

Het nut van de ICF in assessment:
ADL- evaluatie in de diagnostiek van dementie en andere cognitieve
aandoeningen
Brussels Integrated Activities of Daily Living Scale (BIA)

Prof. dr. Patricia De Vriendt



Het nut van de ICF in assessment

- Duidelijk onderscheid tussen componenten
- Categorieën: benamingen, definities en zelfs codes
- Schaal (alhoewel niet geoperationaliseerd en au fond eigenlijk geen schaal)
- Visualiseren van interacties
- Handvaten voor interventies
- Kwaliteitscontrole (Hiaten of dubbels in gegevens)
- Interprofessionele communicatie

Hoe ICF gebruiken?

- Enkel de categorieën

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**INTEGRATING THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING
DISABILITY AND HEALTH (ICF) IN THE GERIATRIC MINIMUM DATA SET-2
(GMDS-25) FOR INTERVENTION STUDIES IN OLDER PEOPLE**

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Abstract: Objective: Since the number of older people is rising worldwide, there is an increasing need for a structured and integrated approach for the participation of the older person in clinical research. The introduction of a 'Geriatric Minimum Data Set' (GMDS) will allow a standardized description of the older person participating in clinical research. ICF, a universal tool for the comprehensive description of human functioning, developed by the World Health Organisation, can make a substantial contribution to the development of a GMDS. It can serve as a 'framework', including all the functional characteristics needed in research in Gerontology and Geriatrics. The objective was to integrate ICF terminology in a recently proposed GMDS-25. Design: ICF is explored to determine the most relevant ICF-categories for GMDS-25. Results and conclusion: Several items of the GMDS-25 can be described in terms of ICF. This description contributes to the optimal standardization of the GMDS-25.

Key words: MDS, GMDS-25, older adults, ICF, geriatric assessment.

Categorieën en scoring

Conversion of the Mini-Mental State Examination to the International Classification of Functioning, Disability and Health Terminology and Scoring System

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Key Words

International Classification of Functioning, Disability and Health · Cognitive status evaluation · Cognitive status screening tool · Psychometrics · Alzheimer's disease · Mild cognitive impairment

Abstract

Background: In older patients, evaluation of the cognitive status is crucial. The Mini-Mental State Examination (MMSE) is widely used for screening of cognition, providing fairly high sensitivity, specificity and reproducibility. Recently, a consensus emerged on the necessity of an international and transparent language, as provided by the WHO's International Classification of Functioning, Disability and Health (ICF). Most assessment tools however are not in accordance with the ICF. **Objective:** To reformulate the MMSE according to the ICF, both for the individual items and for the scoring system. **Method:** MMSE data (scores varying from 3 to 30/30) of (1) 217 cognitively healthy elderly, (2) 60 persons with mild cognitive impairment, (3) 60 patients with mild Alzheimer's disease (AD), and (4) 60 patients with moderate/severe AD

hospital (groups 2 and 3), or the geriatric ward (group 4). The allocation to the groups was done after multidisciplinary evaluation. The conversion of the MMSE to ICF-MMSE was done by content comparison and by subsequent translation of the scoring system using automatic algorithms. **Results:** All MMSE items were converted to the corresponding ICF categories. Three ICF domains were addressed: global and specific mental functions, general tasks and demands, divided over 6 ICF categories (orientation time/place, sustaining attention, memory functions, mental functions of language, undertaking a simple task). Scores on individual items were transformed according to their relative weight on the original MMSE scale, and a total ICF-MMSE score from 0 (no problem) to 100 (complete problem) was generated. Translation was satisfying, as illustrated by a good correlation between MMSE and ICF-MMSE. The diagnostic groups were distributed over the ICF-MMSE scores as expected. For each ICF domain, ICF-MMSE subscores were higher with increasing severity in cognitive decline. There was a higher dispersion, in accordance with the more detailed scoring possibilities of the ICF-MMSE. **Conclusions:** It is possible to adapt the MMSE to the ICF concept. This adaptation enhances interdiscipli-

SCORES – CONVERSIE

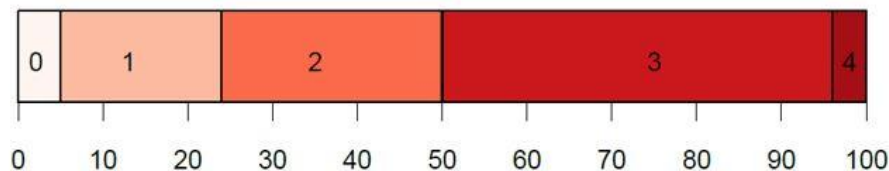
vb categorie b134 – slaap:

Geef aan op een schaal van 0-10 of 0-100:

In welke mate heb je problemen met: slapen, zoals in slaap vallen, vaak wakker worden 's nachts of te vroeg wakker worden 's morgens?

Conversie via VAS schaal

A 0-100 (e.g. VAS) Scale -> can be transformed to an **ICF-qualifier Scale** for reporting health information



The ICF-qualifier ordinal scale-> can be transformed to a **0-100 Scale**

ICF

xxx.**0** GEEN stoornis of beperking/participatieprobleem 0-4%

xxx.**1** LICHTE stoornis of beperking/participatieprobleem 5-24%

xxx.**2** MATIGE stoornis of beperking/participatieprobleem 25-49%

xxx.**3** ERNSTIGE stoornis of beperking/participatieprobleem 50-95%

xxx.**4** VOLLEDIGE stoornis of beperking/participatieprobleem 96-100%

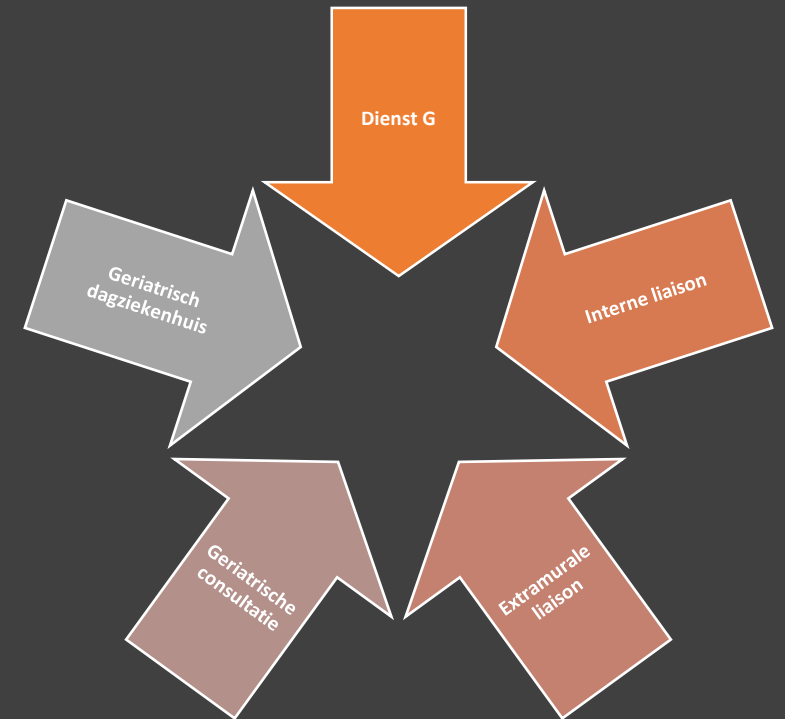
Of from scratch!

De Brussels Integrated Activities of Daily Living Scale

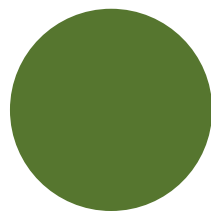
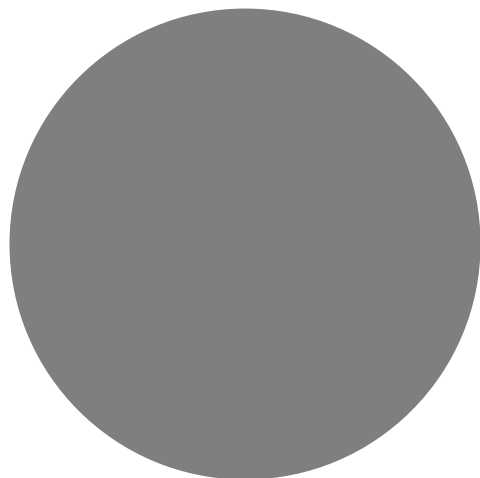
Aanleiding van dit onderzoeksproject



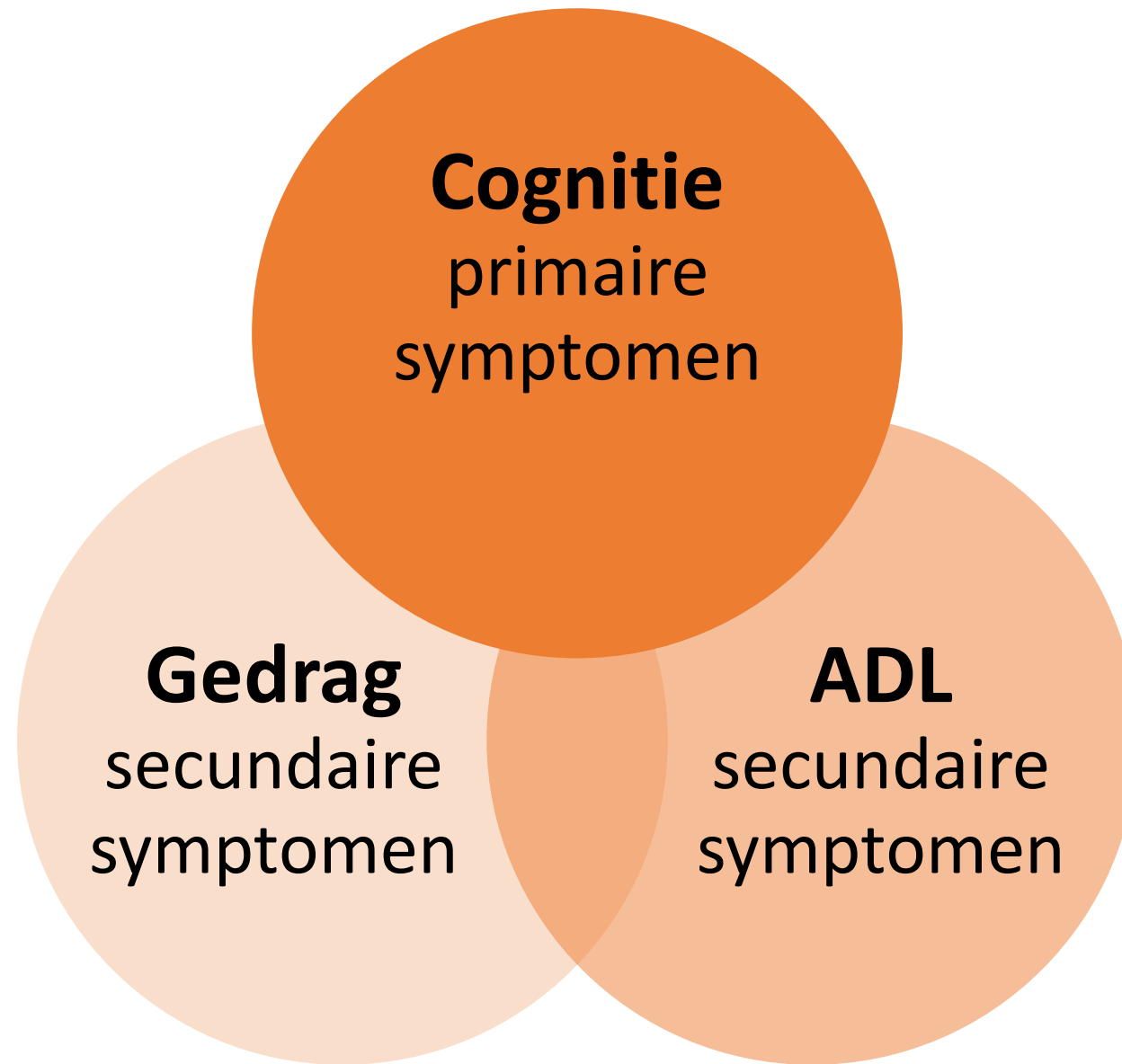
Het zorgprogramma voor de Geriatrische Patiënt: het geriatriesch dagziekenhuis



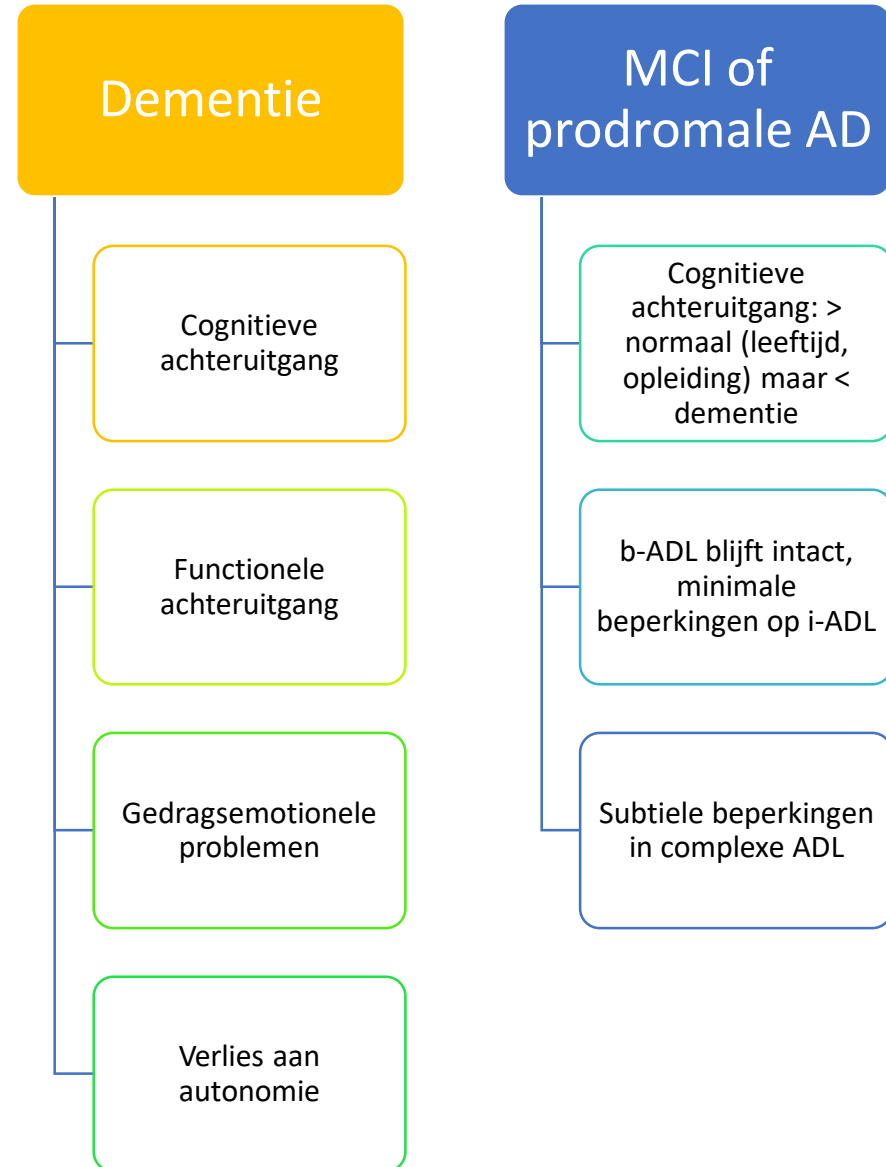
Is de persoon cognitief gezond,
heeft hij/zij MCI of een milde
dementie?



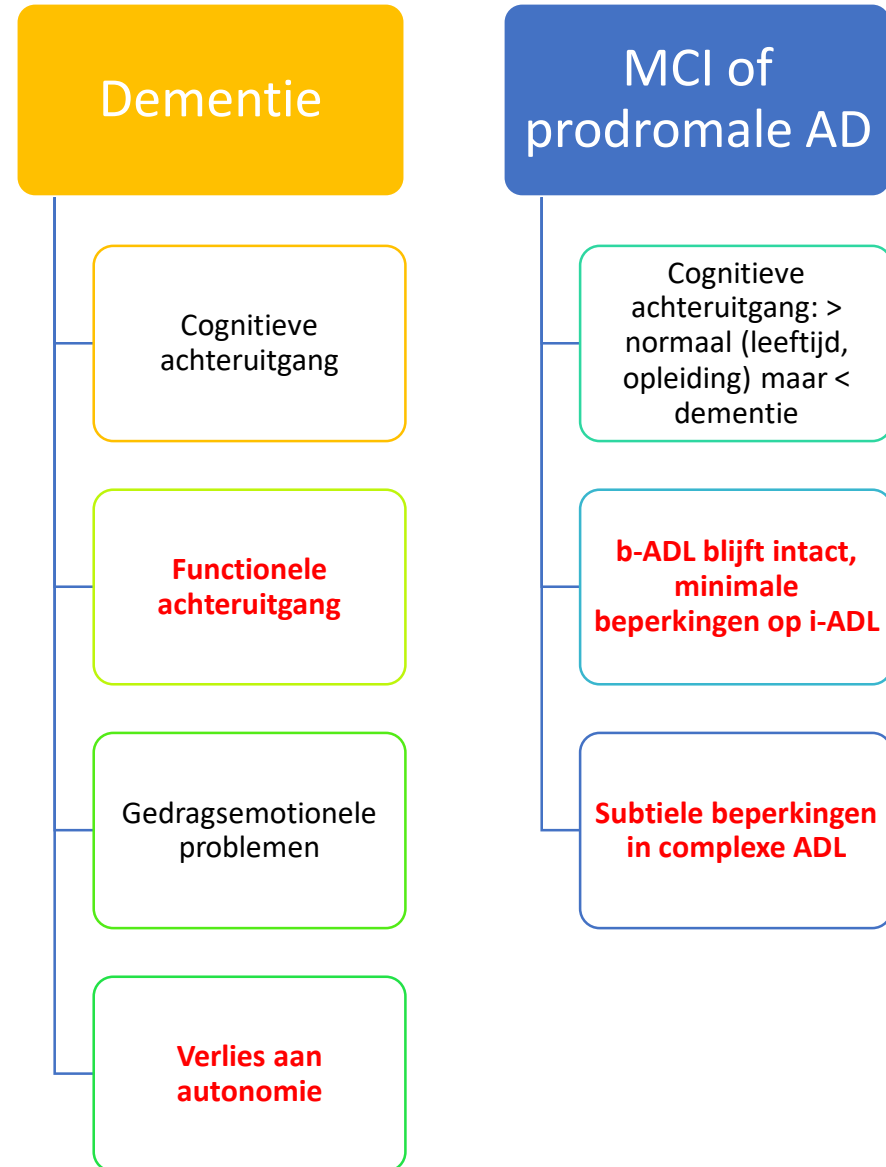
Wat is dementie, wat is MCI en
wat is het onderscheid daar
tussen?



Criteria dementie & MCI of prodromale AD

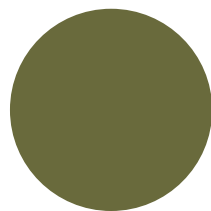
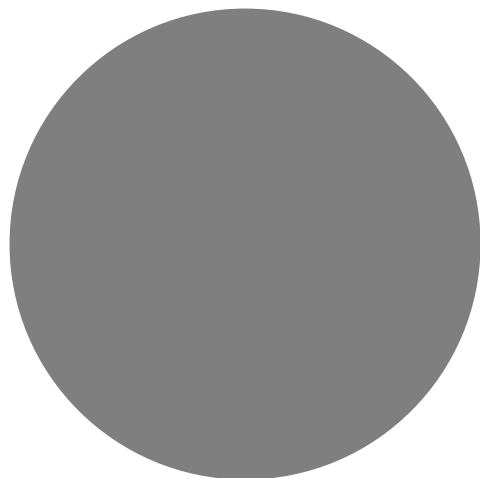


Criteria dementie & MCI of prodromale AD



ADL cruciaal
maar
problemen
met de
evaluatie
ervan

- Variaties in versies van instrumenten
- Gebrekkige scoringsmethoden
 - Zwakke sensitiviteit om subtiele beperkingen in kaart te brengen
- Genderspecifieke en niet-relevante activiteiten
- Geen oorzaken van beperkingen
 - Diagnostiek van cognitieve stoornissen => cognitieve problemen
- Zwakke psychometrische kenmerken
- Activiteiten niet 'moeilijk' genoeg ikv MCI
- Geen "all-encompassing" instrument

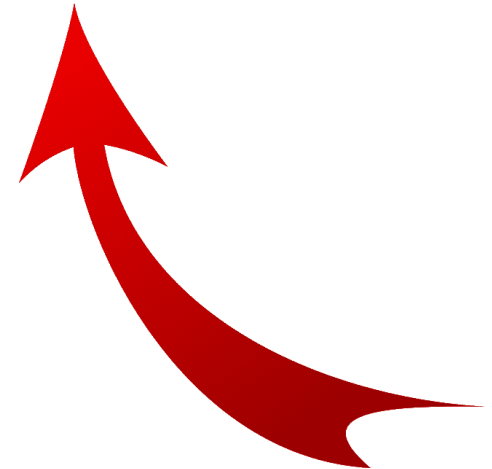


Hoe draagt een evaluatie van ADL
bij aan een diagnose MCI en
dementie?

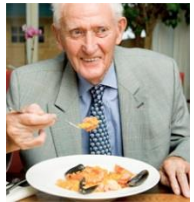


Functioneel continuüm

Nut in cognitieve diagnostiek



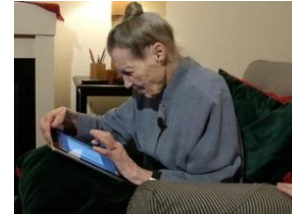
ADL-triade



basale ADL
b-ADL



instrumentele ADL
i-ADL



geavanceerde ADL
a-ADL



ADL-triade

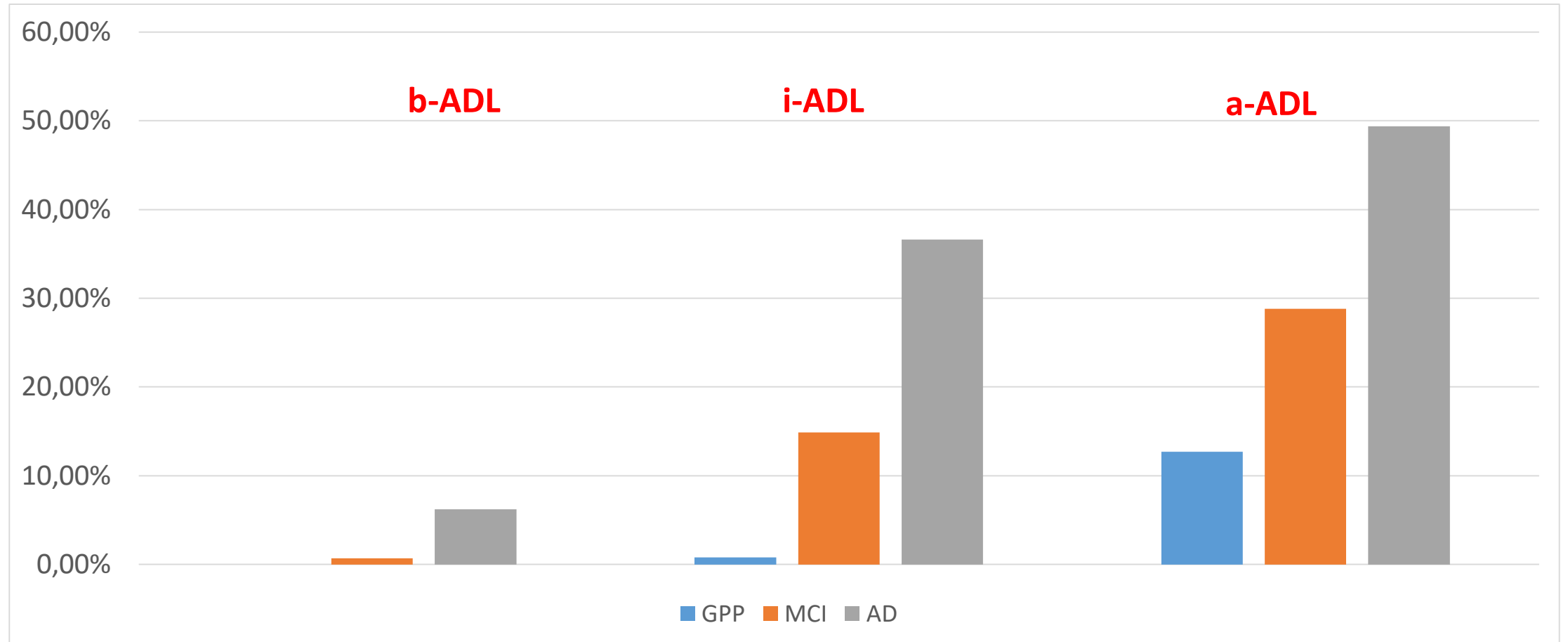
3 niveaus van functioneren

gestratificeerd volgens complexiteit en cognitieve organisatie

- Basale ADL (b-ADL): zelfzorg -> die activiteiten die nodig zijn om te leven
- Instrumentele ADL (i-ADL): huishoudelijke activiteiten -> die activiteiten die nodig zijn om zelfstandig te kunnen wonen en leven
- Geavanceerde ADL (a-ADL): vrijetijd, ontspanning, zelfontwikkeling -> gaat verder dan hetgene dat echt noodzakelijk is

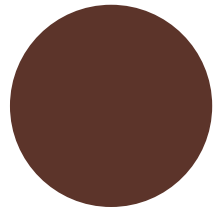
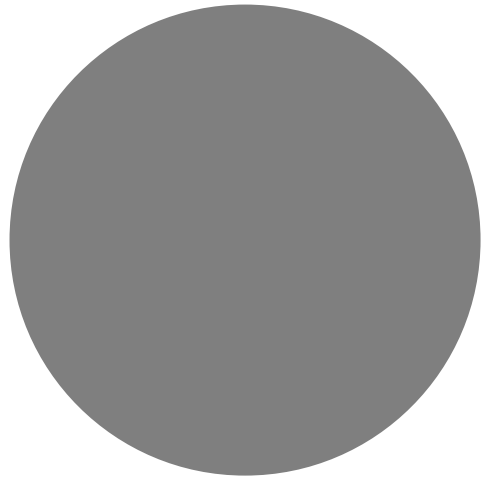
(Reuben et al., 1990)

Functioneel continuüm



Te onthouden...

	Cognitief gezond	MCI	Dementie
Advanced ADL (a-ADL)	-	+	+
Instrumental ADL (i-ADL)	-	+/-	+
Basic ADL (b-ADL)	-	-	+/-



De Brussels Integrated Activities of Daily Living Tool (BIA)

Stapsgewijze ontwikkeling en validatie van de BIA voor gebruik in cognitieve diagnostiek



The process of decline in advanced activities of daily living: a qualitative explorative study in mild cognitive impairment

Patricia De Vriendt,^{1,3,4} Ellen Gorus,^{1,2,4} Elise Cornelis,² Anja Velghe,^{3,4}
Mirko Petrovic^{3,4} and Tony Mets^{1,2,4}

ABSTRACT

Background: The notion of “minimal impairment in instrumental activities of daily living (i-ADL)” is important in the diagnosis of mild cognitive impairment (MCI), but is presently not adequately operationalized. ADL is stratified according to difficulty, complexity, and also to vulnerability to early cognitive changes in a threefold hierarchy: basic activities of daily living (b-ADL), i-ADL, and advanced activities of daily living (a-ADL). This study aims to gain a deeper understanding of the functional decline in the process of MCI.

Methods: In a qualitative design, 37 consecutive patients diagnosed with amnesic (a)-MCI and their proxies were interviewed at two geriatric day hospitals. Constant comparative analysis was used for the analysis.

Results: The a-ADL-concept emerged as important in the diagnosis of MCI. All participants were engaged in a wide range of activities, which could be clustered according to the International Classification of Functioning, Disability and Health (ICF). Participants reported subtle difficulties in performance. A process of functional decline was identified in which adaptation and coping mechanisms interacted with the process of reduced skills, leading to an activity disruption and an insufficiency in functioning.

Conclusion: This study asserts the inclusion of an evaluation of a-ADL in the assessment of older persons. When evaluating ADL at three levels (b-ADL, i-ADL, and a-ADL), all the activities one can perform in daily living are covered.

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THE ADVANCED ACTIVITIES OF DAILY LIVING: A TOOL ALLOWING THE EVALUATION OF SUBTLE FUNCTIONAL DECLINE IN MILD COGNITIVE IMPAIRMENT

P. DE VRIENDT^{1,3,4}, E. GORUS^{1,2,4}, E. CORNELIS², I. BAUTMANS^{1,2,4}, M. PETROVIC^{3,4}, T. METS^{1,2}

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Abstract: *Objectives:* Assessment of advanced activities of daily living (a-ADL) can be of interest in establishing the diagnosis of Alzheimer's disease (AD) in an earlier stage, since these activities demand high cognitive functioning and are more responsive to subtle changes. In this study we tested a new a-ADL tool, developed according to the International Classification of Functioning, Disability and Health (ICF). The a-ADL tool is based on the total number of activities performed (TNA) by a person and takes each subject as his own reference. It distinguishes a total Disability Index (a-ADL-DI), a Cognitive Disability Index (a-ADL-CDI), and a Physical Disability Index (a-ADL-PDI), with lower score representing more independency. We explored whether these indices allow distinction between cognitively healthy persons, patients with Mild Cognitive Impairment (MCI) and patients with mild AD. *Methods:* Participants were on average 80 years old (SD 4.6; 66-90), were community dwelling, and were diagnosed as (1) cognitively healthy subjects (n=26); (2) patients with MCI (n = 17), or (3) mild AD (n = 25), based upon extensive clinical evaluation and a set of global, cognitive, mood and functional assessments. The a-ADL-tool was not part of the clinical evaluation. *Results:* The a-ADL-CDI was significantly different between the three groups (p<.01). The a-ADL-DI was significantly different between MCI and AD (p<.001). The tool had good psychometrical properties (inter-rater reliability; agreement between patient and proxy; correlations with cognitive tests). Although the sample size was relatively small, ROC curves were computed for the a-ADL-DI and a-ADL-CDI with satisfactory and promising results. *Conclusion:* The a-ADL-CDI and a-ADL-DI might offer a useful contribution to the identification and follow up of patients with mild cognitive disorders in an older population.

Key words: International classification of functioning, disability and health, cognitive disorders, Alzheimer's

Prevalence of a-ADL items and distribution of the limitation scores

Table 1 shows the various a-ADL reported by the respondents. More than 50% of the participants reported at least 22 of the 49 a-ADL items as relevant. To play a music instrument was the activity with the lowest prevalence (4.4%). No extra a-ADL other than the 49 included in the list were reported. In table 3 the distribution of ICF scores compared to respectively TNA (ICF 0) or LA (ICF 1-4) within the diagnostic groups is shown. Score 0 and 3 differed significantly between the AD group and the other groups and score 1 showed a significant difference between all groups.

Tijdsgebruik

+/- 33 minuten (range 15 – 50) (> AD, $p < .01$)

Interrater beoordelaarsbetrouwbaarheid

ICC .975 - .996

The indices

The results for the indices are shown in table 3. Healthy controls performed more activities (TNA) than patients with MCI or with AD; for patients with MCI there was a tendency towards having more activities than AD patients ($p = .070$). LA was significantly higher in AD patients than in the healthy controls and in MCI patients. The a-ADL-DI showed a significant difference between the AD group and the healthy controls and MCI group; between healthy controls and MCI patients a tendency was observed ($p = .099$). The a-ADL-CDI differed significantly between all groups with the healthy controls having a better score than the MCI patients and the latter better than the AD patients. The a-ADL-PDI showed no significant difference between the groups.

Table 4

Correlations between cognitive tests, b-ADL, i-ADL and a-ADL-indices

	MMSE	CamCog	b-ADL	i-ADL	a-ADL-DI	a-ADL-CDI	a-ADL-PDI
MMSE	1.00						
CamCog	.881**	1.00					
B-ADL	-.305*	-.261*	1.00				
I-ADL	-.799**	-.775**	.504**	1.00			
a-ADL-DI	-.714**	-.688**	.260*	.717**	1.00		
a-ADL-CDI	-.713**	-.688**	.196	.722**	.888**	1.00	
a-ADL-PDI	-.344**	-.309*	.133	.303*	.497**	.349**	1.00

Discriminative power of the advanced activities of daily living (a-ADL) tool in the diagnosis of mild cognitive impairment in an older population

P. De Vriendt,^{1,2} T. Mets,^{1,2,3} M. Petrovic^{2,4,5} and E. Gorus^{1,2,3}

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ABSTRACT

Background: Mild cognitive impairment (MCI) is characterized by subjective and objective memory impairments in the absence of manifest functional decline. Mild changes in activities of daily living (ADL) can be present and probably predict conversion to dementia. A new advanced (a)-ADL tool was developed for evaluating high-level activities and, taking each participant as their own reference, distinguishing a Cognitive Disability Index (a-ADL-DI), a Cognitive Disability Index (a-ADL-CDI), and a Physical Disability Index (a-ADL-PDI), based on the number of activities performed and the severity and causes of the functional problem. This study evaluates the discriminative validity of the a-ADL in MCI.

Method: Based upon clinical evaluation and a set of global, cognitive, mood, and functional assessments, 150 community-dwelling participants (average age 80.3 years (SD 5; 66–91)) were included and diagnosed as (1) cognitively healthy participants ($n = 50$); (2) patients with a-MCI ($n = 48$), or (3) mild to moderate AD ($n = 52$). The a-ADL tool was not a part of the clinical evaluation.

Results: The a-ADL-DI and the a-ADL-CDI showed a sensitivity and specificity ranging from 70% to 94.2%, Positive Predictive Value ranging from 70% till 93.8%, and Negative Predictive Value from 64.4% and 93.8%, an area under the curve (AUC) ranging from 0.791 to 0.960. Functional decline related to physical deficits, as assessed by the a-ADL-PDI, did not discriminate between the different groups.

Conclusion: The a-ADL tool has a good ability to distinguish normal and pathological cognitive aging. Its discriminative power for underlying causes of limitations may be an advantage.

Grotere steekproef!

HC n=50

aMCI n=48

AD n=53

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Conclusion: The a-ADL tool has a good ability to distinguish normal and pathological cognitive aging. Its discriminative power for underlying causes of limitations may be an advantage.

Conclusion

In conclusion, the evaluation of a-ADL can contribute to the distinction between normal aging, MCI, and AD. Moreover, follow-up assessment of high-level functioning might constitute an important predictor of conversion towards AD. So, the a-ADL could add knowledge to the issue of whether minimal ADL impairment is part of the MCI syndrome or is predictor of conversion to dementia, since it is likely that functional decline occurs over the course of MCI and that this cumulative change leads to dementia. Future research – longitudinal prospective follow up study of the MCI group – should address this issue.

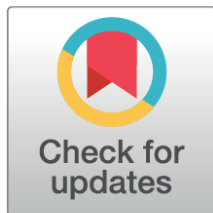
RESEARCH ARTICLE

Early diagnosis of mild cognitive impairment and mild dementia through basic and instrumental activities of daily living: Development of a new evaluation tool

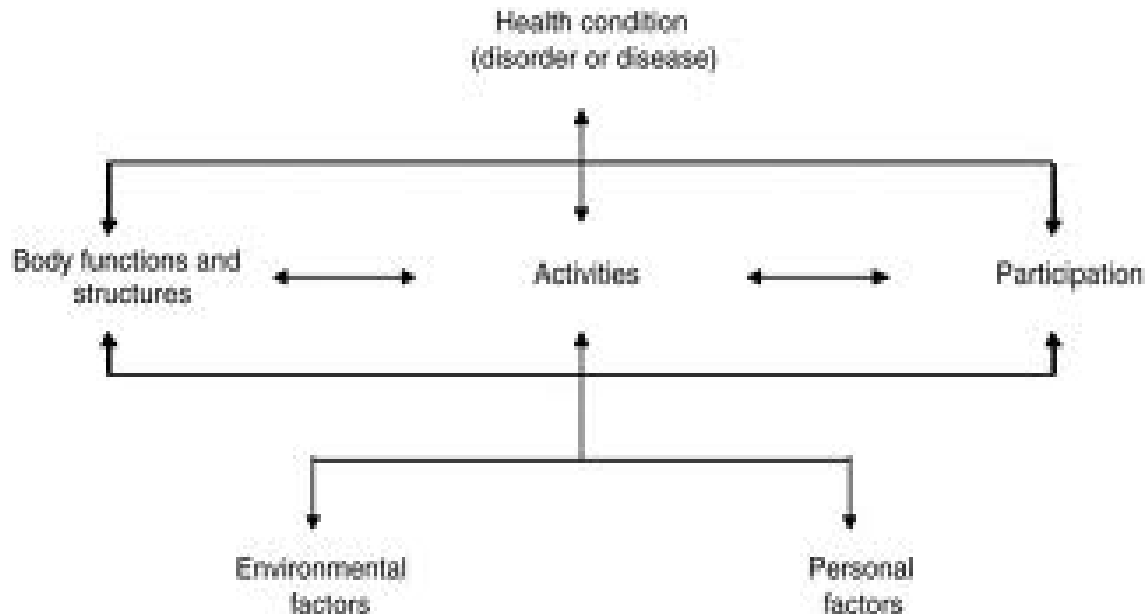
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Principes van de BIA



WHO, 2001

- Het evalueren van de activiteiten van het dagelijks leven
- ICF-definiëring van activiteiten
- Persoon als eigen referentiepunt: hoe relevant is een activiteit voor een persoon?
- Verschillende gradaties van beperkingen
 - Scoringssysteem: ICF-qualifiers
- Differentiatie in oorzaken van beperkingen
- Indexen

Table 1. Items of the Katz Index according to the codes and definitions of the ICF.

Item according to Katz's Index	ICF activity	ICF code	ICF definition
Bathing	Washing oneself	d510	Washing and drying one's whole body, or body parts, using water and appropriate cleaning and drying materials or methods, such as bathing, showering, washing hands and feet, face and hair, and drying with a towel.
Dressing	Dressing	d540	Carrying out the coordinated actions and tasks of putting on and taking off clothes and footwear in sequence and in keeping with climatic and social conditions, such as by putting on, adjusting and removing shirts, skirts, blouses, pants, undergarments, saris, kimono, tights, hats, gloves, coats, shoes, boots, sandals and slippers.
Transferring	Indoor mobility and changing basic body position	d410	Getting into and out of a body position and moving from one location to another, such as getting up out of a chair to lie down on a bed, and getting into and out of positions of kneeling or squatting.
	Transferring oneself	d420	Moving from one surface to another, such as sliding along a bench or moving from a bed to a chair, without changing body position.
	Walking	d450	Moving along a surface on foot, step by step, so that one foot is always on the ground, such as when strolling, sauntering, walking forwards, backwards, or sideways.
Continence	Regulating urination	d5300	Coordinating and managing urination, such as by indicating need, getting into the proper position, choosing and getting to an appropriate place for urination, manipulating clothing before and after urination, and cleaning oneself after urination.
	Regulating defecation	d3501	Coordinating and managing defecation, such as by indicating need, getting into the proper position, choosing and getting to an appropriate place for defecation, manipulating clothing before and after defecation, and cleaning oneself after defecation
Toileting	Toileting	d530	Planning and carrying out the elimination of human waste (urination and defecation), and cleaning oneself afterwards.
Feeding	Eating	d550	Carrying out the coordinated tasks and actions of eating food that has been served, bringing it to the mouth and consuming it in culturally acceptable ways, cutting or breaking food into pieces, opening bottles and cans, using eating implements, having meals, feasting or dining.
	Drinking	d560	Taking hold of a drink, bringing it to the mouth, and consuming the drink in culturally acceptable ways, mixing, stirring and pouring liquids for drinking, opening bottles and cans, drinking through a straw or drinking running water such as from a tap or a spring.

Table 2. Items of the Lawton Scale according to the codes and definitions of the ICF.

Item according to Lawton Scale	ICF activity	ICF code	ICF definition
Telephone use	Using communication devices and techniques	d360	Using devices, techniques and other means for the purposes of communicating, such as calling a friend on the telephone.
Using transportation	Using transportation	d470	Using transportation to move around as a passenger, such as being driven in a car or on a bus, rickshaw, jitney, animal-powered vehicle, or private or public taxi, bus, train, tram, subway, boat or aircraft.
Shopping	Shopping	d6200	Obtaining, in exchange for money, goods and services required for daily living (including instructing and supervising an intermediary to do the shopping), such as selecting food, drink, cleaning materials, household items or clothing in a shop or market; comparing quality and price of the items required, negotiating and paying for selected goods or services, and transporting goods.
Preparing food	Preparing meals	d630	Planning, organising, cooking and serving simple and complex meals for oneself and others, such as by making a menu, selecting edible food and drink, getting together ingredients for preparing meals, cooking with heat and preparing cold foods and drinks, and serving the food.
Housekeeping	Doing housework	d640	Managing a household by cleaning the house, washing clothes, using household appliances, storing food and disposing of garbage, such as by sweeping, mopping, washing counters, walls and other surfaces; collecting and disposing of household garbage; tidying rooms, closets and drawers; collecting, washing, drying, folding and ironing clothes; cleaning footwear; using brooms, brushes and vacuum cleaners; using washing machines, driers and irons.
Doing laundry	Washing and drying clothes	d6400	Washing clothes and garments and hanging them out to dry in the air.
Doing handyman work	Caring for household objects	d650	Maintaining and repairing household and other personal objects, including house and contents, clothes, vehicles and assistive devices, and caring for plants and animals, such as painting or wallpapering rooms, fixing furniture, repairing plumbing, ensuring the proper working order of vehicles, watering plants, grooming and feeding pets and domestic animals.
Responsibility for own medications	Maintaining one's health	d5702	Caring for oneself by being aware of the need and doing what is required to look after one's health, both to respond to risks to health and to prevent ill-health, such as by seeking professional assistance; following medical and other health advice; and avoiding risks to health such as physical injury, communicable diseases, drug-taking and sexually transmitted diseases.
Handling finance	Basic economic transitions	d860	Engaging in any form of simple economic transaction, such as using money to purchase food or bartering, exchanging goods or services; or saving money.

ICF-definities a-ADL

Cluster of activities	Description
Sophisticated kitchen activities d6301	Advanced cooking, complex meals with a large number of ingredients, using complex methods of preparation or making dinner with several courses; baking bread, cakes
Household appliances and daily technology d6403	The use of electronically equipment inside and outside the house, including reading and understanding manuals
High level gardening d6505	To cultivate vegetables and special or rare plants
Cognitive stimulating activities or intellectual activities d166 & d9200	Playing games, reading books, etc...; to read professional literature, books and magazines in other languages, use of computer programs, use of an agenda
Craftwork and arts d6500 & d9203	Knitting, sewing, repairing clothes, reattaching buttons and fasteners; practicing arts like painting, sculpturing and others, playing music instruments
Complex economic activities or transactions d865	To be involved in some form of complex economic transactions like trading in commodities, the use of bank cards, 'money out the wall' system, PC-banking
To communicate by using devices or techniques d360	The use of cell phones, corresponding through email
Sports d9201	To be engage in informal or organized sports: group activities and sporting on your own, e.g. fishing, ride a bicycle
Transportation by motorized vehicles d475	To drive a car, motorcycle
Self development/self realization/self educational activities d9202 & d 810	To develop one self by formal or informal learning: attending a course, going to lectures, consuming arts (visiting exhibitions, musical performances)
To go on a holiday d920	Going on holiday, in an own cottage or participating in group trips
Caring for or assisting others d660 & d6506	To care for household members (mostly the partner), often by helping to handle medication, helping with bathing, dressing or assisting in transfers; or caring for (grand)children and to provide help in household tasks, to take care of pets, by feeding and cleaning them and exercising them
Caring for household objects d560	Activities like painting, wallpapering rooms, fixing furniture, plumbing in the own place or in that of others
Semi professional work d855	To work as a volunteer, engaged in non-remunerative employment and performing 'semi professional work': social jobs, administration, accountancy, often as a continuation of ones profession
Engagement in organized social live or leisure activities d910 & d9250	Active participation in organized communities or societies by taking part in meetings, being member of the board, organizing activities for others or by participating in activities organized by others, like short trips and coffee moments; to be engaged in forms of activity only for amusement or relaxation, like to go out for diner with partner, children, friends and to visit family. All activities clustered in this category encompass a social factor by doing things just for the fun of being together, socializing
	35

		MATE VAN BEPERKING 0 - 1 - 2 - 3 - 4	REDEN VAN BEPERKING					OPMERKINGEN
			INTRINSIEKE REDEN			OMGEVINGS REDEN		
ICF		0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
I-1. BIA ICF-definities								
I-2.	Brood, cakes, taarten bakken	0 - 1 - 2 - 3	Reden van beperking					
I-3.	Complexe maaltijden bereiden	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
I-4.	Nieuwe gerechten uitproberen	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
I-5.	Confituur maken		G	IP	FYS	SOC	MAT	
II GEBRUIK VAN HUISHOUDTOESTELLEN EN -TECHNOLOGIE (ICF d640)								
II-6.	Microgolfoven gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-7.	Vaatwasser gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-8.	Oven gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-9.	Koffiezet gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-10.	Keukenrobot gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-11.	Wasmachine gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-12.	Droogkast gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-13.	Radio en/of cd-speler gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-14.	(Digitale) televisie gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	
II-15.	Video en/of DVD speler gebruiken	0 - 1 - 2 - 3 - 4	COG	IP	FYS	SOC	MAT	

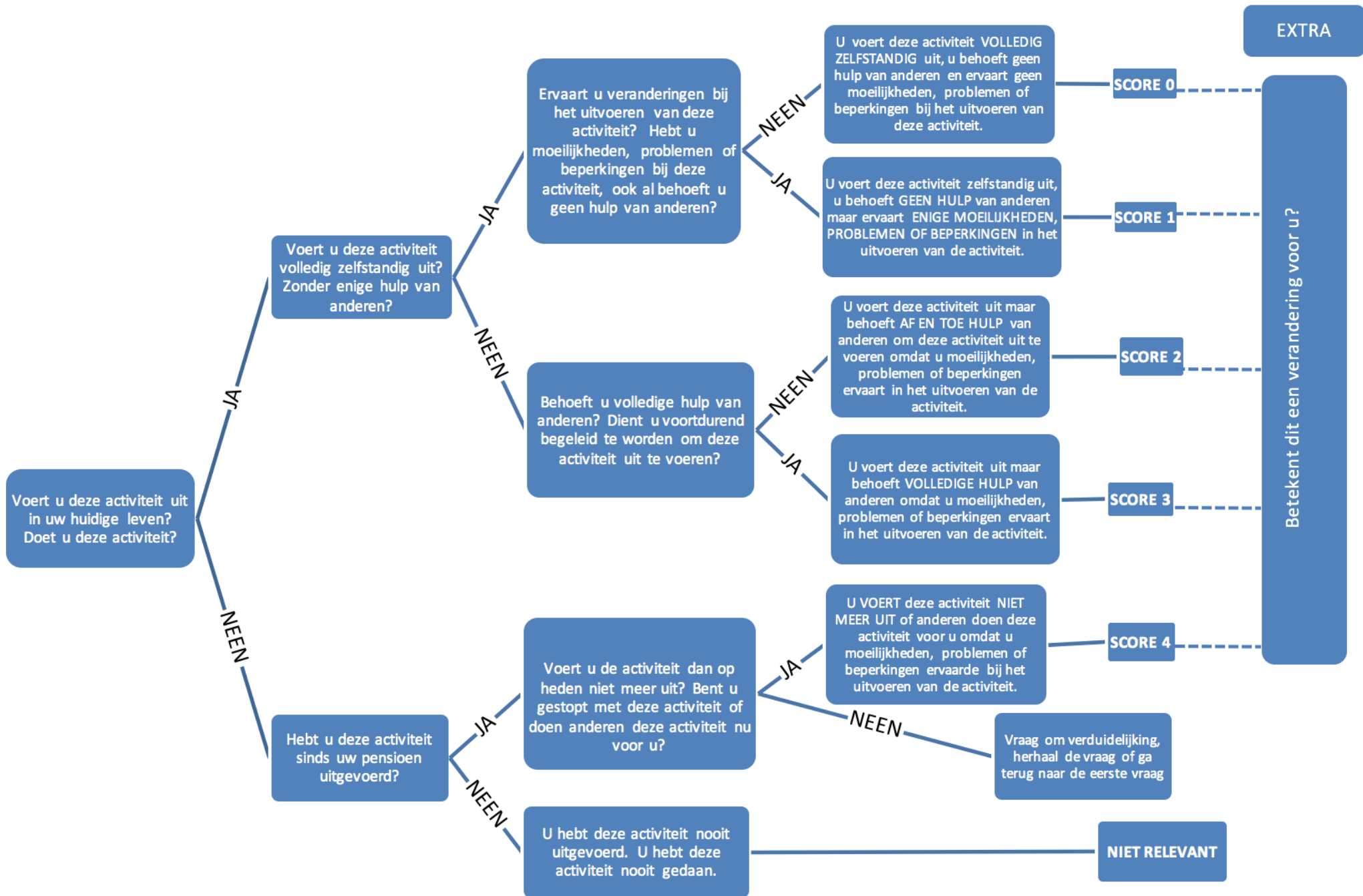
Relevantie

Mate van beperking

Verschillende indexen (%)

Indexen voor b-, i- en a ADL

- Globale afhankelijkheidsindex (global disability index = DI)
- Cognitieve afhankelijkheidsindex (cognitive disability index = CDI)
- Fysieke afhankelijkheidsindex (physical disability index = PDI)
- % afhankelijkheid
- Hoe hoger het %, hoe meer beperkingen ervaren worden (cfr ICF)



Psychometrische kenmerken BIA

Clinimetric properties		
Feasibility	Time use (n=30) Comprehensibility (n=30)	✓
Content validity	Prevalence of the a-ADL items (n=68) B-ADL = Katz; i-ADL = Lawton (n=150)	✓
Reliability of the scoring system	Distribution of the scores among groups (n=68) Inter rater agreement/reliability (n=28) Agreement patient/proxy (n=24)	✓
Construct validity	Hypothesis correlations with other measures (n=68; n=150) Expected differences between groups (n=68; n=150)	✓
Discriminative validity	Sensitivity and specificity (n=157; n=150) Positive and negative predicative values (n=157; n=150)	✓



© Can Stock Photo

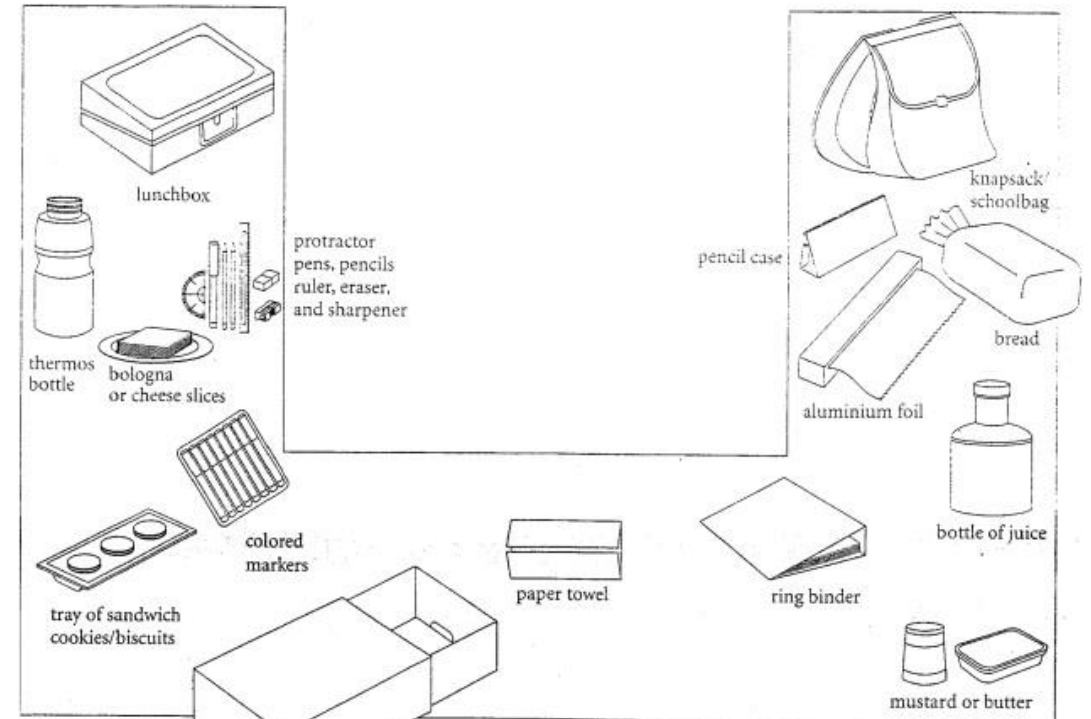
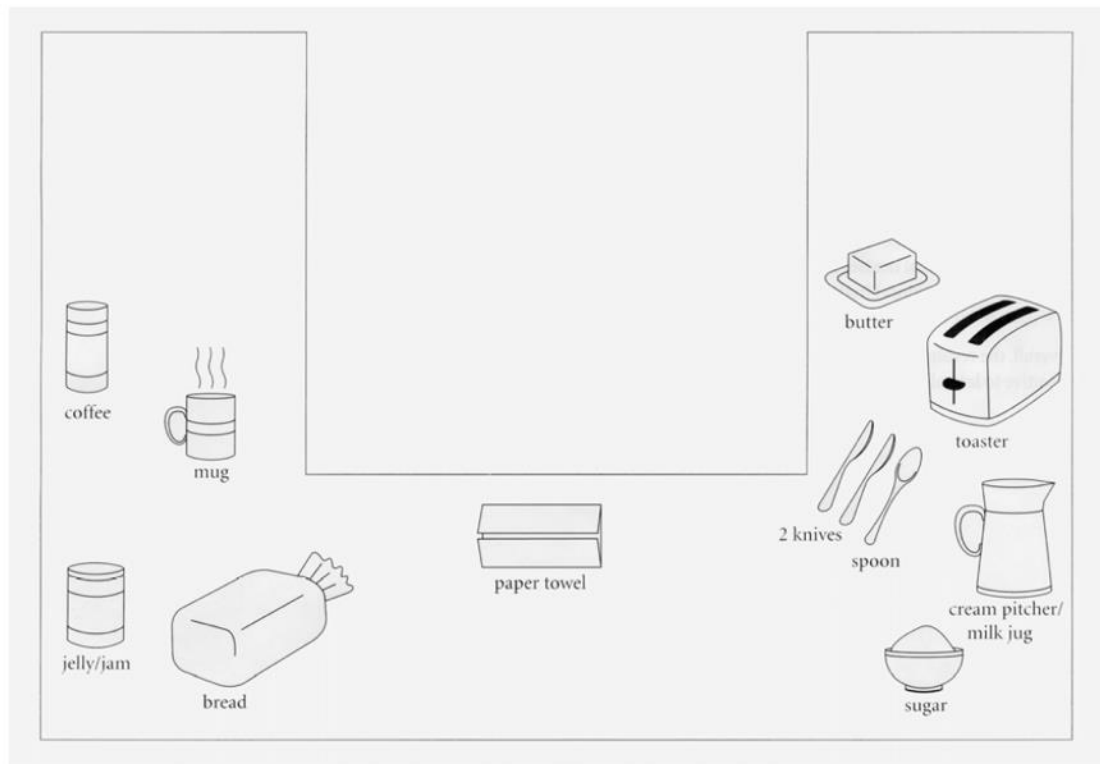
Performance/occupation based of report based?



Accepted for publication

Naturalistic Action Test (NAT)

Table layout for Task 1 (Toast and Coffee)



drawer containing:
envelope#, spoon,
2 knives, fork,
miscellaneous coupons#,
spatula, retractable tape
measure#, thread spool/
cotton reel#, screwdriver#,
toothbrush#, ice tongs#,
thermos lid, thermos cup

Items marked # may be
replaced with other small
manipulative objects, if
necessary.

bell to be attached to
under side of table

Meerwaarde van NAT: errors in performance

Table 1. NAT comprehensive error score categories [19, 20]

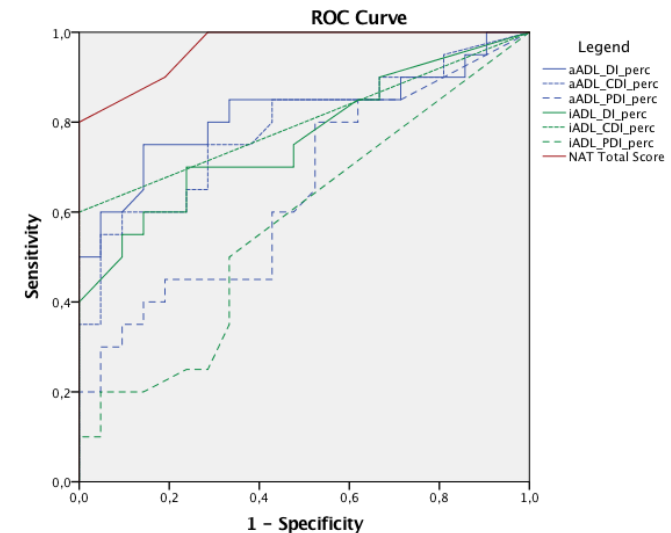
Error category	Definitions	Examples from toast and coffee (item 1) and present (item 2) tasks
Omission	a step or subtask is not performed	does not add sugar to coffee
Substitution	semantically related or perceptually similar alternate object used in place of target object	spreads butter on toast with spoon instead of knife
Anticipation-omission	anticipation of a step which entails a subsequent omission (anticipation-omission), steps or subtasks are performed in reverse order (reversal)	applies butter on bread, without first toasting bread; applies jelly on bread, then applies butter
Perseveration	a step or subtask is performed more than once; an action is performed repetitively or for an excessive amount of time	toasts multiple slices of bread
Quality	task performance is grossly inadequate	pours too much cream into coffee so that the cup overflows
Gesture substitution	correct object is used, but with an inappropriate gesture	grasps knife incorrectly
Spatial misorientation	object is misoriented relative to the hand/body or another object	misorients wrapping paper with respect to the gift
Spatial misestimation	the spatial relationship between objects is incorrect	cuts too small a piece of wrapping paper
Tool omission	action is performed without a tool/implement	rips wrapping paper (i.e. does not use scissors)
Action-addition	performance of an action not readily interpreted as a task step	eats toast; puts tape on garden shears

Commission*

* Commission errors entail task steps that are performed inaccurately. However, in the case of commissions, the steps are easily identified as relevant to the task and necessary to achieve the task objective.

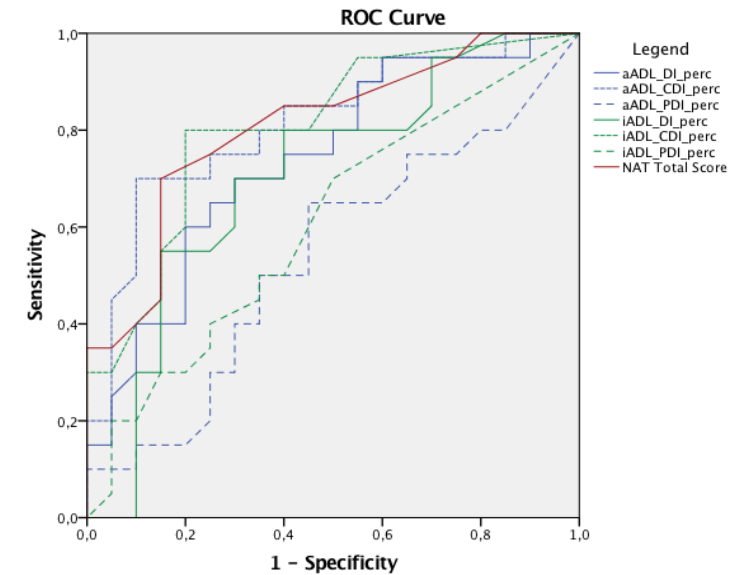
Concurrent validity between the NAT, a-ADL tool and i-ADL evaluation.

HC versus MCI			
	AUC	95% CI	P-value ^a
NAT Total Score	0.967	0.922 – 1.000	
NAT Task 1	0.771	0.620 - 0.923	
NAT Task 2	0.838	0.717 – 0.960	
NAT Task 3	0.873	0.761 - 0.984	
a-ADL-DI	0.820	0.682 - 0.959	0.2101
a-ADL-CDI	0.785	0.641 – 0.929	0.1633
a-ADL-PDI	0.646	0.476 - 0.817	0.0002
i-ADL-DI	0.764	0.615 – 0.913	0.0588
i-ADL-CDI	0.800	0.656 – 0.944	0.3173
i-ADL-PDI	0.571	0.394 – 0.749	0.0001



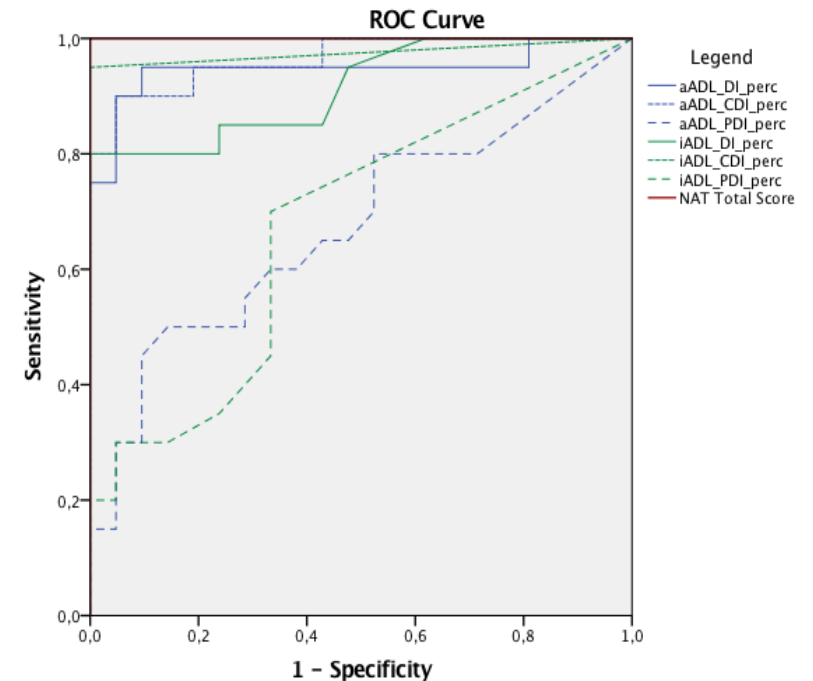
Concurrent validity between the NAT, a-ADL tool and i-ADL evaluation.

MCI versus AD			
	AUC	95% CI	P-value ^a
NAT Total Score	0.809	0.674 – 0.944	
NAT Task 1	0.753	0.600 – 0.905	
NAT Task 2	0.613	0.436 – 0.789	
NAT Task 3	0.813	0.673 – 0.952	
a-ADL-DI	0.739	0.584 - 0.893	0.4248
a-ADL-CDI	0.814	0.679 - 0.949	0.0624
a-ADL-PDI	0.539	0.357 – 0.721	0.0221
i-ADL-DI	0.705	0.538 – 0.872	0.2916
i-ADL-CDI	0.808	0.672 - 0.943	0.9895
i-ADL-PDI	0.608	0.431 – 0.784	0.0732



Concurrent validity between the NAT, a-ADL tool and i-ADL evaluation.

HC versus AD			
	AUC	95% CI	P-value ^a
NAT Total Score	1.000	1.000 – 1.000	
NAT Task 1	0.952	0.880 – 1.000	
NAT Task 2	0.870	0.763 – 0.978	
NAT Task 3	0.955	0.886 – 1.000	
a-ADL-DI	0.948	0.867 – 1.000	0.2101
a-ADL-CDI	0.964	0.913 – 1.000	0.1633
a-ADL-PDI	0.674	0.505 - 0.842	0.0002
i-ADL-DI	0.915	0.828 – 1.000	0.0588
i-ADL-CDI	0.975	0.918 – 1.000	0.3173
i-ADL-PDI	0.674	0.507 - 0.841	0.0001



VAN OVERSCHELDE ET AL, 2019 (N=15)

Patiënt	Diagnose	COTESS	CPT	MMSE	b-ADL- DI	b-ADL- CDI	i-ADL- DI	i-ADL- CDI	a-ADL- DI	a-ADL- CDI
1	DEM	X	X		X	X	X	X	X	X
2	DEM	X	X	X	X	X	X	X	X	X
3	MCI	X			X		X		X	
4	DEM	X	X	X			X	X	X	X
5	DEM	X	X	X	X	X	X	X	X	X
6	MCI	X	X							X
7	DEM	X		X						X
8	DEM	X	X		X	X	X	X		X
9	MCI	X	X	X				X		
10	GEZ	X		X		X		X		X
11	DEM	X	X	X					X	X
12	MCI	X	X		X			X	X	X
13	DEM	X	X	X	X	X	X	X		X
14	GEZ	X		X		X	X		X	X
15	MCI	X					X	X	X	X
Juiste	Indicatie:	15/15	10/15	9/15	7 /15	7 /15	9 /15	10/15	9/15	13/15

LEASUS

Mevrouw Pauwels (79j) meldt zich samen met haar echtgenoot aan op het geriatriesch dagziekenhuis naar aanleiding van haar subjectieve geheugenklachten



- moeite met het zich herinneren van recente informatie
- kan niet profiteren van aanwijzingen
- heeft een zwakke leercurve
- oriëntatie in ruimte, tijd, persoon en taal blijven intact.

ADL – kwalitatieve beschrijving



- autonoom voor basale-ADL
- op niveau van i-ADL discrete beperkingen (kleine klusjes, geldbeheer)
- milde procesmatige handelingsstoornissen en moeite met complexe activiteiten zoals een vergadering volgen, bijeenkomsten organiseren en nieuwe recepten uitproberen, te blijven uitvoeren, wat ze vroeger wel frequent deed.
- regelmatig hulp van anderen nodig of maakt fouten.

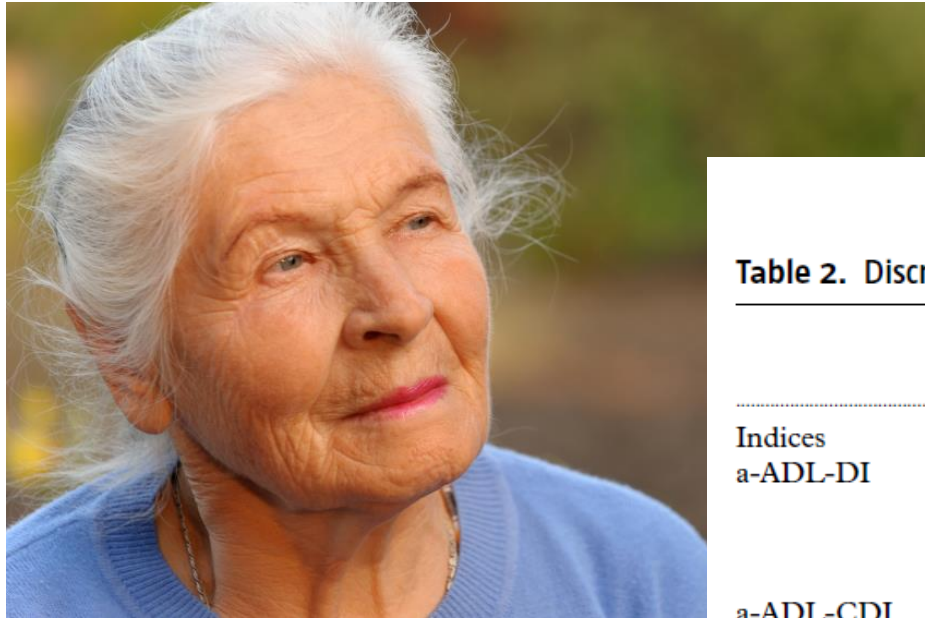
ADL – in cijfers



- b-ADL:
 - b-ADL-DI: 0%,
 - b-ADL-CDI: 0%
 - b-ADL-PDI: 0%
- i-ADL:
 - i-ADL-DI: 9,2%,
 - i-ADL-CDI: 4,1%
 - i-ADL-PDI: 0%
- a-ADL:
 - a-ADL-DI: 21,4%,
 - a-ADL-CDI: 14,7%
 - a-ADL-PDI: 5,2%

Normwaarden a-ADL

a-ADL-DI: 21,4%
 a-ADL-CDI: 14,7%
 a-ADL-PDI: 5,2%



a-ADL evaluation in MCI 1425

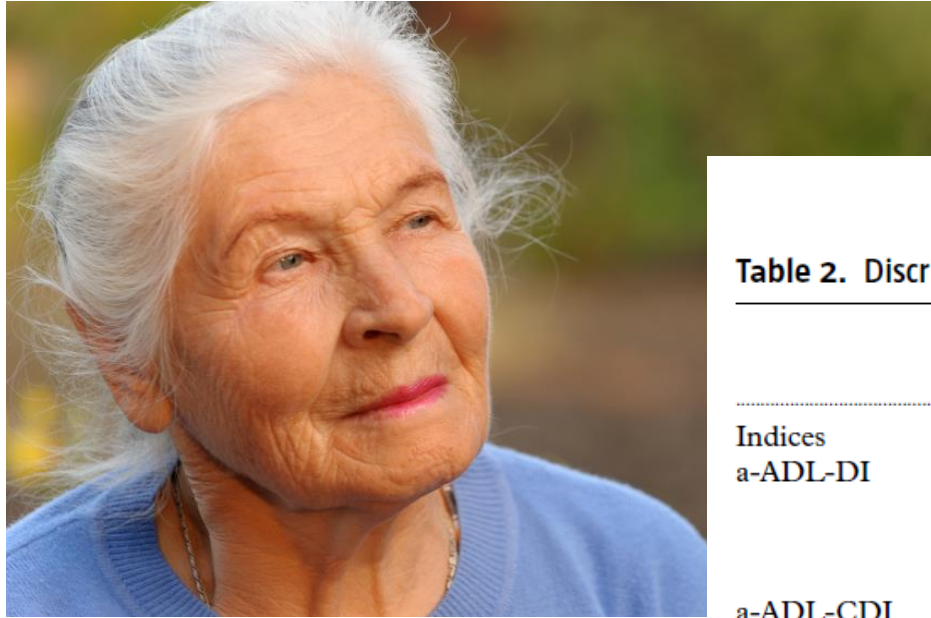
Table 2. Discriminative validity of the a-ADL indices between controls, patients with MCI and AD

	GROUPS	OPTIMAL CUT-OFF	SENSITIVITY	SPECIFICITY	AUC	PPV	NPV
Indices							
a-ADL-DI	C vs. MCI	27.2	75%	80.0%	0.814	79.3%	75.7%
	MCI vs. AD	47.9	71.2%	70.8%	0.802	72.4%	62.6%
a-ADL-CDI	C vs. AD	36.2	94.2%	90.0%	0.949	90.4%	94.2%
	C vs. MCI	14.1	75%	70.0%	0.791	69.4%	75.7%
a-ADL-PDI	MCI vs. AD	27.4	80.8%	70.8%	0.804	72.4%	79.6%
	C vs. AD	22.5	86.5%	94.0%	0.960	94.2%	86.0%
	C vs. MCI	6.1	60.4%	6.0%	0.600	54.5%	61.3%
	MCI vs. AD	9.3	61.5%	64.2%	0.580	65.2%	59.6%
	C vs. AD	7.1	67.3%	72.0%	0.666	72.8%	66.4%

C: controls; MCI: mild cognitive impairment; AD: Alzheimer's disease; a-ADL-DI: advanced activities of daily living Disability Index; a-ADL-CDI: advanced activities of daily living Cognitive Disability Index; a-ADL-PDI: advanced activities of daily living-Physical Disability Index; AUC: area under the curve; PPV: positive predictive value; NPV: negative predictive value.

Normwaarden a-ADL

a-ADL-DI: 21,4%
 a-ADL-CDI: 14,7%
 a-ADL-PDI: 5,2%



a-ADL evaluation in MCI 1425

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Normwaarden i-ADL



i-ADL:
i-ADL-DI: 9,2%,
i-ADL-CDI: 4,1%,
i-ADL-PDI: 0%).

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
<u>i-ADL-DI</u>	<u>Gezond vs. MCI</u>	17.2%	80.8%	84.8%	0.858
	MCI vs. AD	44.1%	70.4%	74.3%	0.736
	<u>Gezond vs. AD</u>	30.5%	90.1%	96.2%	0.968
<u>i-ADL-CDI</u>	<u>Gezond vs. MCI</u>	3.8%	80.8%	91.1%	0.895
	MCI vs. AD	23.6%	74.6%	70.3%	0.805
	<u>Gezond vs. AD</u>	10.5%	93.0%	97.5%	0.990
<u>i-ADL-PDI</u>	<u>Gezond vs. MCI</u>	7.7%	65.8%	67.1%	0.724
	MCI vs. AD	8.8%	66.2%	41.1%	0.546
	<u>Gezond vs. AD</u>	7.7%	71.8%	67.1%	0.774

Normwaarden i-ADL



i-ADL:
 i-ADL-DI: 9,2%,
 i-ADL-CDI: 4,1%,
 i-ADL-PDI: 0%).

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
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	<u>Gezond vs. AD</u>	7.7%	71.8%	67.1%	0.774

Normwaarden b-ADL



b-ADL:
 b-ADL-DI: 0%,
 b-ADL-CDI: 0%,
 b-ADL-PDI: 0%.

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
b-ADL-DI	<u>Gezond vs. MCI</u>	6.2%	53.4%	89.6%	0.736
	MCI vs. AD	18.3%	46.5%	80.8%	0.631
	<u>Gezond vs. AD</u>	10.4%	60.6%	93.7%	0.828
b-ADL-CDI	<u>Gezond vs. MCI</u>	2.1%	13.7%	100%	0.568
	MCI vs. AD	6.2%	36.6%	87.7%	0.648
	<u>Gezond vs. AD</u>	2.1%	43.7%	100%	0.718
b-ADL-PDI	<u>Gezond vs. MCI</u>	2.1%	58.9%	77.2%	0.711
	MCI vs. AD	10.4%	45.1%	64.4%	0.555
	<u>Gezond vs. AD</u>	10.4%	45.1%	94.0%	0.748

Normwaarden B-ADL



b-ADL:
 b-ADL-DI: 0%,
 b-ADL-CDI: 0%,
 b-ADL-PDI: 0%.

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
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	MCI vs. AD	10.4%	45.1%	64.4%	0.555
	<u>Gezond vs. AD</u>	10.4%	45.1%	94.0%	0.748

Besluit op basis van multidisciplinair overleg



- Cognitieve testen wijzen in dezelfde richting als ADL evaluatie
- Voorlopig diagnose amnestische MCI
- Follow up na zes maanden

Mevrouw Pauwels komt na zes maanden terug op het geriatrisch dagziekenhuis



- discrete achteruitgang maar volgens de diagnostische criteria voldoet mevrouw nog steeds aan a-MCI
- actueel nog geen diagnose van dementie door de ziekte van Alzheimer gesteld.
- Opnieuw wordt een opvolging gepland.

Mevrouw Pauwels komt opnieuw na zes maanden terug op het geriatrisch dagziekenhuis, ondertussen al één jaar na eerste aanmelding



- Een opvallende achteruitgang
- Matig georiënteerd in tijd
- Problemen met alle geheugentaken
- Stagnerende leercurve
- Moeite met de uitgestelde herinnering van recent opgeslagen informatie
- Taalfuncties matig
- Uitval op lexicale vlotheid
- Perceptuele vaardigheden en visuoconstructieve praxis matig
- Inprenting, aandacht en oriëntatie in ruimte goed bewaard

Mevrouw Pauwels komt opnieuw na zes maanden terug op het geriatrisch dagziekenhuis, ondertussen al één jaar na eerste aanmelding



- Toename van procesmatige handelingsstoornissen
- b-ADL autonoom
- i-ADL hulp bij maaltijden bereiden, zelfstandig huishoudelijke taken organiseren is moeilijk, toezicht nodig bij inname van medicatie, geldbeheer volledig overgenomen door haar echtgenoot
- a-ADL: moeite met continueren van activiteiten, hulp nodig bij gebruik van toestellen zoals een microgolfoven en de afstandsbediening van de tv
- ‘trial-and-error’ strategie
- vertraagd handelen

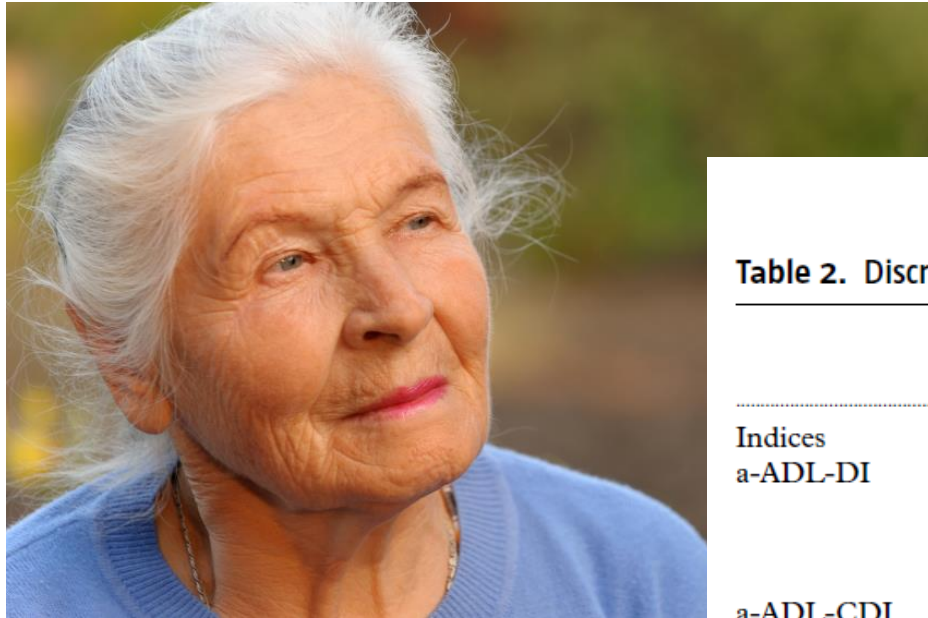
Eén jaar na eerste aanmelding: ADL in cijfers



- b-ADL:
 - b-ADL-DI: 0%,
 - b-ADL-CDI: 0%,
 - b-ADL-PDI: 0%
- i-ADL:
 - i-ADL-DI: 32,3%,
 - i-ADL-CDI: 28,4%,
 - i-ADL-PDI: 3,2%
- a-ADL:
 - a-ADL-DI: 62,2%,
 - a-ADL-CDI: 43,4%,
 - a-ADL-PDI: 5,2%.

Normwaarden a-ADL

a-ADL-DI: 62,2%
 a-ADL-CDI: 43,4%
 a-ADL-PDI: 5,2%



a-ADL evaluation in MCI 1425

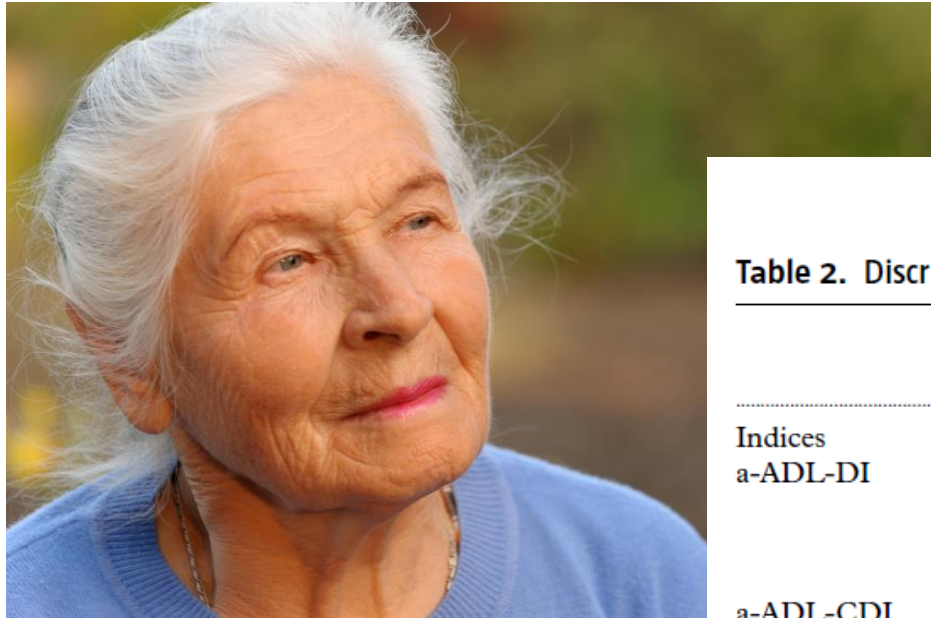
Table 2. Discriminative validity of the a-ADL indices between controls, patients with MCI and AD

	GROUPS	OPTIMAL CUT-OFF	SENSITIVITY	SPECIFICITY	AUC	PPV	NPV
Indices							
a-ADL-DI	C vs. MCI	27.2	75%	80.0%	0.814	79.3%	75.7%
	MCI vs. AD	47.9	71.2%	70.8%	0.802	72.4%	62.6%
a-ADL-CDI	C vs. AD	36.2	94.2%	90.0%	0.949	90.4%	94.2%
	C vs. MCI	14.1	75%	70.0%	0.791	69.4%	75.7%
a-ADL-PDI	MCI vs. AD	27.4	80.8%	70.8%	0.804	72.4%	79.6%
	C vs. AD	22.5	86.5%	94.0%	0.960	94.2%	86.0%
	C vs. MCI	6.1	60.4%	6.0%	0.600	54.5%	61.3%
	MCI vs. AD	9.3	61.5%	64.2%	0.580	65.2%	59.6%
	C vs. AD	7.1	67.3%	72.0%	0.666	72.8%	66.4%

C: controls; MCI: mild cognitive impairment; AD: Alzheimer's disease; a-ADL-DI: advanced activities of daily living Disability Index; a-ADL-CDI: advanced activities of daily living Cognitive Disability Index; a-ADL-PDI: advanced activities of daily living-Physical Disability Index; AUC: area under the curve; PPV: positive predictive value; NPV: negative predictive value.

Normwaarden a-ADL

a-ADL-DI: 62,2%
 a-ADL-CDI: 43,4%
 a-ADL-PDI: 5,2%



a-ADL evaluation in MCI 1425

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Normwaarden i-ADL



i-ADL:
 i-ADL-DI: 32,3%,
 i-ADL-CDI: 28,4%,
 i-ADL-PDI: 3,2%

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
<u>i-ADL-DI</u>	<u>Gezond vs. MCI</u>	17.2%	80.8%	84.8%	0.858
	MCI vs. AD	44.1%	70.4%	74.3%	0.736
	<u>Gezond vs. AD</u>	30.5%	90.1%	96.2%	0.968
<u>i-ADL-CDI</u>	<u>Gezond vs. MCI</u>	3.8%	80.8%	91.1%	0.895
	MCI vs. AD	23.6%	74.6%	70.3%	0.805
	<u>Gezond vs. AD</u>	10.5%	93.0%	97.5%	0.990
<u>i-ADL-PDI</u>	<u>Gezond vs. MCI</u>	7.7%	65.8%	67.1%	0.724
	MCI vs. AD	8.8%	66.2%	41.1%	0.546
	<u>Gezond vs. AD</u>	7.7%	71.8%	67.1%	0.774

Normwaarden i-ADL



i-ADL:
 i-ADL-DI: 32,3%,
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Normwaarden b-ADL



b-ADL:
 b-ADL-DI: 0%,
 b-ADL-CDI: 0%,
 b-ADL-PDI: 0%.

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
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Normwaarden b-ADL



b-ADL:
 b-ADL-DI: 0%,
 b-ADL-CDI: 0%,
 b-ADL-PDI: 0%.

<u>Indexen</u>	<u>Groepen</u>	<u>Optimale cut off</u>	<u>Sensitiviteit</u>	<u>Specificiteit</u>	<u>AUC</u>
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Mevrouw Pauwels komt opnieuw na zes maanden terug op het geriatrisch dagziekenhuis, ondertussen al één jaar na eerste aanmelding

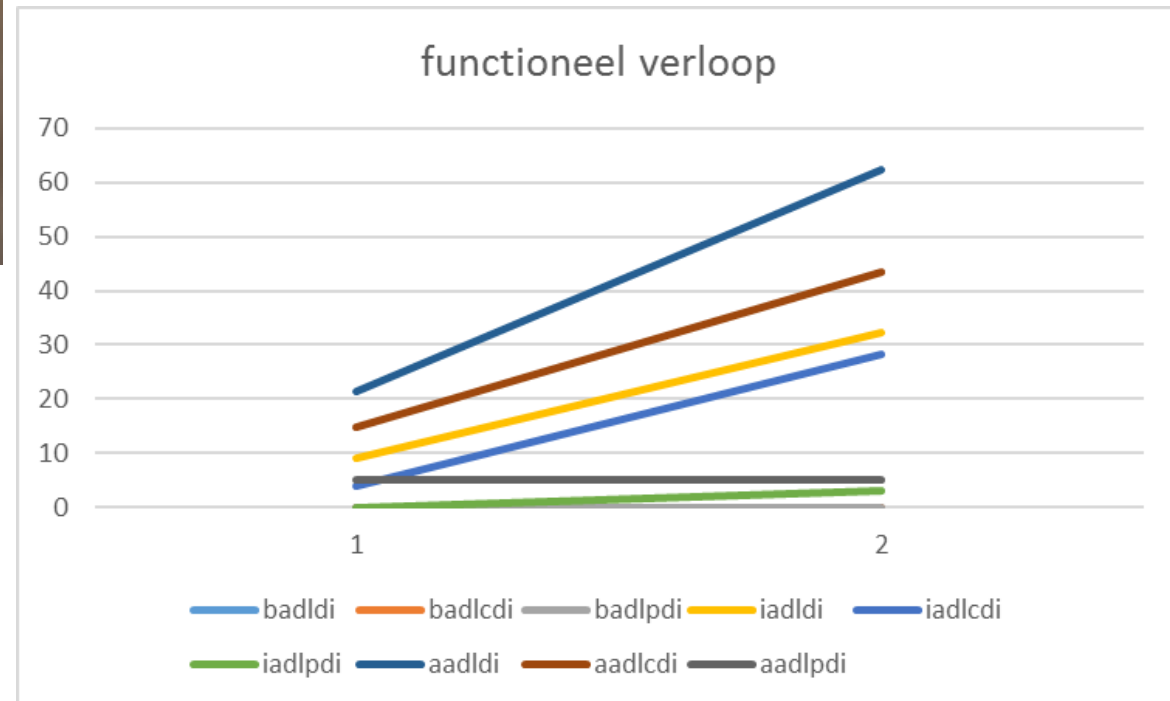


- Diagnose nu wél vermoeden beginnende Alzheimer Dementie

Verloop ADL



Pauwels	T1	T2
B-adl di	0	0
B-adl cdi	0	0
B-adl pdi	0	0
i-adl di	9,2	32,3
i-adl cdi	4,1	28,4
i-adl pdi	0	3,2
A-adl di	21,4	62,2
A-adl cdi	14,7	43,4
A-adl pdi	5,2	5,2



Anderere toepassingen

Goal oriented care



CLEVER
DOELEN BEPALEN IN DE EERSTE LIJN
artevelde hogeschool

Betekenisvolle activiteiten
als sleutel in de doelgerichte zorg

Prof. dr. Dominique Van de Velde,
mevr. Vanessa Gauwe,
Prof. dr. Patricia De Vriendt

Mag ik u voorstellen aan



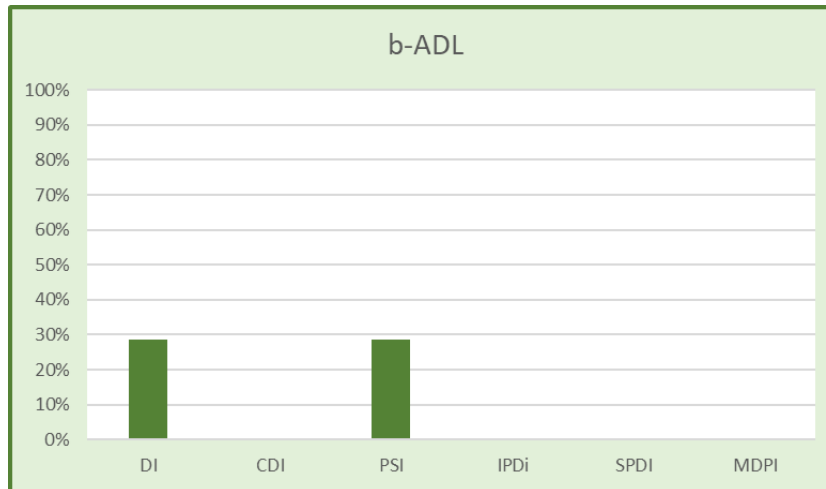
- Marie
- Antoinette

Resultaten: Zelfzorg (b-ADL)

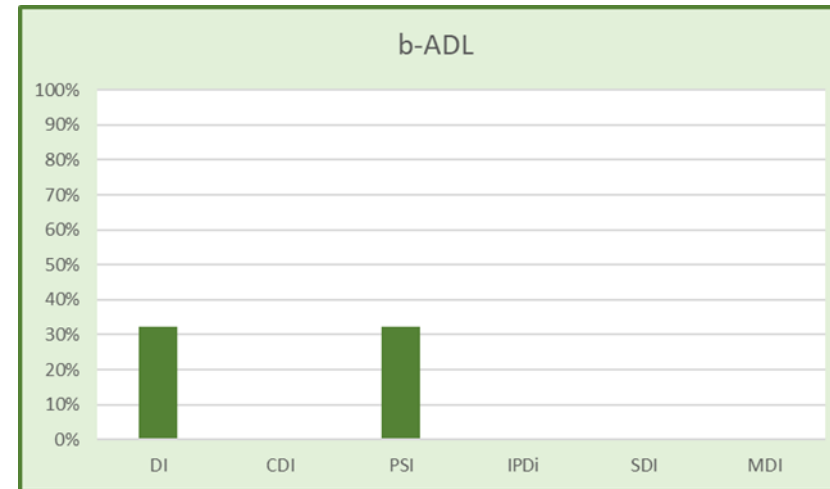
gegevens	Antoinette	Interpretatie ICF	Marie	Interpretatie ICF
b-ADL				
Aantal activiteiten	7		7	
Aantal activiteiten met beperking	5		4	
Globale afhankelijkheidsindex	32%	Matige beperking	29%	Matige beperking
Cognitieve index	0%		0%	
Fysieke index	32%		29%	
Intrapersoonlijke index	/		/	
Sociale index	/		/	
Materiele index	/		/	

Resultaten: b-ADL

Antoinette



Marie

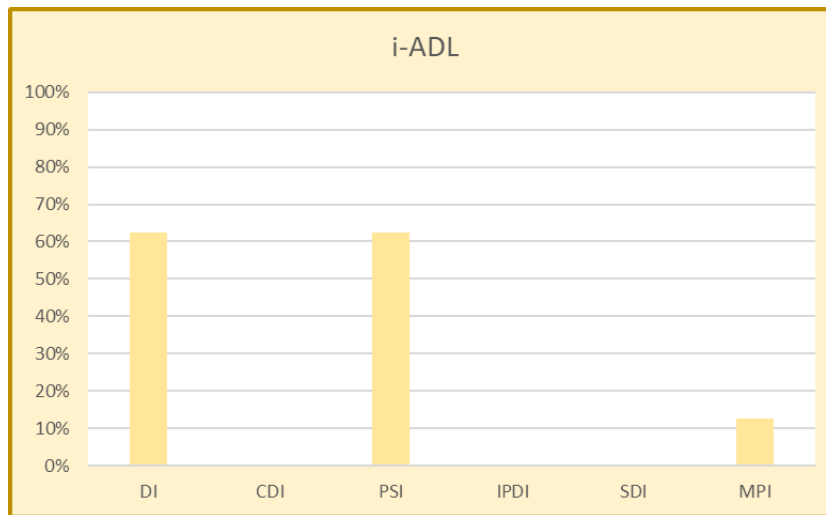


Resultaten: Instrumentele activiteiten (i-ADL)

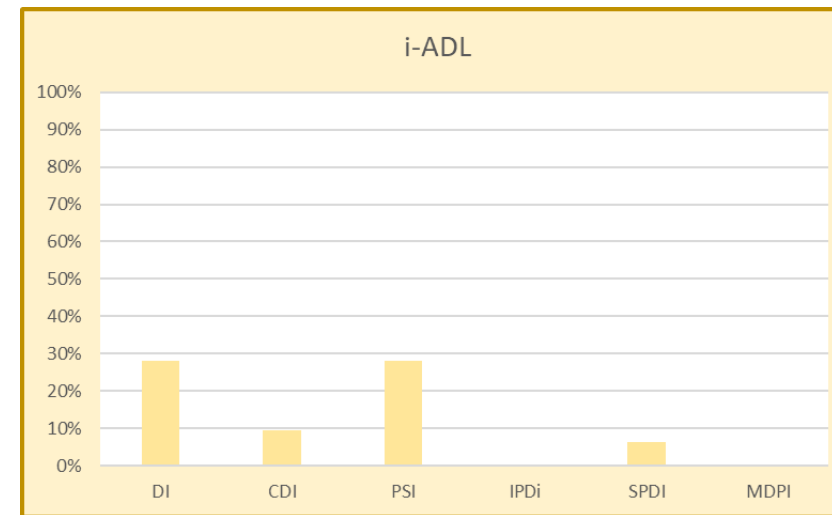
gegevens	Antoinette	Interpretatie ICF	Marie	Interpretatie ICF
i-ADL				
Aantal activiteiten	8		8	
Aantal activiteiten met beperking	7		5	
Globale afhankelijkheidsindex	65%	Ernstige beperking	28%	Matige beperking
Cognitieve index	0		9%	
Fysieke index	63%		28%	
Intrapersoonlijke index	0%		0%	
Sociale index	0%		6%	
Materiele index	13%		0%	

Resultaten i-ADL

Antoinette



Marie

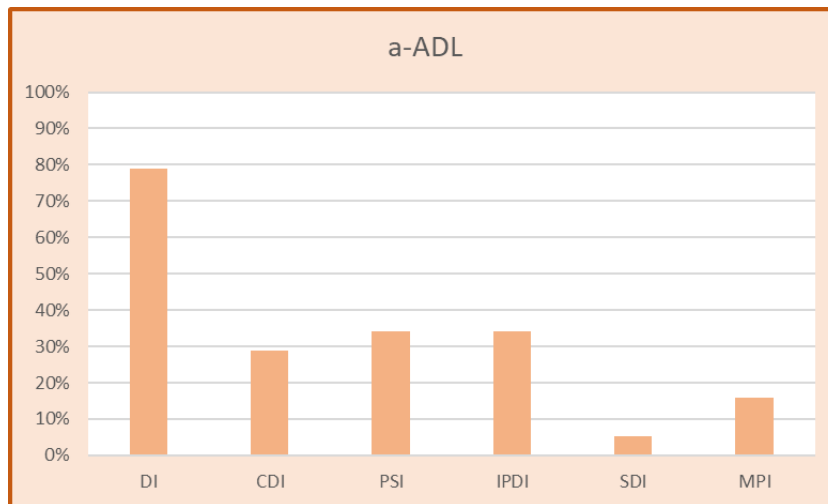


Resultaten: Geavanceerde (a-) ADL

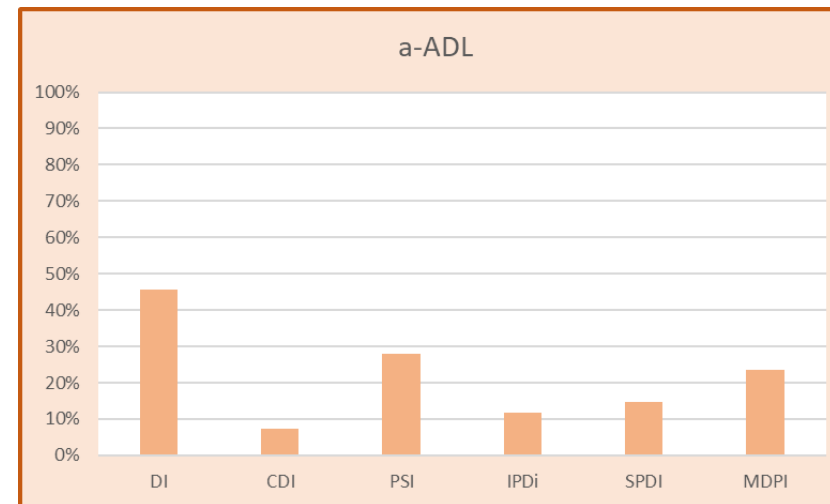
gegevens	Antoinette	Interpretatie ICF	Marie	Interpretatie ICF
a-ADL				
Aantal activiteiten	19		17	
Aantal activiteiten met beperking	17		10	
Globale afhankelijkheidsindex	79%	Ernstige beperking	46%	Matige beperking
Cognitieve index	29%		7%	
Fysieke index	34%		28%	
Intrapersoonlijke index	35%		12%	
Sociale index	5%		15%	
Materiele index	16%		24%	

Resultaten a-ADL

Antoinette



Marie



Prioriteiten Marie + ICF codes

b-ADL

- Wassen – d510
- Aankleden – d540

i-ADL

- Naar buiten gaan – d470
- Boodschappen doen – d6200

a-ADL

- Zingen – d9202
- Tekenen – d9203
- Schilderen – d9203
- Cafe/restaurantbezoek – d910
- Breien – d9203

Prioriteiten Marie + ICF codes

b-ADL

- Wassen – d510
- Aankleden – d540

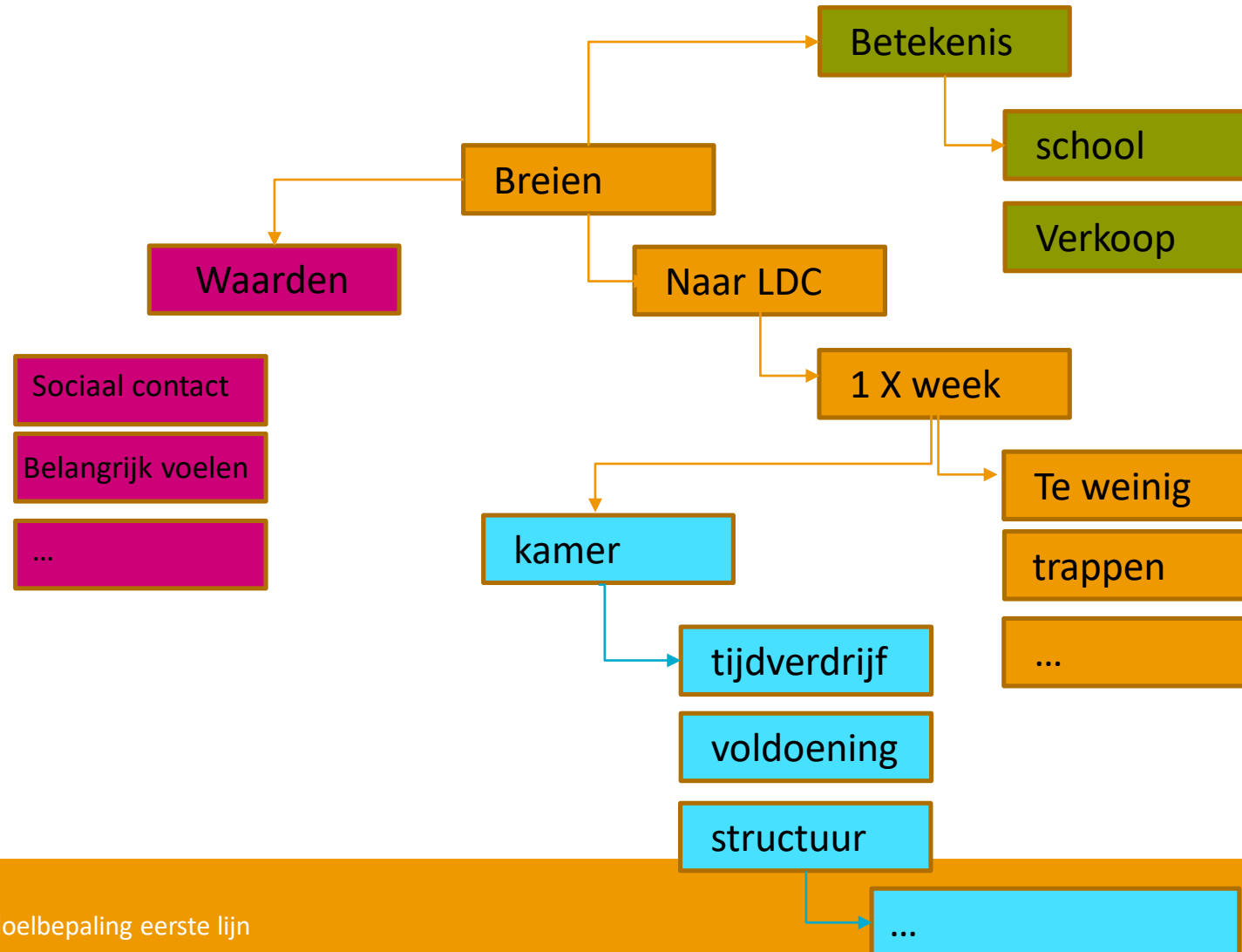
i-ADL

- Naar buiten gaan – d470
- Boodschappen doen – d6200

a-ADL

- Zingen – d9202
- Tekenen – d9203
- Schilderen – d9203
- Cafe/restaurantbezoek – d910
- Breien – d9203

Breien voor Marie



Het eerste Doel van Marie

C	Ik woon alleen in mijn appartement (boven het LDC). Ik kan daar goed mijn plan trekken, maar ik wil blijven breien. Ik kan dat alleen, maar iemand moet mijn wol gaan halen naar de winkel en ik wil naar beneden kunnen met mijn rollator (lift nemen)
L	Breien is voor mij altijd belangrijk geweest, ik heb dat geleerd in mijn opleiding huishoudkunde (ik ben geboren op een schip in Hoboken),
E	Als ik dit doe op mijn kamer is het vooral om mijn tijd te passeren, maar ik wil dit ook doen in het LDC in het breigroepje (met 7 mensen). Ik wil mij daarvoor engageren en wil naar de vergadering gaan van het LDC (maar ik kan niet, door verzorging)
V	Het geeft mij veel voldoening omdat ze de sjaal verkopen in het LDC. Jammer dat er niet meer momenten zijn om dit te doen in groep, want dan heb ik ook meer sociale contacten. Ik wil onder de mensen komen, erbij horen en wil mij gewaardeerd voelen.
E	Dit doel is samen met Marie opgebouwd en ze heeft dit bevestigd: neem mijn brei af en ik leef niet meer.
R	Het is een zeer relevante activiteit en realistisch om aan te werken met verschillende disciplines.



Vragen later?

Opleiding

Management, Zorg en Beleid in de Gerontologie

www.vub.ac.be/GERO

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