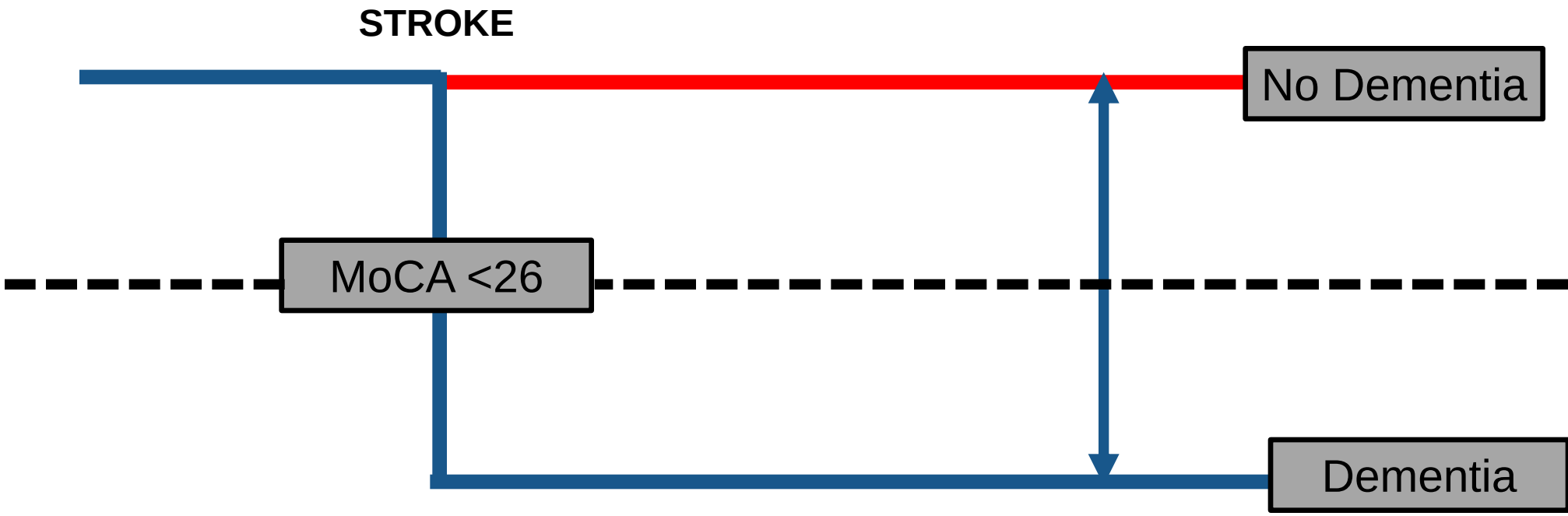
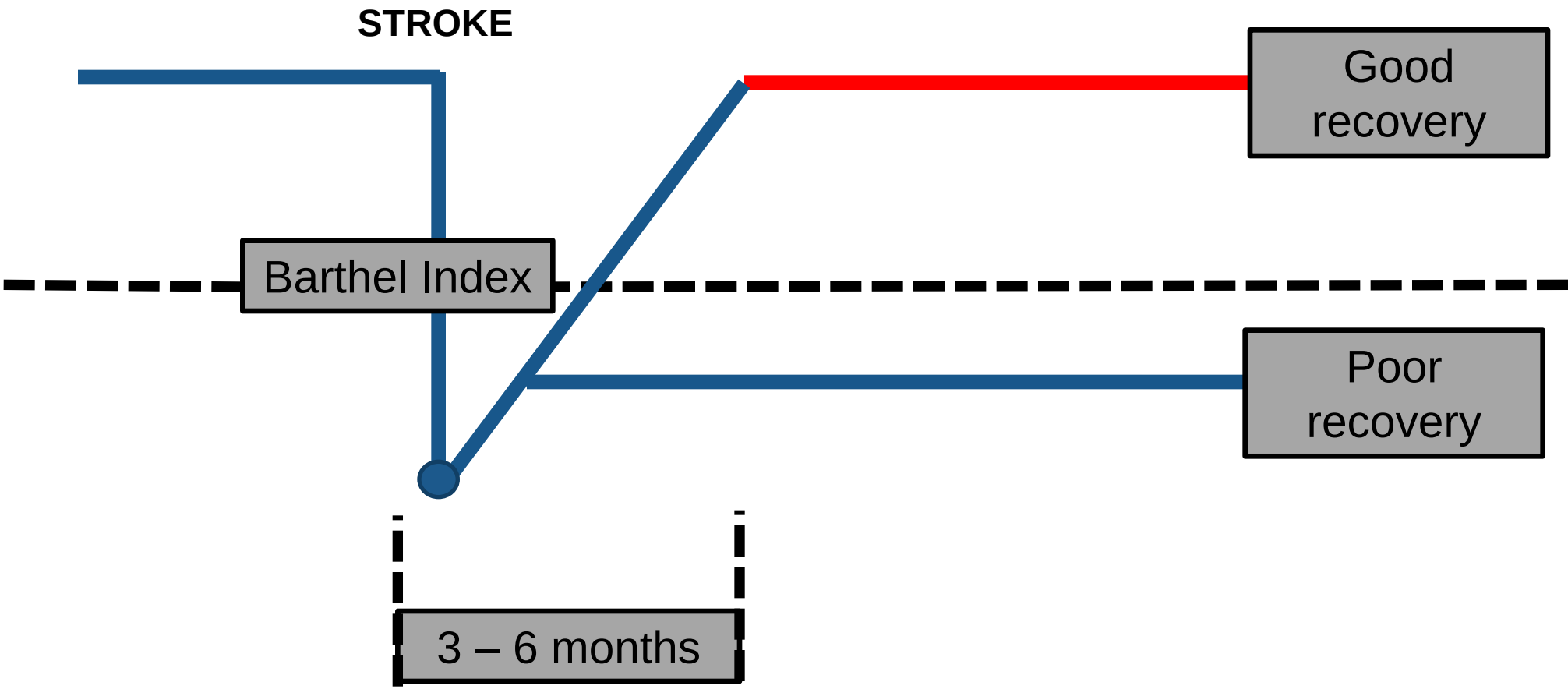
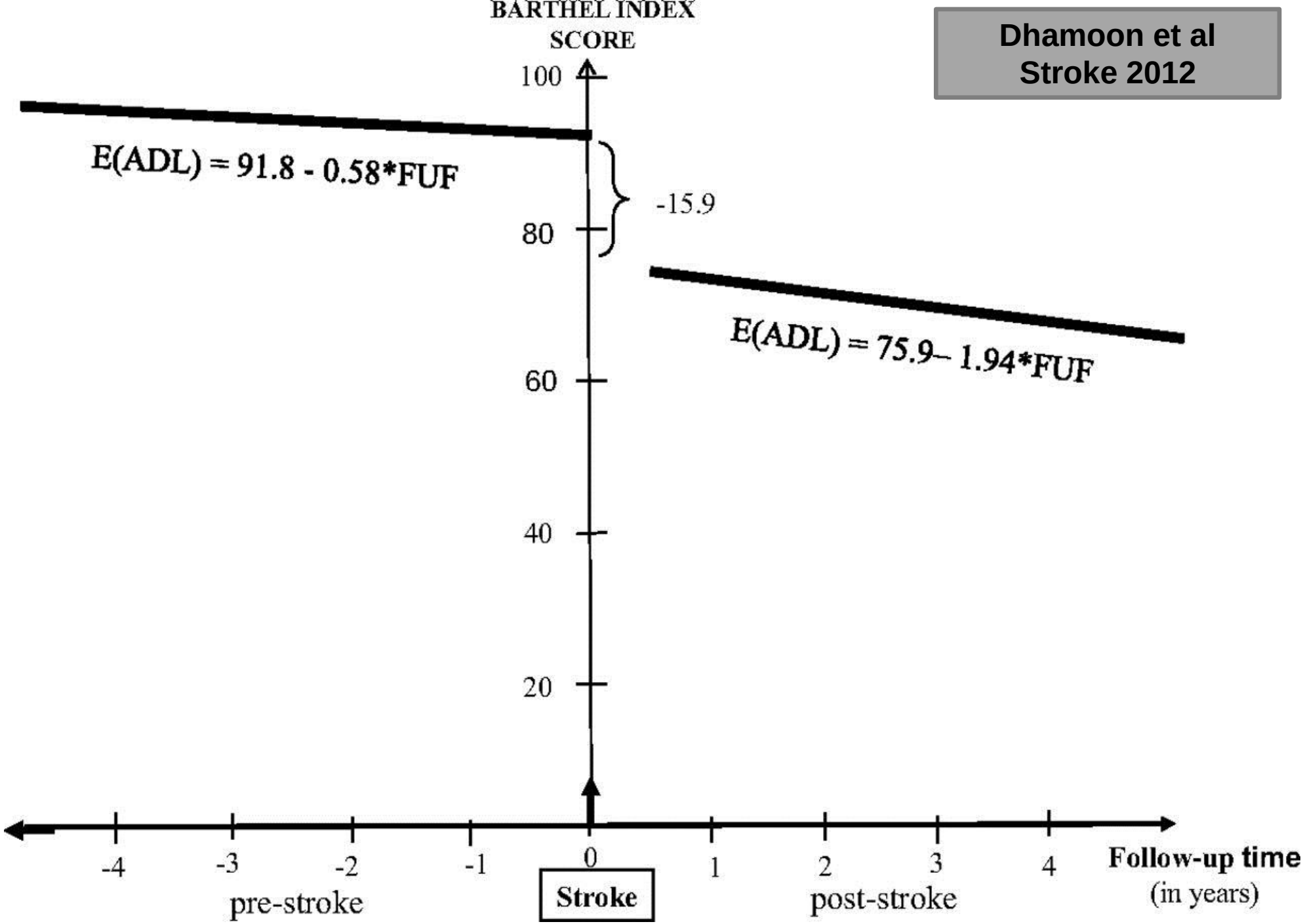


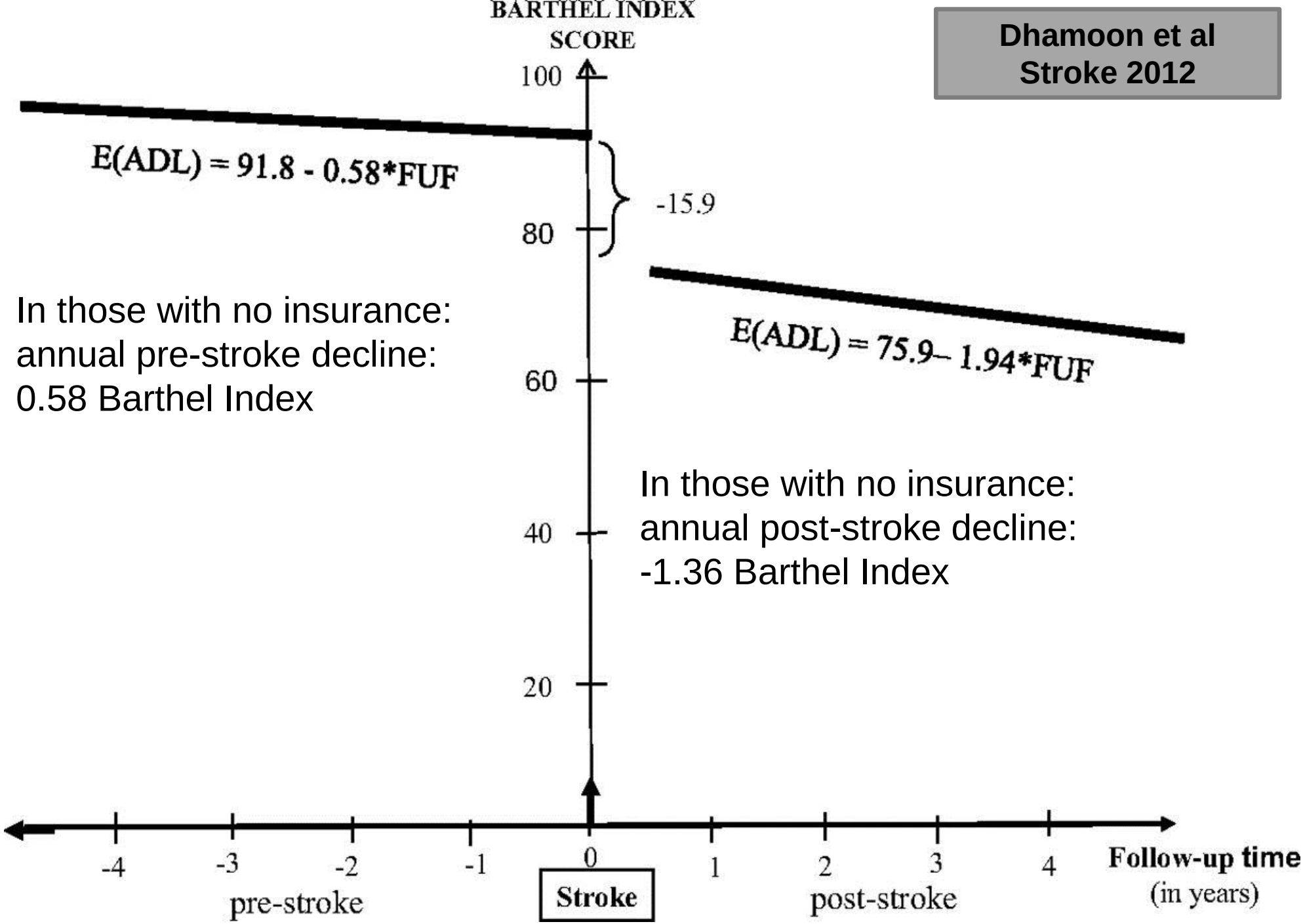
Prevalence of cognitive impairment post stroke:
8-45%


STROKE
Good recovery
Barthel Index
Poor recovery
3 – 6 months



Dhamoon et al
Stroke 2012

Dhamoon et al
Stroke 2012



In those with no insurance:
annual pre-stroke decline:
0.58 Barthel Index

In those with no insurance:
annual post-stroke decline:
-1.36 Barthel Index

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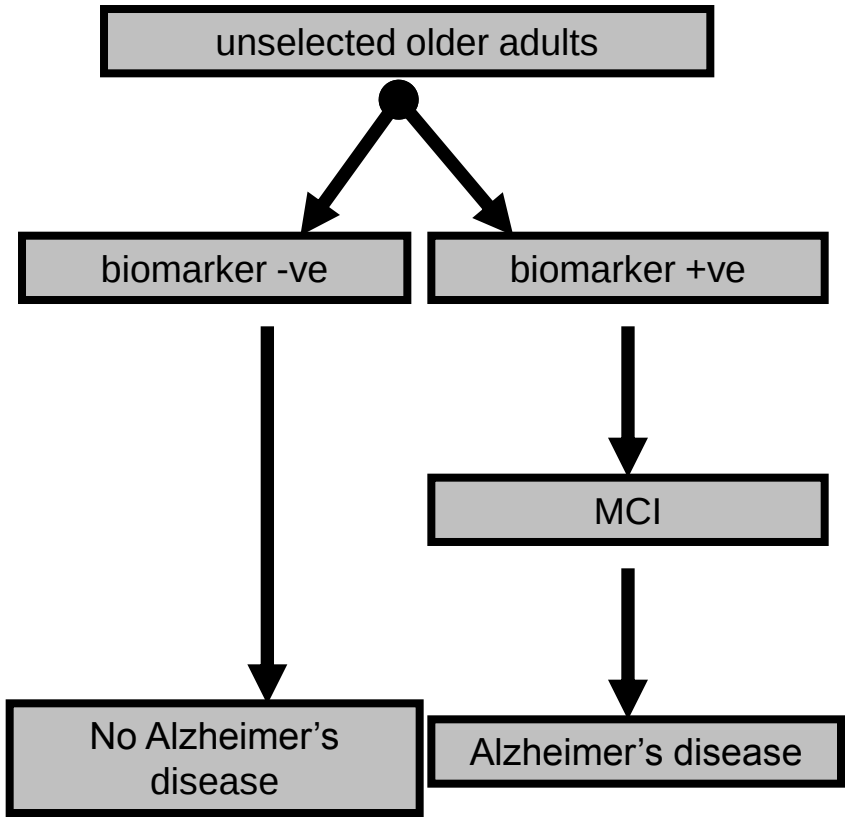
Ritchie CW et al
Alz R&T 2015



Biomarkers select those most likely to develop dementia

Conversion to MCI

OR

MCI conversion to dementia

offers an efficient, robust measure of outcome

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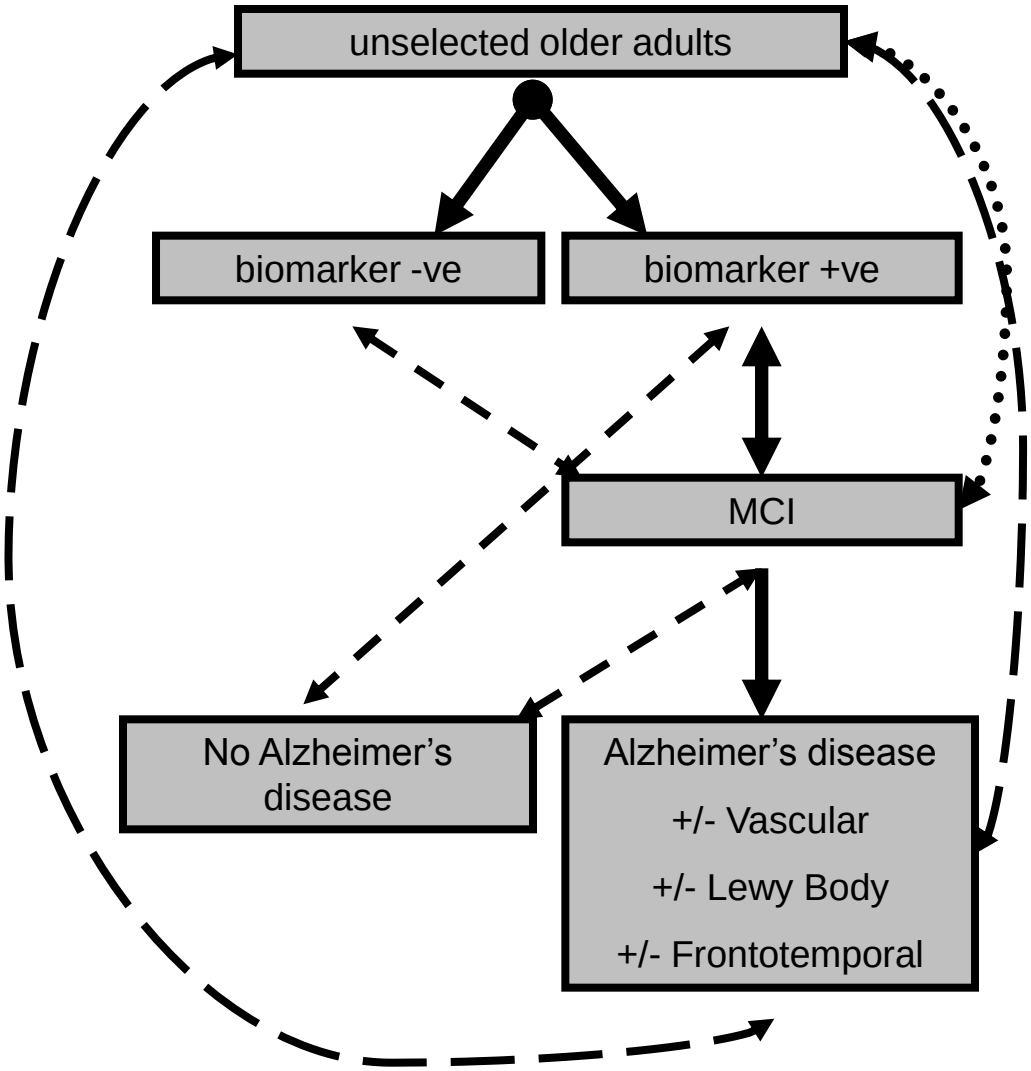
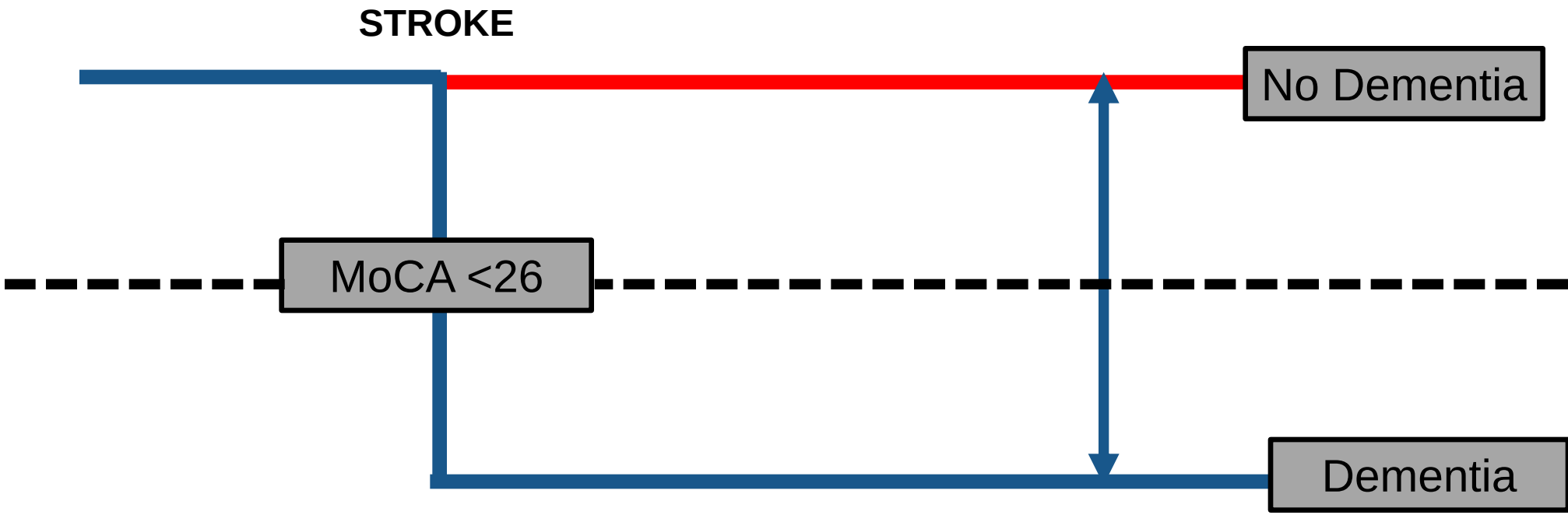
Ritchie CW et al
Alz R&T 2015

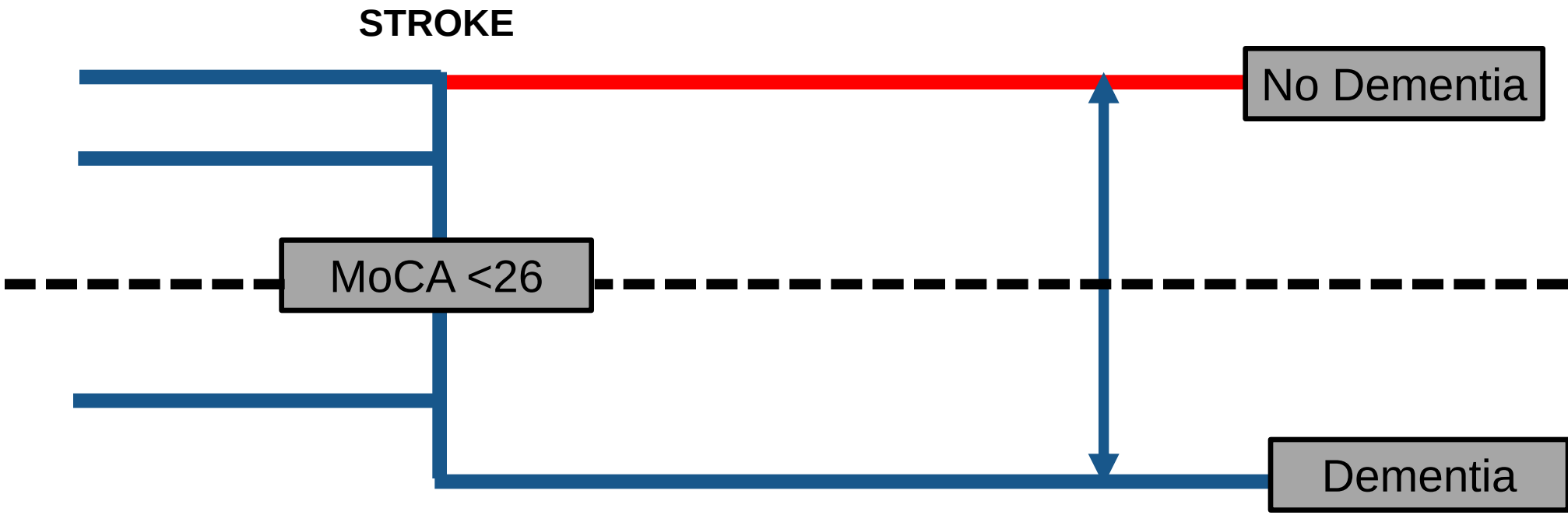


Prognostic accuracy of biomarkers in older adults is limited.

Conversion from MCI to dementia is not certain; even after extended follow up.

In older adults mixed patterns of dementia are common.


STROKE
No Dementia
MoCA <26
Dementia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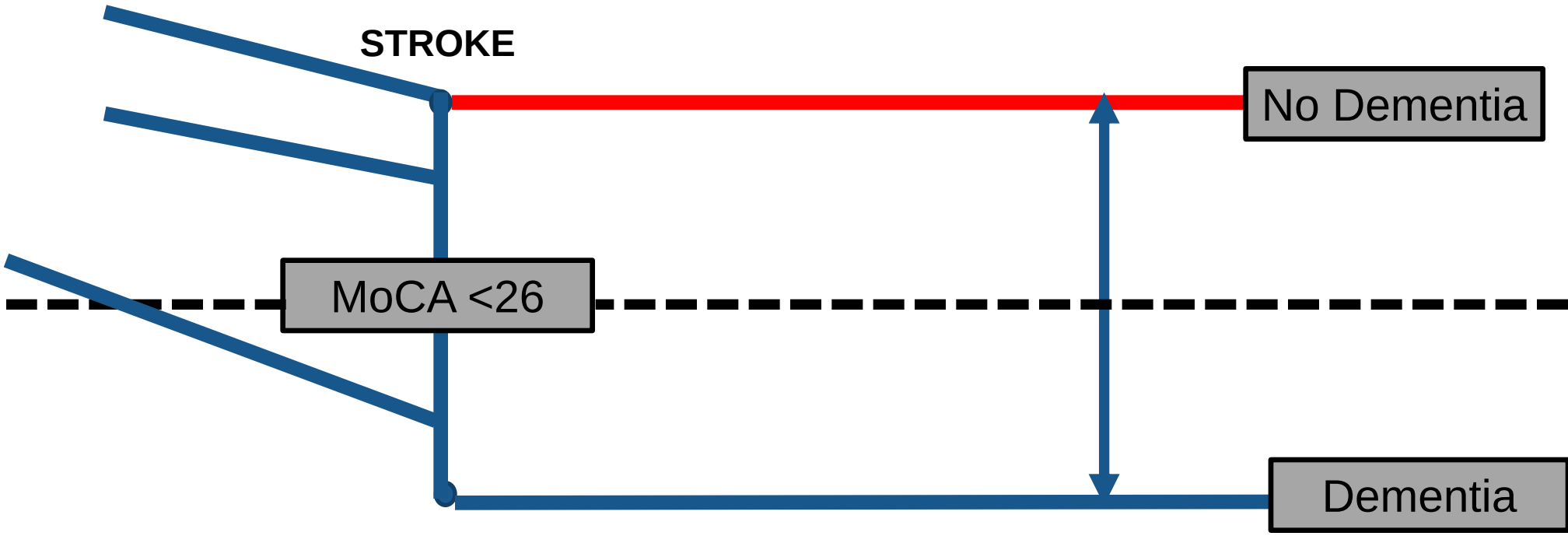
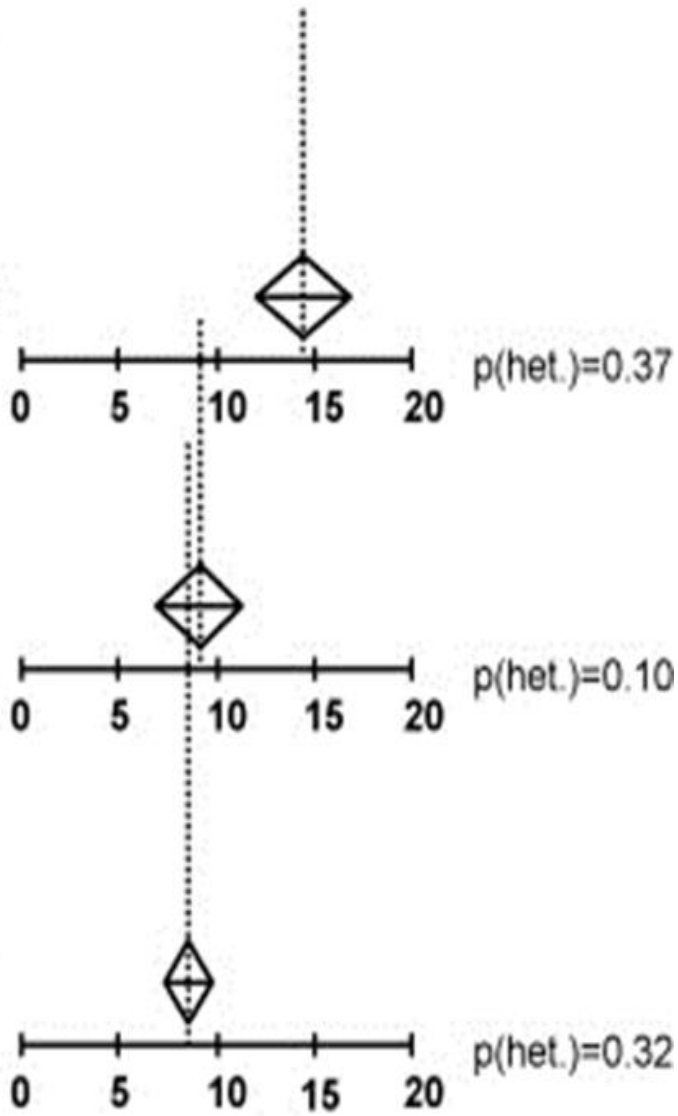

STROKE
No Dementia
MoCA <26
Dementia

University of Glasgow

Pendlebury et al Lancet Neurol 2009

Total (n studies)	Demented/ Total	Prev (%)	95%CI
All patients with stroke			
Hospital-based			
Total (3 studies)	112 / 779	**14.4**	12.0-16.8
Population-based			
Total (3 studies)	152 / 1674	**9.1**	6.9-11.3
Patients reaching follow-up			
Hospital-based			
Total (7 studies)	175 / 2057	**8.5**	7.3-9.7



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Informant assessments for diagnosis of dementia

Informant Questionnaire Cognitive Decline Elderly (IQCODE)

Alzheimer's Disease 8 questions (AD-8)

Deterioration Cognitive Observe

Blessed Dementia Scale

GP-Cog

Concord Informant Dementia Scale (CIDS)

Symptoms of Dementia Screener (SDS)

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IQCODE in the last ten years have you noticed a change in X's ability to:
Remembering things about family and friends
Remembering things that have happened recently
Recalling conversations a few days later
Remembering address and telephone number
Remembering what day and month it is
Remembering where things are usually kept
Remembering where to find things around the house
Knowing how to work familiar machines around the house
Learning to use a new gadget or machine around the house
Learning new things in general
Following a story in a book or on TV
Making decisions on everyday matters
Handling money for shopping
Handling financial matters,
Handling other everyday arithmetic problems,
Using his/her intelligence to understand what's going on

University of Glasgow

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Making decisions on everyday matters
Handling money for shopping
Handling financial matters,
Handling other everyday arithmetic problems,
Using his/her intelligence to understand what's going on

Scoring
(change over 10 years)
1: Much improved
2: A bit improved
3: Not much change
4: A bit worse
5: Much worse

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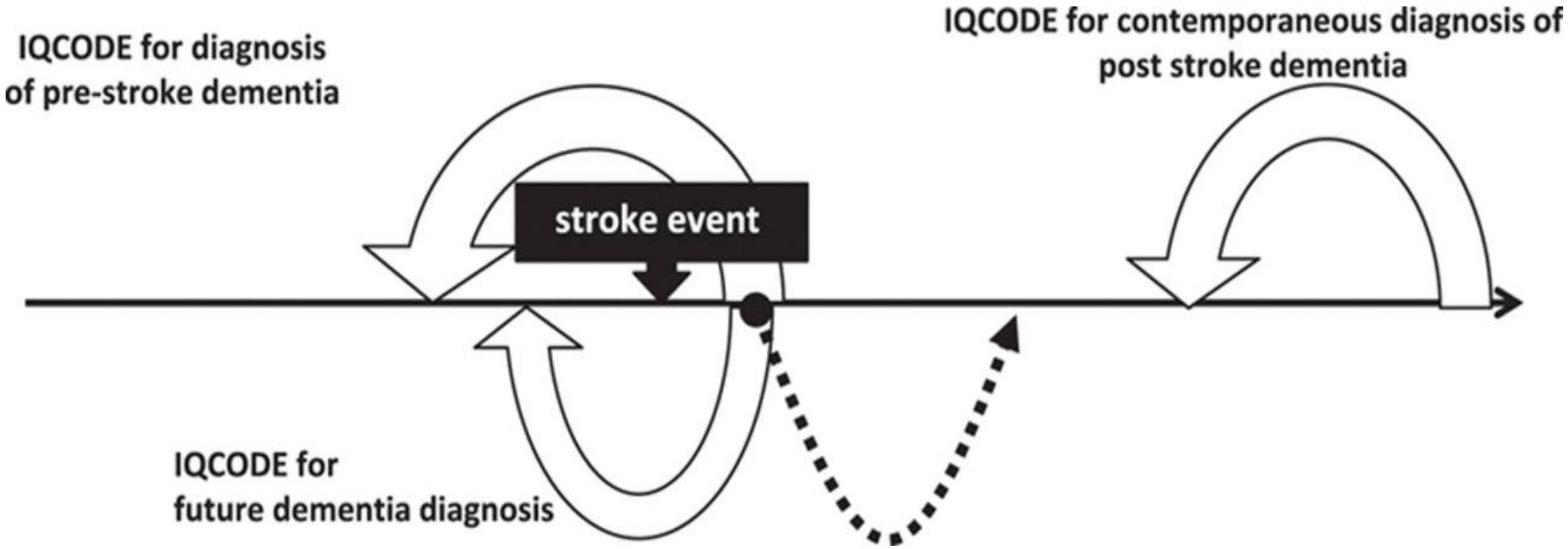
Informant assessments for diagnosis of dementia	Validated in stroke
Informant Questionnaire Cognitive Decline Elderly (IQCODE)	N
Alzheimer's Disease 8 questions (AD-8)	N
Deterioration Cognitive Observe	N
Blessed Dementia Scale	N
GP-Cog	N
Concord Informant Dementia Scale (CIDS)	N
Symptoms of Dementia Screener (SDS)	N

Describing 3 differing approaches to informant assessment in stroke care.



McGovern et al
Stroke 2016

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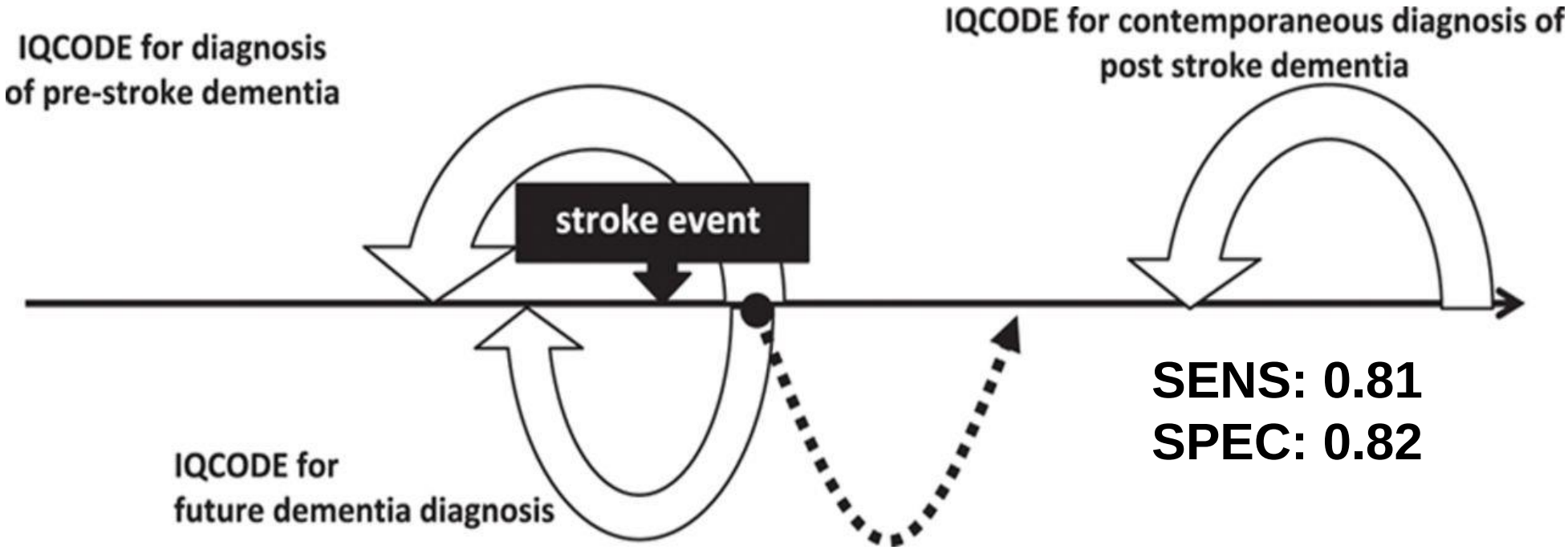
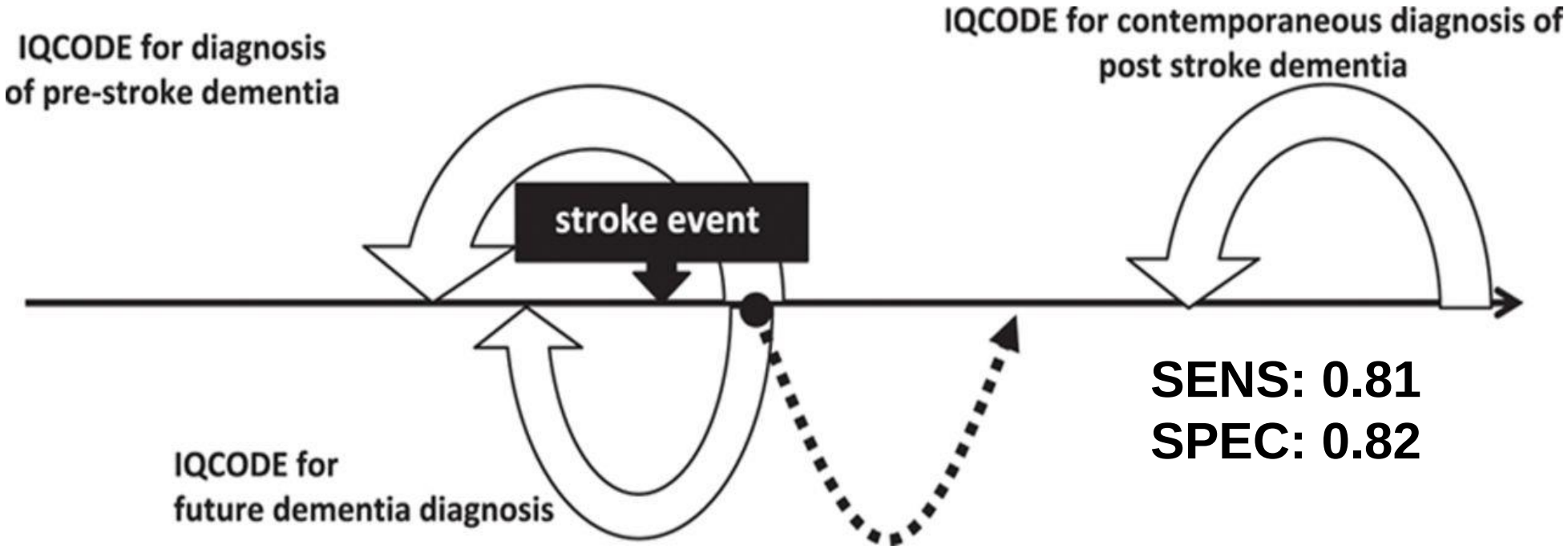


SENS: 0.81
SPEC: 0.82

McGovern et al
Stroke 2016

Describing 3 differing approaches to informant assessment in stroke care.

SENS: TBC
SPEC: TBC



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McGovern et al
Stroke 2016

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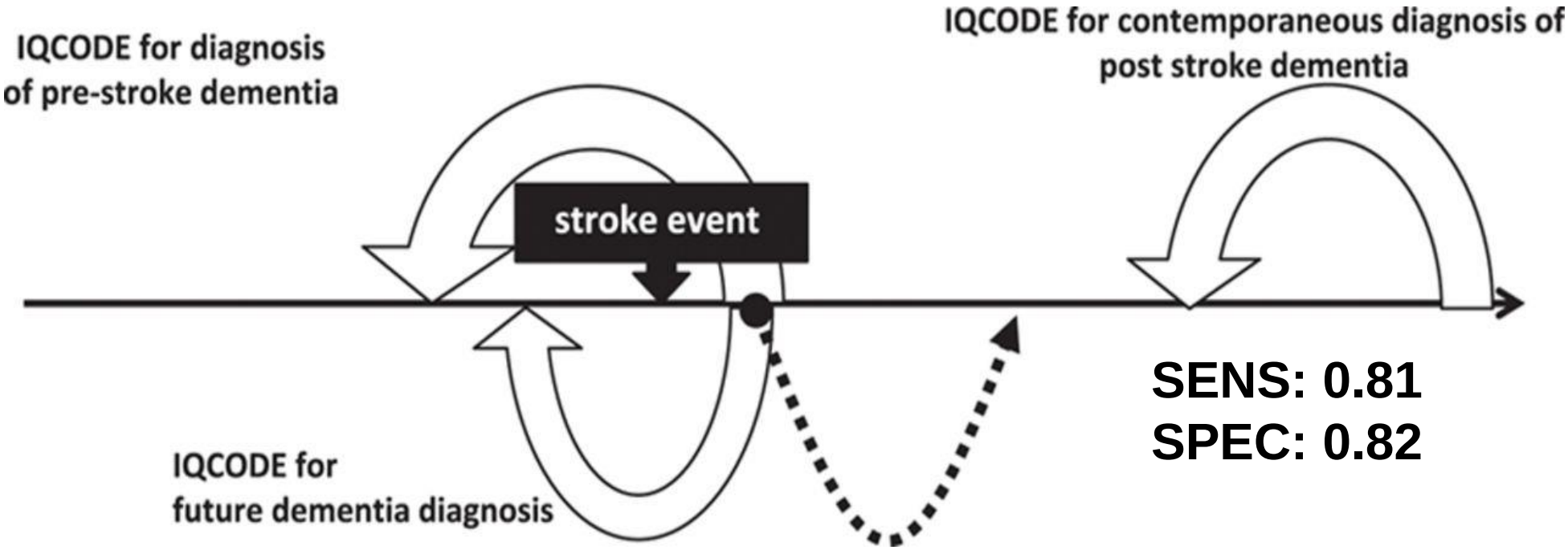
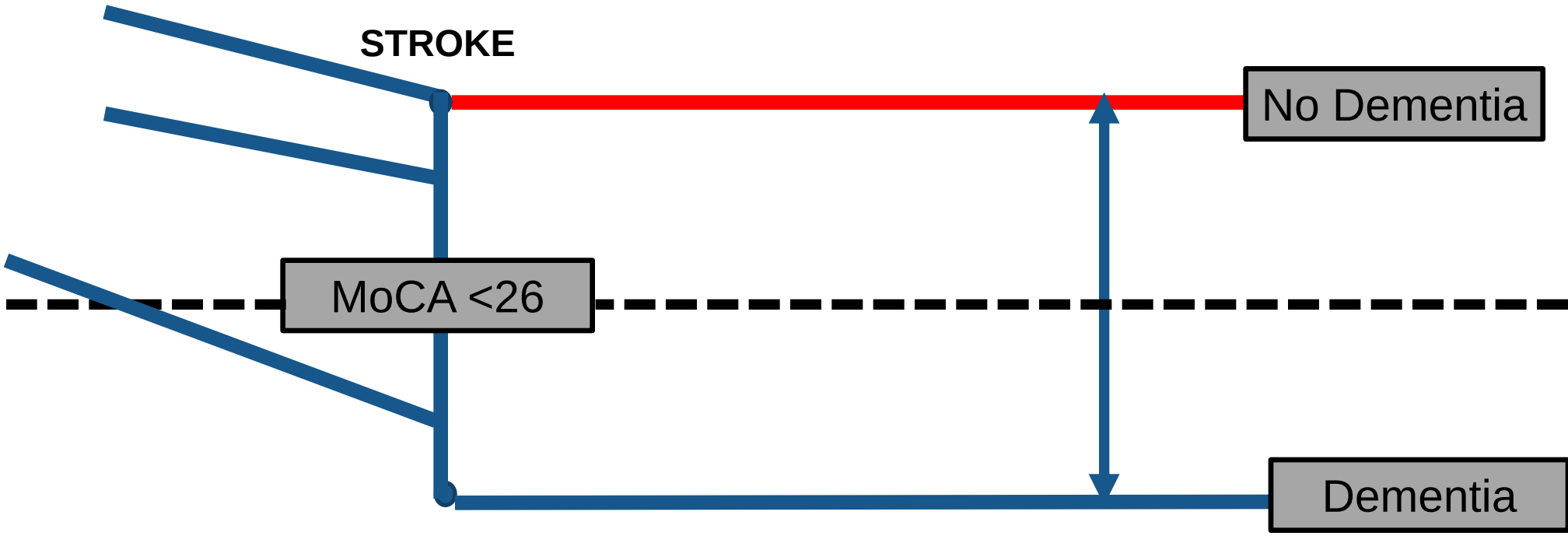


SENS: 0.81
SPEC: 0.82

SENS: 0.60
SPEC: 0.97

McGovern et al
Stroke 2016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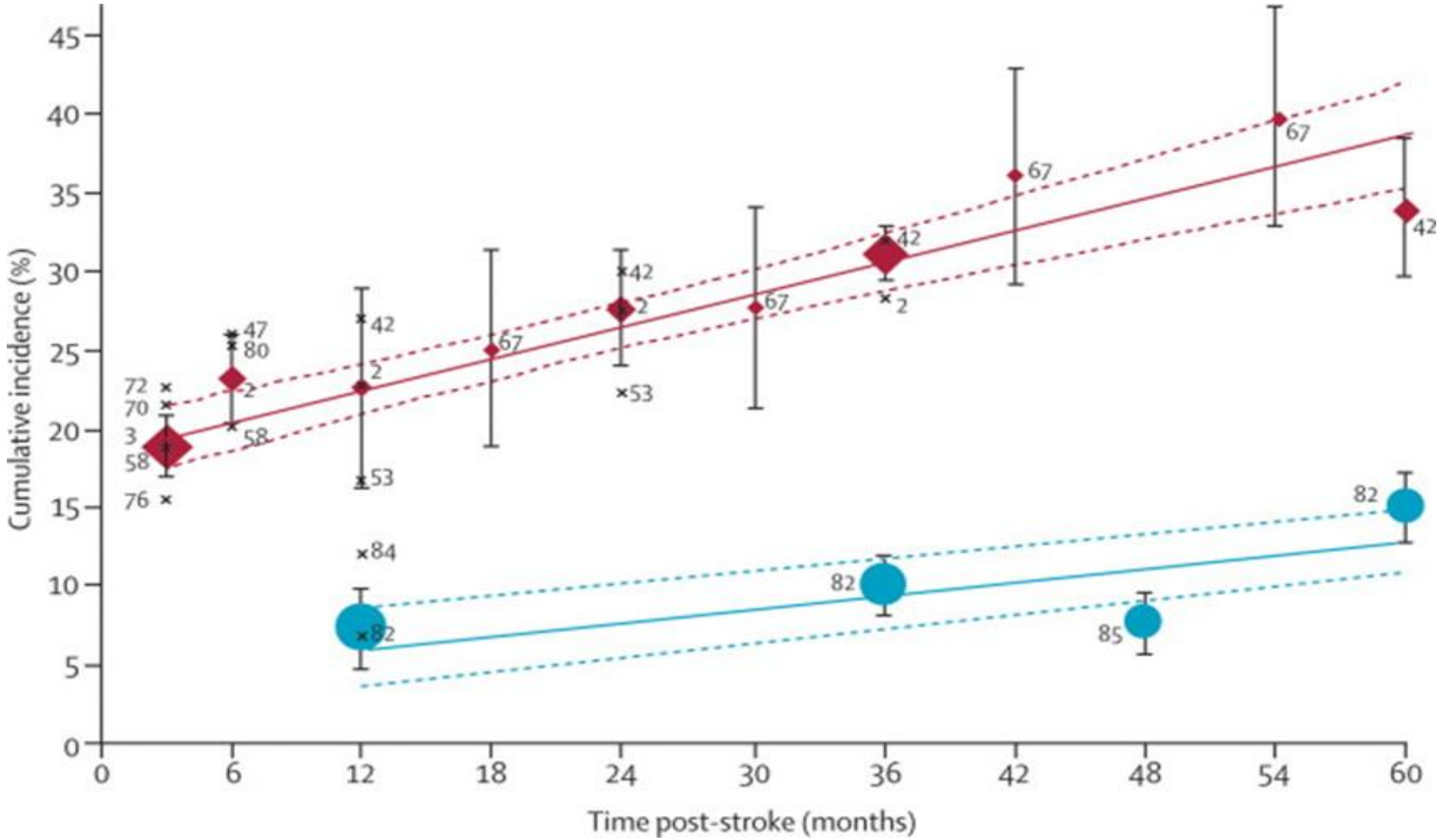
University of Glasgow

Pendlebury et al Lancet Neurol 2009



♦ Hospital cohorts, all stroke

O Community cohorts, first ever stroke only

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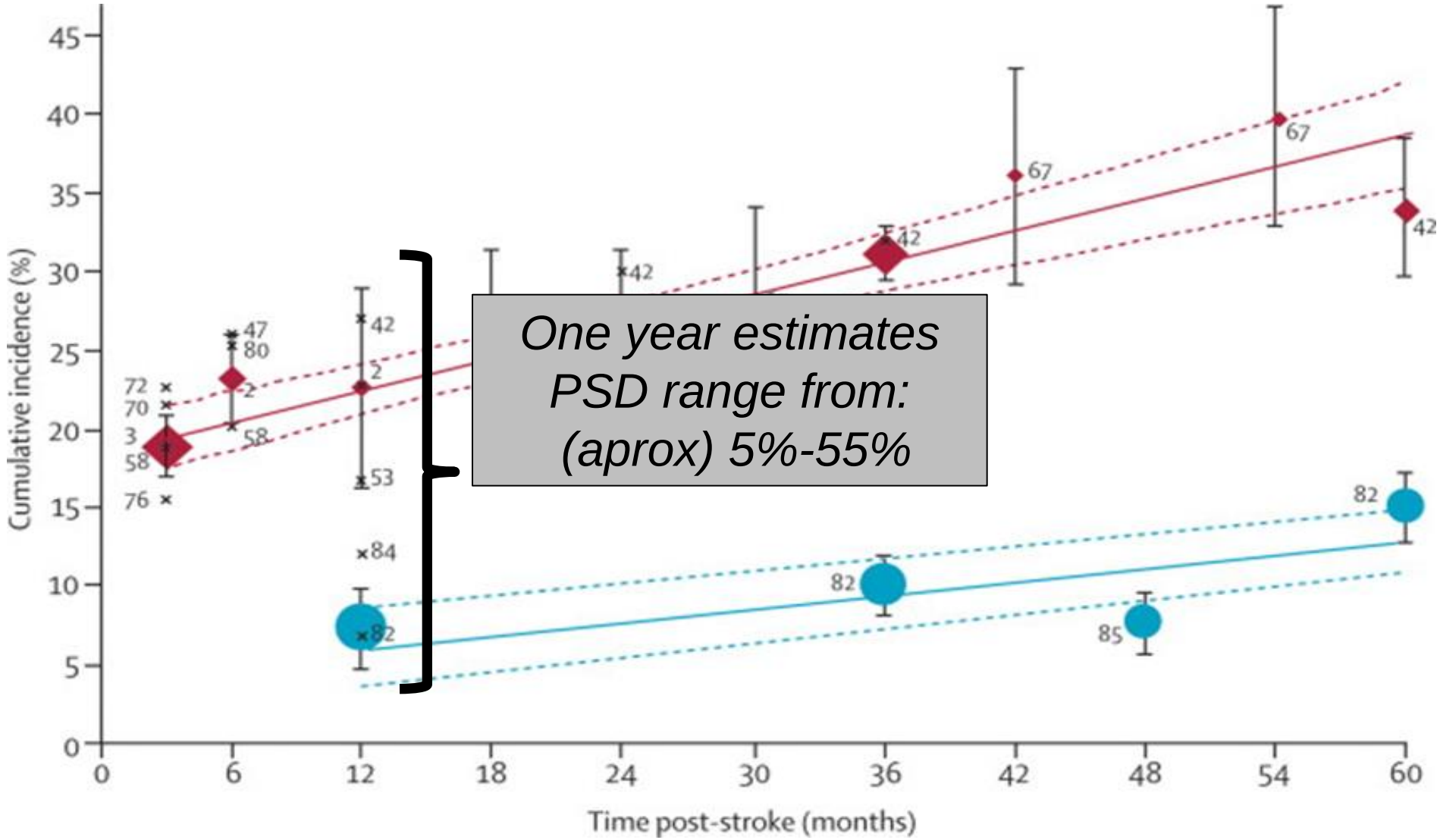
Pendlebury et al Lancet Neurol 2009



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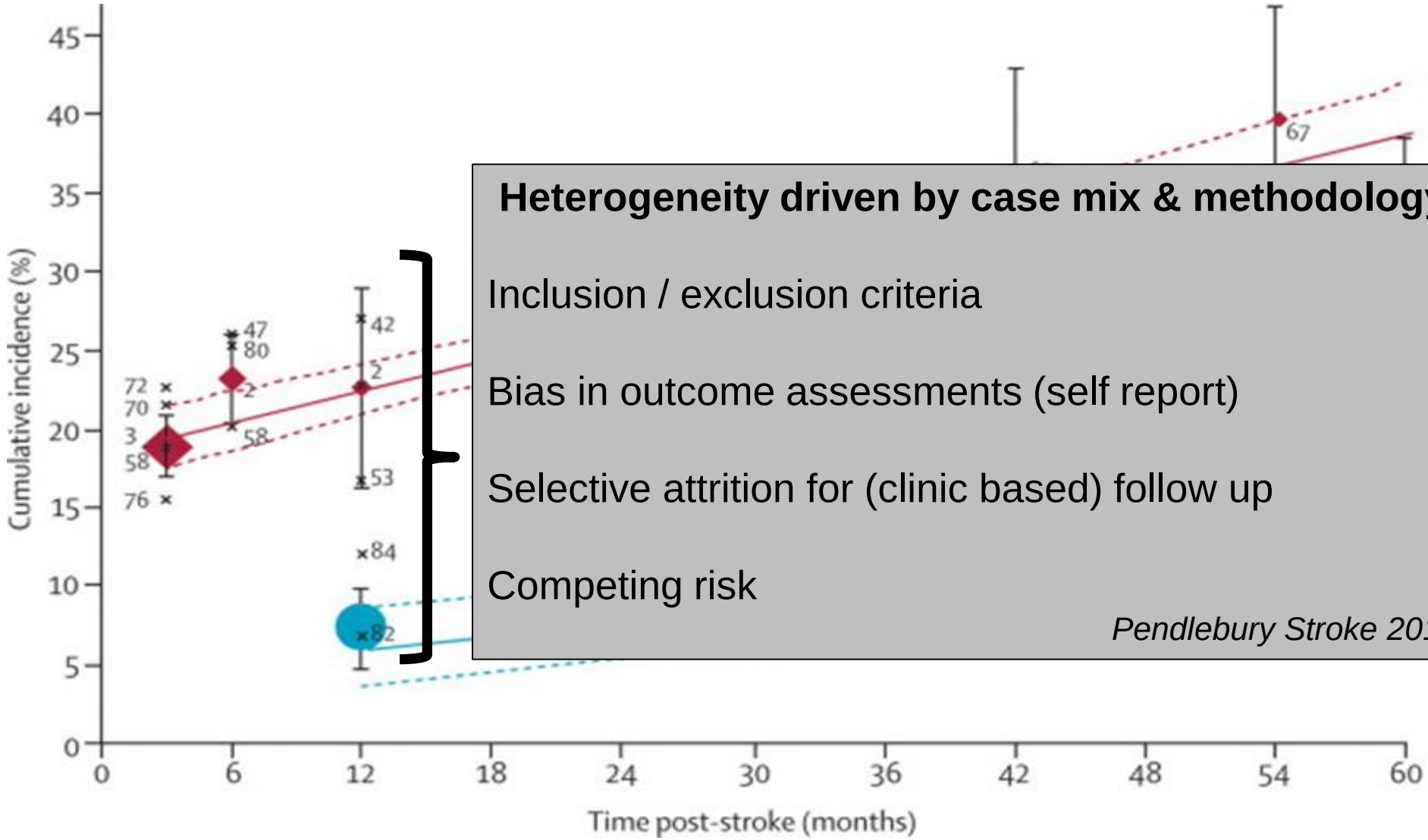
Lancet Neurol 2009



Heterogeneity driven by case mix & methodology

Inclusion / exclusion criteria

Bias in outcome assessments (self report)

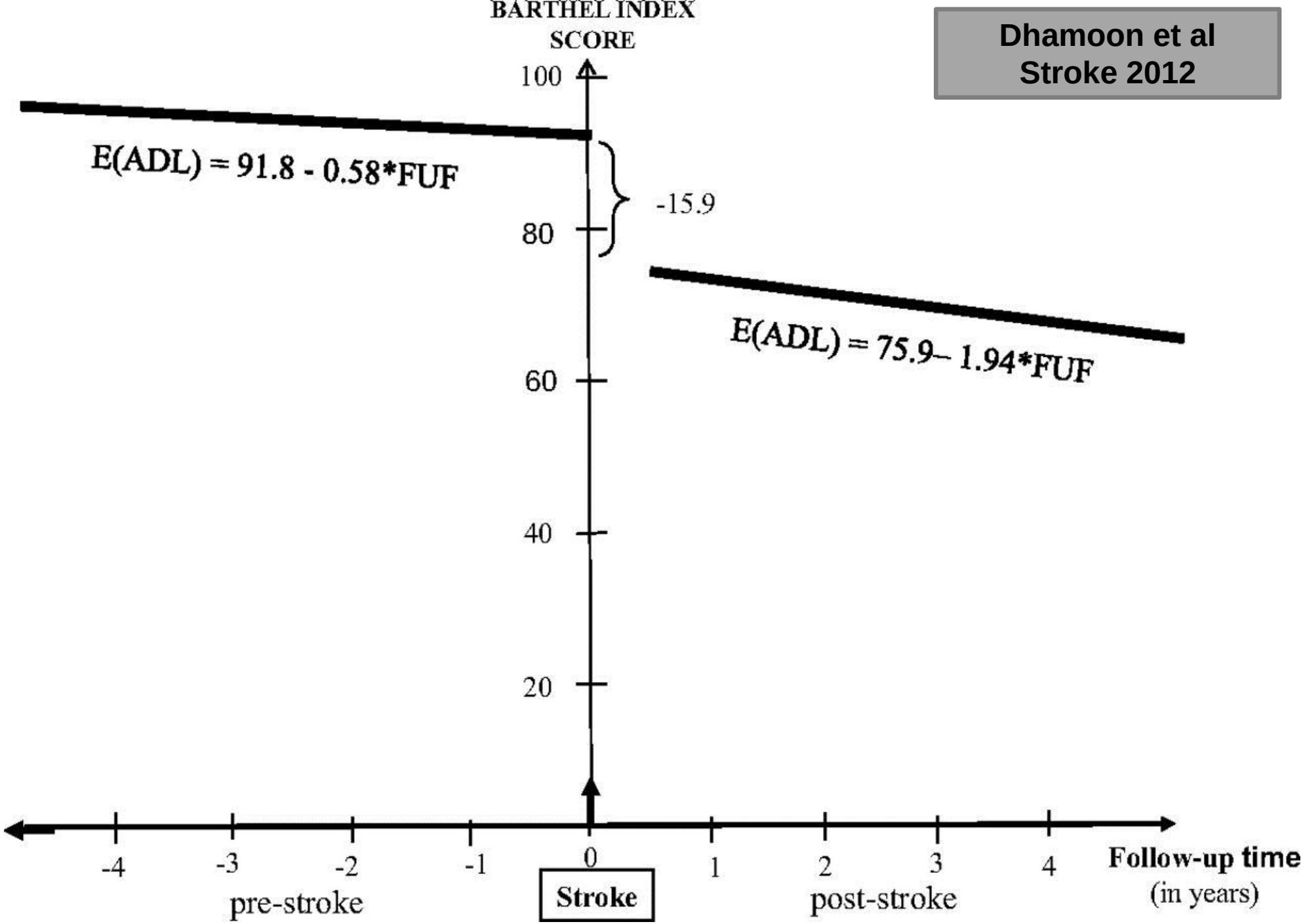
Selective attrition for (clinic based) follow up

Competing risk

Pendlebury Stroke 2015

♦ Hospital cohorts, all stroke

O Community cohorts, first ever stroke only



Dhamoon et al
Stroke 2012

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Sachdev et al JNNP 2014

	Annual rate of change in MMSE
Aharon-peretz J 2002	- 1.1
Black S 2003	-0.8
Sachdev 2004	-0.83
Wilkinson 2003	-0.7

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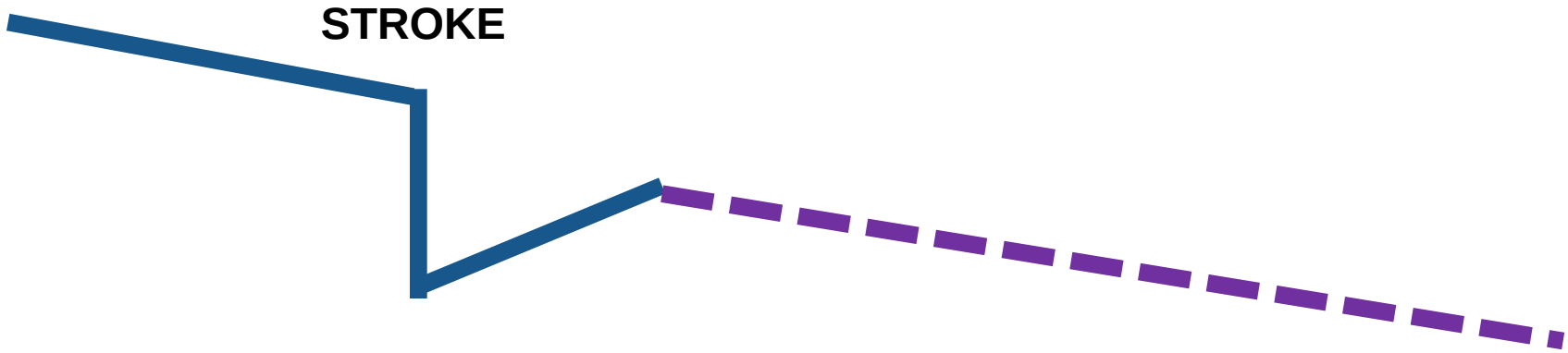
Sachdev et al JNNP 2014

	Annual rate of change in MMSE
Aharon-peretz J 2002	- 1.1
Black S 2003	-0.8
Sachdev 2004	-0.83
Wilkinson 2003	-0.7
‘Vascular dementia’	-1.8
‘Alzheimers disease’	-2.5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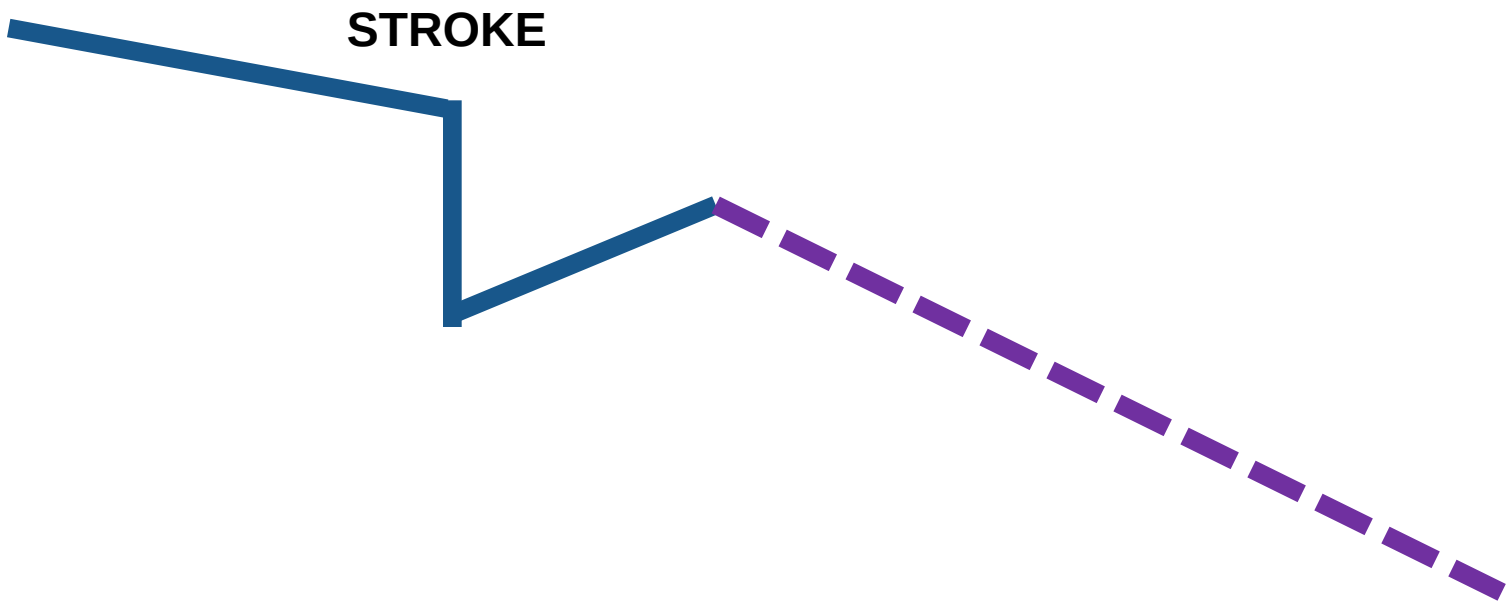
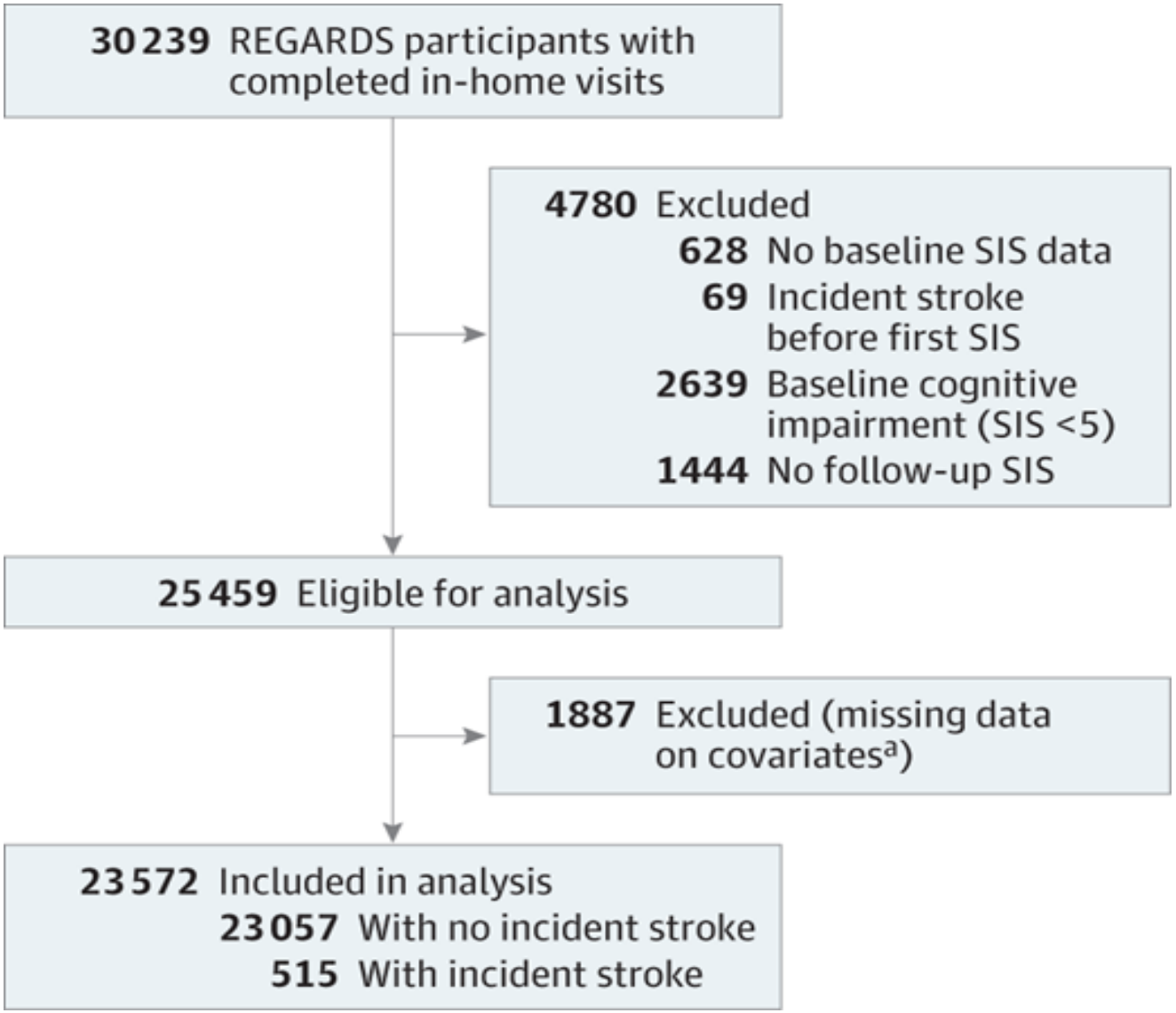
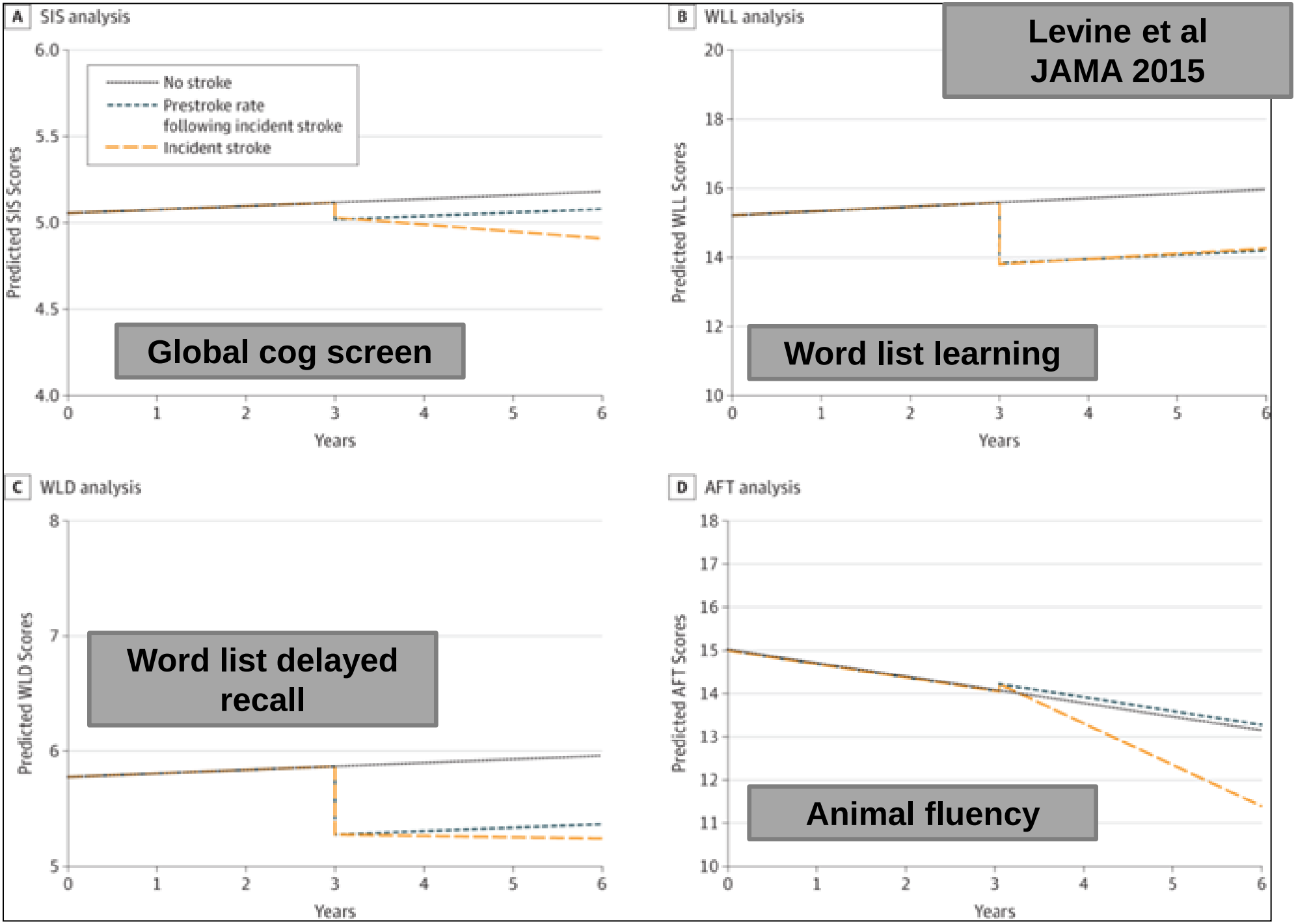
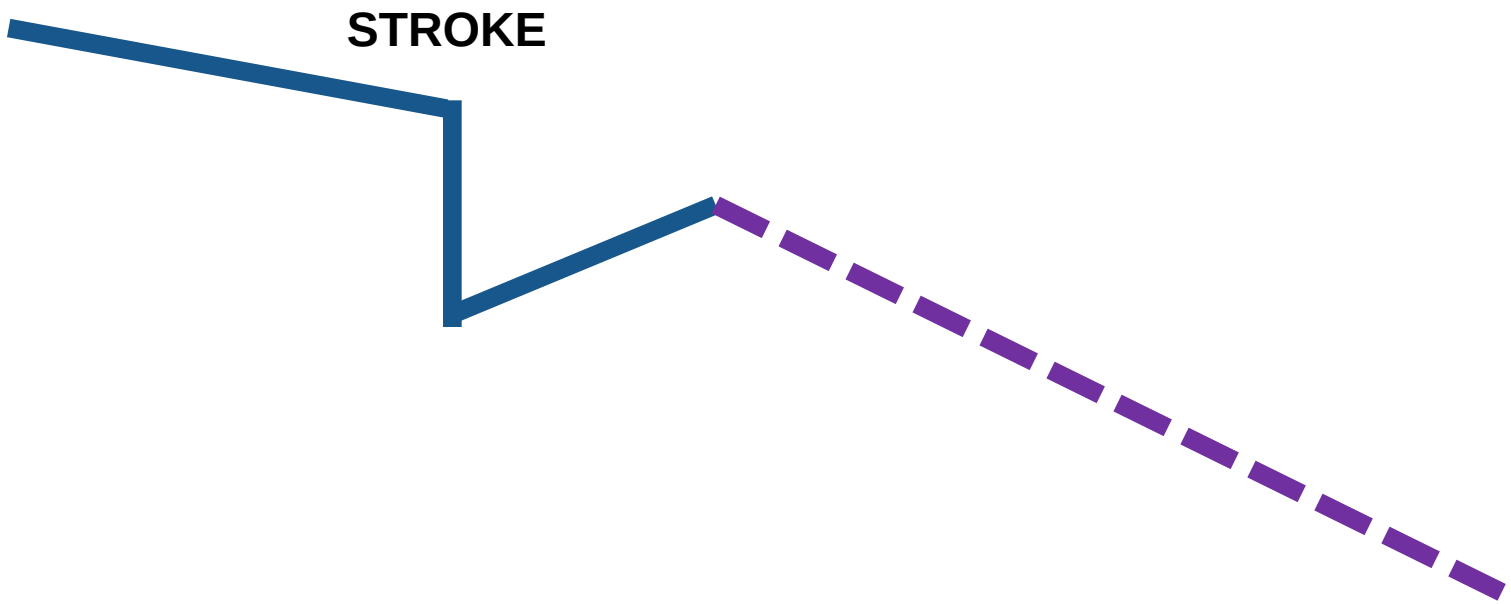

STROKE

University of Glasgow

Levine et al JAMA 2015




Levine et al
JAMA 2015
A SIS analysis
Predicted SIS Scores
6.0
5.5
5.0
4.5
4.0
No stroke
Prestroke rate following incident stroke
Incident stroke
Global cog screen
0 1 2 3 4 5 6
Years
B WLL analysis
Predicted WLL Scores
20
18
16
14
12
10
Word list learning
0 1 2 3 4 5 6
Years
C WLD analysis
Predicted WLD Scores
8
7
6
5
Word list delayed recall
0 1 2 3 4 5 6
Years
D AFT analysis
Predicted AFT Scores
18
17
16
15
14
13
12
11
10
Animal fluency
0 1 2 3 4 5 6
Years


STROKE

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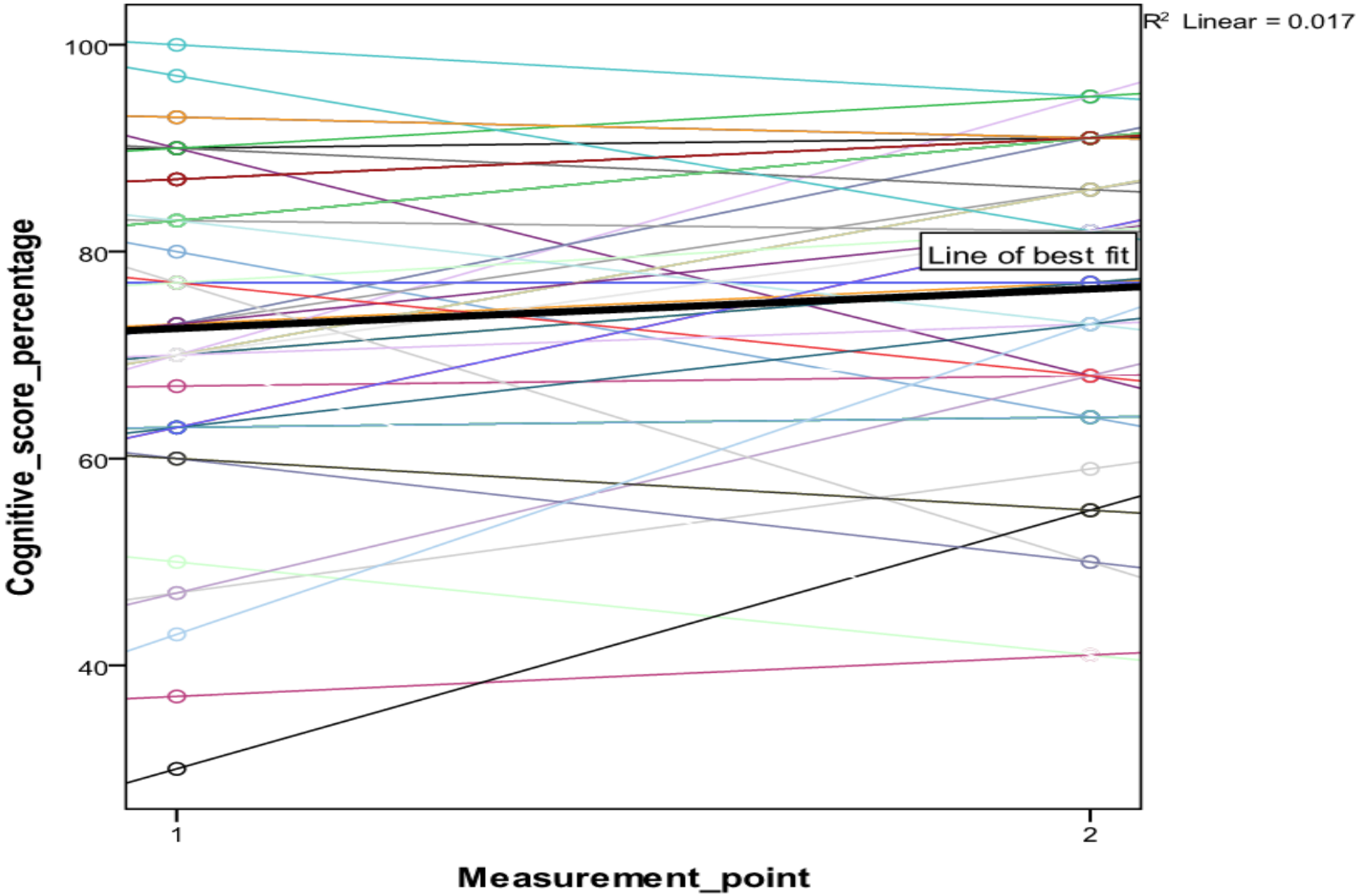

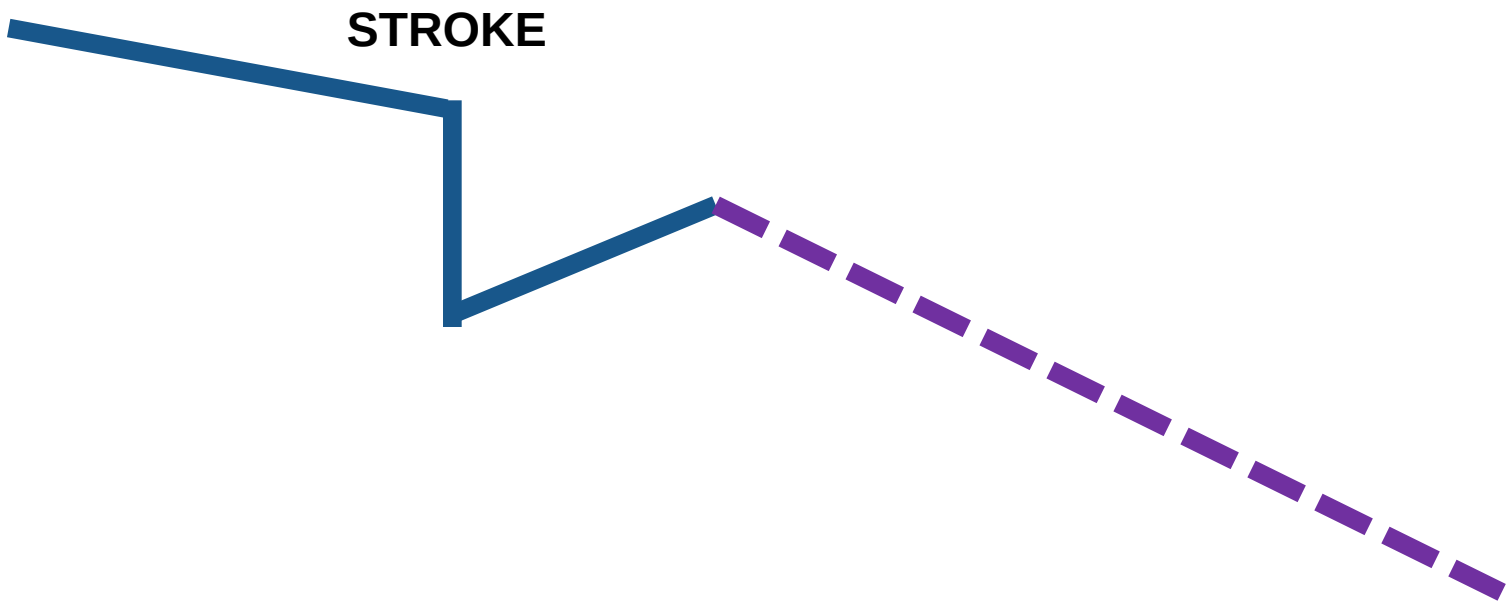
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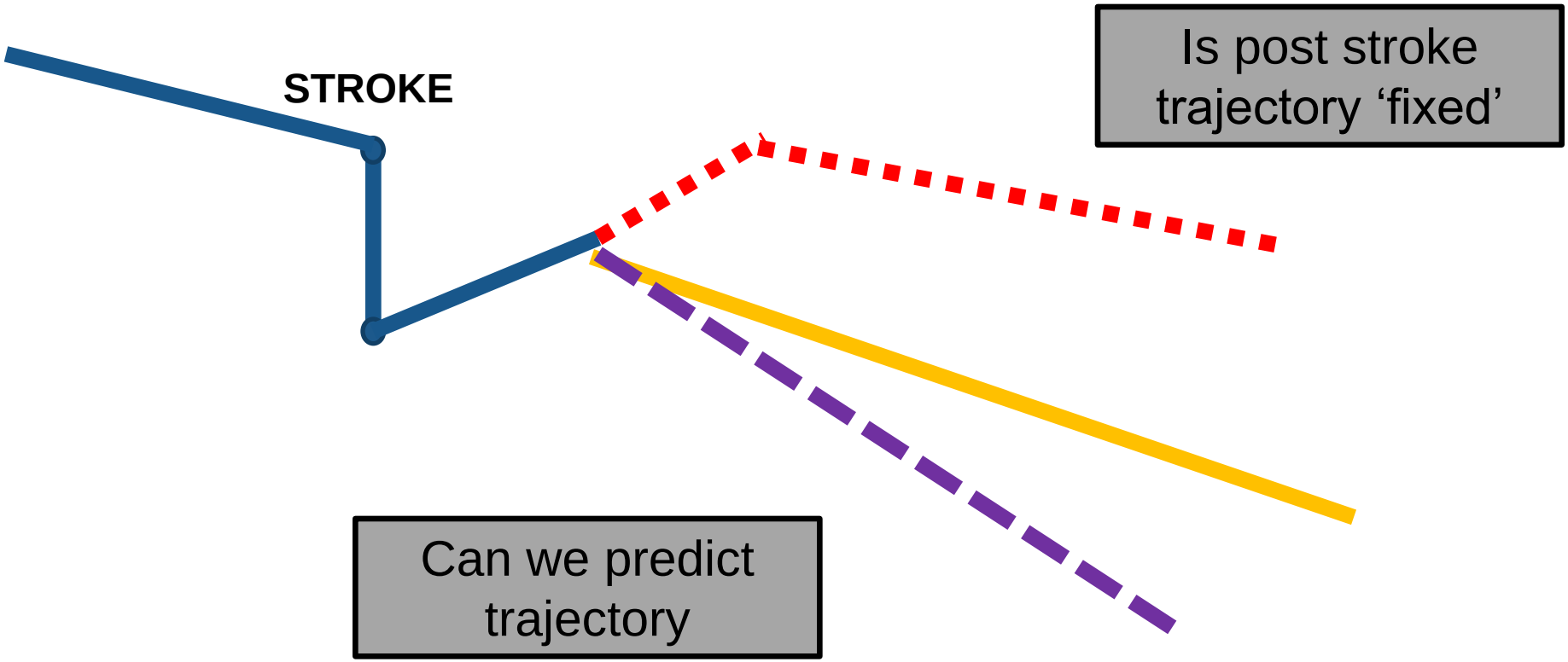
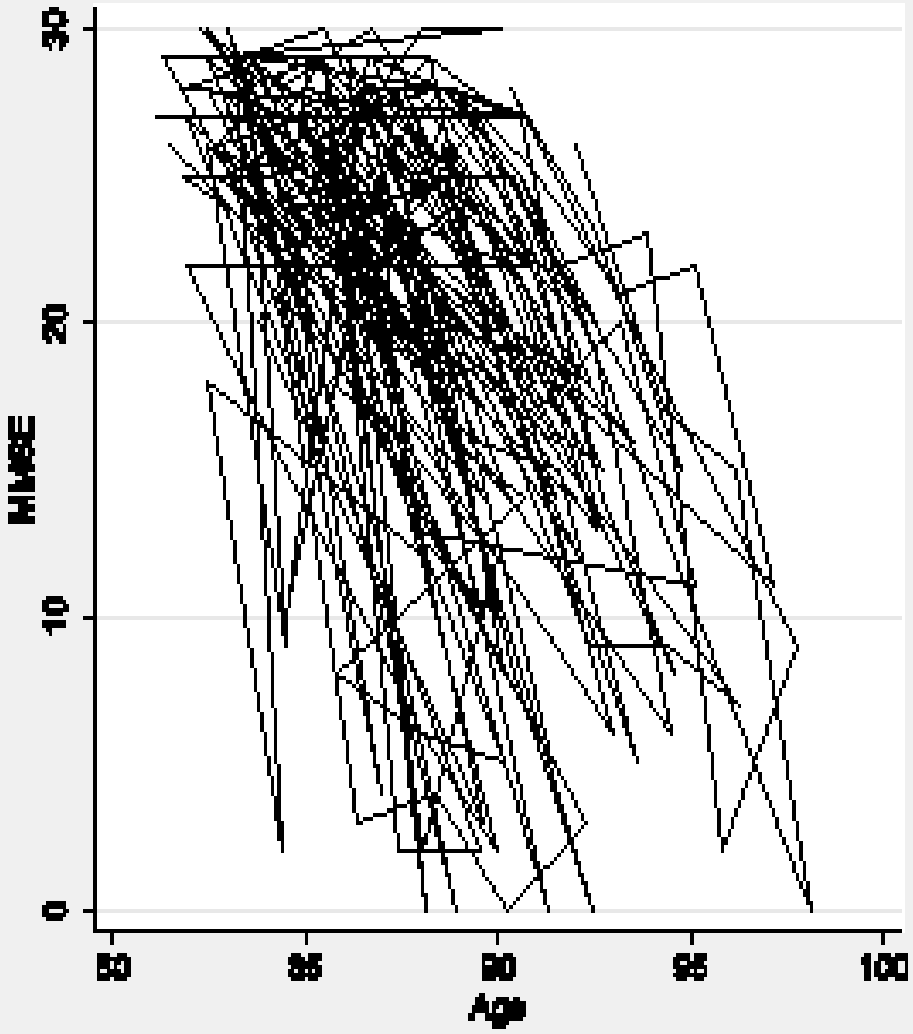
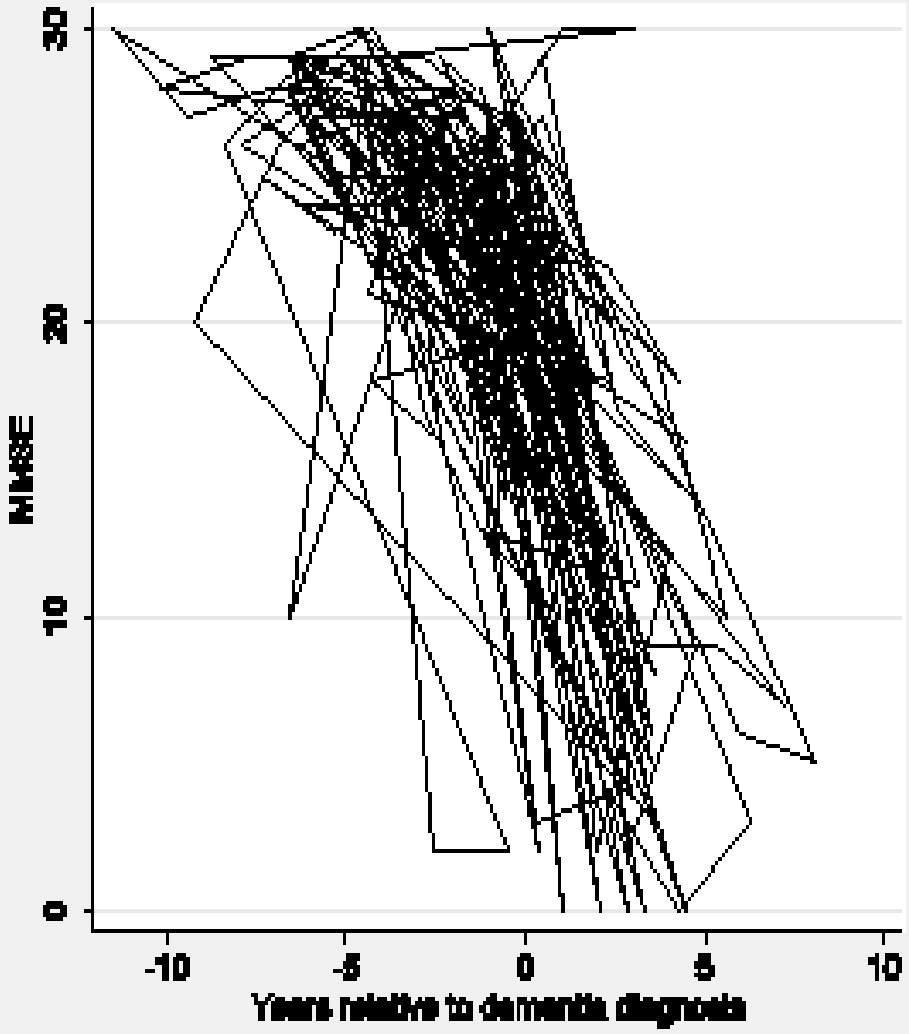

STROKE
Is post stroke trajectory ‘fixed’
Can we predict trajectory

University of Glasgow

Graciela Muniz Terrera 2015





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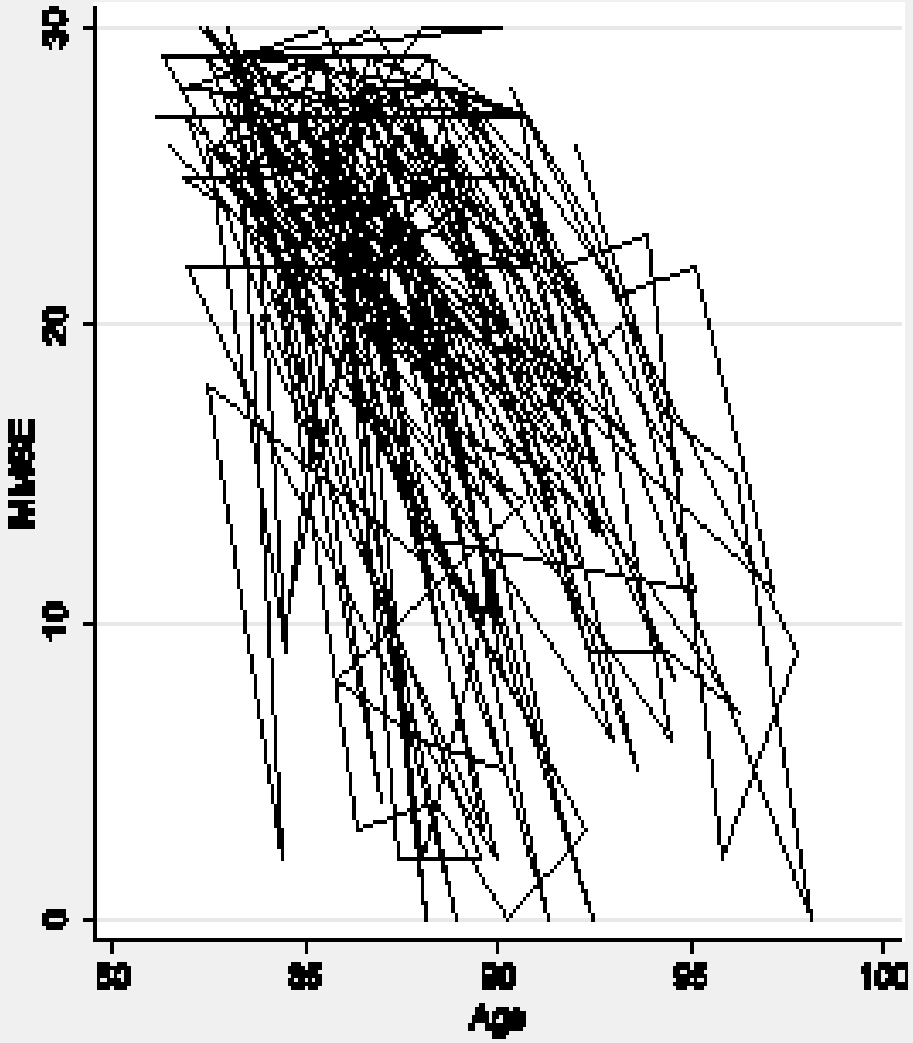
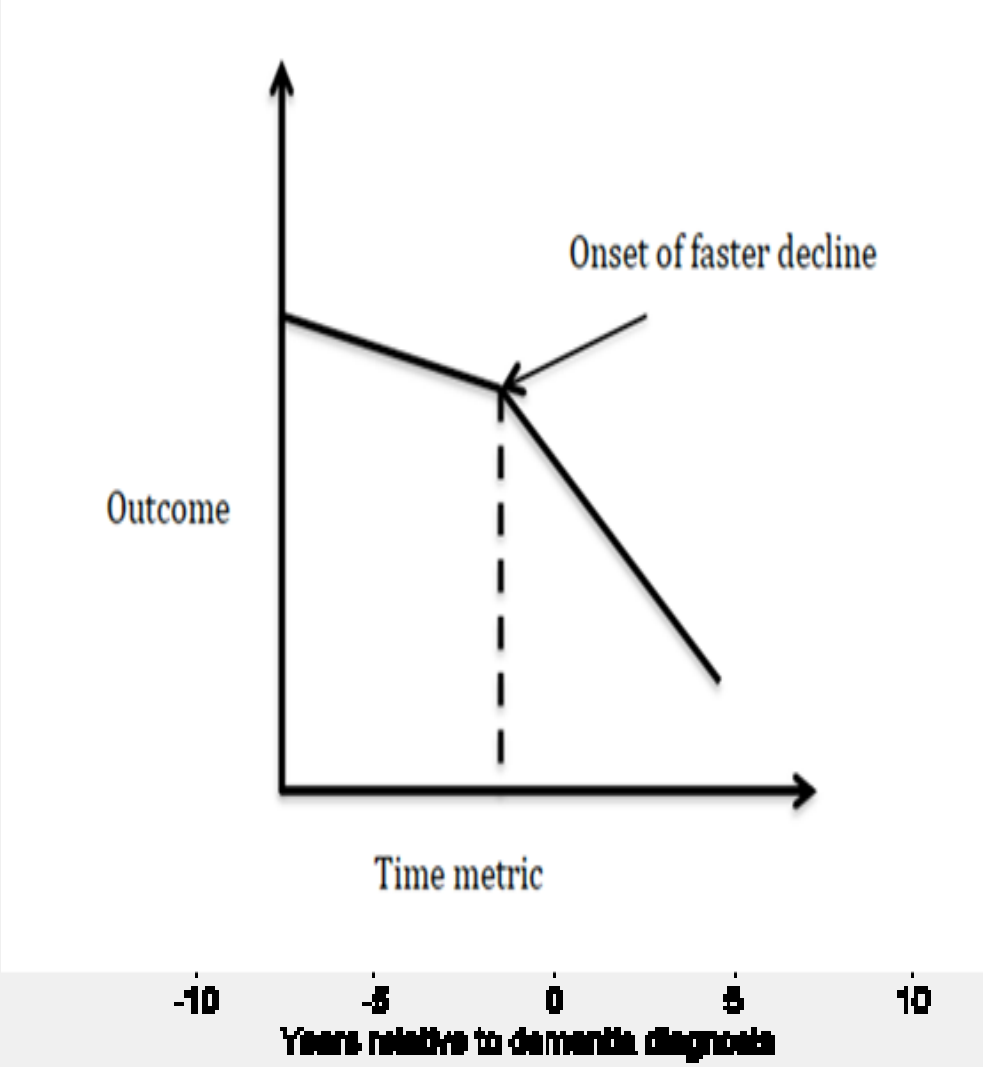
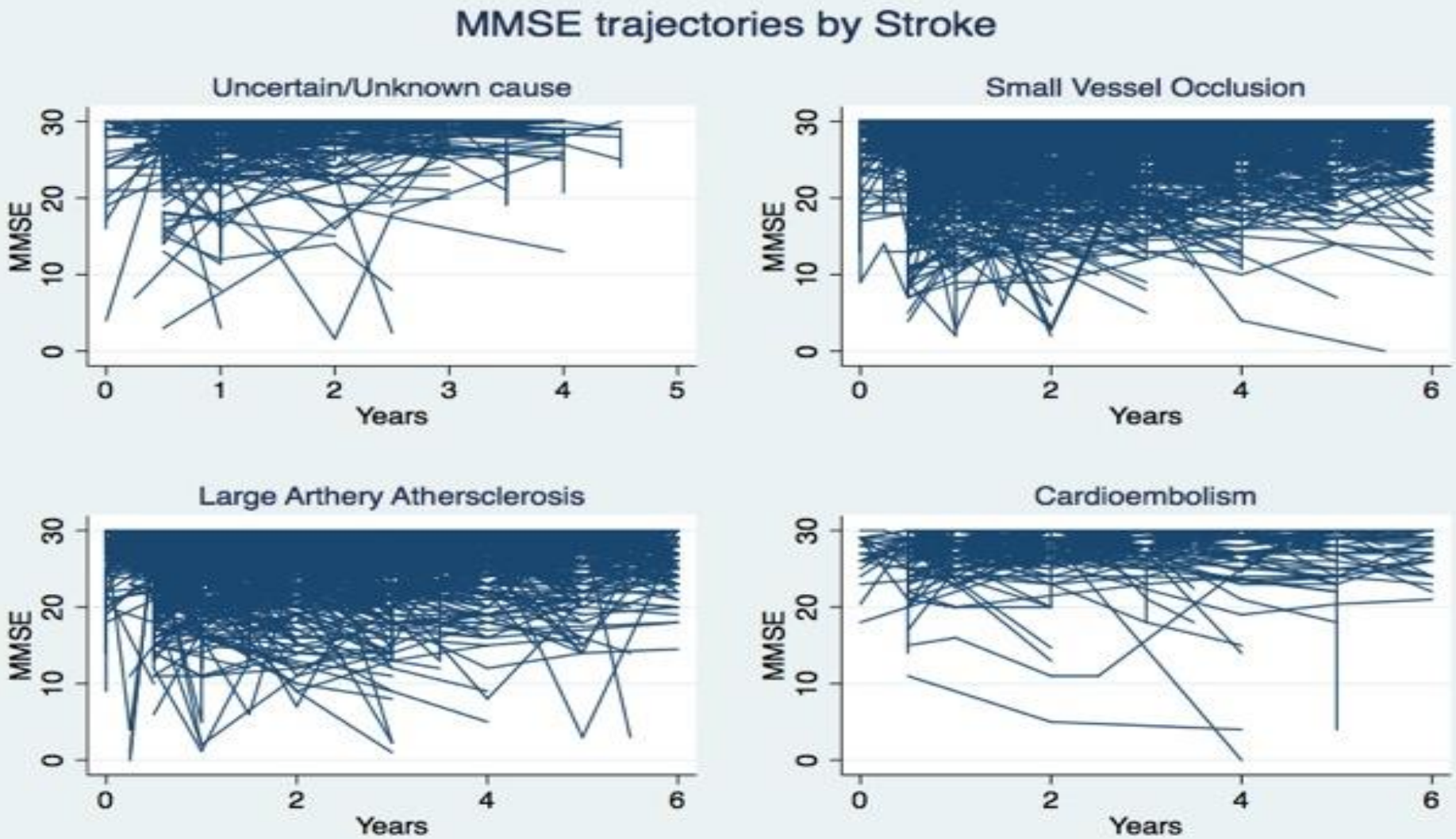


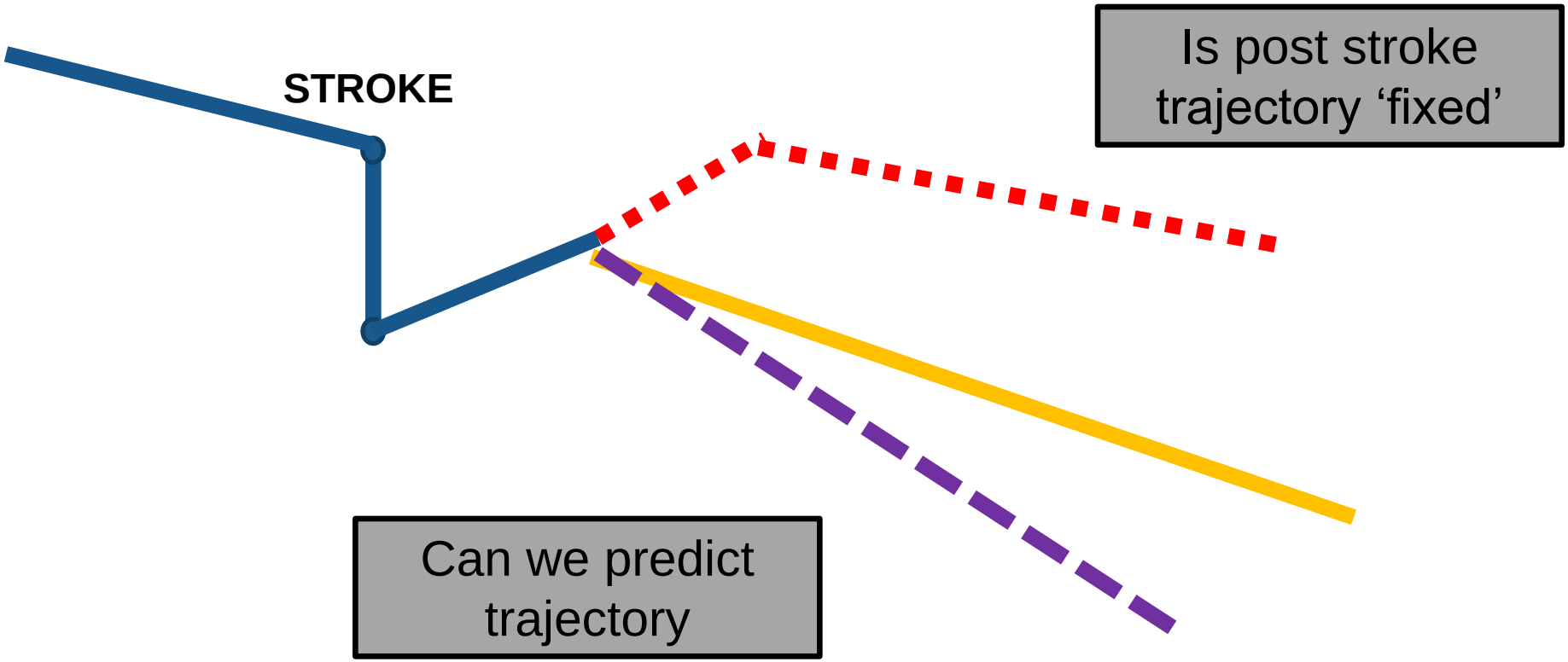



MMSE trajectories by Stroke
Uncertain/Unknown cause
Small Vessel Occlusion
Large Arthery Athersclerosis
Cardioembolism
MMSE
Years
0
10
20
30
0
1
2
3
4
5
6

University of Glasgow

Sachdev et al JNNP 2014

	Annual rate of change in MMSE	Rate following further vascular event
Aharon-peretz J 2002	- 1.1	-2.0
Black S 2003	-0.8	N/A
Sachdev 2004	-0.83	-1.62
Wilkinson 2003	-0.7	N/A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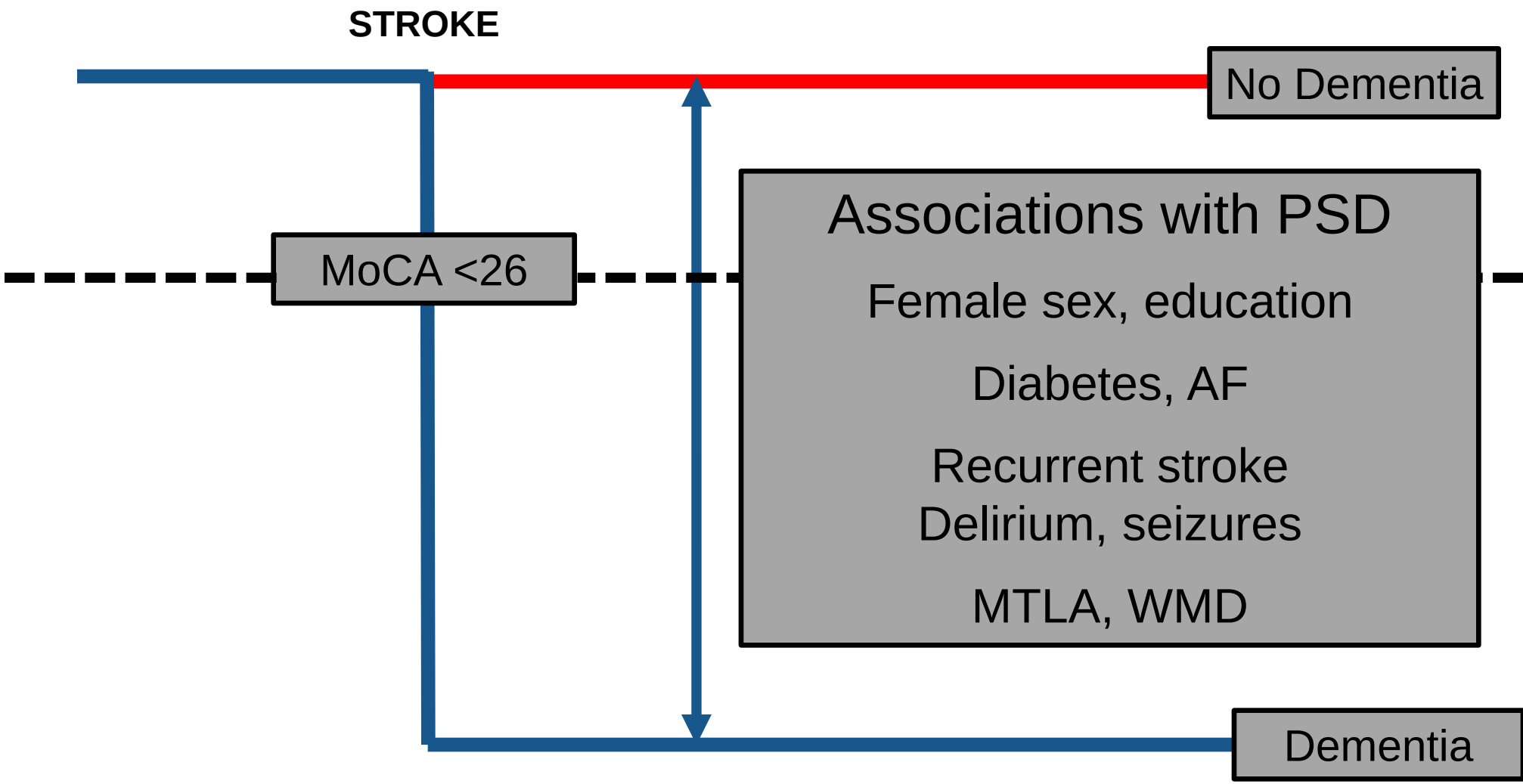

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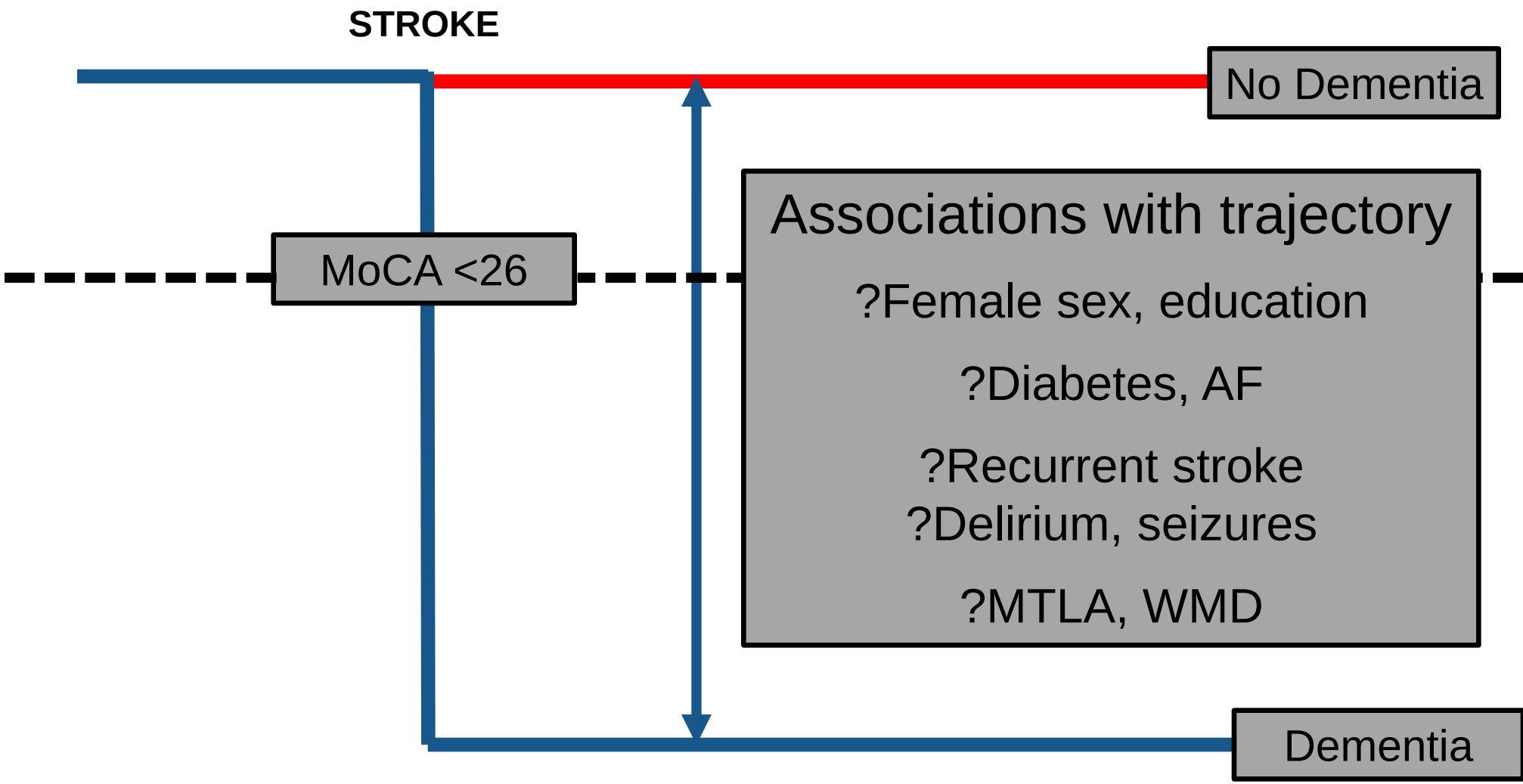
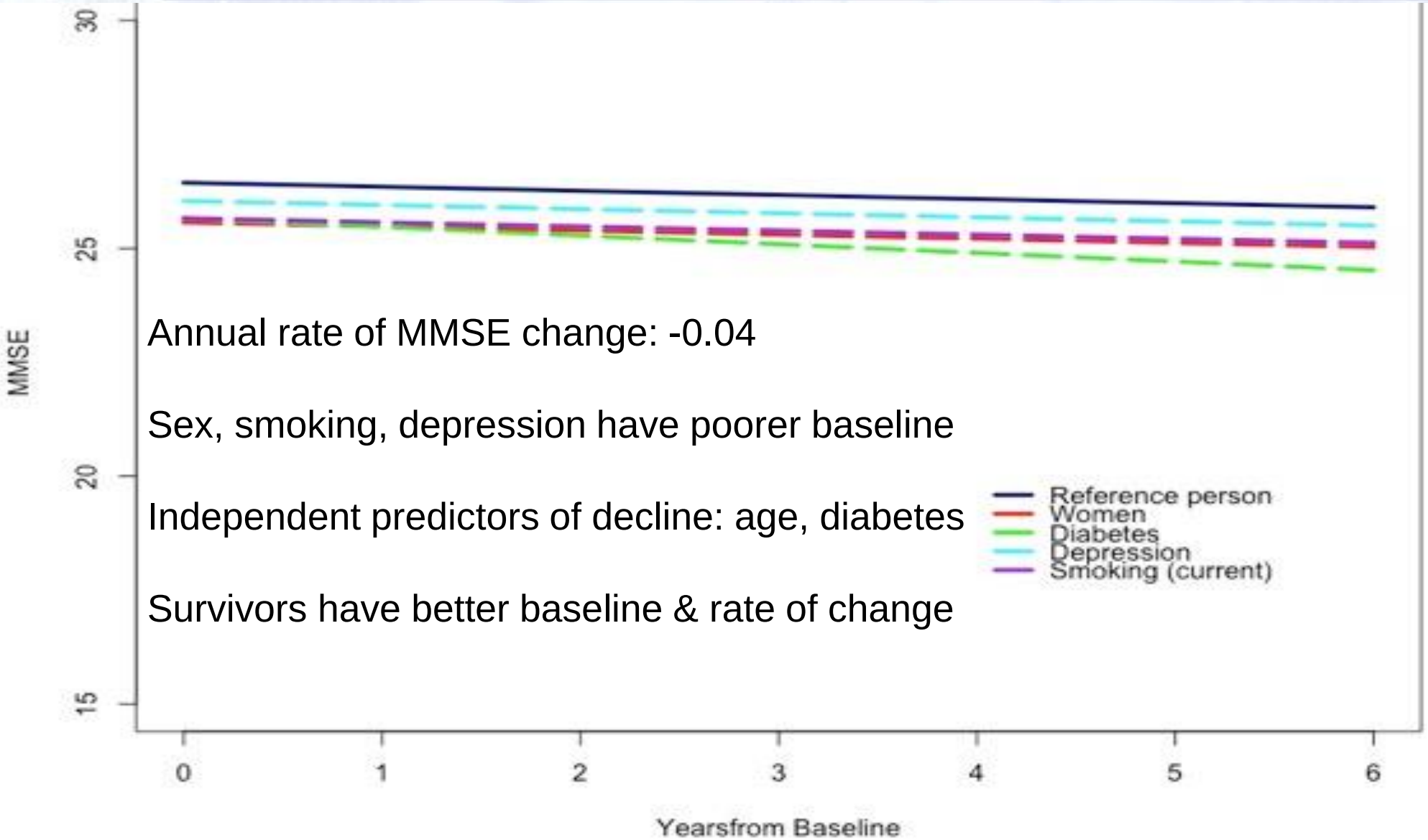


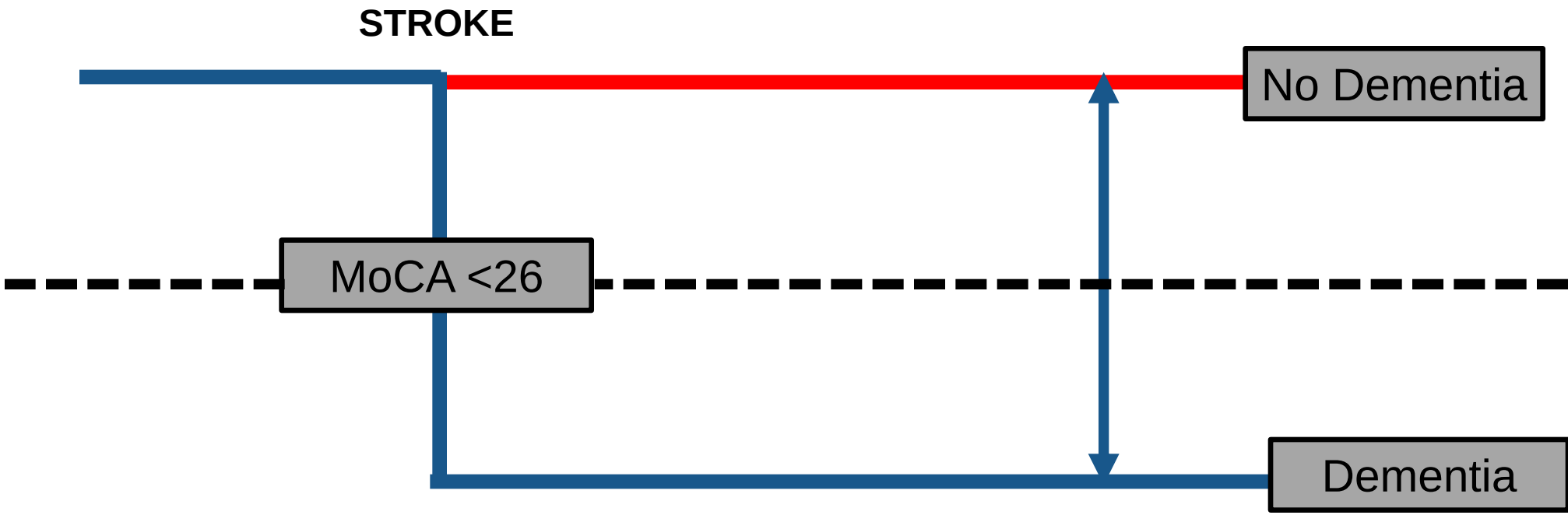


Annual rate of MMSE change: -0.04

Sex, smoking, depression have poorer baseline

Independent predictors of decline: age, diabetes

Survivors have better baseline & rate of change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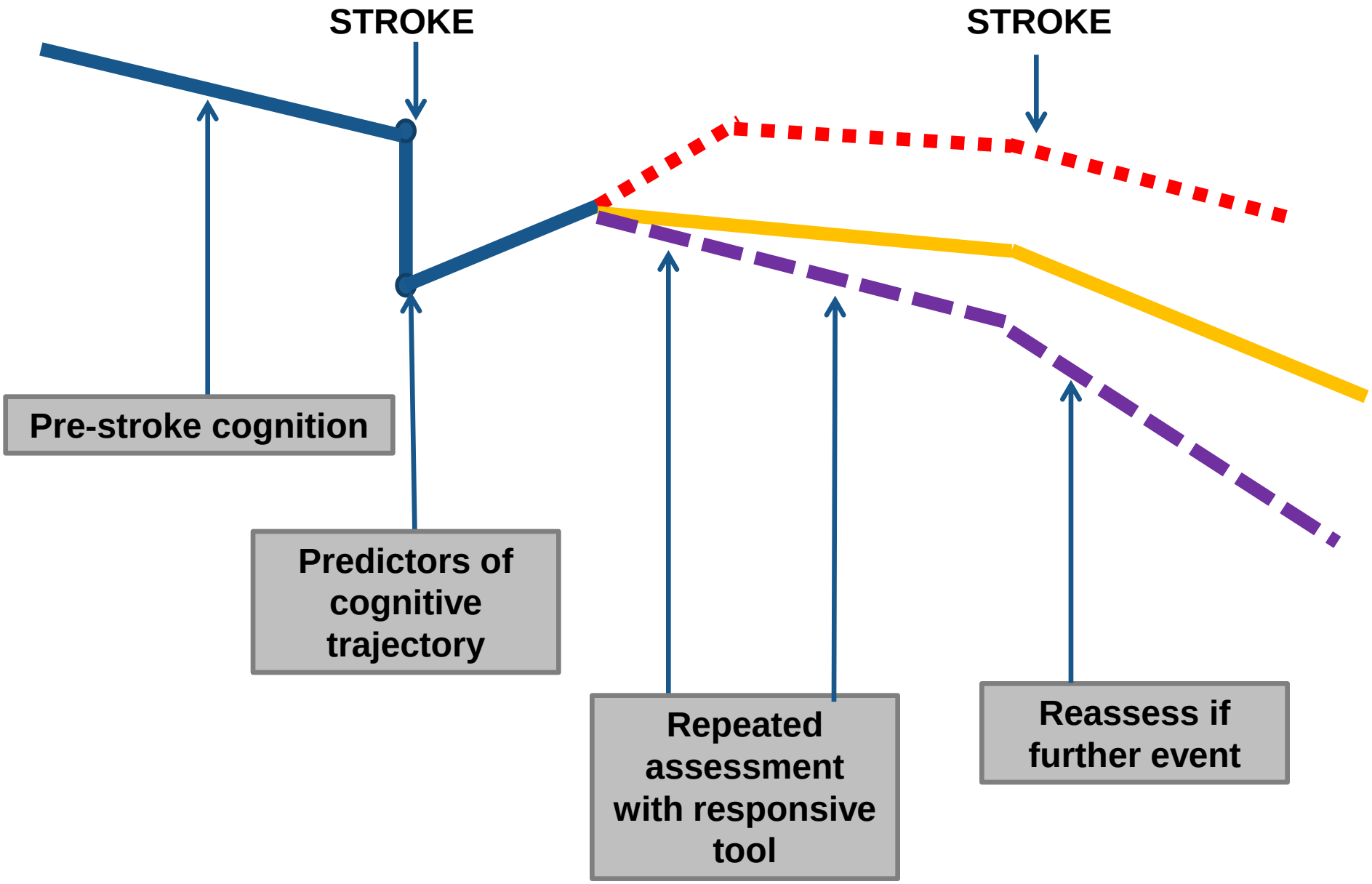
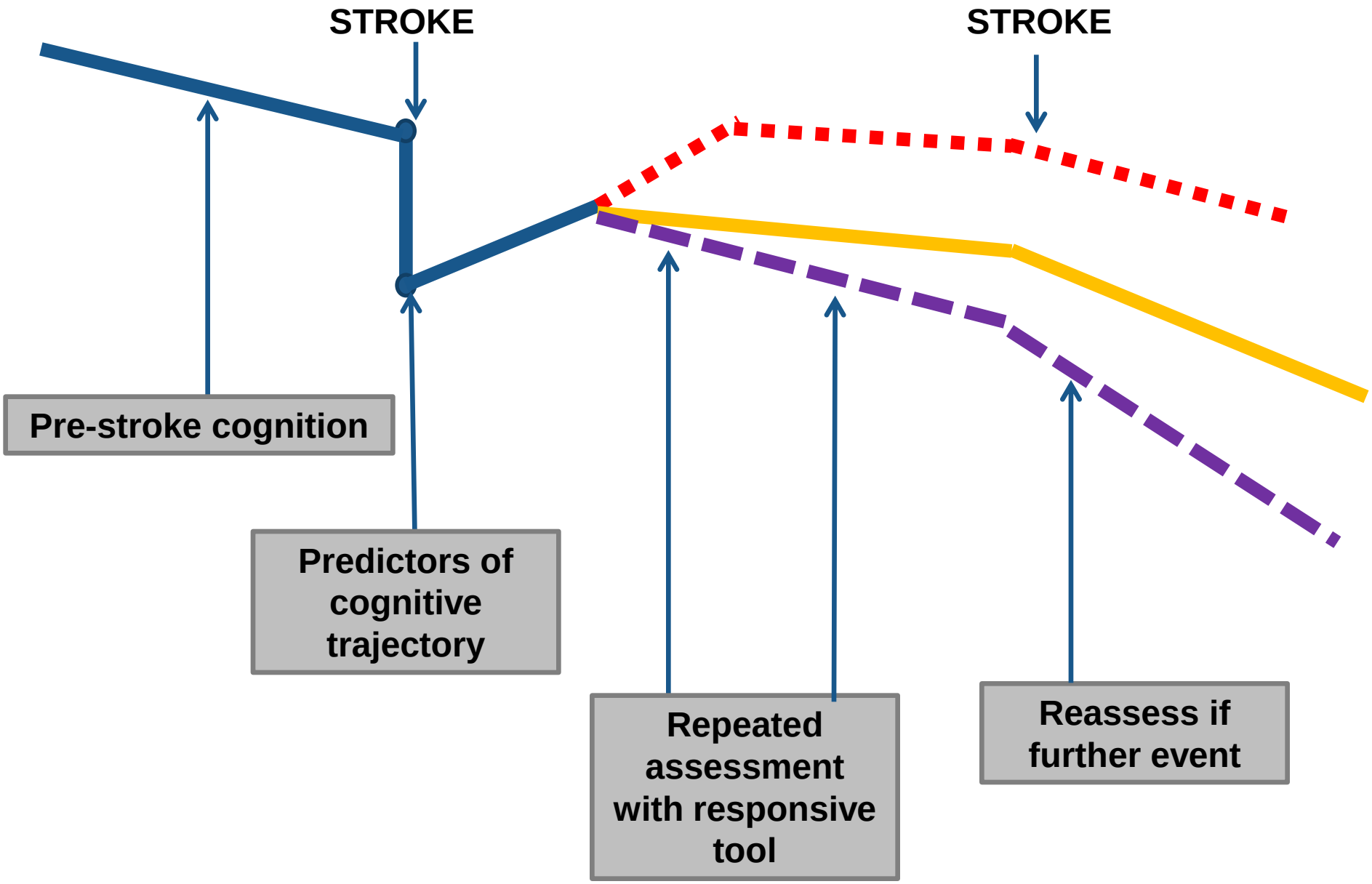

STROKE
STROKE
Pre-stroke cognition
Predictors of cognitive trajectory
Repeated assessment with responsive tool
Reassess if further event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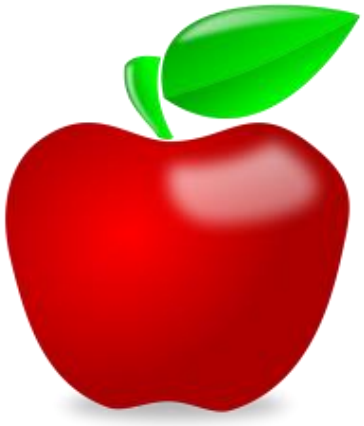
University of Glasgow

Stroke association



PPLE

Assessing Post-stroke Psychology a Longitudinal Evaluation

Cognitive trajectory post stroke

- Embrace the complexity
- Cognition is a dynamic process – keep assessing
- Take a life course approach
- Recognise the limitations in available data
- Avoid cognitive nihilism
- Understanding trajectory may lead to interventions

Cognitive trajectory in stroke

Dr Terry Quinn
Stroke Association/CSO Senior Clinical Lecturer

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