

ISNVD



**INTERNATIONAL SOCIETY OF
NEUROVASCULAR DISEASE**

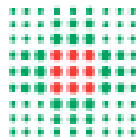
9th annual meeting

May 30-31, 2019, University of Ferrara - Italy
AULA MAGNA - S. ANNA UNIVERSITY-HOSPITAL, CONA VIA ALDO MORO 8

SESSION 2: Age Related Vascular Changes

Risk Factors for Alzheimer and Dementia

Stefano Volpato



**SERVIZIO SANITARIO REGIONALE
EMILIA-ROMAGNA**
Azienda Ospedaliero - Universitaria di Ferrara



**Università
degli Studi
di Ferrara**

**Dipartimento
di Scienze Mediche**

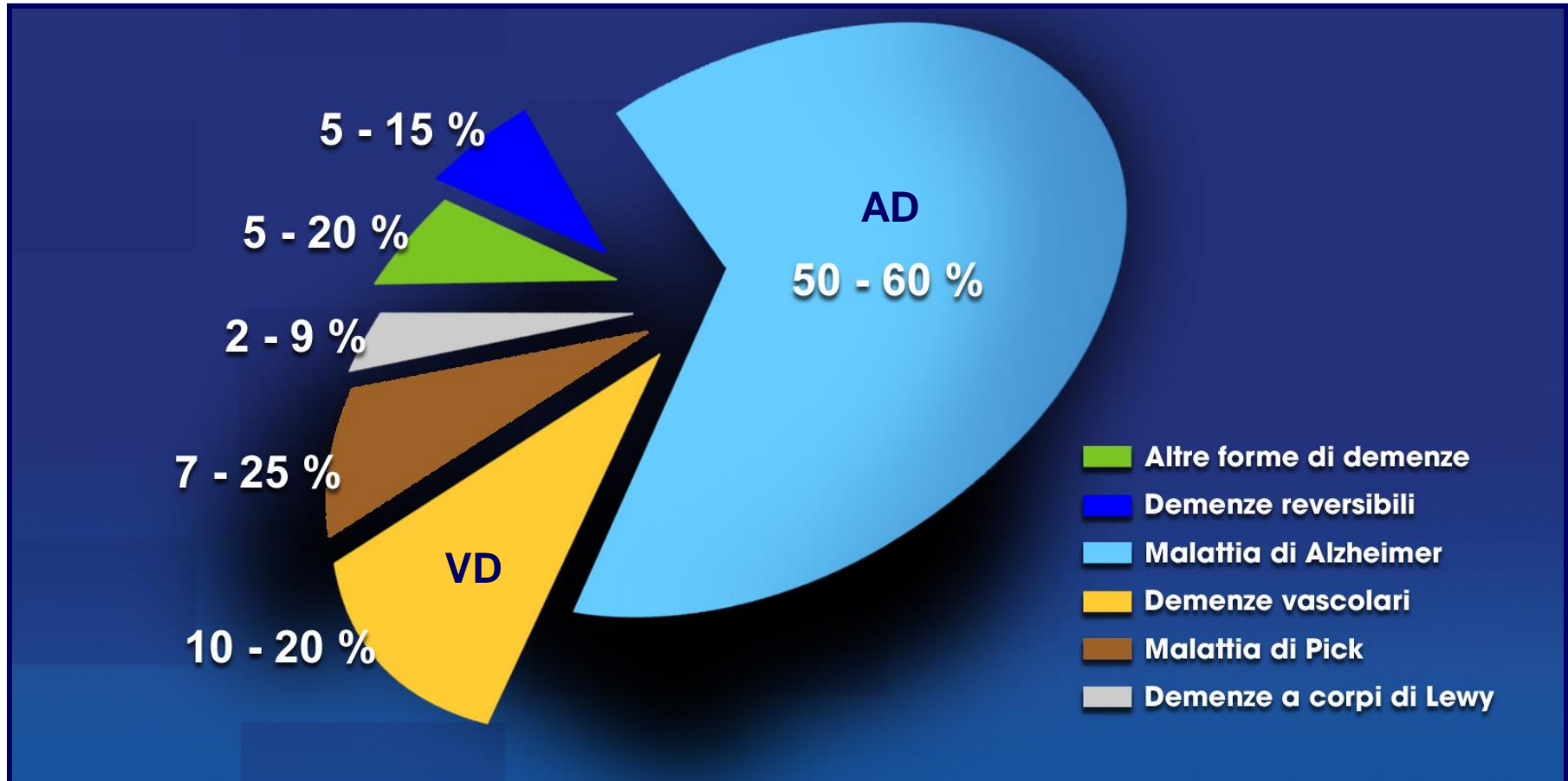
DISCLOSURE INFORMATION

In the last two years I have received honoraria
from the following farmaceutical companies:
ABBOTT; BAYER; NUTRICIA

What Is Dementia?

- Dementia is the loss of cognitive functioning, like thinking, remembering, and reasoning, and behavioral abilities to such an extent that it interferes with a person's daily life and activities.
 - Dementia is not a disease
 - Dementia is syndrome
 - Many diseases may cause dementia
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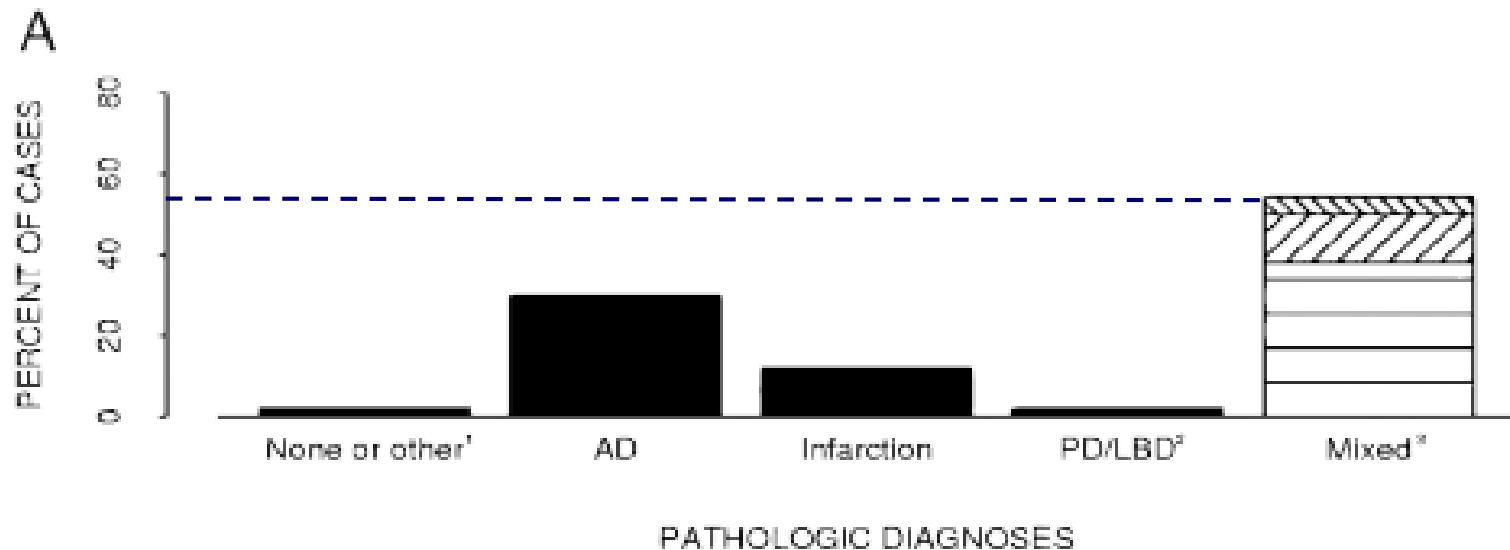
Main causes of dementia



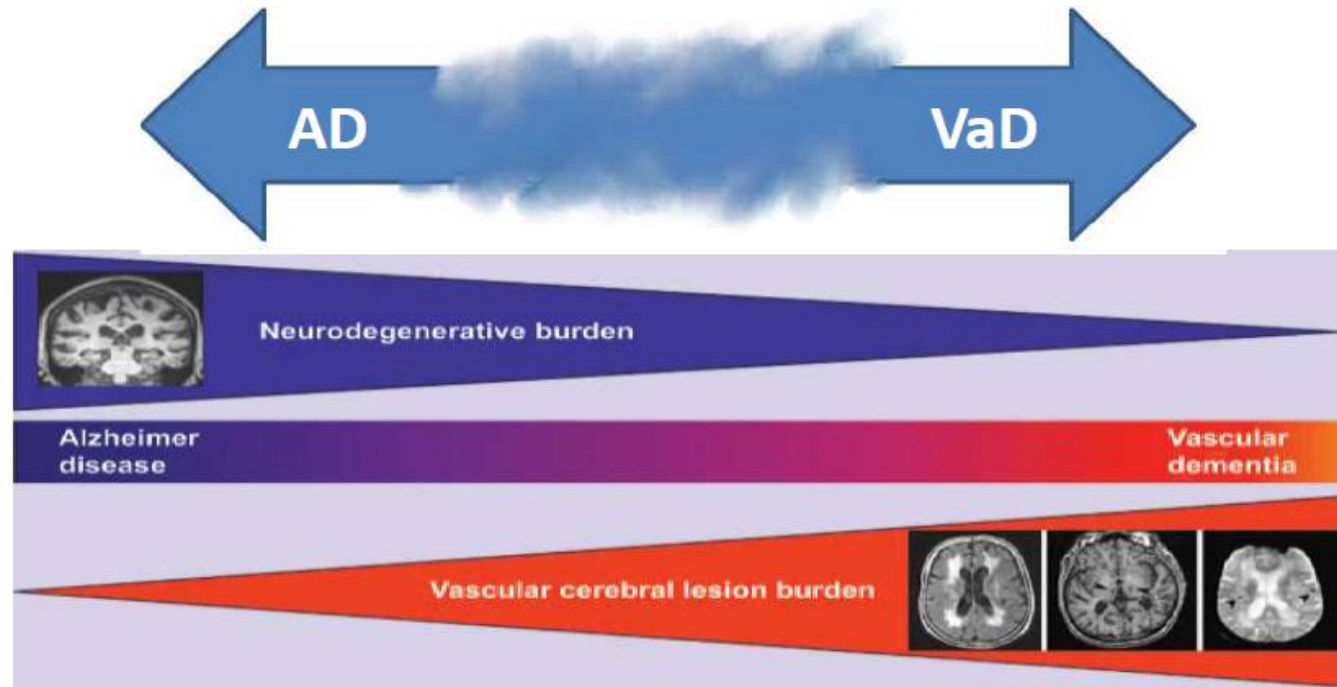
AD: Alzheimer disease VD: vascular dementia

Distribution of diagnoses in community-dwelling persons with dementia

Figure Distribution of diagnoses in community-dwelling persons with (A) and without (B) dementia

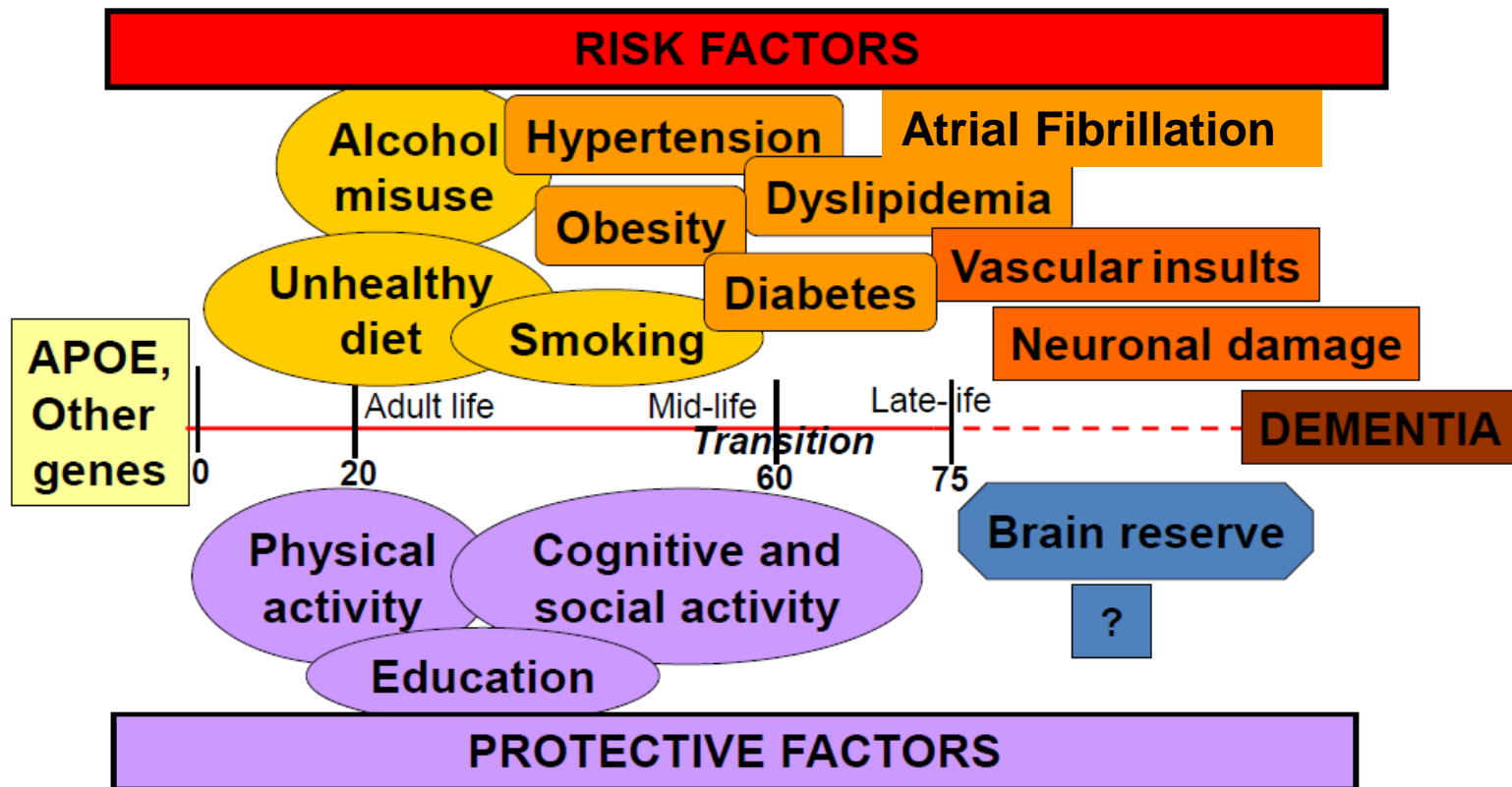


Dementia in the old age



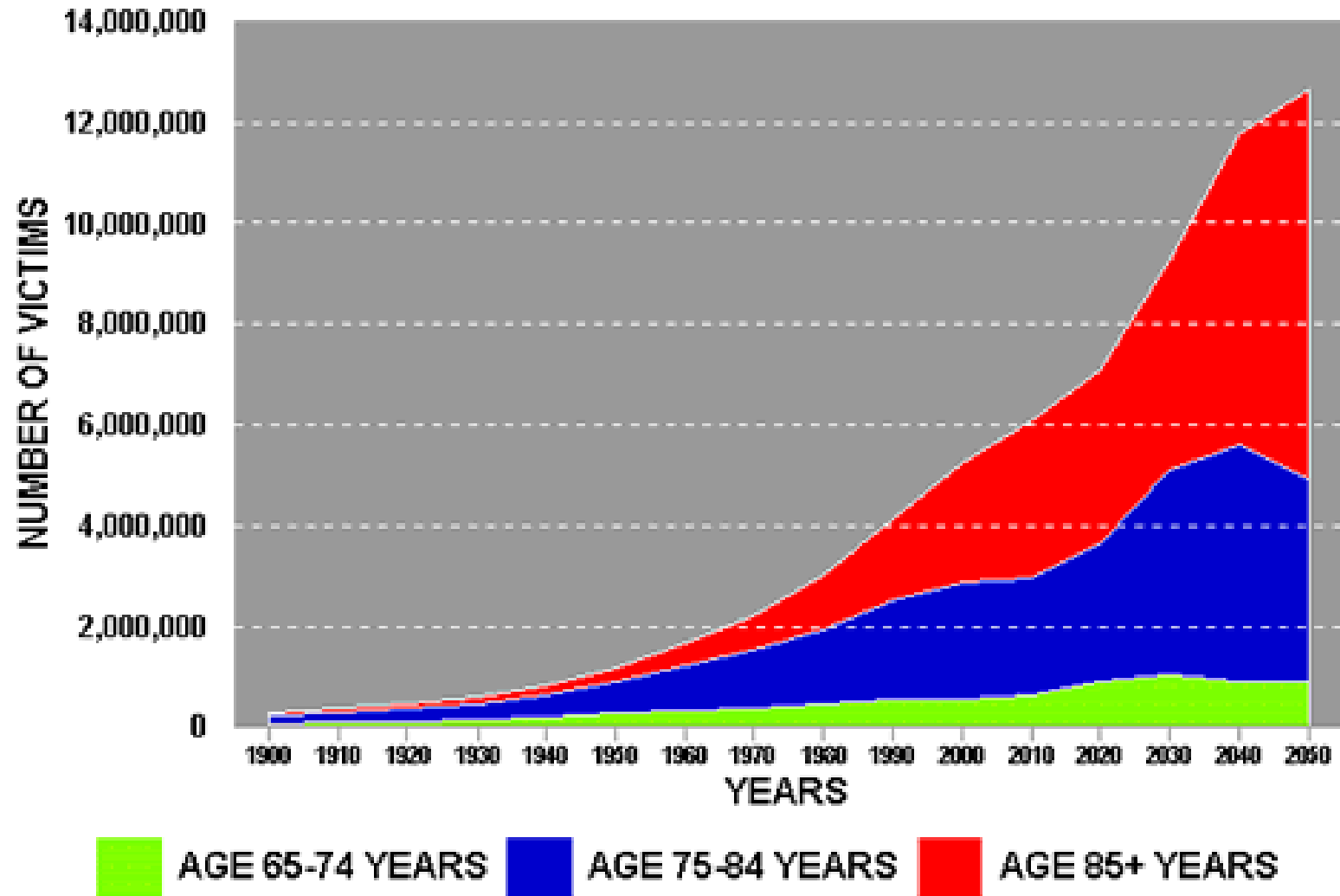
In the general population
70% of the patients with dementia are 75+ years old

AD is a multi-factorial disease:
target several risk factors simultaneously
for an optimal preventive effect



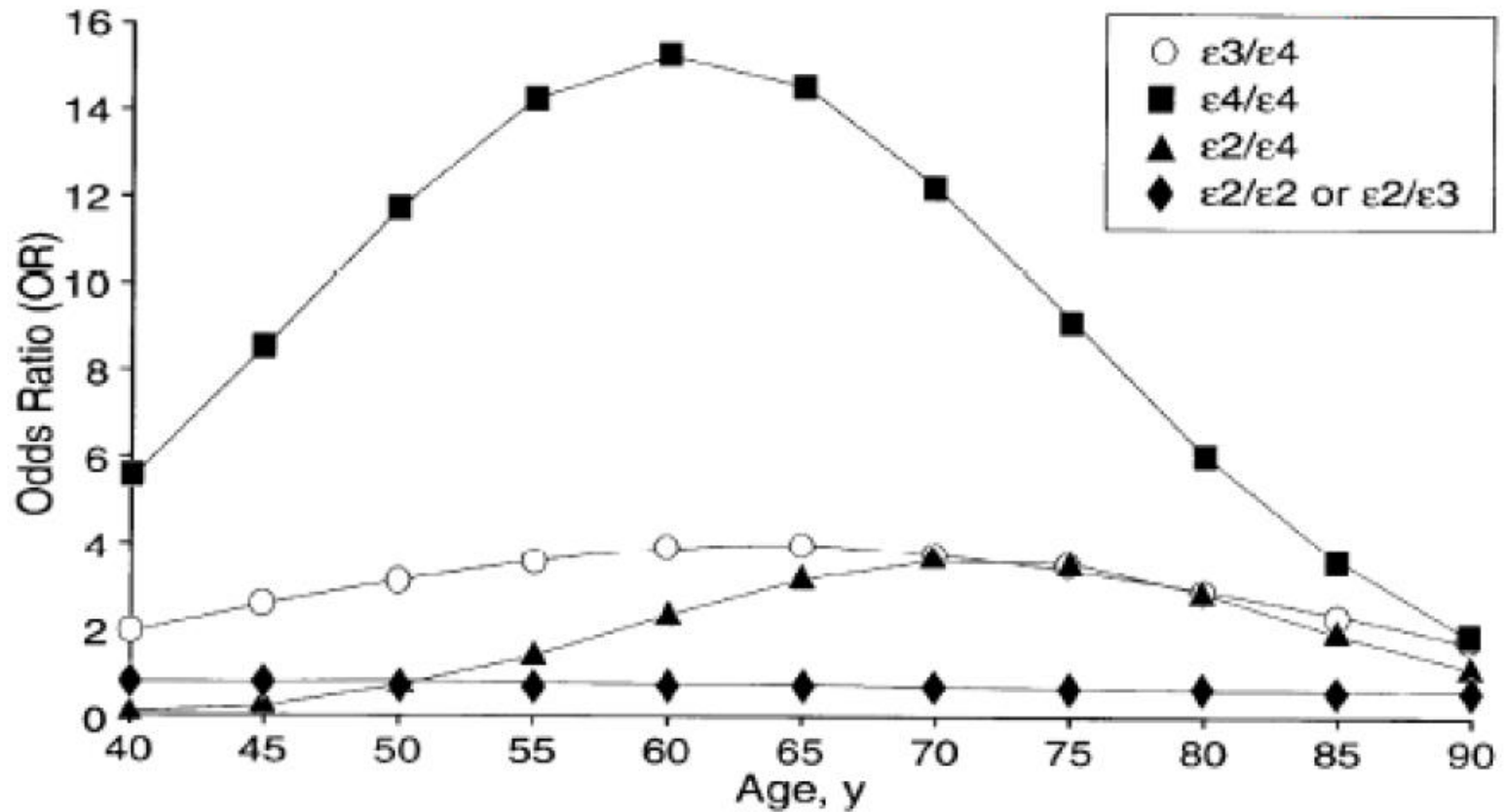
PREVALENCE OF ALZHEIMER'S DISEASE

(BY DECADES IN U.S.A. FROM 1900-2050)



This graph portrays how many Americans over the age of 65 are currently affected by Alzheimer's, and a projection of how many more will become affected with it as time passes.
w3.uhsc.edu

Odds of Alzheimer Diseases by APOE genotype and age



Promising Strategies for the Prevention of Dementia

Laura E. Middleton, PhD; Kristine Yaffe, MD

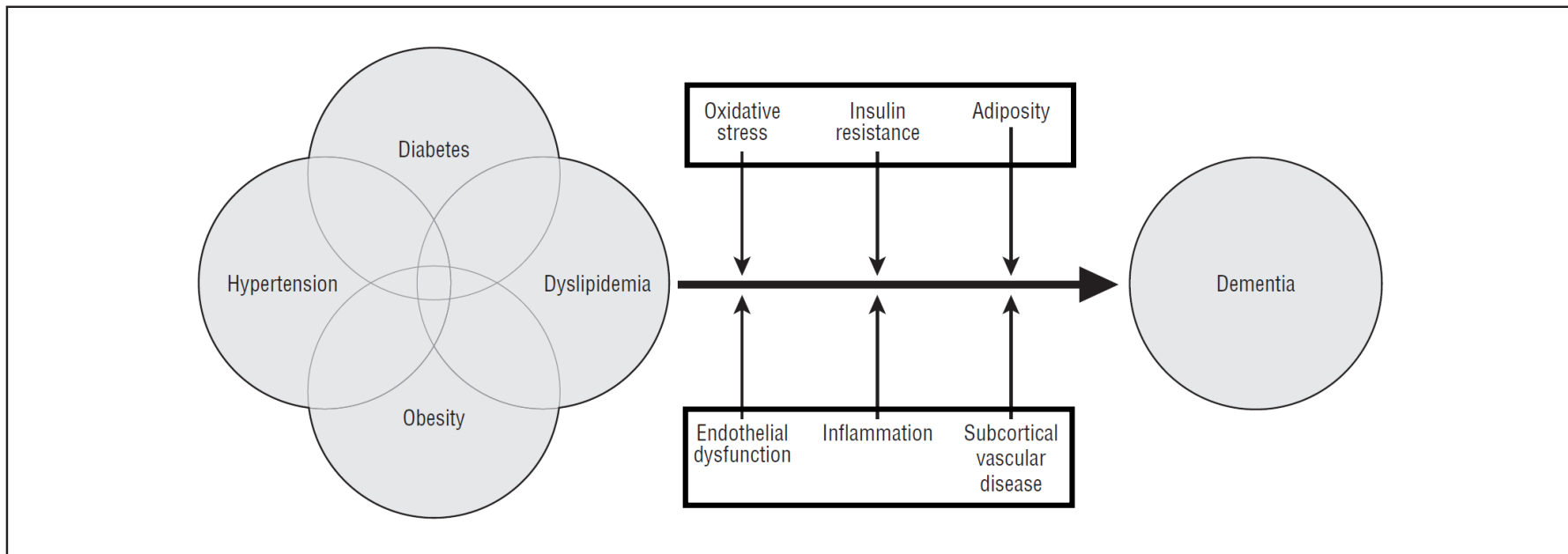
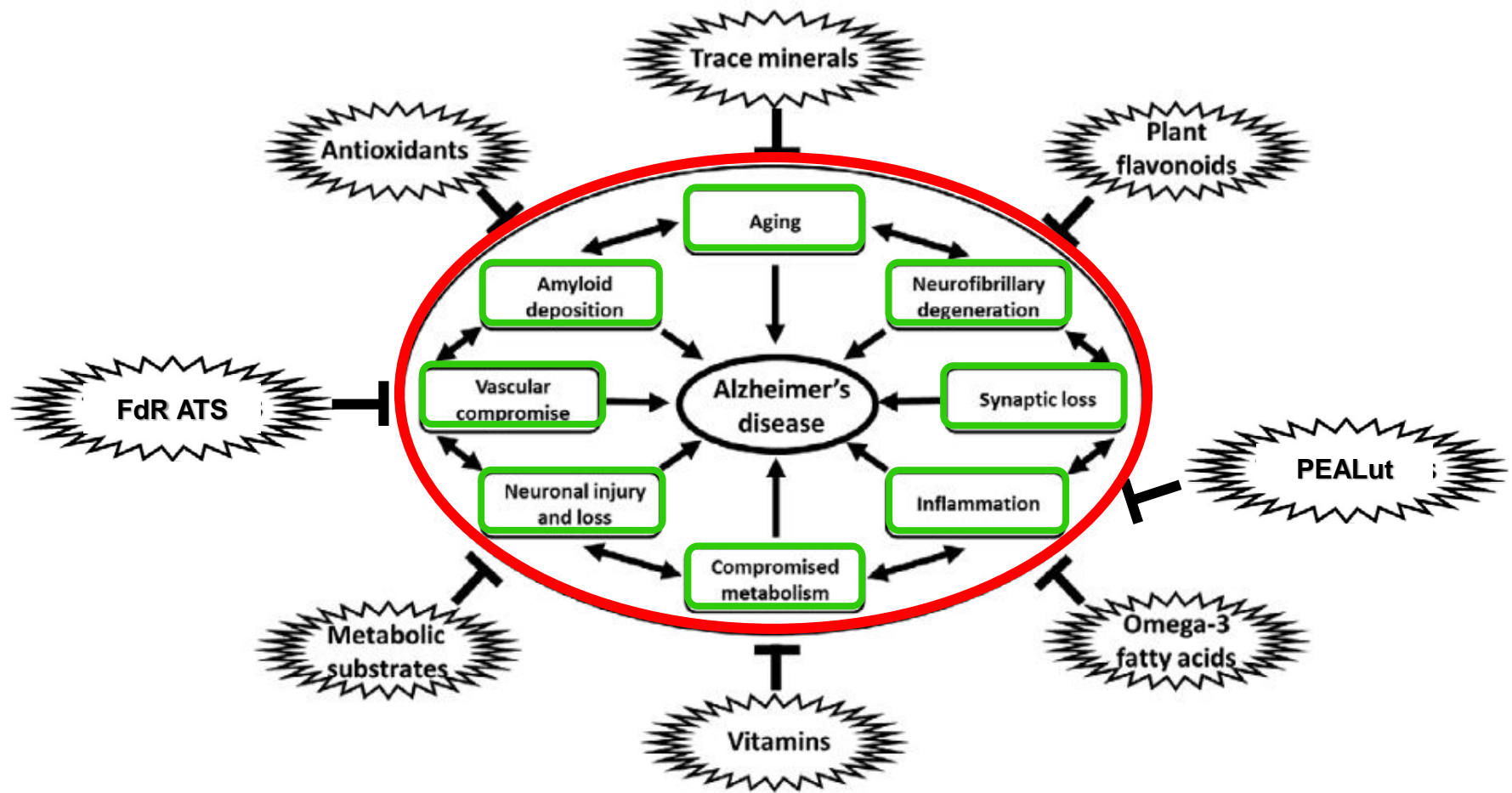


Figure. Possible mechanisms that may explain the association between vascular risk factors and an increased risk of developing dementia.

Cellular pathways and process linked to neurodegeneration in AD



Oxidative stress and cognitive decline

H. B. Staehelin

Pathological cascade in Alzheimer's disease

Protection

Repair capacity for DNA
Antioxidant enzymes
Endogenous antioxidants
e.g. Melatonin
Antioxidants
Folic acid
Vitamin B₁₂
Flavonoids
Carotenes
Anti-inflammatory agents
Non-vitamin natural
antioxidant polyphenols etc.

Structural changes
DNA
Cell organelles
Membranes

Functional changes
Neuronal dysfunction

Abeta
+++

Tau-hyperphos
+++

Neuronal death

Pathogenic effect

Mutations
Chromosome 21,14,1
ApoE
DNA damage
mDNA
Insulin-degrading enzyme
SNP not yet identified etc.

Oxidative stress ROS
Radiation
Metals
Nutrient deficiencies
Hyperhomocysteinaemia
Increased abeta
Inflammation
Diabetes
Obesity
Hypertension

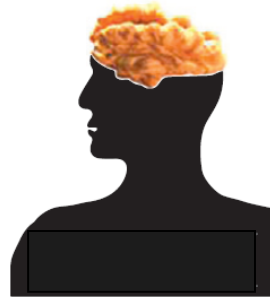
Micronutrients

Antioxidants
(vit C, vit E,
carotenoids,
polyphenols)

B Vitamins
(B6, folate, B12)

- fruits and vegetables
- vegetable oils
- cereals, seeds...

Dieta
mediterranea



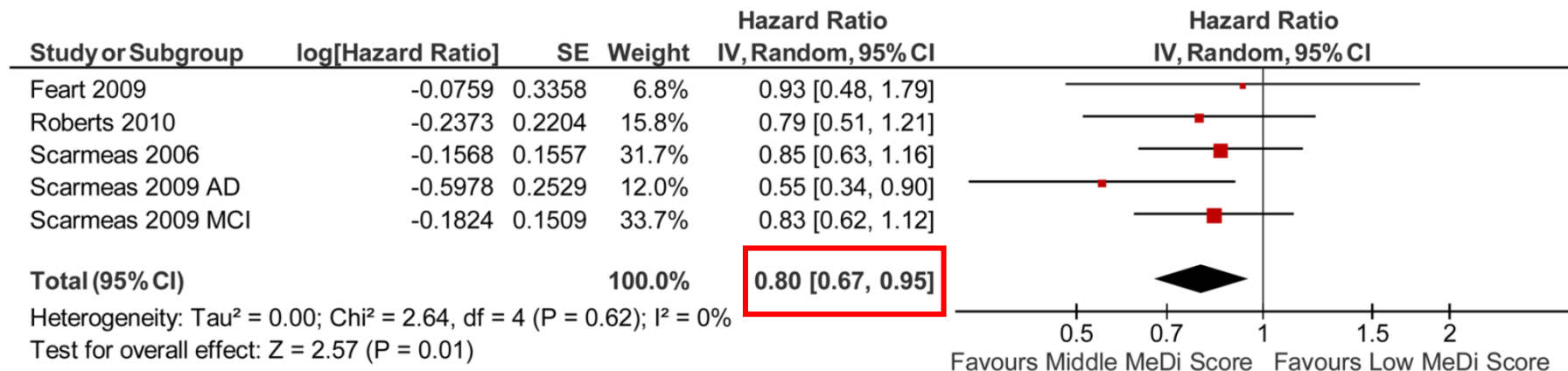
Macronutrients

Omega-3
fatty acids

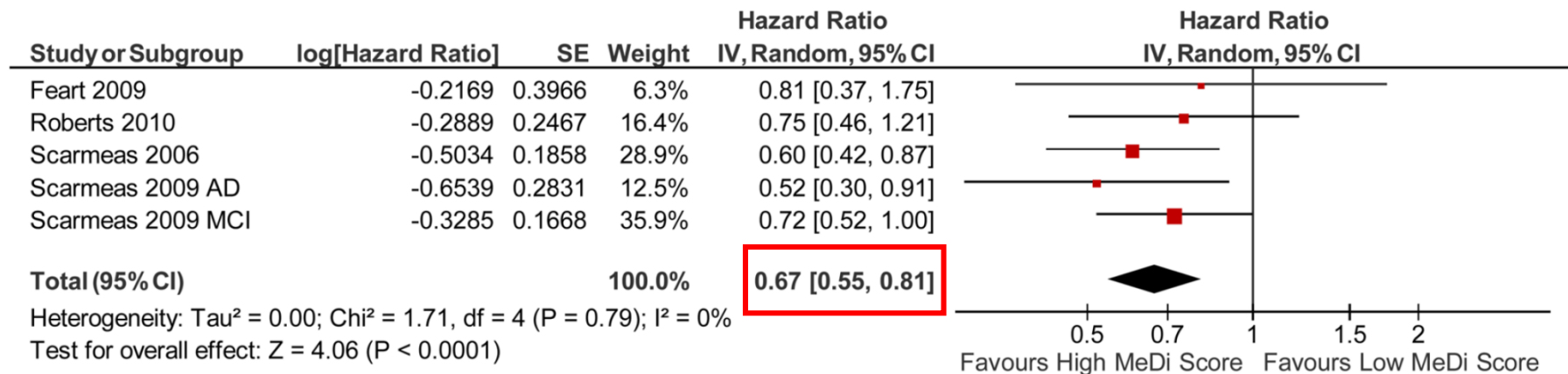
- fatty fish (EPA, DHA)
- vegetable oils and seeds: canola, walnut (ALA)
- some vegetables (lamb's lettuce) and legumes (ALA)

Adherence to MD and cognitive decline

4.2 Middle vs Lowest MeDi tertile



4.3 Highest vs Lowest MeDi tertile



Mediterranean Diet and Age-Related Cognitive Decline: A RCT

IMPORTANCE Oxidative stress and vascular impairment are believed to partly mediate age-related cognitive decline, a strong risk factor for development of dementia. Epidemiologic studies suggest that a Mediterranean diet, an antioxidant-rich cardioprotective dietary pattern, delays cognitive decline, but clinical trial evidence is lacking.

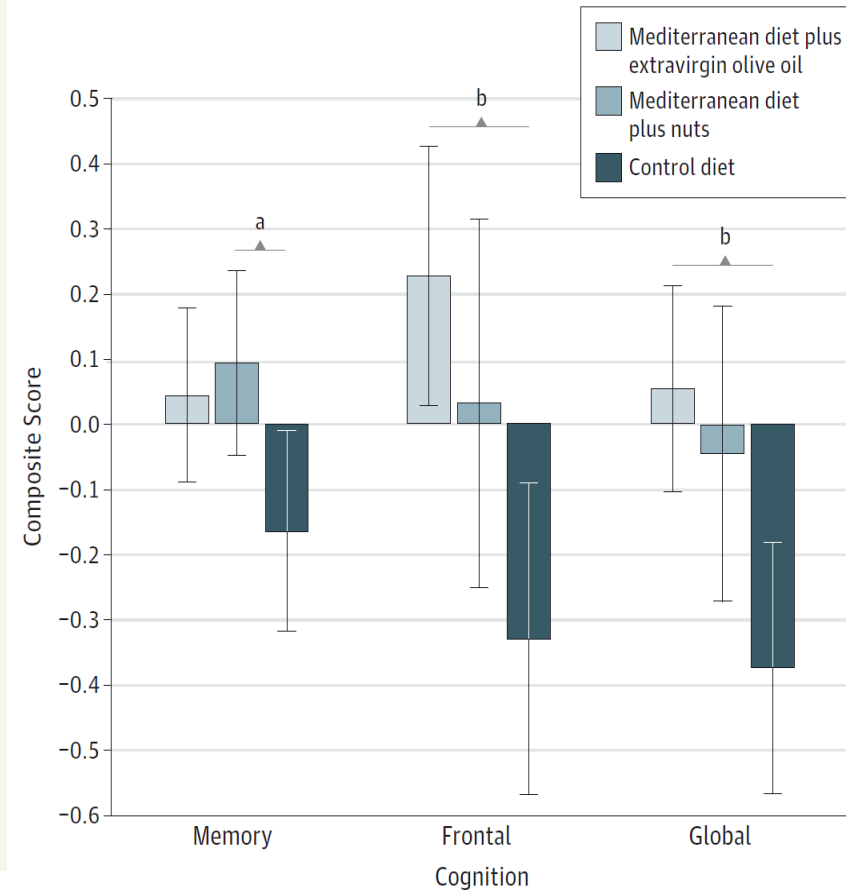
OBJECTIVE To investigate whether a Mediterranean diet supplemented with antioxidant-rich foods influences cognitive function compared with a control diet.

DESIGN, SETTING, AND PARTICIPANTS Parallel-group randomized clinical trial of 447 cognitively healthy volunteers from Barcelona, Spain (233 women [52.1%]; mean age, 66.9 years), at high cardiovascular risk were enrolled into the Prevención con Dieta Mediterránea nutrition intervention trial from October 1, 2003, through December 31, 2009. All patients underwent neuropsychological assessment at inclusion and were offered retesting at the end of the study.

INTERVENTIONS Participants were randomly assigned to a Mediterranean diet supplemented with extravirgin olive oil (1 L/wk), a Mediterranean diet supplemented with mixed nuts (30 g/d), or a control diet (advice to reduce dietary fat).

MAIN OUTCOMES AND MEASURES Rates of cognitive change over time based on a neuropsychological test battery: Mini-Mental State Examination, Rey Auditory Verbal Learning Test (RAVLT), Animals Semantic Fluency, Digit Span subtest from the Wechsler Adult Intelligence Scale, Verbal Paired Associates from the Wechsler Memory Scale, and the Color Trail Test. We used mean z scores of change in each test to construct 3 cognitive composites: memory, frontal (attention and executive function), and global.

Figure 2. Changes in Cognitive Function Measured With Composites by Intervention Group



Conclusions

- AD and vascular dementia are the most common form of dementia in older people
 - Both AD and VD are multifactorial conditions and shared multiple risk factors
 - Age, APO-E, and education level are strong non-modifiable risk factors
 - Traditional CVD risk factors, including unhealthy diet and sedentary life-style have been associated with both VD and AD
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