ECHO Ontario: Care of the Elderly

Dementia

David Conn - Baycrest & U. of Toronto

Sept. 2019

Baycrest

North East Specialized Geriatric Centre
Centre gériatrique spécialisé du Nord-Est

Faculty/Presenter Disclosure

- **Faculty: David Conn**
- **Relationships with commercial interests:**
  - Grants/Research Support: **None**
  - Speakers Bureau/Honoraria: **None**
  - Consulting Fees: **None**

Disclosure of Commercial Support

- This program has **NOT** received financial support other than the support of the MOHLTC
- This program has **NOT** received in-kind support
- Potential for conflict(s) of interest:

  None to be disclosed

Mitigating Potential Bias

The information presented in this CME program is based on recent information that is explicitly “evidence-based”.

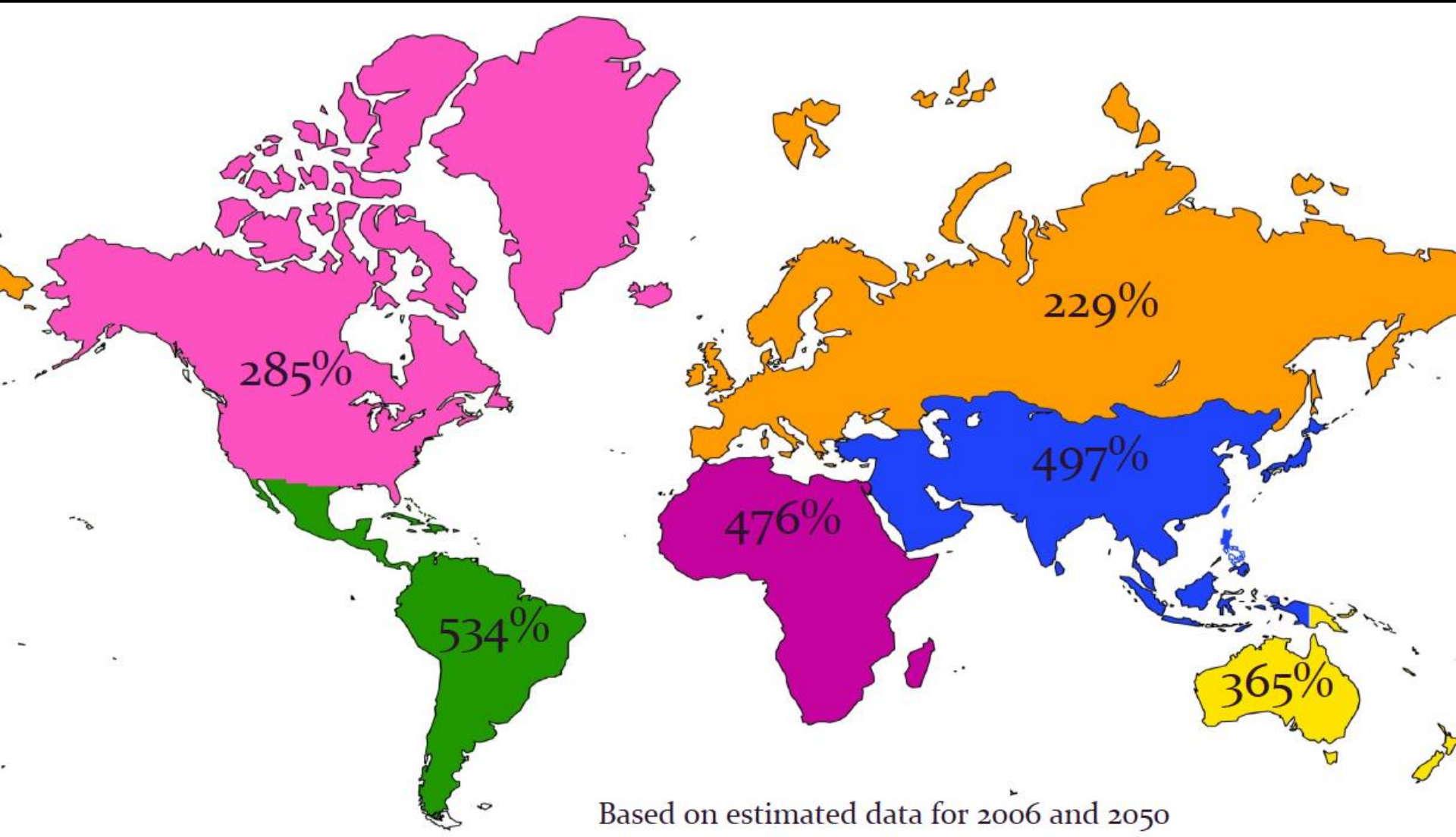
This CME Program and its material is peer reviewed and all the recommendations involving clinical medicine are based on evidence that is accepted within the profession; and all scientific research referred to, reported, or used in the CME/CPD activity in support or justification of patient care recommendations conforms to the generally accepted standards

Learning Objectives

By the end of the session participants will:

- Be aware of some Risk Factors for Dementia
- Be able to select appropriate screening tools and outline the assessment process
- Be able to describe the common subtypes of dementia
- (Responsive behaviours discussed in another session)

Predicted Increase in Alzheimer's Disease Prevalence by 2050



Ziegler-Graham K et al. Alzheimer's & Dememtia 2007;3(Suppl):S168–9

- Dementia
  - an acquired syndrome consisting of a decline in memory and other cognitive functions

DSM-5 Diagnosis: Major Neurocognitive Disorder

- Significant cognitive decline in one or more domain
- Deficits sufficient to interfere with independence
- Not delirium or attributable to another mental disorder
- NOTE: MCI is termed Mild Neurocognitive Disorder in DSM-5

ELSEVIER

Alzheimer's & Dementia 7 (2011) 263–269

Alzheimer's & Dementia

The diagnosis of dementia due to Alzheimer's disease: Recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease

Proposed: Probable AD, Possible AD or AD <u>with evidence of pathophysiological process.</u>

Also MCI due to AD & Preclinical AD

Alzheimer's & Dementia 11 (2015) 718-726

Summary of the evidence on modifiable risk factors for cognitive decline and dementia: A population-based perspective

Matthew Baumgart[a], Heather M. Snyder[b,*], Maria C. Carrillo[b], Sam Fazio[c], Hye Kim[a], Harry Johns[d]

[a]*Division of Public Policy, Alzheimer's Association, Washington, DC, USA*
[b]*Division of Medical & Scientific Relations, Alzheimer's Association, Chicago, IL, USA*
[c]*Division of Constituent Relations, Alzheimer's Association, Chicago, IL, USA*
[d]*President & CEO, Alzheimer's Association, Chicago, IL, USA*

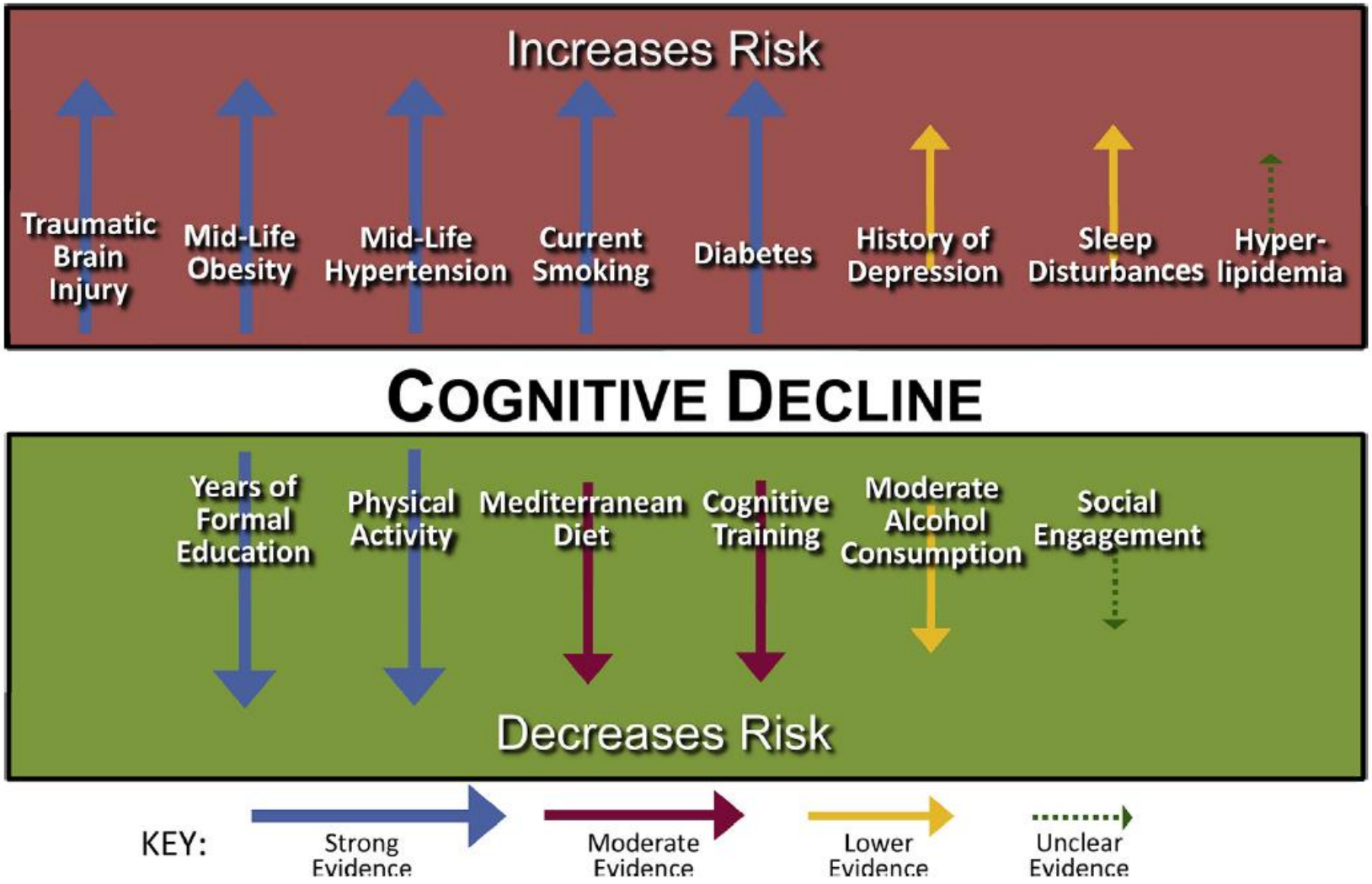


Fig. 1. Strength of evidence on risk factors for cognitive decline.

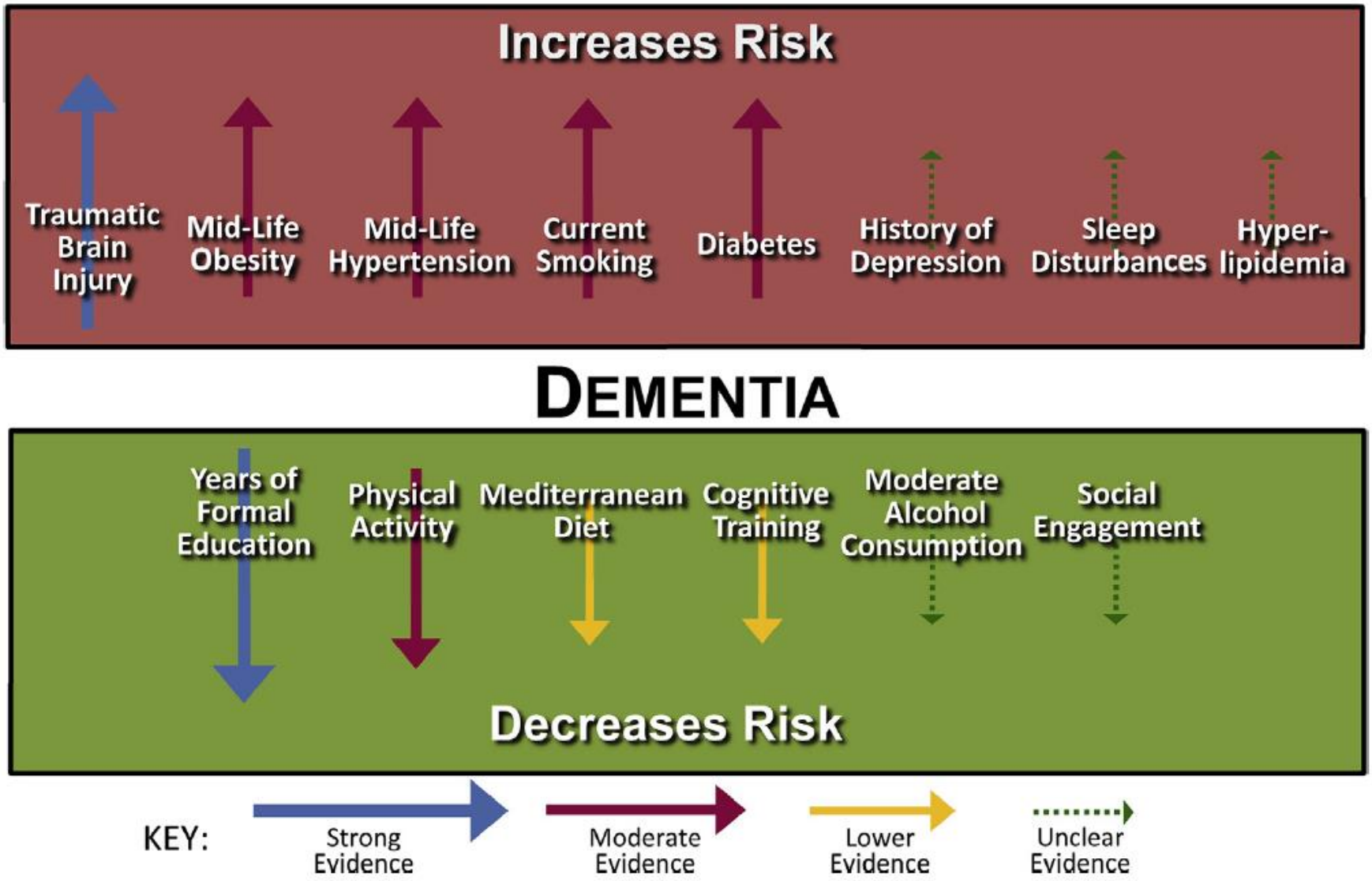


Fig. 2. Strength of evidence on risk factors for dementia.

Canadian Task Force
on Preventive Health Care

Instead of population screening, the CTFPHC "acknowledges the importance of **clinical evaluation or case-finding in the context of signs and symptoms** to ensure patients are attended to and treated individually."

Using the Dementia Risk Calculator

The Dementia Risk Calculator Doubling Rule
(de la Torre, 2004, Gauthier et al.,1997 and Siu, 1991)

Risk doubles for every 5 years of age

<65 years	1%
65 years	2%
70 years	4%
75 years	8%
80 years	16%
85 years	32%

Each additional vascular risk factor approximately doubles the risk (One risk factor: risk multiplier is 2; 2 or more risk factors: risk multiplier is 4)

Positive family history doubles the risk. (One family member: risk multiplier is 2; 2 or more family members: risk multiplier is 4)

Overall risk = age risk _____% x family hx risk multiplier___x vascular risk multiplier ___= ___%

Screening Tests
Mini-Mental Status Exam (MMSE)

- Orientation (10 points)
- Registration (3 points)
- Attention and Calculation (5 points)
- Recall (3 points)
- Language (8 points)
- Visuospatial (1 point)
- Total=30, if less than 25, consider dementia.

Normative Data on MMSE

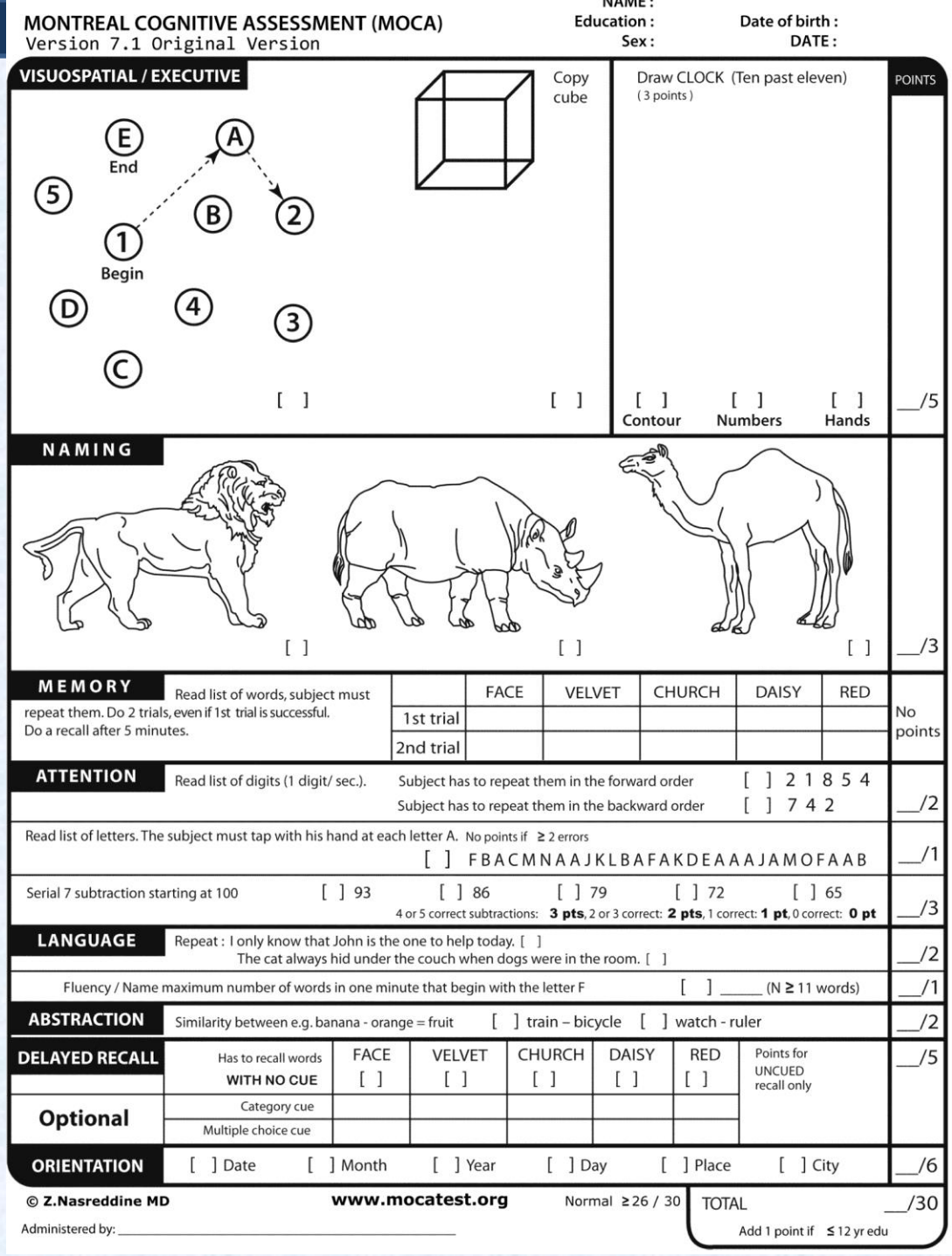
	Age (years)												
Education	18-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	>84
4th Grade	22	25	25	23	23	23	23	22	23	22	22	21	20	19
8th Grade	27	27	26	26	27	26	27	26	26	26	25	25	25	23
High School	29	29	29	28	28	28	28	28	28	28	27	27	25	26
College	29	29	29	29	29	29	29	29	29	29	28	28	27	27

Normative scores vary with age and education level!

MMSE
Pros and Cons

- Pros
  - Widely used and therefore can track cognition over time and between clinicians
  - 5-10 minutes.
- Cons
  - False positives: those with little education.
  - False negatives: those with high premorbid intellectual functioning.

MOCA is better for Mild Cognitive Impairment (MCI) Screening



MONTREAL COGNITIVE ASSESSMENT (MOCA)
Version 7.1 Original Version

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

VISUOSPATIAL / EXECUTIVE — Copy cube — Draw CLOCK (Ten past eleven) (3 points) — POINTS

E End, A, 5, B, 2, 1 Begin, D, 4, 3, C

[ ] [ ] [ ] 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 /2
Subject has to repeat them in the backward order [ ] 7 4 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 /3
4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**

LANGUAGE Repeat : I only know that John is the one to help today. [ ] /2
The cat always hid under the couch when dogs were in the room. [ ]

Fluency / Name maximum number of words in one minute that begin with the letter F [ ] _____ (N ≥ 11 words) /1

ABSTRACTION Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler /2

DELAYED RECALL

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

Points for UNCUED recall only /5

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: _____

Very Brief Screening

- Mini-Cog (Borson et al, 2006)
  - 3 item recall
  - clock test
- Dementia Quick Screen
  - Same as above plus:
    Animal Name Generation

Assessment

- Taking the patient's history
- Interviewing caregiver / family
- Cognitive tests
- Basic lab tests
- Physical examination
- Structural imaging – if certain criteria are met

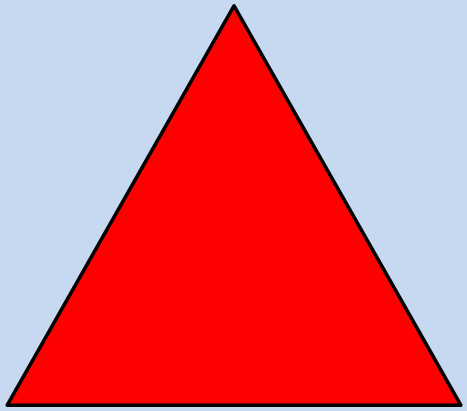
ref: CCCDTD-3

Caregiver Informant screen (ABC concerns)

Please tick items in the ABCs where you have concerns

A = ADL's

Finances
Shopping
Driving
Cooking
Travel
Laundry



B = Behaviour

Anger
Irritability
Apathy
Depression

C = Cognition

Forgetfulness
Repetitive questions/stories
Word finding problems
Misplacing objects/getting lost

Assessment of Function is more important than any cognitive test: many tools available

Has There Been An Effect On Functional Activities?

Instrumental Activities of Daily Living	Independent	Can do with difficulty	Needs some help	Dependent on others
1. Pay bills/manage finances (forgets to pay bills, pays bills twice)	0	1	2	3
2. Plan meals and organize shopping (food spoiled)	0	1	2	3
3. Food preparation/Cooking (oven or stove left on, food has "funny" taste, not properly cooked)	0	1	2	3
4. Ability to deal with emergencies (fire, fall, medical emergency, lock outside, power outages)	0	1	2	3
5. Manage medication (misses doses, takes too many)	0	1	2	3
6. Transportation (driving issues, gets lost, wandering)	0	1	2	3
7. Plan trip and outings	0	1	2	3
8. Home maintenance	0	1	2	3
9. Housekeeping/laundry (difficulty using appliances)	0	1	2	3
10. Ability to carry out hobbies	0	1	2	3
11. Telephone use	0	1	2	3
Activities of Daily Living				
1. Feeding	0	1	2	3
2. Bathing	0	1	2	3
3. Grooming (hair, shaving, nails, makeup)	0	1	2	3
4. Dressing	0	1	2	3
5. Toileting	0	1	2	3
6. Transfers	0	1	2	3
7. Ambulation	0	1	2	3
8. Climbing stairs	0	1	2	3

(Adapted from the Dementia Tool Box, 2006)

Other resources: (see appendix)
The Modified Physician Self-Maintenance Scale /Instrumental Activities of Daily Living Scale Lawton-Brody
Functional Assessment Questionnaire (FAQ)
SMAF and e-SMAF – e-mail to get French and English copies and information:
iugs@ssss.gouv.qc.ca

Table 3. Studies Recommended by the American Geriatrics Society for Patients with Suspected Dementia

Laboratory tests	*Imaging tests*	*Tests to consider in patients with specific risk factors*
Calcium level Complete blood count Complete metabolic panel Folate level Thyroid-stimulating hormone level* Vitamin B_{12} level*	Computed tomography or magnetic resonance imaging of the brain if any of the following are present: • Abrupt or rapid decline • Age younger than 60 years • Focal deficits • Predisposing conditions Consider positron emission tomography if definitive diagnosis will change management decisions	Cerebrospinal fluid analysis Human immunodeficiency virus test Lyme titer Rapid plasma reagin test

**—The only tests routinely recommended by the American Academy of Neurology for all patients with suspected dementia are thyroid-stimulating hormone and vitamin B_{12} levels.[28]*

Information from references 27 and 28.

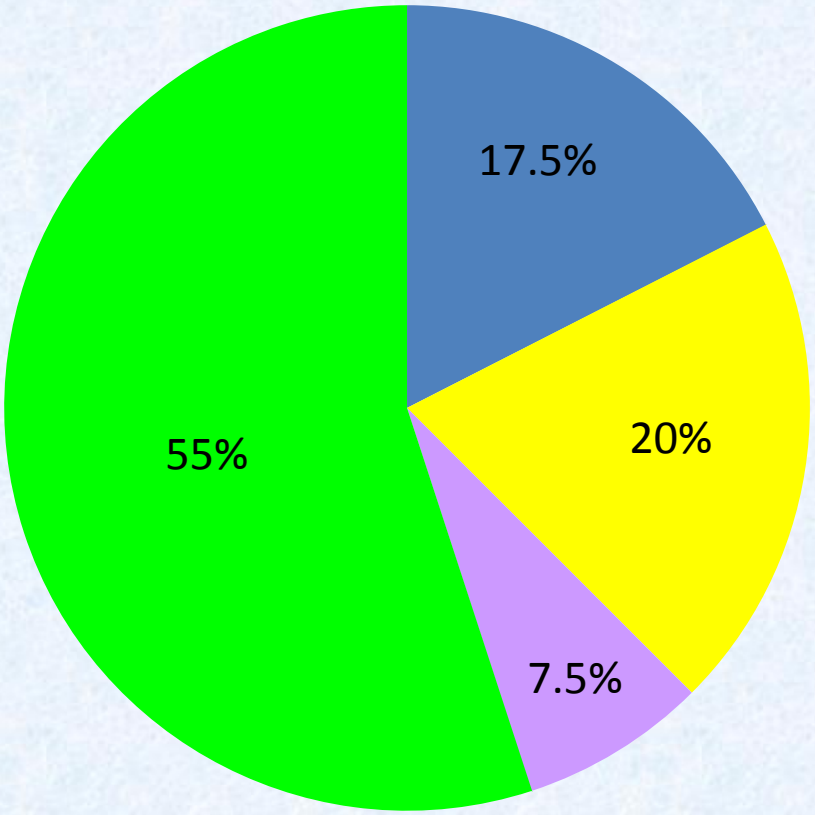
Table 1. Key Findings and Suggested Diagnoses in Patients with Cognitive Dysfunction

Key findings on history and physical examination	*Suggested diagnosis*
Ascending paresthesias, tongue soreness, limb weakness, weight loss	Vitamin B_{12} deficiency
Broad-based shuffling gait, urinary incontinence	Normal pressure hydrocephalus
Current use of psychoactive drugs, such as benzodiazepines or anticholinergics	Adverse effects from medication
Depressed mood, anhedonia, feelings of worthlessness, flat affect, slowed speech	Depression
Fatigue, cold intolerance, constipation, weight gain, reduced body hair	Hypothyroidism
Head trauma within the previous three months, headache, seizures, hemiparesis, papilledema	Subdural hematoma
History of alcoholism, nystagmus or extraocular muscle weakness, broad-based gait and stance	Wernicke-Korsakoff syndrome
History of high-risk sexual behavior or drug use, hyperreflexia, incoordination, peripheral neuropathy	Human immunodeficiency virus–associated dementia
History of high-risk sexual behavior or drug use, hyporeflexia, papillary abnormalities, decreased proprioception	Neurosyphilis
Recent hospitalization or acute illness, inattention, fluctuating behavioral changes, altered level of consciousness	Delirium

Simmons et al, 2011

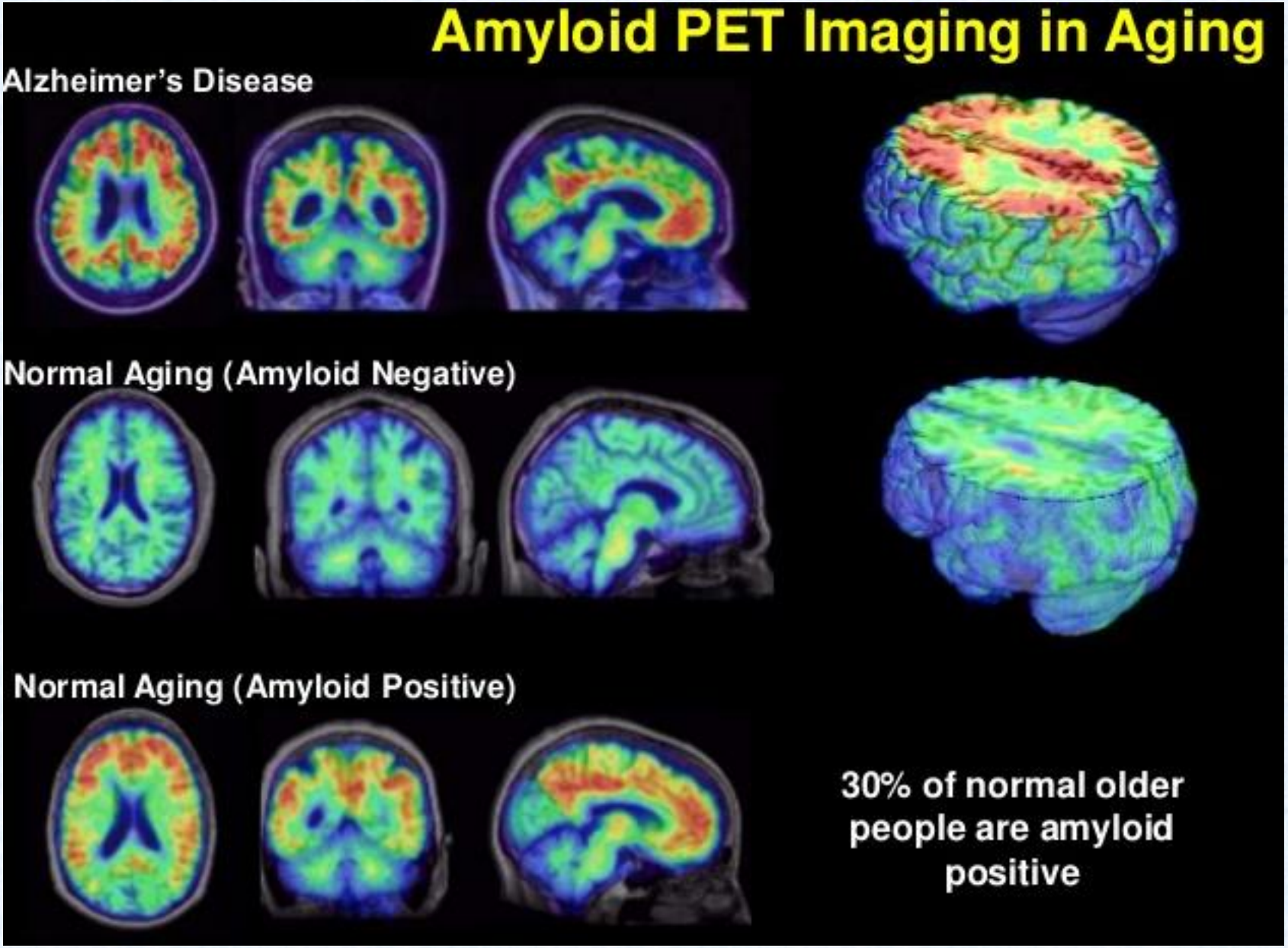
Types of Dementia

(mixed not included)



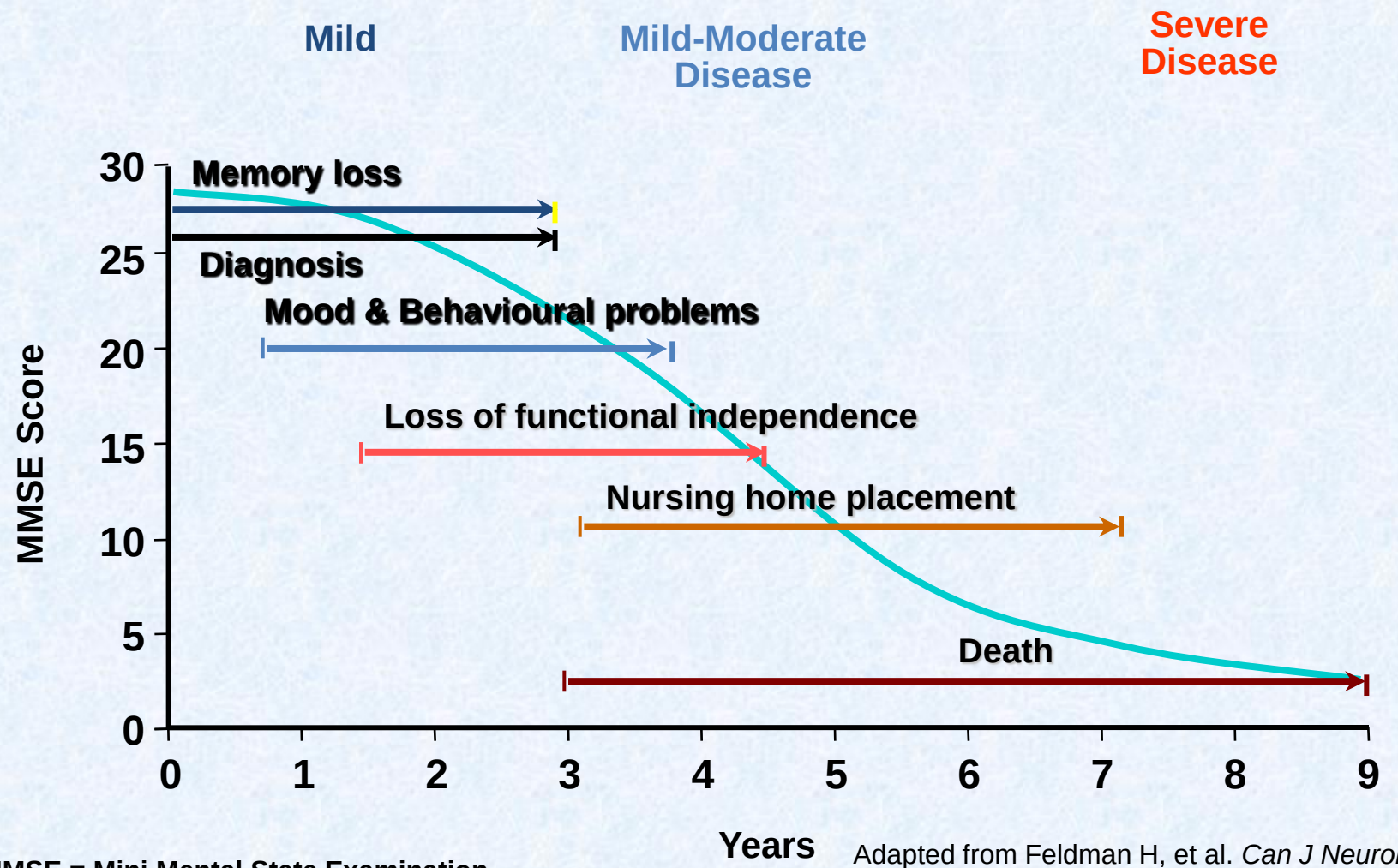
- AD
- Vascular dementias
  - multi-infarct dementia
  - Binswanger's disease
- DLBD
  - Parkinson's disease
  - diffuse DLB
  - Lewy body variant of AD
- Other dementias
  - frontal lobe dementia
  - Creutzfeldt-Jakob disease
  - corticobasal degeneration
  - progressive supranuclear palsy
  - potentially reversible dementias

Gersing et al., 1998; Cras, 1998


Amyloid PET Imaging in Aging
Alzheimer's Disease
Normal Aging (Amyloid Negative)
Normal Aging (Amyloid Positive)
30% of normal older people are amyloid positive

S. Landau, UCB

Course of the Disease



MMSE = Mini Mental State Examination

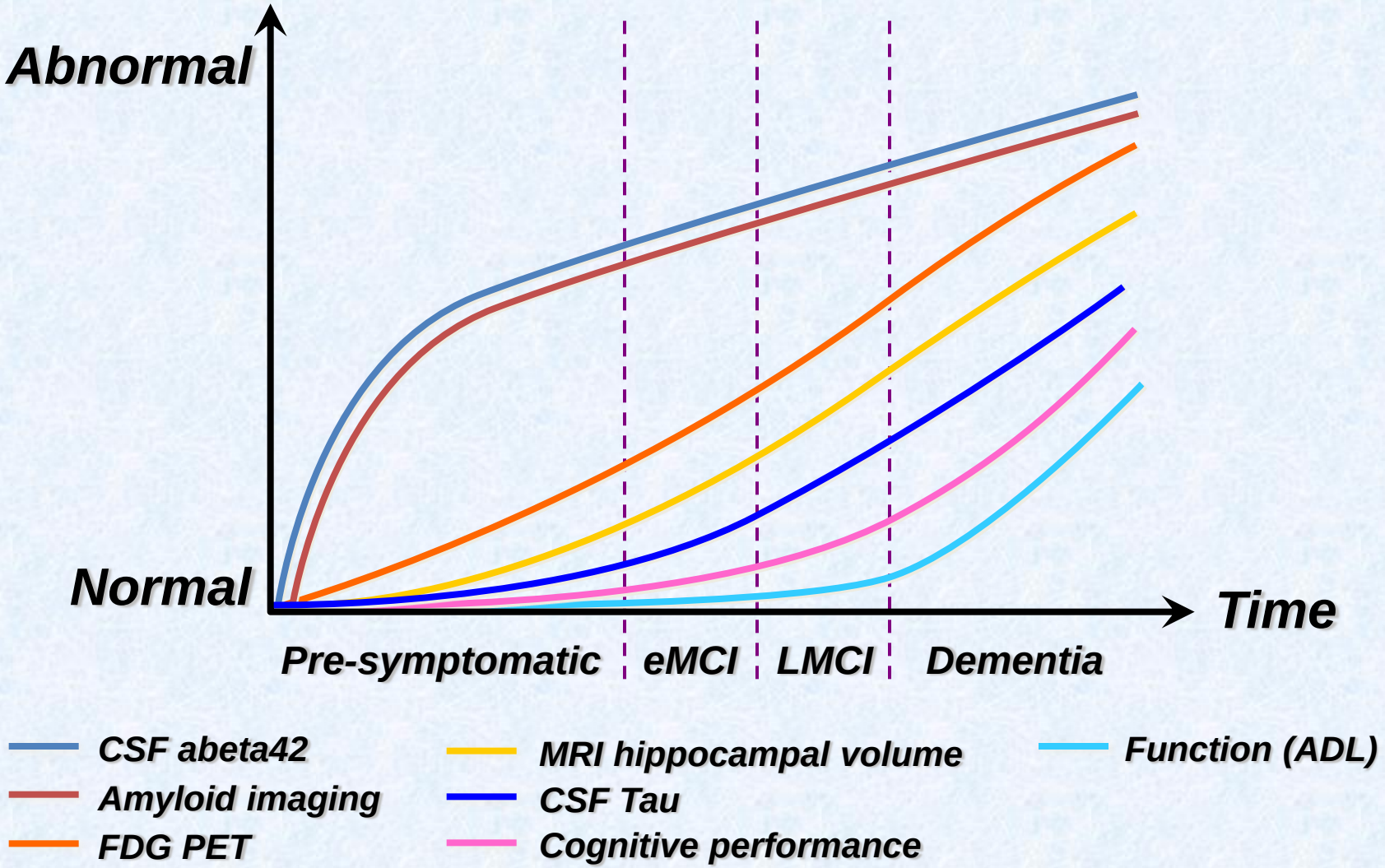
Adapted from Feldman H, et al. *Can J Neurol Sci* 2001; 28 (Suppl 1):S17-S27.

Baycrest

North East Specialized Geriatric Centre
Centre gériatrique spécialisé du Nord-Est

Project ECHO®

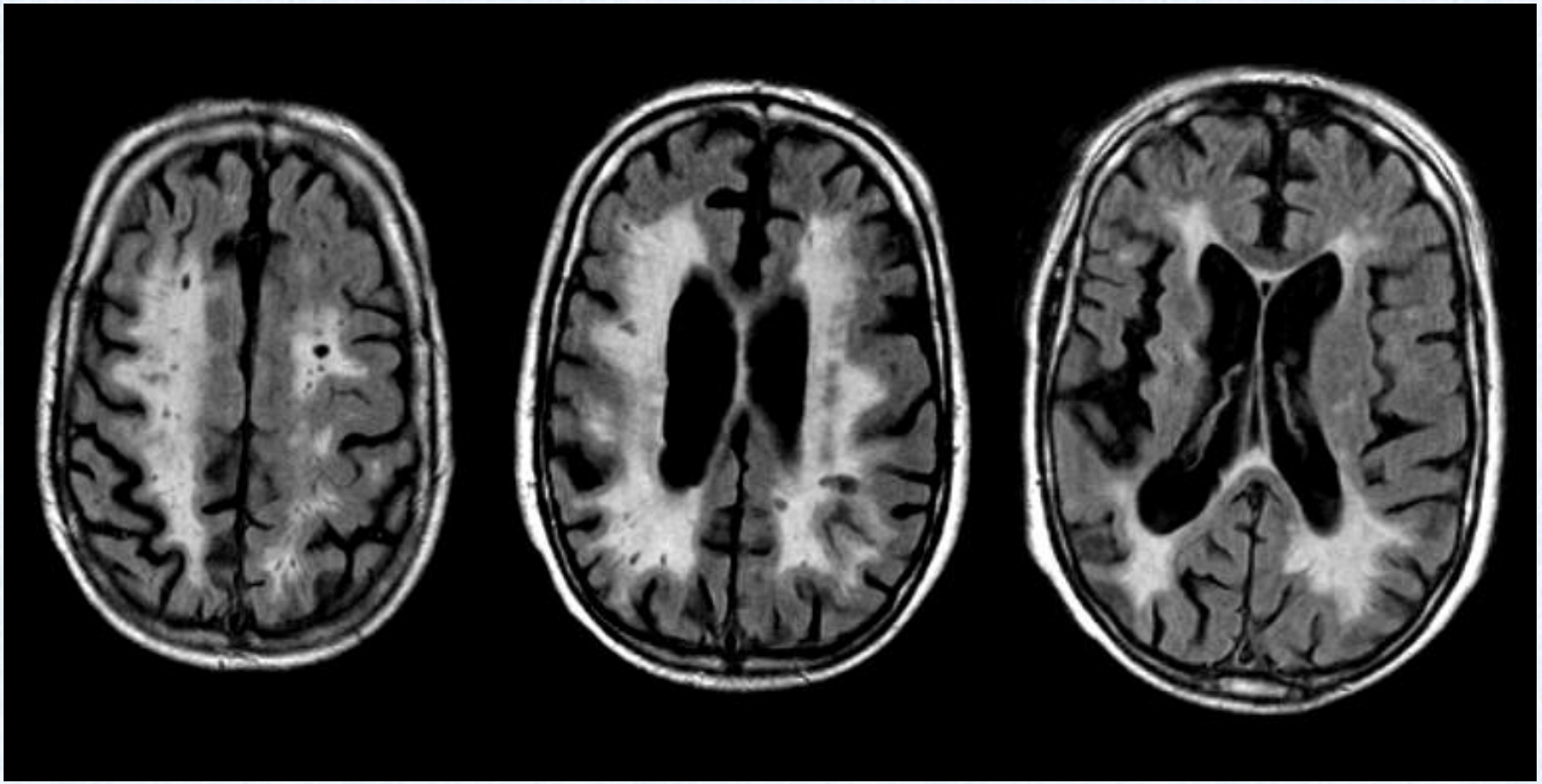
AD Progression



Vascular Dementia – classic features

- Abrupt onset
- Stepwise progression
- Memory problems (not predominant)
- Impaired executive function
- Emotional lability
- History of cerebrovascular risk factors
- Focal neurological signs and symptoms or neuroimaging evidence

Vascular Dementia



Scheltens, 2001.

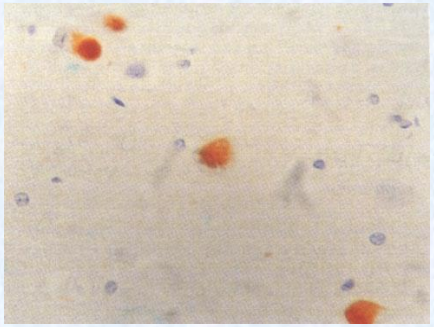
Alzheimer's disease and vascular dementia share common risk factors

- hypertension
- generalized atherosclerosis
- coronary heart disease
- atrial fibrillation
- diabetes mellitus
- hyperlipidemia
- elevated plasma homocysteine
- white matter lesions
- history of stroke

Skoog I. Neuroepidemiology 1998;17:2-9.
MacPherson KM, et al. Perspectives in Cardiology 2001;June/July:19-26.
Seshadri S, et al. N Engl J Med;346:476-483.

Dementia With Lewy Bodies

- Characterized by 3 core symptoms:
  - Fluctuating cognitive impairment (~80%)
  - Persistent visual hallucinations (>60%)
  - Parkinsonism (65%–70%)



Also:

- Systematized delusions (~70%)
- Depression (38%)
- Neuroleptic sensitivity (>50%)
- REM Sleep Disorder

Summary of Personality/Behavioral Symptoms of Frontal Lobe Disorders

- Disinhibition
- Impulsivity
- Vulgarity
- Irritability
- Emotional lability
- Inappropriate laughter, crying
- Bizarre social behavior

- Apathy
- Reduced initiative (Abulia)
- Reduced interest in daily activities/self-care
- Akinetic mutism
- Social withdrawal

Terminology

Frontotemporal Lobar Degeneration (FTLD)

- Behavioural variant frontotemporal dementia (bvFTD)
- Semantic dementia (SD)
- Non-fluent progressive aphasia (NFPA)

Neary et al, 1998

Possible bvFTD (at least 3 of following)

- Early behavioural disinhibition
- Early apathy or inertia
- Early loss of sympathy or empathy
- Early perseverative, stereotyped or compulsive/ritualistic behaviour
- Hyperorality and dietary changes
- Neuropsychological profile: executive dysfunction with relative sparing of memory and visuospatial function

Rascovsky et al. Brain 134:2456-77, 2011

Dementia: Care & Management

- Optimal Environment
- Person-Centred Care
- Caregiver education & support / respite
- Psychosocial interventions
- Optimal healthcare
- Pharmacological treatment

Models of Care - examples

- Person-Centred Care
- Montessori
- Green House
- Butterfly

Ideal Goals for Dementia Medications:

- Slow course of disease
- Improve memory/cognition
- Improve daily function
- Improve behavioural abnormalities
- Improve mood, quality of life

Cholinergic Treatment of AD and related dementias

- Aricept® (donepezil hydrochloride) – approved 1997
- Exelon® (rivastigmine) – approved 2000
- Reminyl® (galantamine) – approved 2001

- Note: Memantine (Ebixa) works on Glutamate receptors (blocks NMDA).

GUIDELINES FOR USE

- Caution in patients with bradycardia or cardiac conduction problems, COPD, Peptic Ulcers
- Assess cognitive and functional level at baseline
- Cholinesterase inhibitors covered by ODB if AD / related disorders plus MMSE of 10 to 26.
- Review regularly (e.g. every 3 months)
- Diaries for caregiver

The Fountain of Health Initiative

www.fountainofhealth.ca

Bringing Seniors' Mental Health Promotion into Clinical Practice

fountain of health

Baycrest

North East Specialized Geriatric Centre
Centre gériatrique spécialisé du Nord-Est

Thank you!

Baycrest

North East Specialized Geriatric Centre
Centre gériatrique spécialisé du Nord-Est

Project ECHO®