LONGER LIFE

Interreg - IPA CBC
Romania - Serbia

UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE VICTOR BABEȘ • TIMIȘOARA •

www.neuro-vascular-dementia.eu

THE CONTINUUM OF VASCULAR NEUROCOGNITIVE DISORDERS

Jianu Dragoș Cătălin,
Ursoniu Sorin, Matcău Diana, Dan Traian Flavius, Bredicean Cristina, Petrica Ligia, Grujic Daciana, Bîrdac Claudiu, Bora Iulia Bianca.

CONTENT

1. INTRODUCTION
2. MILD COGNITIVE IMPAIRMENT
   - Definition
   - Etiology
   - Diagnosis criteria
   - Evaluation of the patient
3. VASCULAR NEUROCOGNITIVE DISORDER
   - Definition
   - Diagnosis
   - Treatment

1. INTRODUCTION

Neurocognitive disorders are defined as conditions in which an acquired impairment of cognitive functions occurs, with coexistent decline in function involving at least one of the following neuropsychological domains

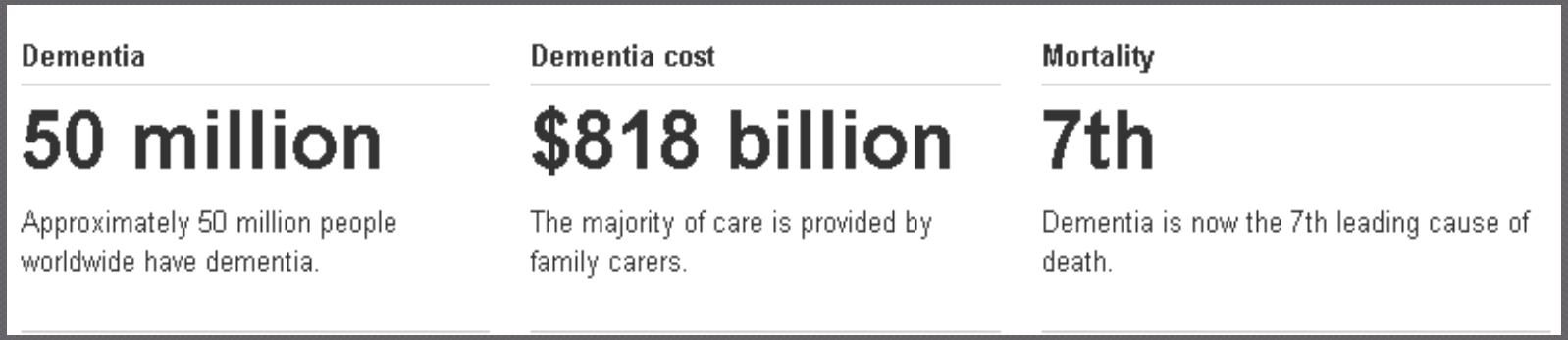
- memory/learning
- complex attention
- executive function
- perceptual or motor abilities
- language
- social cognition

Dementia is a syndrome characterized by a **gradual and progressive decline** in previously acquired cognitive function that results in impaired social or occupational functioning and ultimately leads to loss of independence.

Worldwide Impact

The incidence of dementia increases with age; this disorder is not an inevitable consequence of normal aging.

- WHO: "Dementia: a public health priority"



INFOGRAPHIC

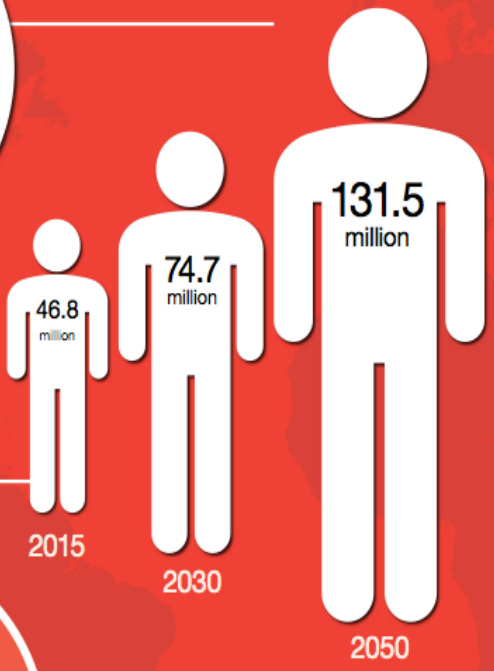
The global impact of dementia

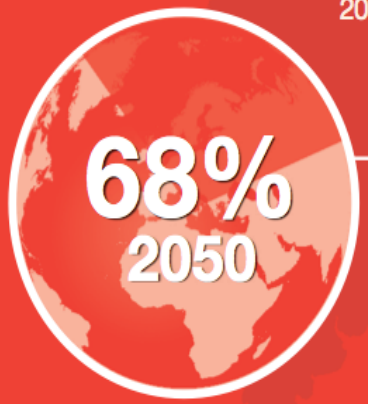
Around the world, there will be 9.9 million new cases of dementia in 2015,

one every 3 seconds

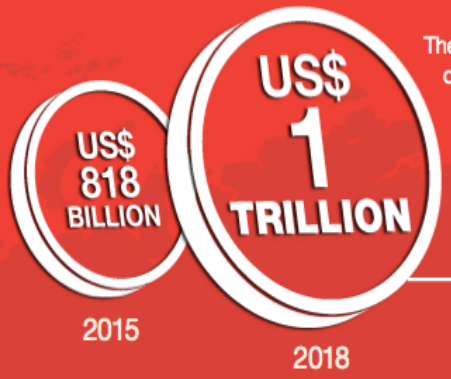
46.8 million people worldwide are living with dementia in 2015.

This number will almost double every 20 years.





Much of the increase will take place in low and middle income countries (LMICs): in 2015, 58% of all people with dementia live in LMICs, rising to 63% in 2030 and 68% in 2050.



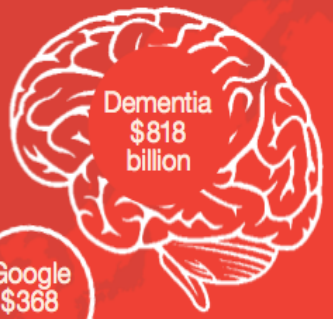
The total estimated worldwide cost of dementia in 2015 is US$ 818 billion. By 2018, dementia will become a trillion dollar disease, rising to

US$ 2 trillion by 2030

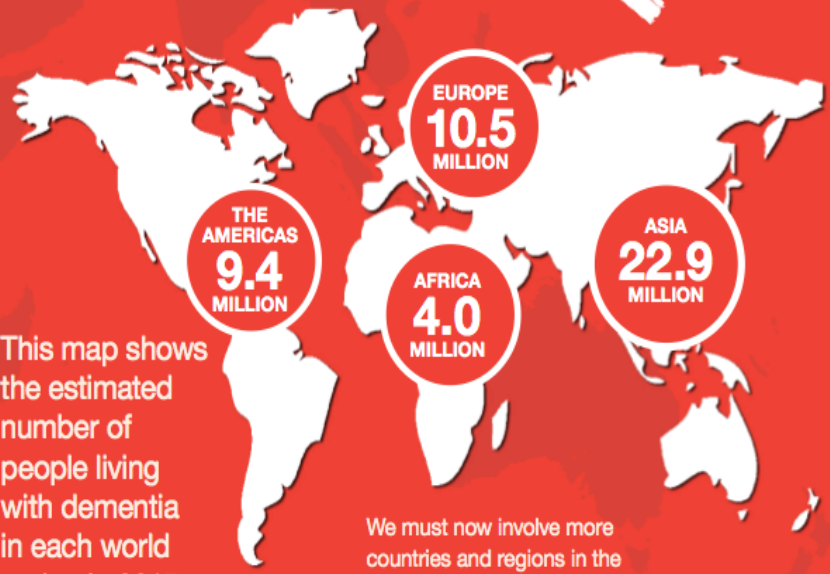
If global dementia care were a country, it would be the

18th largest economy

in the world exceeding the market values of companies such as Apple and Google



(source: Forbes 2015 ranking).



This map shows the estimated number of people living with dementia in each world region in 2015.

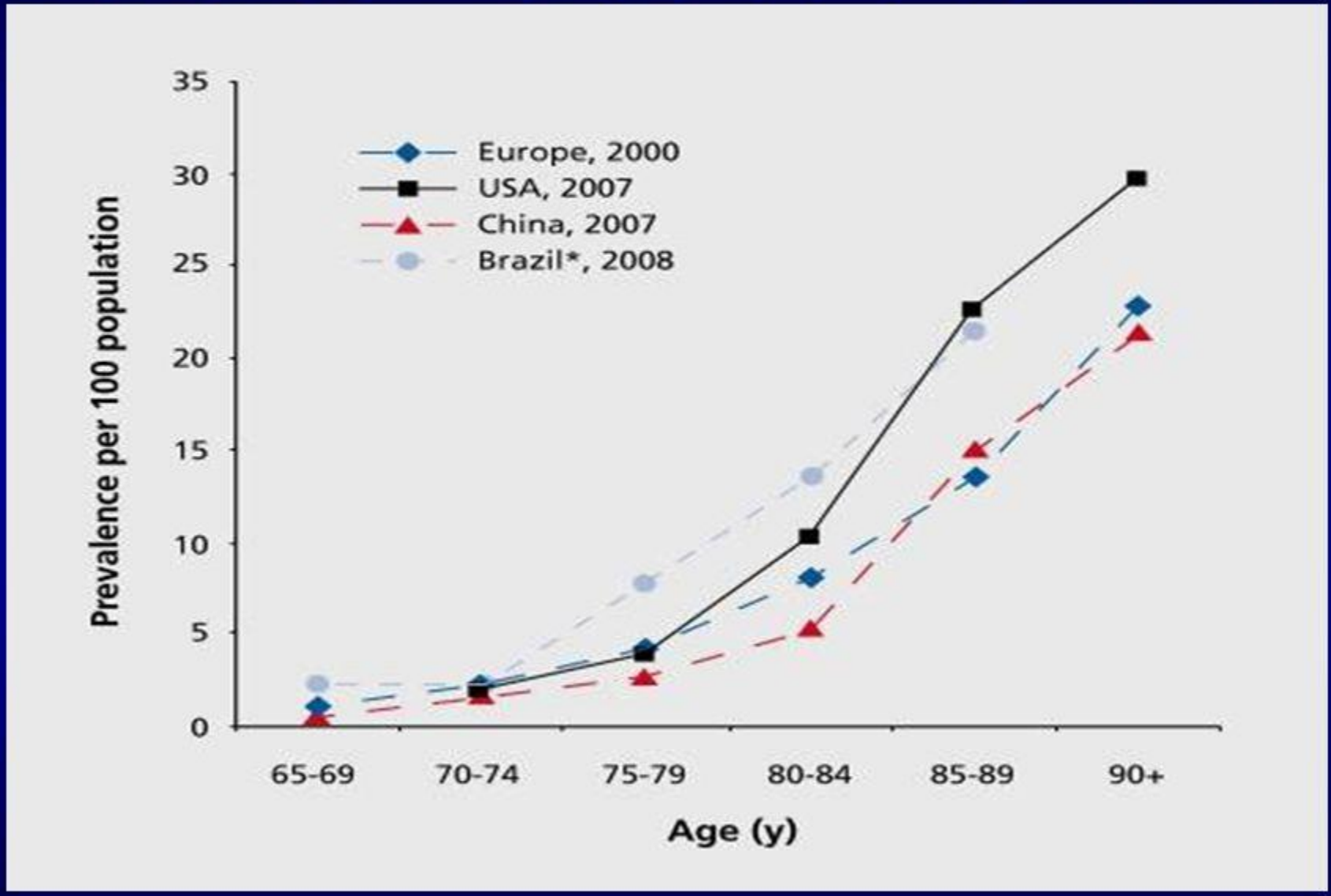
We must now involve more countries and regions in the global action on dementia.

Worldwide prevalence of dementia

- Ageing across the world's populations is not a uniform process. Over the next 15 years, the number of older people is projected to increase by 71% in Latin America and the Caribbean, 66% in Asia, 64% in Africa, 47% in Oceania, 41% in North America, and **23% in Europe**. The differences in the base populations and the rates of growth and longevity mean there will be **wide variations between regions.**

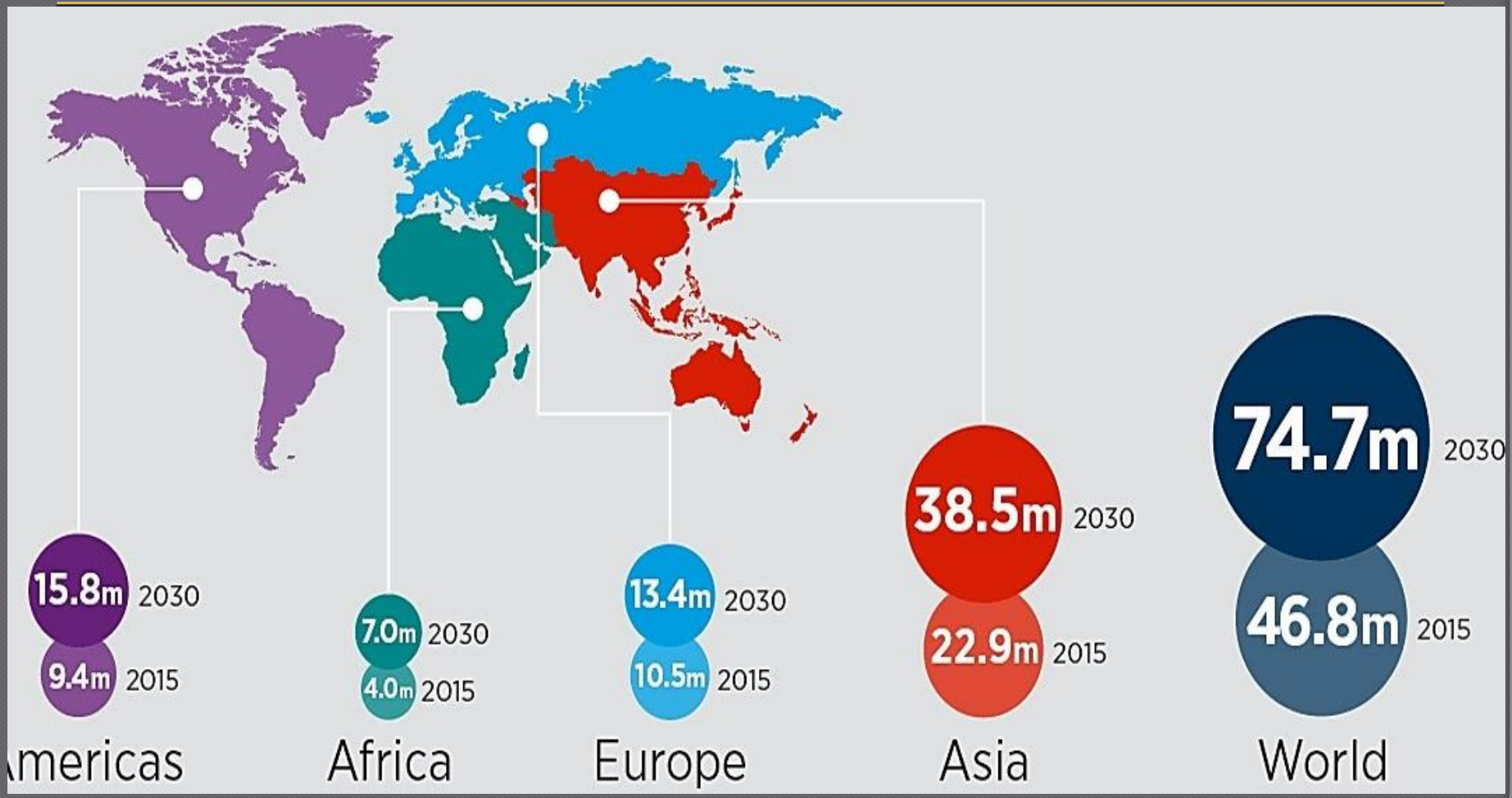
- The estimates of people living with dementia across regions and countries show a clear **increase in numbers** and differences in prevalence rates have been reported.

Worldwide Prevalence of dementia



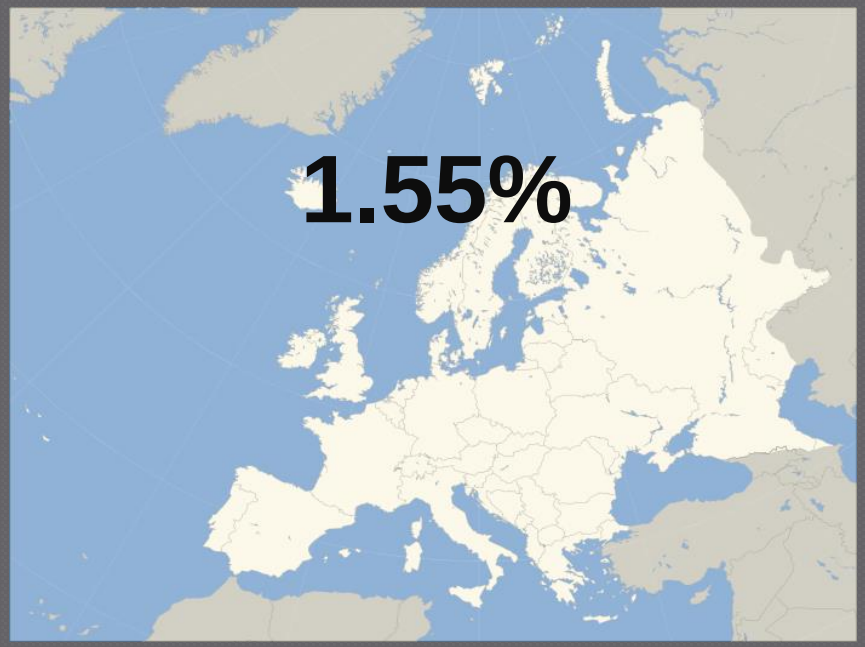
Qiu et al., 2009, Dialogues. Clin. Neurosci. 11:111-128

People living with Dementia - 2015
Estimation of increase - 2030



Where does Romania stand?

Alzheimer Europe estimates the number of people with *dementia* in Romania in 2012 as being 270,304. This represents 1.26% of the total population of 21,387,517. The number of people with dementia as a percentage of the population is somewhat lower than the EU average of 1.55%.



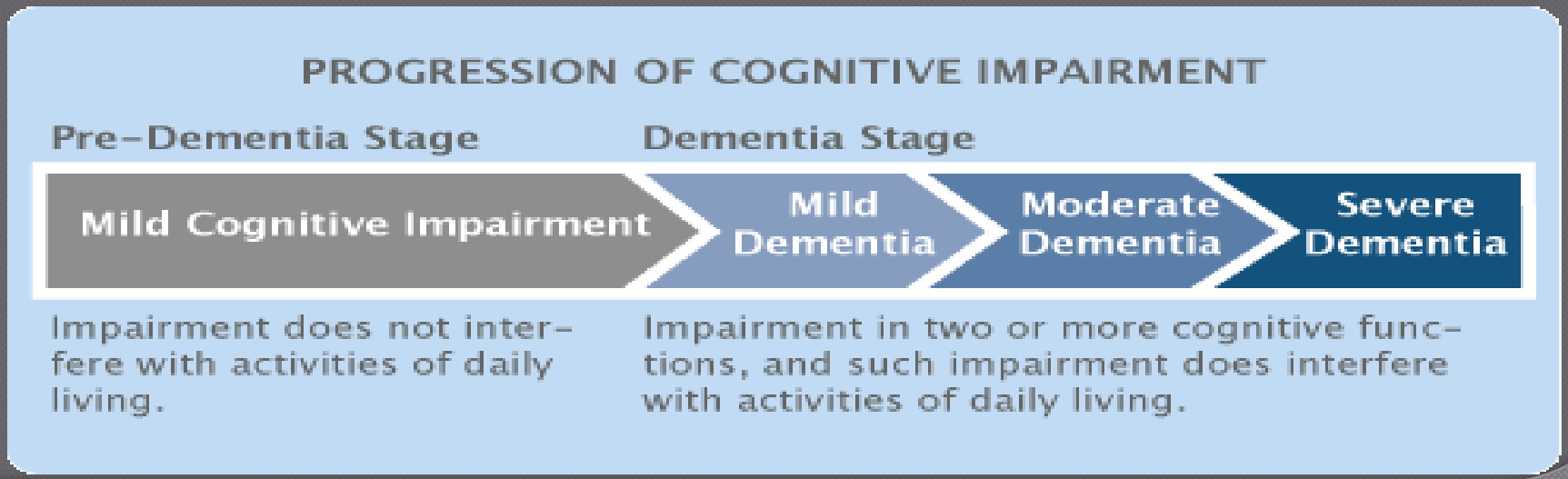
1. INTRODUCTION

Age-associated cognitive decline:

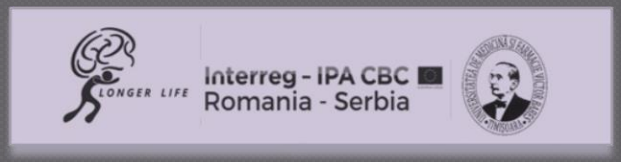
- Cognitive flexibility and multitasking abilities may decline with aging
- Learning or the acquisition of new information decreases with age, but delayed recall remains relatively intact.
- Language comprehension and vocabulary are preserved in normal aging.

Patients with MCI have a significantly increased likelihood of conversion to dementia at a rate of 10% to 15% per year;

Otherwise, cognitively normal age-matched controls develop dementia at a rate of 1% to 2% per year



2. Mild cognitive impairment: definition

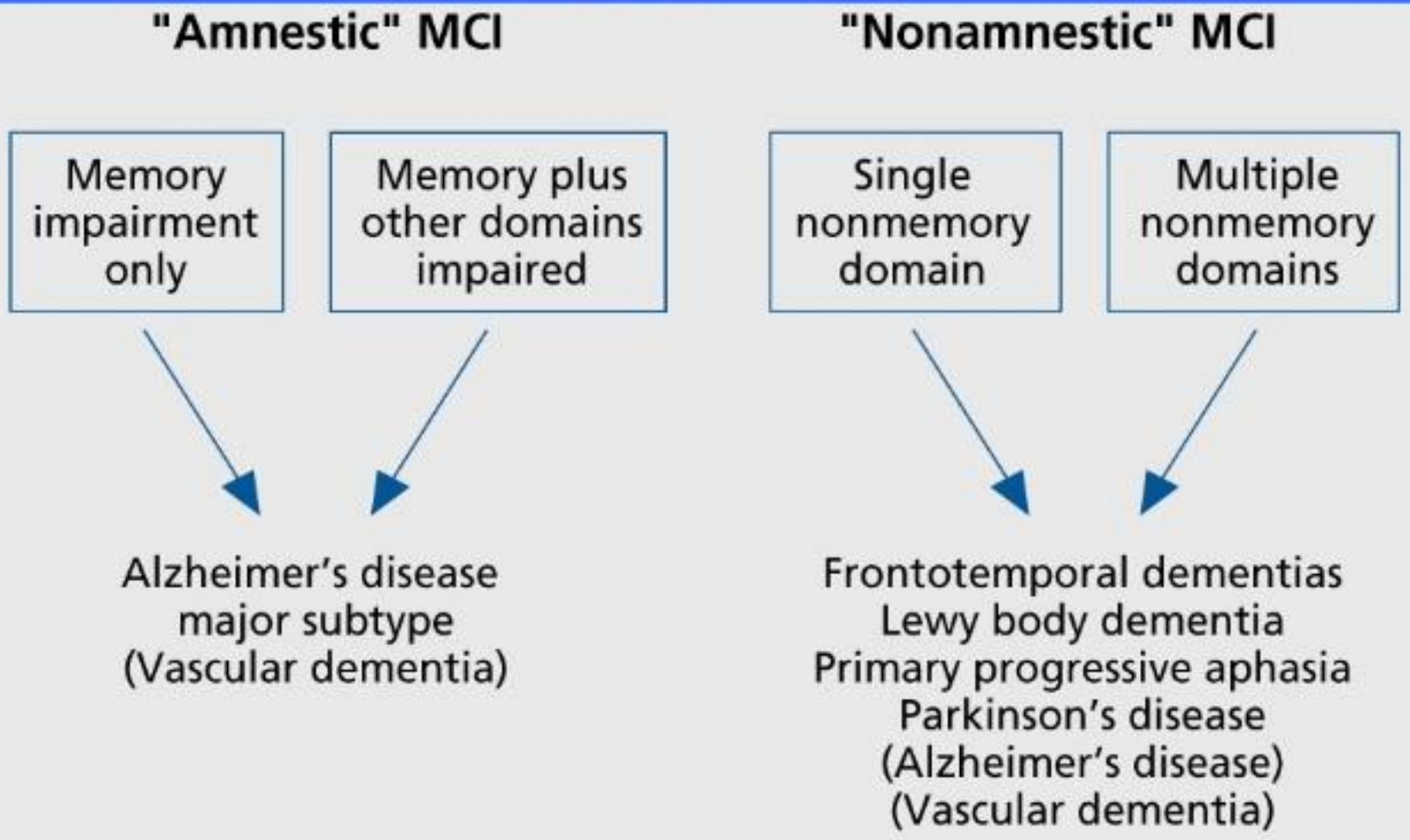


There are research suggesting that a phase of cognitive impairment precedes the development of dementia.

This intermediate stage between normal aging and dementia has been labeled *mild cognitive impairment* (MCI).

MCI can be further subtype as *amnestic MCI* or *non-amnestic MCI*, depending on memory deficit and the number of cognitive affected domains.

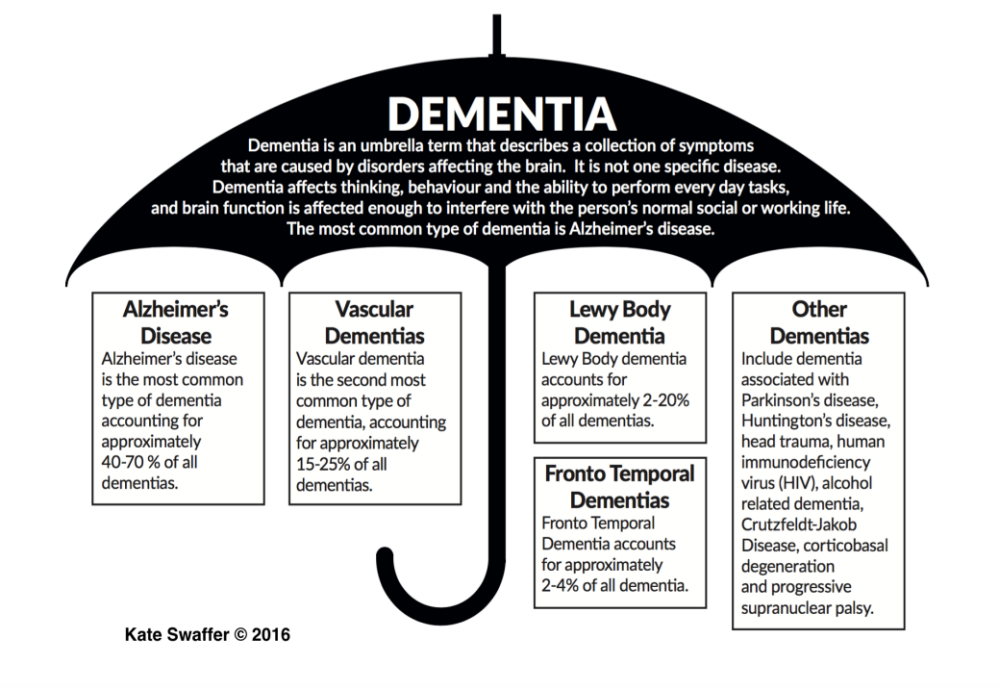
Screening for MCI type



Dickerson. Advances in quantitative magnetic resonance imaging-based biomarkers for Alzheimer disease. *Alzheimer's Research & Therapy* 2010; 2:21
Meyer et al. Diagnosis-Independent Alzheimer Disease Biomarker Signature in Cognitively Normal Elderly People. *Arch Neurol* 2010;67:949-956.

2. MCI: causes

Although within 6 years from the time of MCI diagnosis approximately 80% of patients will progress to dementia, there have been also studied numerous factors like:



- The APOE e4 genotype
- Baseline functional impairment
- Degenerative/ non-degenerative pathologies (lewy body disease, vascular dementia)
- Metabolic disorders (hypothyroidism)
- Vitamin B12 deficiency
- depression

2. MCI : diagnosis

The diagnosis is made on the basis of clinical judgment and requires four features:

- subjective reports
- objective impairment on cognitive testing in one or more cognitive domains
- diminished independence in daily function
- no significant impairment in occupational or social functioning

A careful history should focus on the *evolution of symptoms*, *rate of progression* and *functional impact on activities* of daily living and work performance.

Medication use and substance abuse should be elicited; also screening for depression is imperative.

Vascular risk factors should be identified.

A general physical examination and a thorough neurological examination should be performed.

Screening test in patients who report cognitive difficulties, tests than can serve as a baseline and can be used to monitor disease progression.

MCI: diagnosis

A careful history should focus on the evolution of symptoms, rate of progression and functional impact on activities of daily living and work performance.

Medication use and substance abuse should be elicited; also screening for depression is imperative.

Vascular risk factors should be identified.

A general physical examination and a thorough neurological examination should be performed.

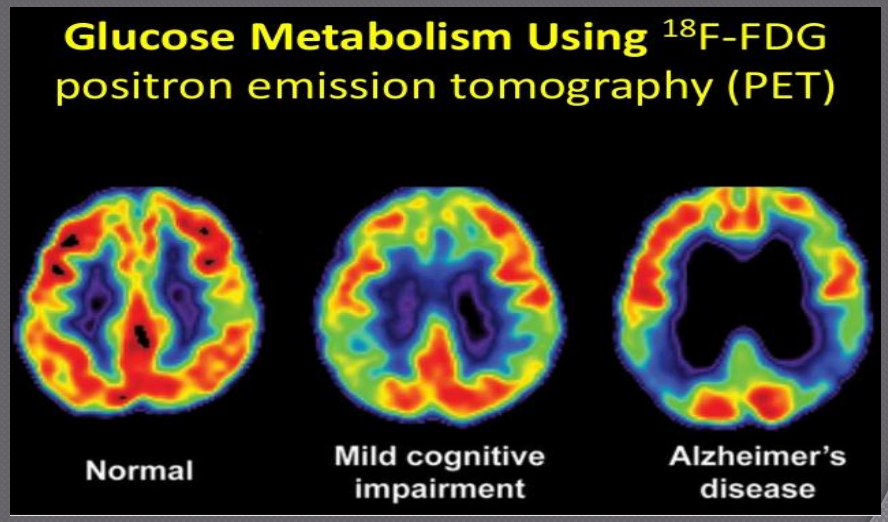
Screening test

Neuropsychological testing (more time consuming and costly)

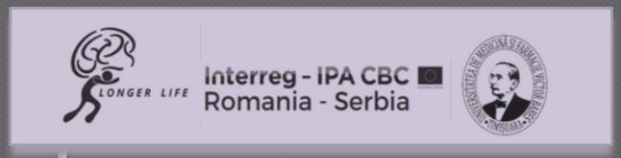
Laboratory tests (for reversible causes of cognitive decline)

Neuroimaging studies (MRI, CT)

Cerebrospinal fluid (HIV, Lyme, systemic autoimmune disease)



2. MCI: evaluation of the patient



For patients age 65 years and older, with no obvious cognitive symptoms, insuficient evidence supports routine cogntive testing:

-> patients with no cognitive symptoms, with or without functional imapairment

-> patients who routinely miss scheduled appointments or arrive on the wrong date /time

-> patients with inability to accurately follow instructions

-> Patients with unexplained weight loss or failure to thrive

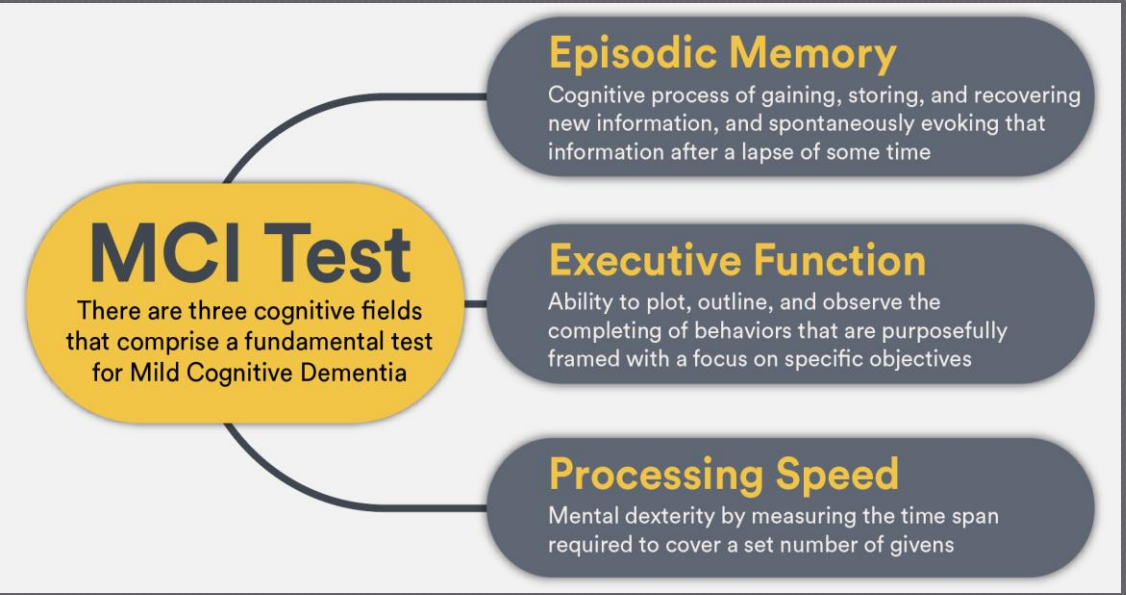
-> Patients with new onset or worsening drepression or anxiety, with/without cognitive symptoms

-> report from a witness, confirmed or uncorfirmed by the patient, of a change in cognition, poor or decreased judgement, loss of initiative, or changes in behaviour

-> patients with known risk factors for cognitive impairment (such as HIV infection or a personal history of alcohol abuse)

MCI:
Types of screening test

Screening test in patients who report cognitive difficulties, tests than can serve as a baseline and can be used to monitor disease progression.



- *MMSE* has been the most extensively studied screening instrument ‘;
- there are also *Montreal Cognitive Assessment* and *Mini-cog* which screen for impairments of executive function
- *Self-administered Cognitive examination* and *Test your memory examination* are for detecting mild cognitive impairment and early dementia.

Mini Mental State Examination (MMSE)

Mini Mental State Exam

Please name the:
Year?
Season?
Date?
Day of Week?
Month?

Orientation to time /5

Where are we?
State?
City?
Suburb?
Hospital?
Floor/Ward?

Orientation to place /5

"I am now going to test your memory"
Name 3 objects. Ask them to repeat all 3.
1 Point for each object remembered. Repeat until learnt all 3 so that recall can be tested.

Registration /3
# of trials

Serial 7s
"please count backwards from 100 in sevens"
93, 86, 79, 72, 65

alternatively

Spell WORLD backwards
D L R O W

Attention and Calculation /5

"Please repeat the 3 objects I asked you to remember"

Recall /3

"Please name these objects"
Point to a wristwatch and a pencil

Naming /2

"Please repeat the following phrase"
"No ifs, ands or buts"

Repetition /1

"Please follow this command"
"Take this paper in your right hand, fold it in half and place it in your lap"

Complex command /3

Please read and obey the following command

CLOSE YOUR EYES

"Please write a sentence"
Must have a noun, verb and make sense

"Please copy the following drawing"

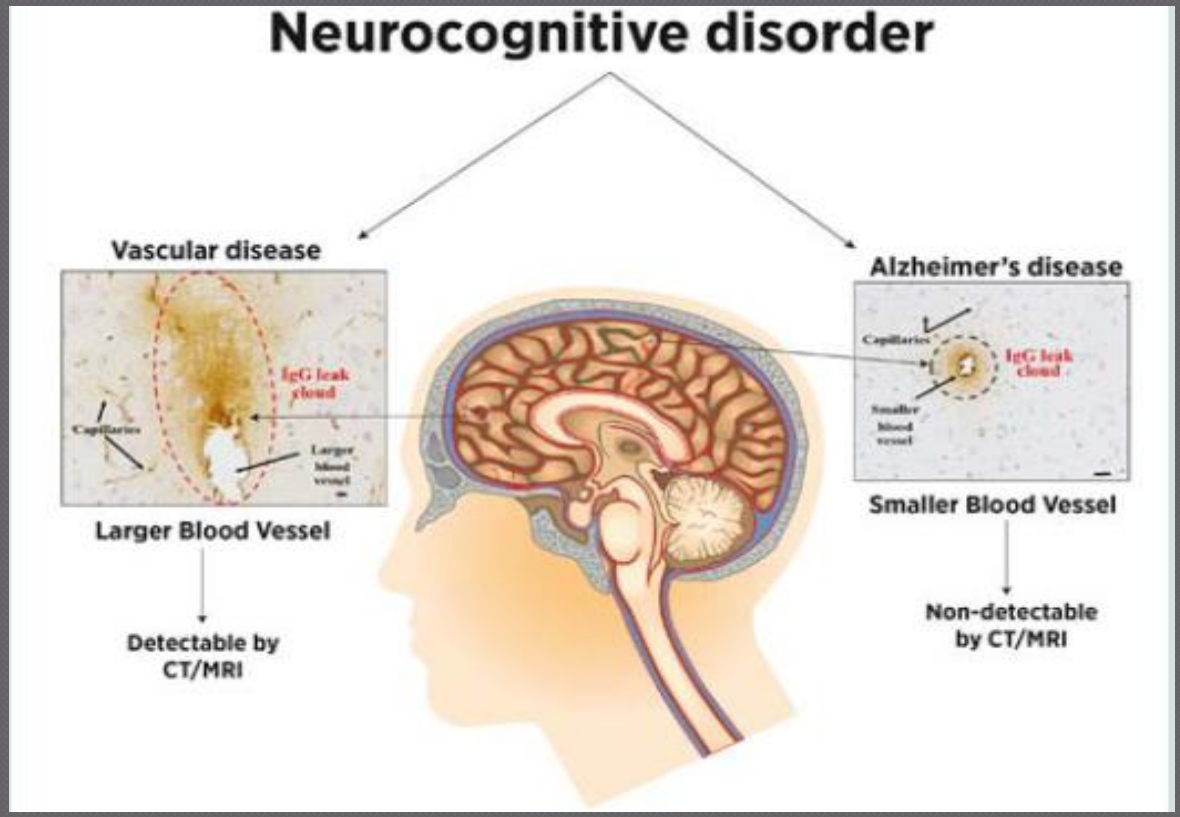
1 point each for the last 3 commands /3

24-30-normal range
18-23-moderate cognitive impairment
0-17 -marked congnitive impairment

TOTAL /30

3. VASCULAR NEUROCOGNITIVE DISORDER: definition

- VND is the term now used to describe cognitive impairment of any degree due to cerebrovascular disease(from mild cognitive impairment to vascular dementia)



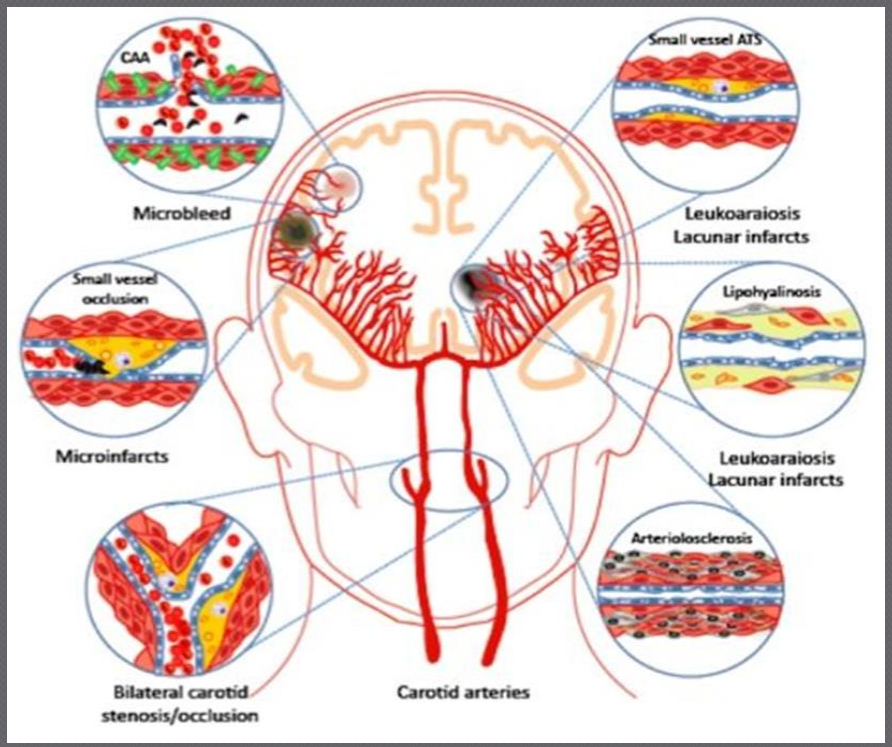
VND: definition

- Associated syndromes :

  - Multiple cortical/ subcortical infarcts
  - Single infarcts in regions of the brain that control speech, motor functions and senses
  - Subcortical ischemic small-vessel disease
  - Hemorrhage (SAH, SDH,IPH)
  - Hypotensive episodes that cause border-zone infarcts
  - Cerebral vasculitis

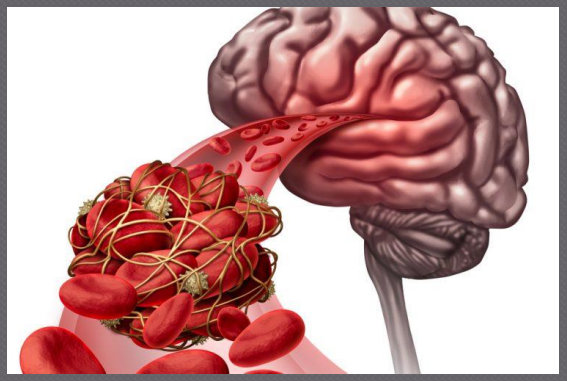
- Non-cognitive symptoms:

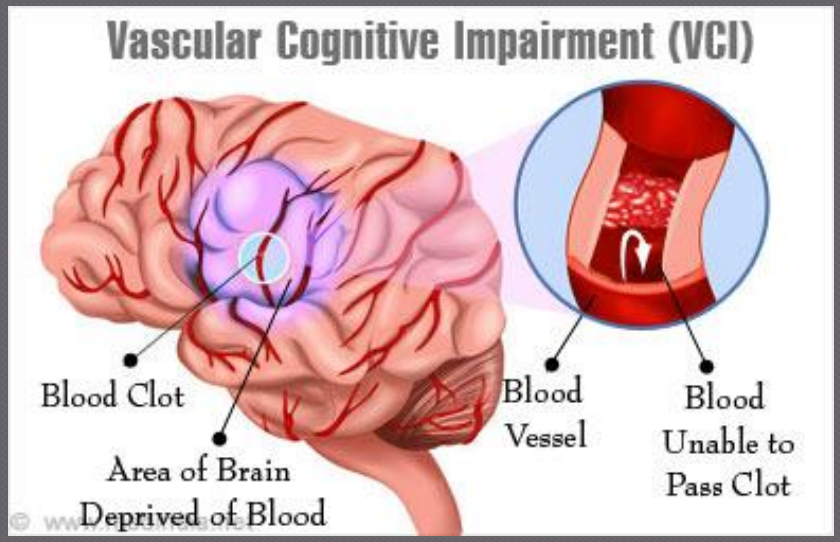
  - Focal neurological findings
  - Depression
  - Pseudo-bulbar palsy
  - Gait abnormalities
  - Urinary difficulties



VND: diagnosis

- Making the diagnosis cand be challenging because of its clinical heterogeneity and the highly variable symptoms due to microvascular or macrovascular disease, clinical criteria have not been validated and neuopshychological profile specific to VND does not exist

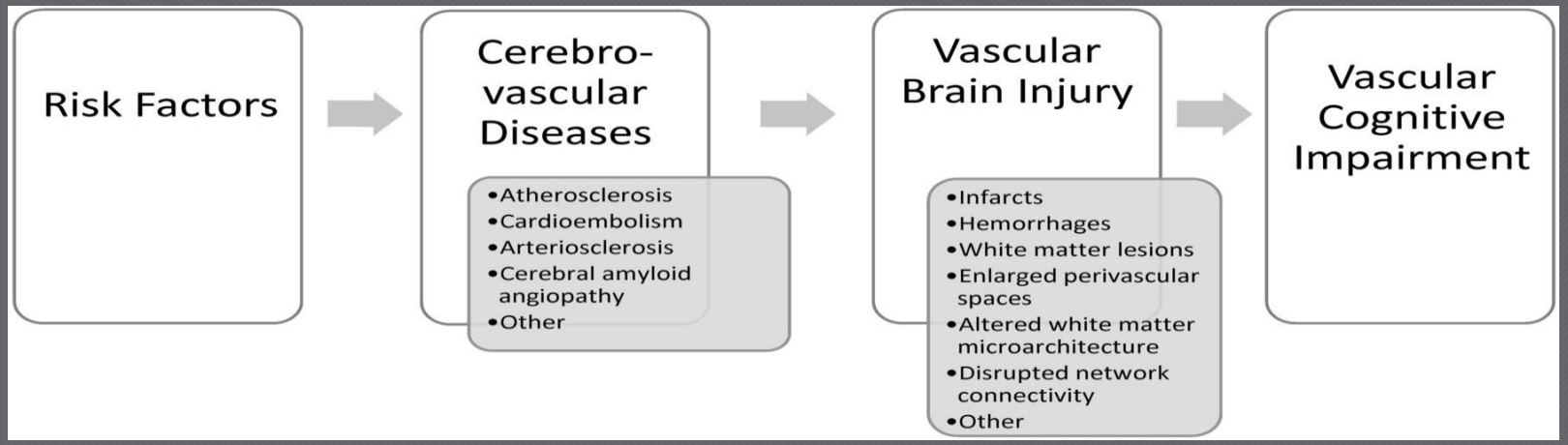




- The diagnosis is made when neuroimaging reveals evidence of a stroke or subclinical cerebrovascular disease

VND: treatment

- Treatment is aimed at identifying and treating cerebrovascular risk factors such as:
  - smoking
  - diabetes mellitus
  - hyperlipidemia
  - hypertension
  - ischemic heart disease
  - atrial fibrillation
  - hypercoagulable states



By lowering stroke risk with antiplatelet or anticoagulant therapy

THANK YOU !!!!