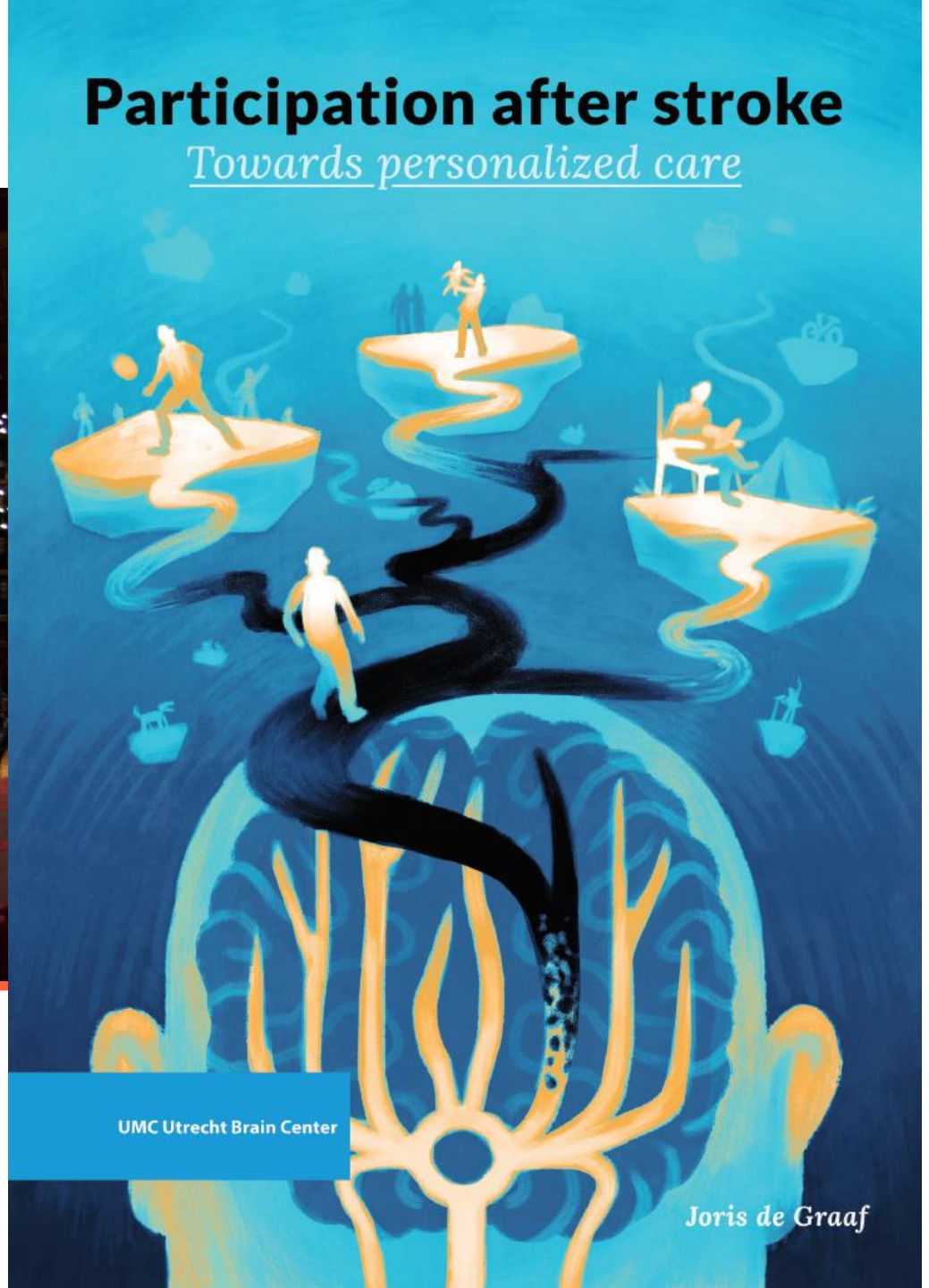


De Hoogstraat Revalidatie

UMC Utrecht

Center of Excellence for Rehabilitation Medicine Utrecht



CV

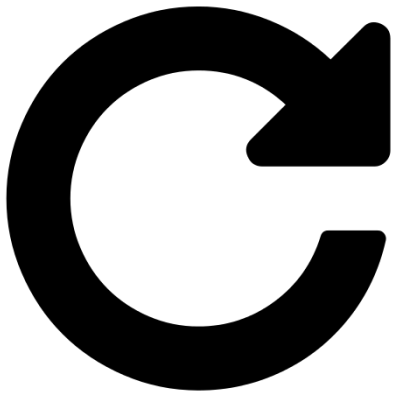
- 2015: Start conducting stroke research
- 2017: Resident in rehabilitation medicine (De Hoogstraat)
  - Start parttime PhD (1:4)
- June 2021: physiatrist in UMC Utrecht (stroke, oncology)
- November 2021: PhD defense
- November 2022: CVA kennisnetwerk!



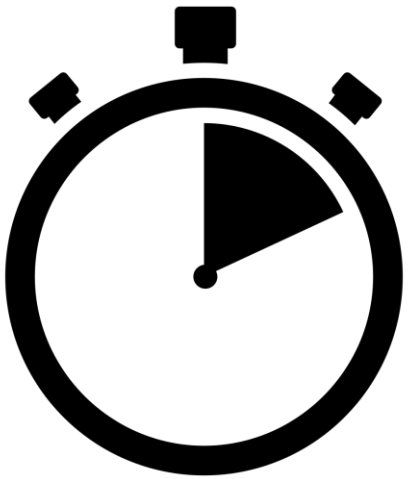
Disclosures

Disclosure of speaker's interests	
(Potential) conflict of interest	**None**
Potentially relevant company relationships in connection with event [1]	**N.A.**
• Sponsorship or research funding[2] • Fee or other (financial) payment[3] • Shareholder[4] • Other relationship, i.e. …[5]	• • • •

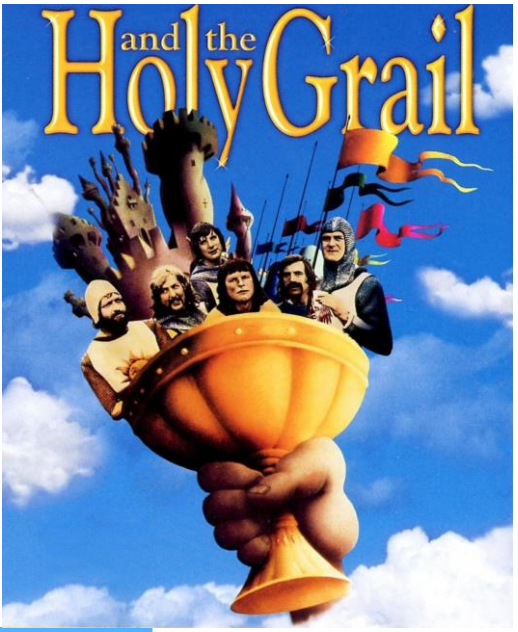
WARNING!

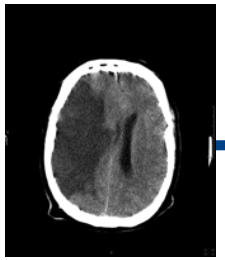






ICF model – the holy grail





"Health condition"
(disorder or disease)

Body functions & Structures

Activities

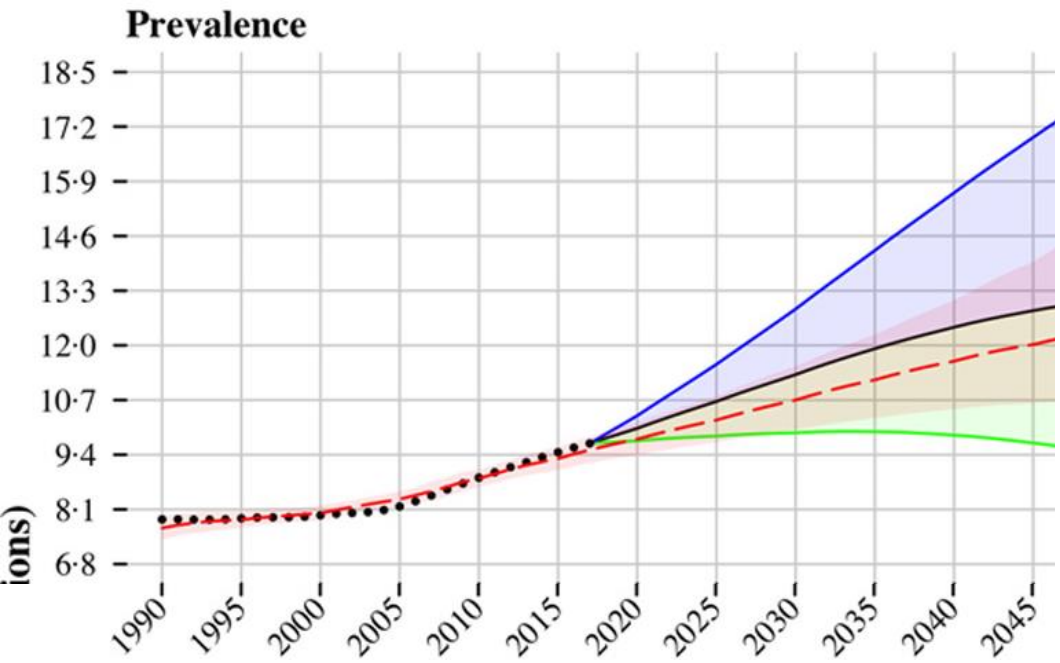
Participation

Personal factors

Environmental factors

"Involvement in a life situation"

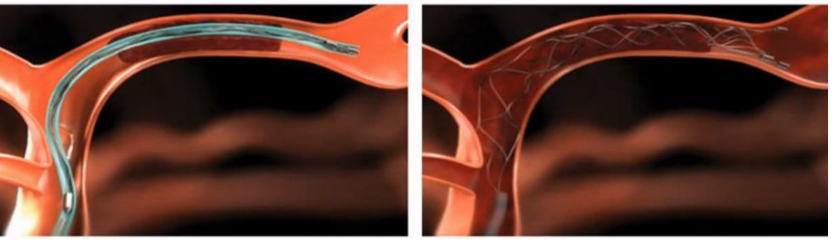
Introduction – prevalence of stroke







Wafa et al 2020









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Modified Rankin Scale

Score	Description
0	No symptoms at all
1	No significant disability despite symptoms; able to carry out all usual duties and activities
2	Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance
3	Moderate disability; requiring some help, but able to walk without assistance
4	Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance
5	Severe disability; bedridden, incontinent and requiring constant nursing care and attention
6	Dead

DASA

DUTCH ACUTE STROKE AUDIT



3 maanden follow-up (mRS)**	
Geen handicap	8.7%
Lichte handicap	23%
Matig tot ernstige handicap	10%
Overleden	3.1%
Onbekend	55%

DICA report 2016; DICA (DASA)

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Stroke outcome – current status

Acute treatment ↗
Prevalence ↗



Long term outcome ?
Patients' perspective ?



Stroke outcome – Value-based healthcare



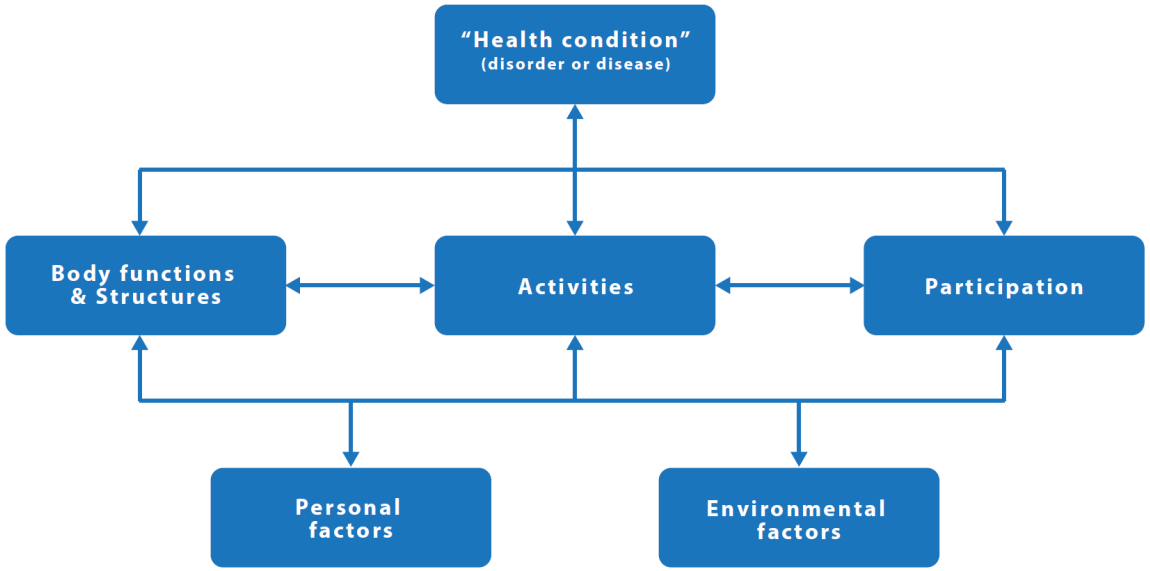


AIMS

1. How should we measure participation/HRQoL after stroke?



2. What are the determinants of participation after stroke?

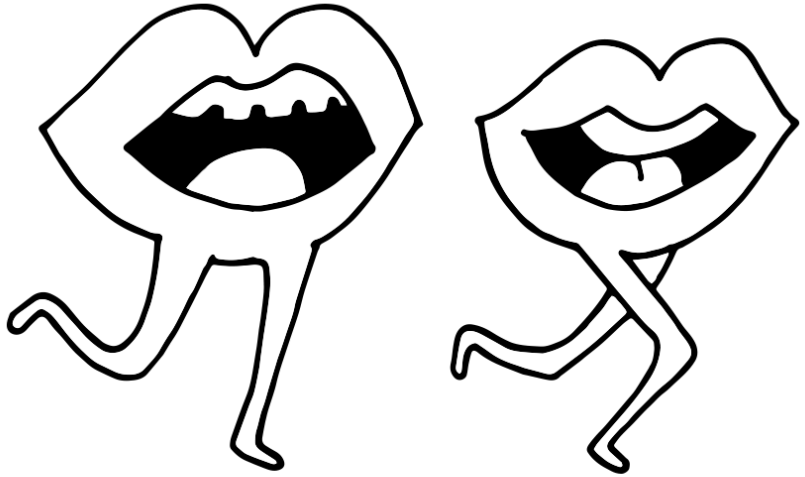


Baseline characteristics

- Median age 70.0y (IQR 61-78y)
- 60.2% male
- 93.0% ischemic stroke
- 46.2% left hemisphere

- NIHSS after 4 days: 3.0 (median)
- 37.2% ADL-dependent at 4 days (BI ≤17)
- 23.6% ADL-dependent at discharge (BI ≤17)
- 96.9% living at home 3 months after stroke





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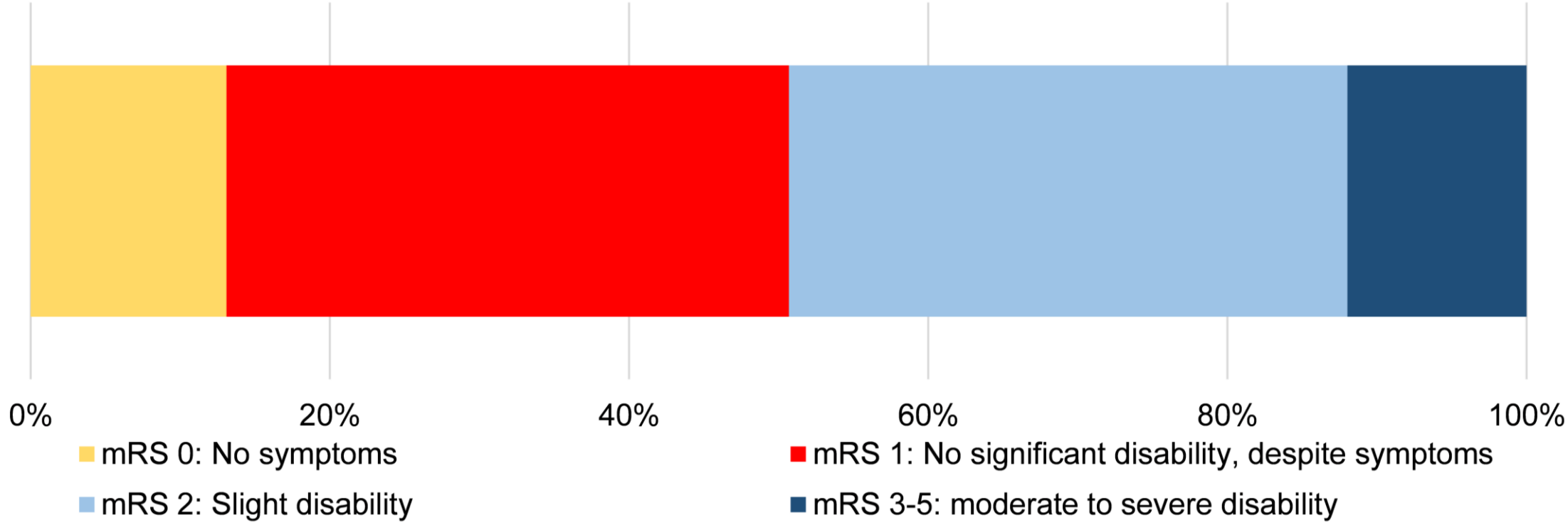
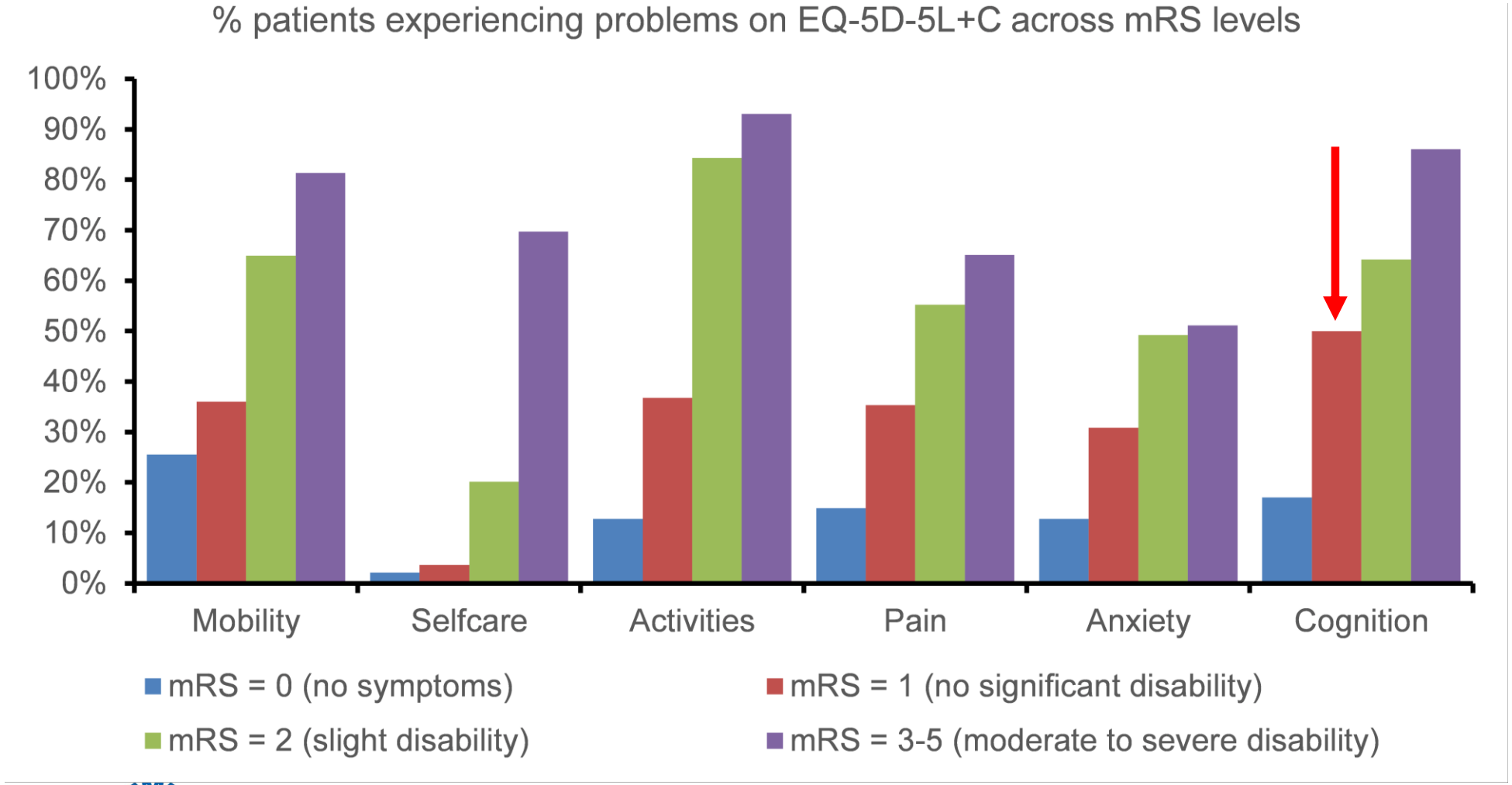
UMC Utrecht
Ziekenhuis St Antonius
Flevoziekenhuis
Franciscus Gasthuis & Vlietland

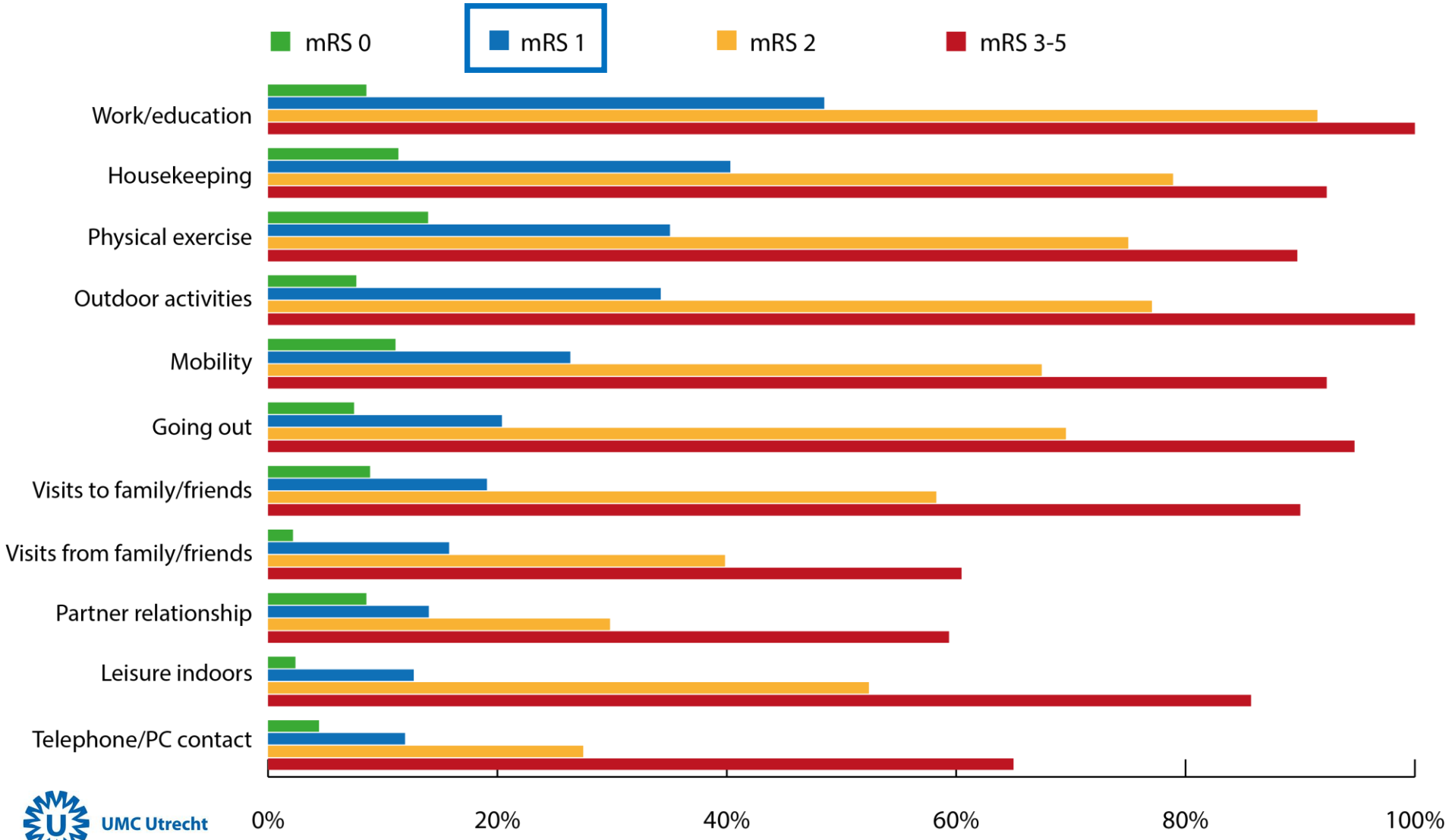
Outcome according to the clinician



Outcome according to the patients (2)



Outcome according to the patients (1)



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Capturing stroke outcome

Patient Reported Measures

OUTCOMES THAT MATTER TO PATIENTS

→ USER-Participation
→ EQ-5D-5L (+C)
→ PROMIS-10





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Capturing stroke outcome









RECOMMENDATION #1:

→ *PROMs add valuable information to the mRS*
→ *It depends on the setting and underlying goal which PROM is preferred*

	Feasibility:	Responsivitity:	Validitity:
USER-P	*Groeneveld et al (2019)* 	*Van der Zee et al (2011)* 	*Post et al (2012)* *de Graaf et al (2021)* 
EQ-5D-5L	*Groeneveld et al (2019)* 	*Golicki et al (2015)* 	*Hunger et al (2012)* 
PROMIS-10		*Katzan et al (2018)* 	*de Graaf et al (2021)* 

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PROMs in clinical practice



W

→ or

→ a CVA:



USER-P, EQ-5D-5L of PROMIS-10???0

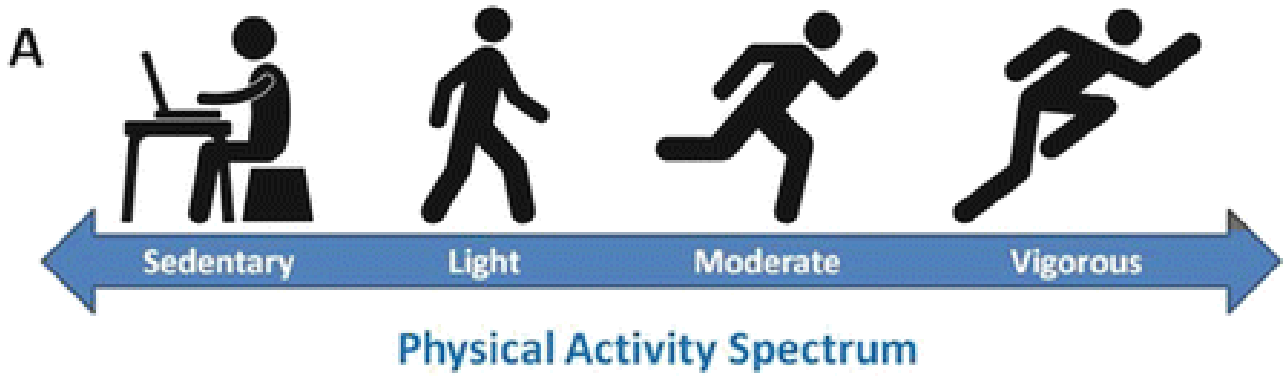
PART 2 – Which factors influence participation?



Participation – movement behavior (1)



Participatie – movement behavior (2)



RISE cohort study (n=200)

Three distinct movement behaviors:

- *Sedentary prolongers*
- *Sedentary movers*
- *Sedentary exercisers*



Wondergem et al (2019)

Participation – movement behavior (3)

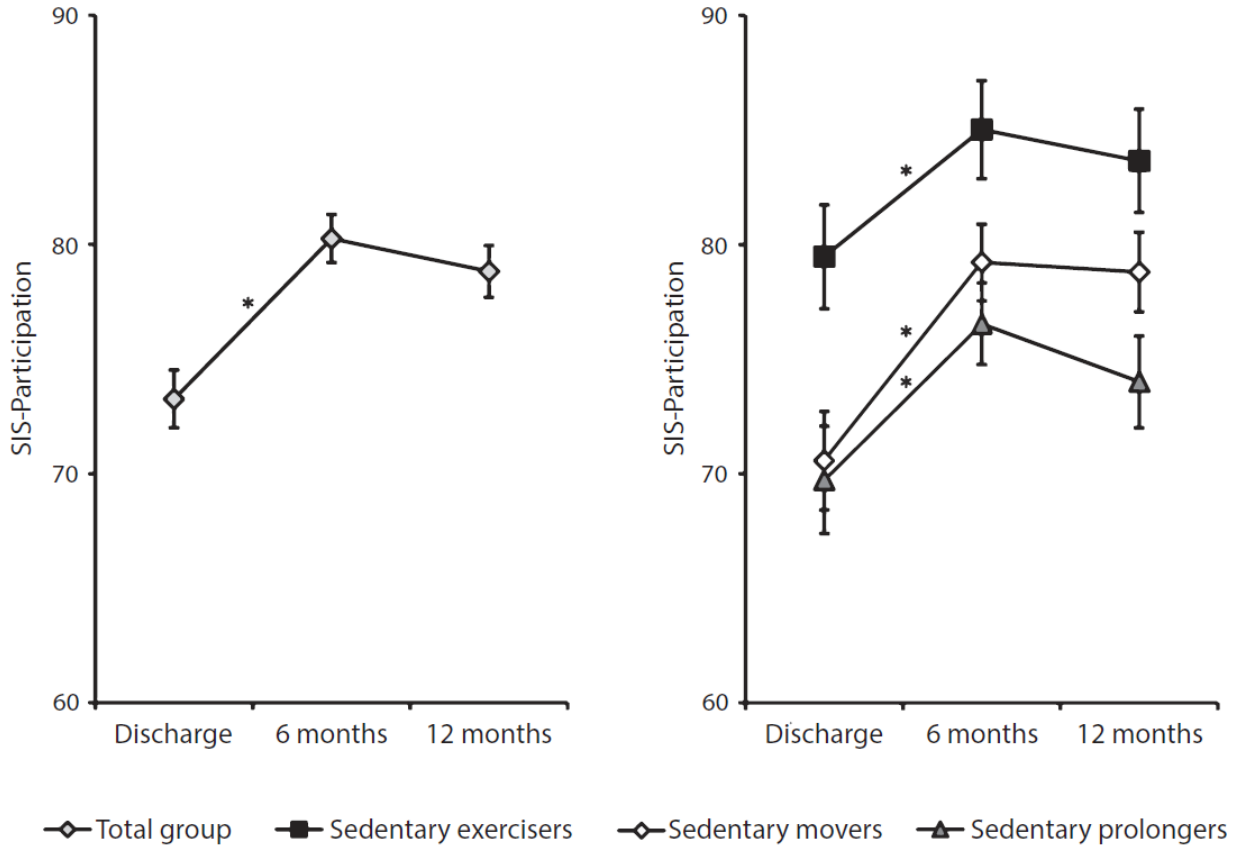


Figure 8.3: The modelled course of participation during the first year after discharge to the home setting in people with a first-ever stroke per movement behavior pattern at baseline.
Abbreviations: SIS Participation, Stroke Impact Scale 3.0 Participation domain.
Outcomes are adjusted for the confounding effects of stroke severity (NIHSS), age, sex, symptoms of anxiety (HADS-A) and discharge destination after hospitalization.
Note: higher SIS Participation scores indicate better participation outcome. The error bars represent the standard error (SE).
* $p < 0.05$, comparing mean SIS Participation scores between consecutive time points.

Participation – Age (1)

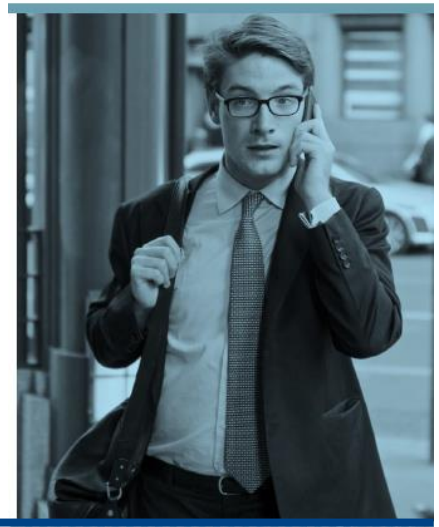




Participation – Age (2)

<70 years

- Gender (women)
- Stroke severity
- Cognitive functioning (MoCA)
- **Depressive symptoms**



>70 years

- Age
- Stroke severity
- **Anxiety symptoms**



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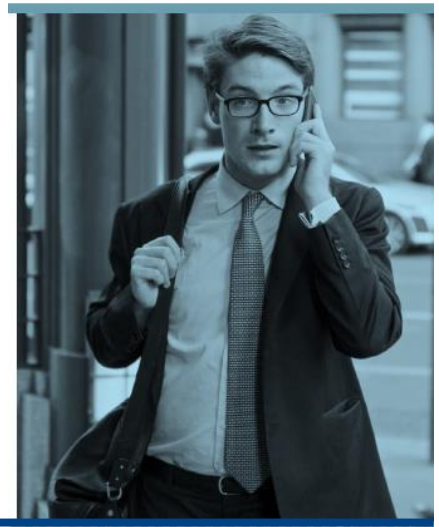
De Graaf et al (2017)

Participation – Age (2)

<70 years

- **Gender (women)**
- Stroke severity
- **Cognitive functioning (MoCA)**
- Depressive symptoms



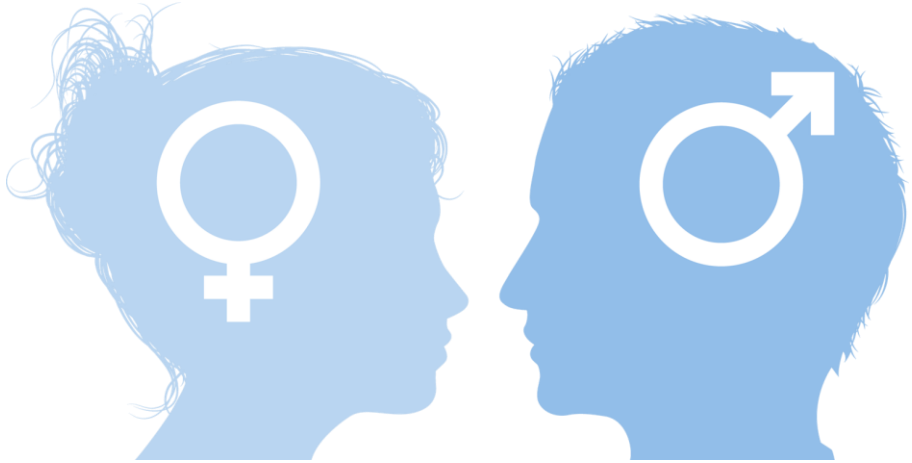
>70 years

- Age
- Stroke severity
- Anxiety symptoms



De Graaf et al (2017)

Participation – Gender





Participation – Gender

Voorspellers restricties:



Age

Stroke severity

Depressive symptoms

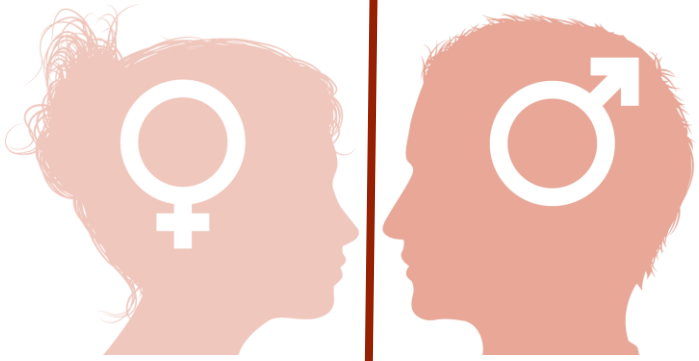
Age

Stroke severity

Depressive symptoms

Cognitive functioning

Voorspellers tevredenheid:



Stroke severity

Maladaptive psychological factors

Depressive symptoms

Participation – Cognition (1)



The New York Times

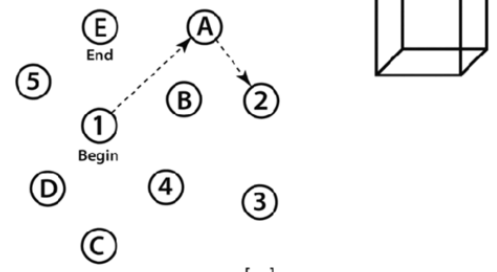
Trump Has Perfect Cognitive Test Score, White House Physician Says

MoCA

MONTREAL COGNITIVE ASSESSMENT (MOCA)
Version 7.1 Original Version

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

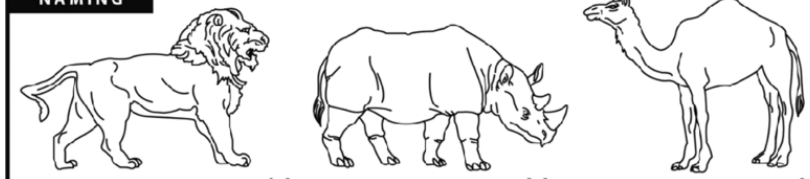
VISUOSPATIAL / EXECUTIVE — POINTS



Copy cube [ ] [ ]

Draw CLOCK (Ten past eleven) (3 points) [ ] Contour [ ] Numbers [ ] Hands __/5

NAMING



[ ] [ ] [ ] __/3

MEMORY Read list of words, subject must repeat them. Do 2 trials, even if 1st trial is successful. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED
1st trial					
2nd trial					

No points

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
[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B __/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 __/5

	Has to recall words WITH NO CUE	FACE	VELVET	CHURCH	DAISY	RED	Points for UNCUED recall only
		[ ]	[ ]	[ ]	[ ]	[ ]	
Optional	Category cue						
	Multiple choice cue						

ORIENTATION [ ] Date [ ] Month [ ] Year [ ] Day [ ] Place [ ] City __/6

© Z.Nasreddine MD **www.mocatest.org** Normal ≥ 26 / 30

TOTAL __/30
Add 1 point if ≤ 12 yr edu

Administered by: _____



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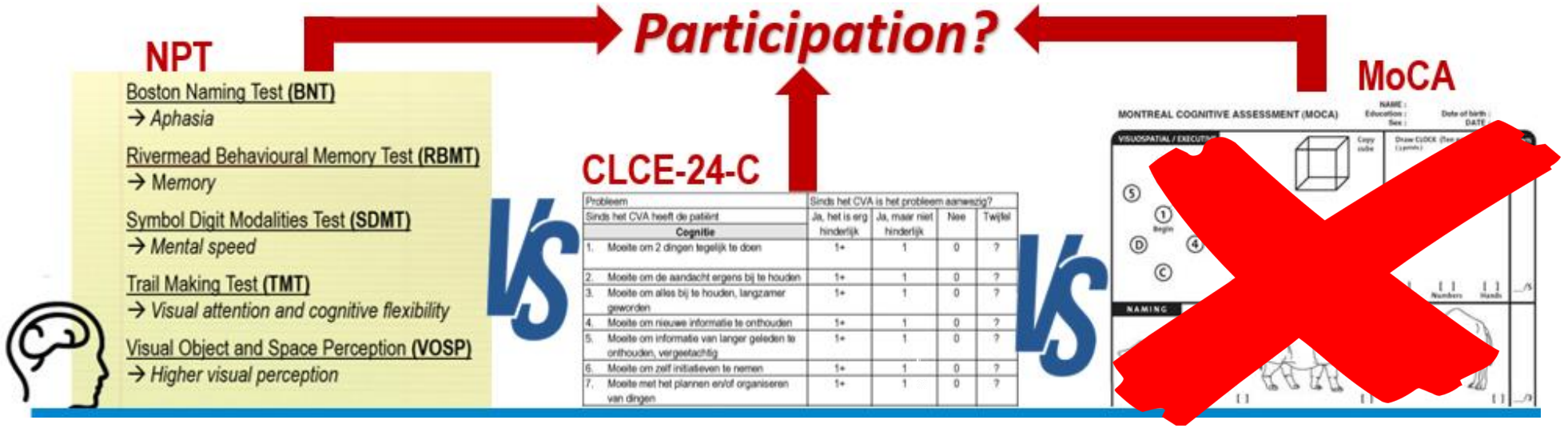
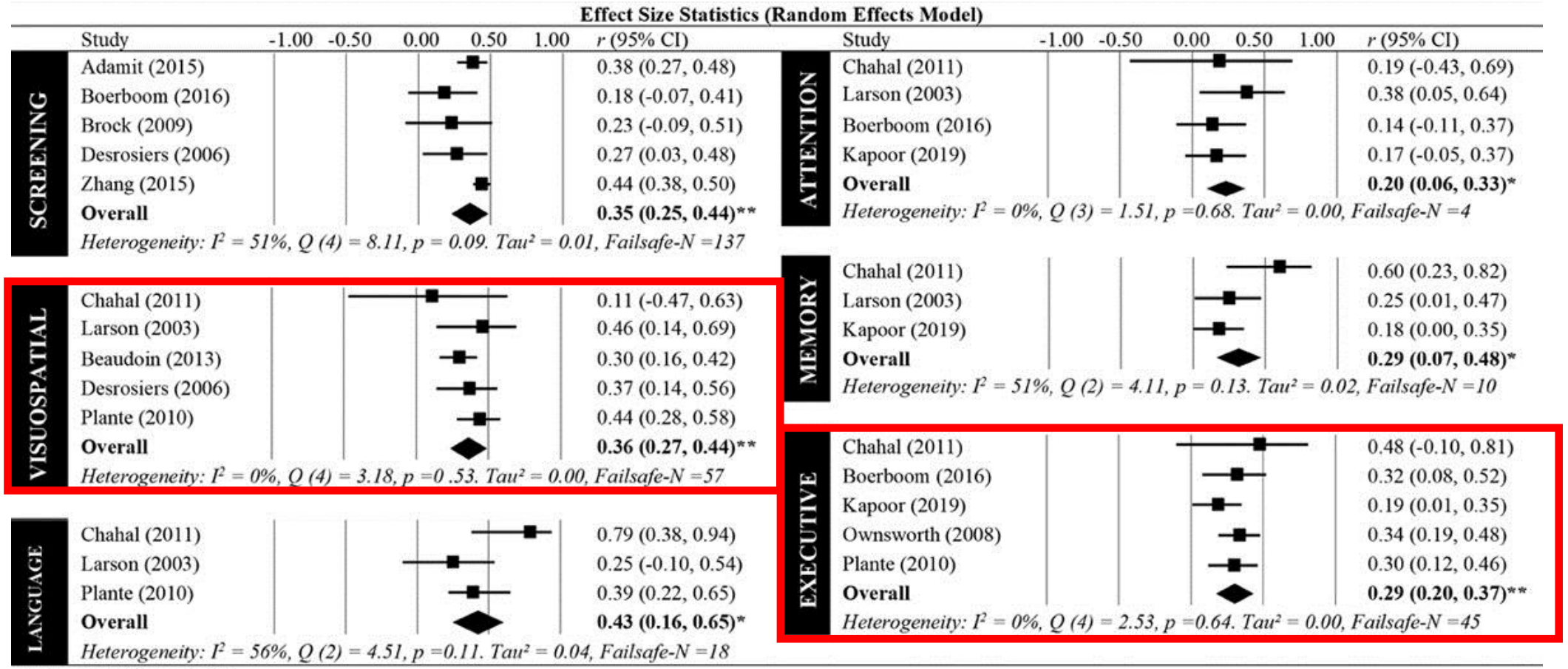
Participation – Cognition (2)





Participation – Cognitive domains



Alpha set at .05, two-tailed.

†p < .05, * p<.01, ** p<.001

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Stolwyk et al (2021)

Participation – Cognition (4)

Winner: CLCE-24-C

Probleem	Sinds het CVA is het probleem aanwezig?			
Sinds het CVA heeft de patiënt	Ja, het is erg hinderlijk	Ja, maar niet hinderlijk	Nee	Twijfel
Cognitie				
1. Moeite om 2 dingen tegelijk te doen	1+	1	0	?
2. Moeite om de aandacht ergens bij te houden	1+	1	0	?
3. Moeite om alles bij te houden, langzamer geworden	1+	1	0	?
4. Moeite om nieuwe informatie te onthouden	1+	1	0	?
5. Moeite om informatie van langer geleden te onthouden, vergeetachtig	1+	1	0	?
6. Moeite om zelf initiatieven te nemen	1+	1	0	?
7. Moeite met het plannen en/of organiseren van dingen	1+	1	0	?
8. Moeite in concrete dagelijkse activiteiten uit te voeren (niet door verlamming)	1+	1	0	?
9. Verminderd tot geen besef meer van tijd	1+	1	0	?
10. Verminderd tot geen besef meer van plaats, ruimte of persoon	1+	1	0	?
11. Geen aandacht meer voor een deel van het lichaam of de omgeving	1+	1	0	?
Communicatie				
12. Moeite om gesproken en/of geschreven taal te begrijpen	1+	1	0	?
13. Moeite om zelf te praten of te schrijven	1+	1	0	?





The importance of psychological factors

Thesis Marloes van Mierlo (2017)





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Psychological factors and participatio



ACRM
AMERICAN CONGRESS OF REHABILITATION MEDICINE

Archives of Physical M

journal homepage

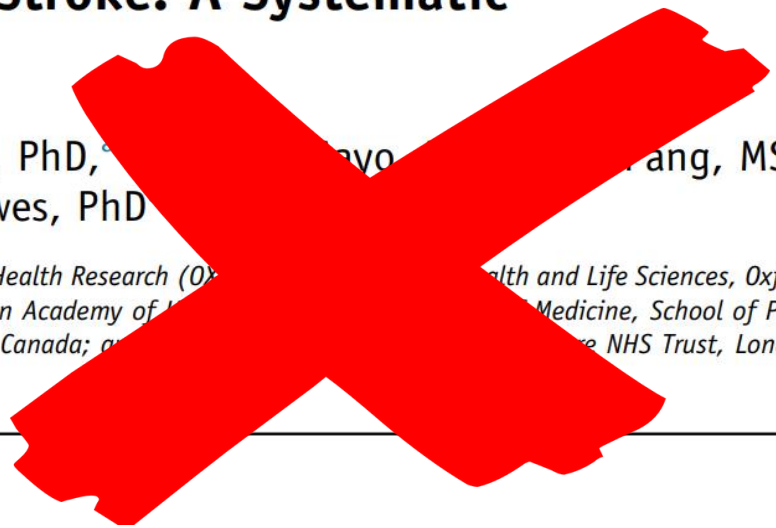
Archives of Physical Medicine and

REVIEW ARTICLE

Factors Associated With Participation in Life Situations for Adults With Stroke: A Systematic Review

Leisle Ezekiel, MRes,[a] Johnny Collett, PhD,[ayo ang, MSc,[c]
Leanne Field, BSc (hons),[a] Helen Dawes, PhD

From the [a]Oxford Institute of Nursing, Midwifery and Allied Health Research (OX lth and Life Sciences, Oxford Brookes University, Oxford, United Kingdom; [b]Fellow of the Canadian Academy of Medicine, School of Physical and Occupational Therapy, McGill University, Montreal, Québec, Canada; a e NHS Trust, London, United Kingdom.



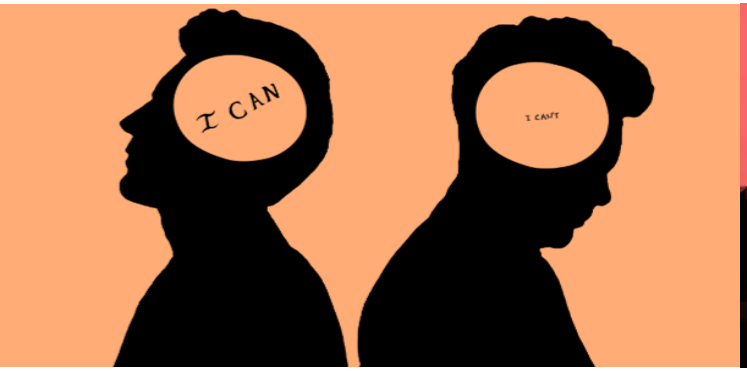
Participation – Psychological factors (1)

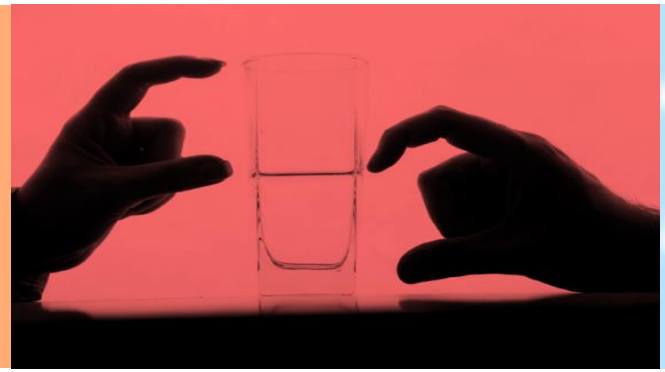
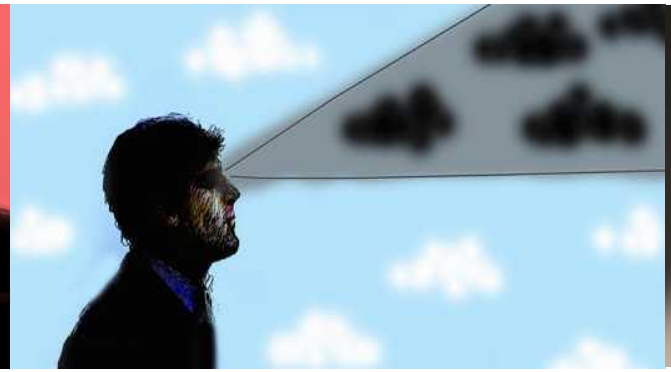
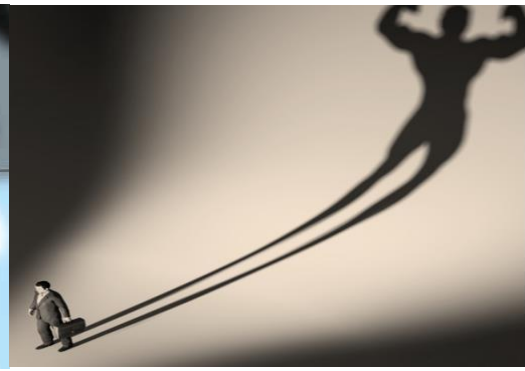
Adaptive factors

- *Pro-active coping, self-efficacy, extraversion, optimism*

Maladaptive factors

- *Passive coping, neuroticism, pessimism*



Weijenberg et al, 2018; Darlington et al., 2007; Kim et al., 2013; van Mierlo et al., 2014; van Mierlo et al., 2017; Wolters Gregório, Gould, Spitz, van Heugten, & Ponsford, 2014; Wolters Gregório et al., 2015

Participation – Psychological factors (2)

- **Adaptive psychological factors** and **mood** are important independent predictors of the course of participation up to 4 years after stroke

- Next step: implement psychological screening?



Take home messages

- ***Regular assessment of participation after stroke (in post-stroke care, stroke audits and stroke research), taking into account the impact of stroke from the patients' perspective, would be a major step towards personalized stroke care.***

- *Early identification of individuals with stroke who are at risk for an unfavorable course of participation is important.*

Take home messages

- *Regular assessment of participation after stroke (in post-stroke care, stroke audits and stroke research), taking into account the impact of stroke from the patients' perspective, would be a major step towards personalized stroke care.*

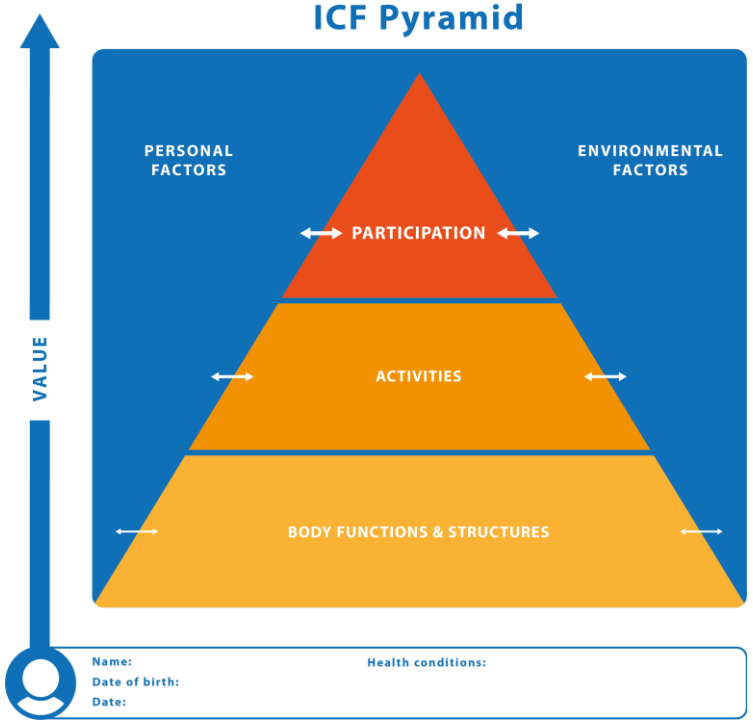
- ***Early identification of individuals with stroke who are at risk for an unfavorable course of participation is important.***

- Movement behavior
- Age-specific factors
- Cognitive functioning
- Mood problems
- Adaptive psychological factors
- Gender

Paradigm shift needed in stroke research and care







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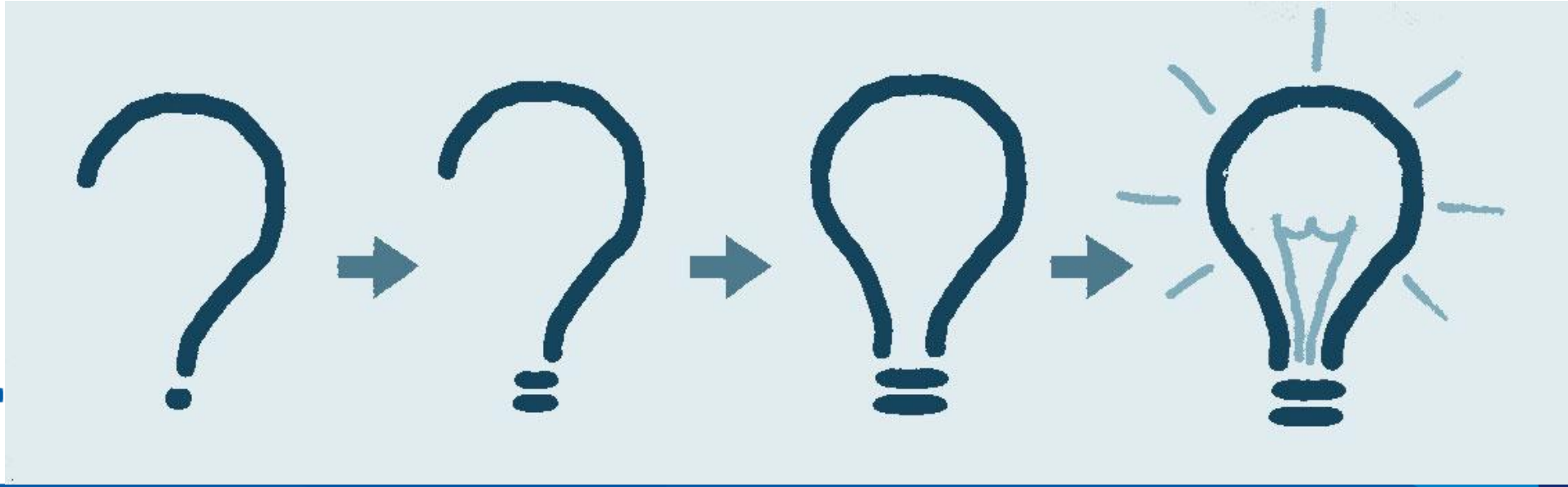
Questions? / Discussion!



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