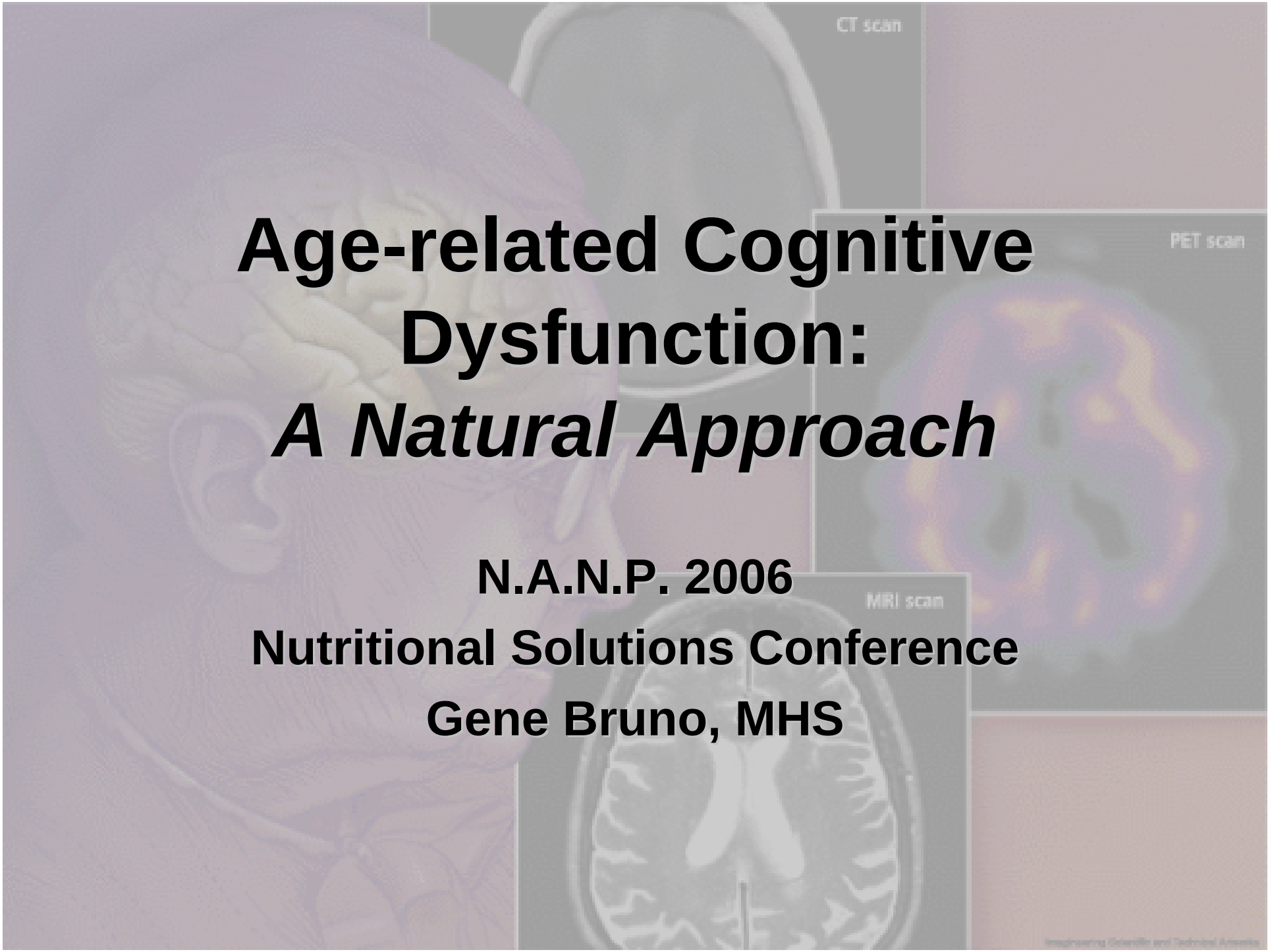

Age-related Cognitive Dysfunction: *A Natural Approach*

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Nutritional Solutions Conference

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Note

- The term “age-related cognitive dysfunction” can refer to a number of disorders from the relatively common age-related memory impairment, to progressive dementias such as Alzheimer’s disease.
- This presentation will focus on the dementias

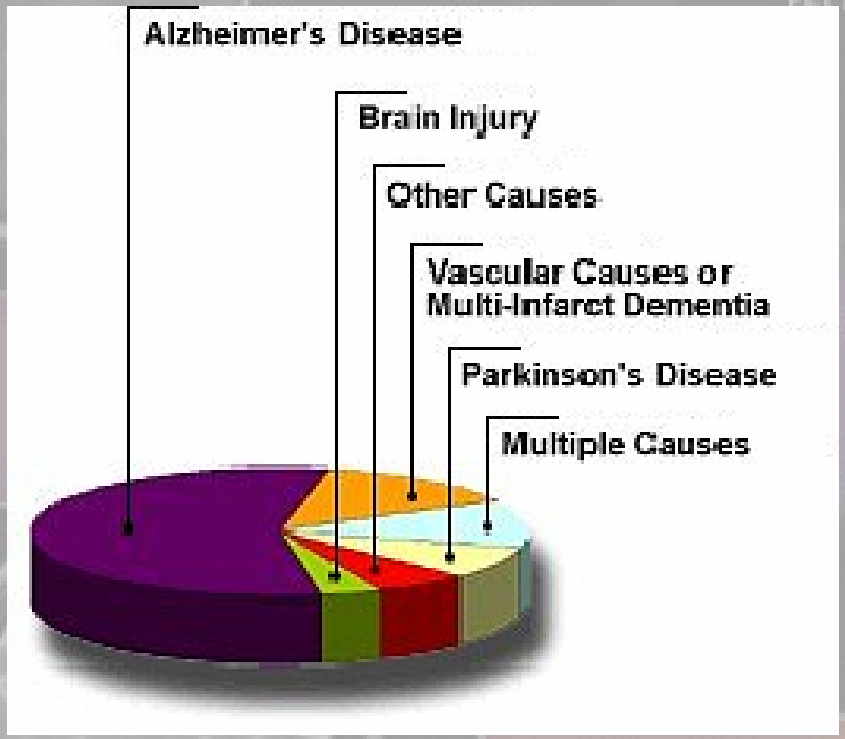
Learning Objectives

- Discuss the types, prevalence & etiology of dementias
- Explain the impact of dementia care on family
- Describe the nutritional guidelines for older adults
- Evaluate dietary supplements with benefits for dementia
- Create natural protocols for individual types of dementia

TABLE 1 – DEMENTIA: TYPE, CAUSES & TREATMENTS		
Type	**Cause**	**Conventional Treatment**
Dementia of Alzheimer type (DAT)	Plaques, tangles, transmitter defects, abnormal amyloid deposition	Anticholinesterases, nerve growth Factor
Vascular dementia	Multiple infarcts, stroke, small vessel disease	Aspirin, lower blood pressure, lower cholesterol
Lewy body dementia	Lewy bodies, transmitter defects	Anticholinesterases
Parkinson's disease	Lewy bodies especially in basal Ganglia	Antiparkinsonian drugs do not help Dementia
Frontal lobe dementia	Various, including Pick's	
Normal pressure hydrocephalus	Obstructed cerebrospinal fluid flow due to previous damage, e.g. subarachnoid hemorrhage, meningitis	Surgery (shunt)
Punch-drunk syndrome	Repeated head injury	Stop the damage
Slow-growing brain tumor	Pressure causes destruction of brain	Surgery
Aluminum and other metals	Direct toxic effect	Remove the poison
Wilson's disease	Toxicity of copper	Penicillamine
Alcohol abuse	Toxic effect and thiamine deficiency	Abstinence, thiamine treatment
Huntington's chorea	Genetic abnormality	Screening available
Syphilis (GPI)	Infective	Antibiotics
AIDS	Infective, secondary infection	Anti-AIDS drugs
Vitamin (e.g. B12) deficiencies	Toxic?	Replacement
Hypothyroidism	Toxic?	Replacement
Parathyroid disorders	Calcium metabolism altered	Medical or Surgical
Adapted from *Jacques, A. & Jackson, G.A. 2000, Understanding Dementia, 2nd ed, Churchill Livingstone, Edinburgh.*		

Types of Dementia

- Most prevalent types include:
  - Alzheimer's disease
  - Vascular dementia
  - Parkinson's disease

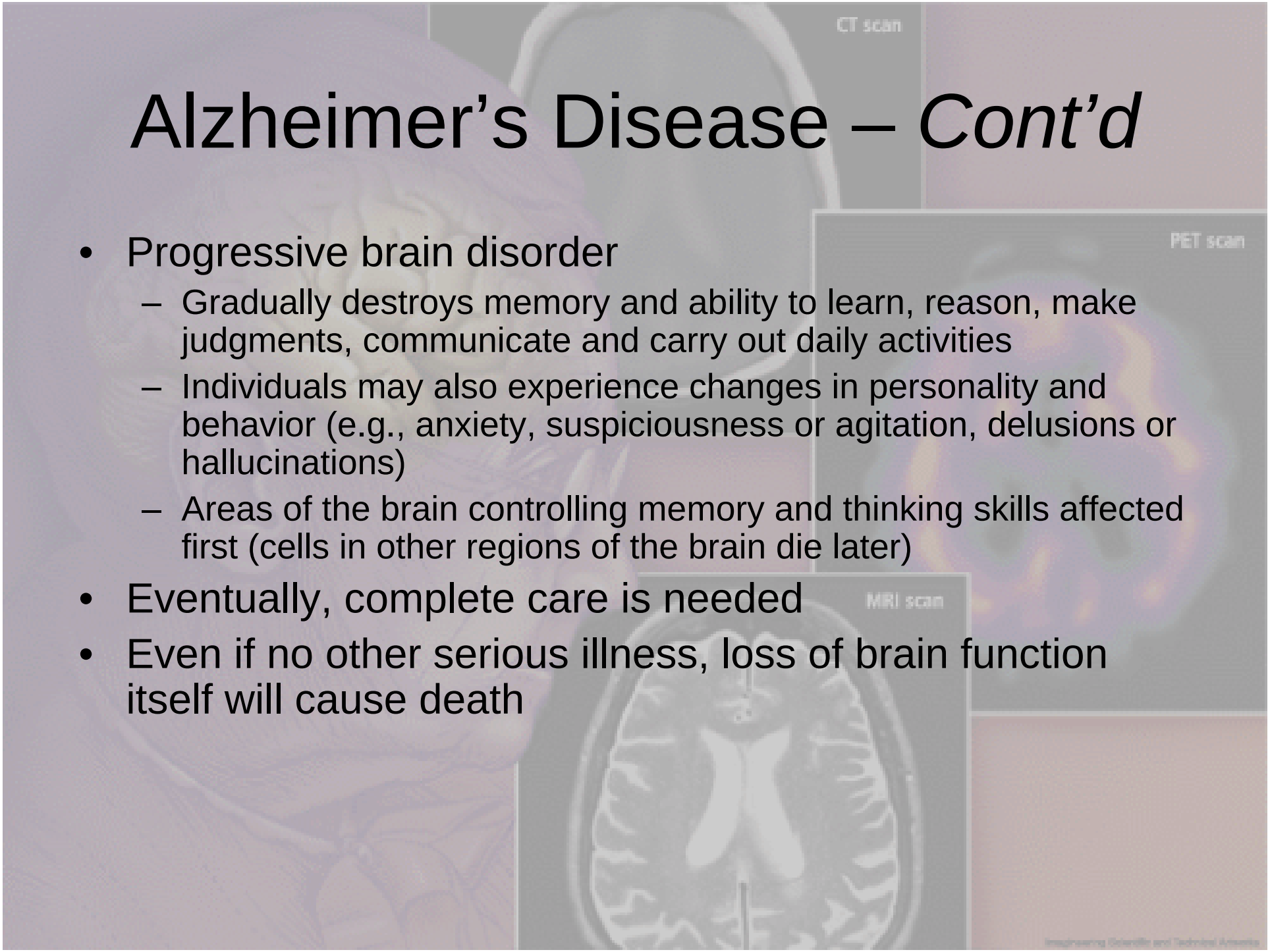


Alzheimer's Disease

- Dementia of the Alzheimer's type (DAT) is the correct name
- Most common dementia
  - Affecting 50-60% of geriatric patients who have dementia
  - Over the age of 65, one person in 10 can be expected to be afflicted
  - Ratio increases to 4 in 10 in those over 85

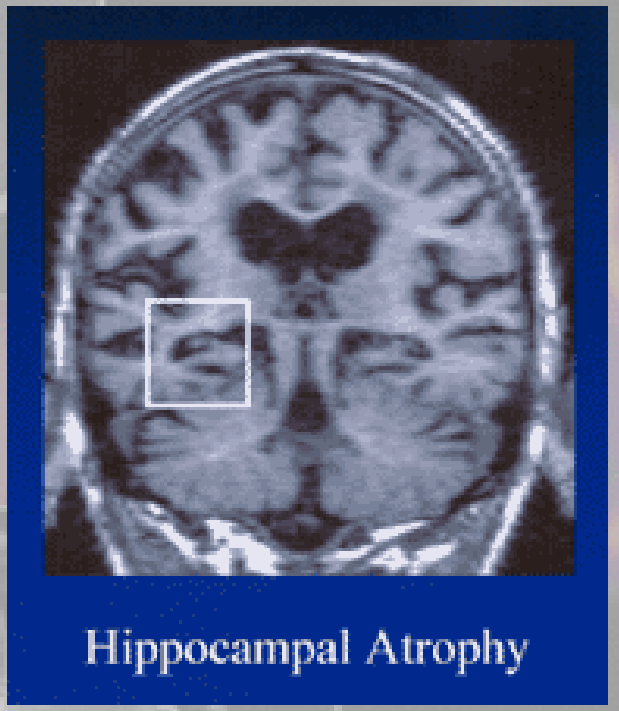
Alzheimer's Disease – *Cont'd*

- Progressive brain disorder
  - Gradually destroys memory and ability to learn, reason, make judgments, communicate and carry out daily activities
  - Individuals may also experience changes in personality and behavior (e.g., anxiety, suspiciousness or agitation, delusions or hallucinations)
  - Areas of the brain controlling memory and thinking skills affected first (cells in other regions of the brain die later)
- Eventually, complete care is needed
- Even if no other serious illness, loss of brain function itself will cause death



Alzheimer's Disease – *Cont'd*

- Etiology of DAT
  - Cerebral hemispheres shrink and lose weight; an indication of cell death.
  - Neurofibrillary tangles and neuritic plaques appear to contribute to this problem
  - Some evidence of a genetic predisposition to DAT.



Alzheimer's Disease – *Cont'd*

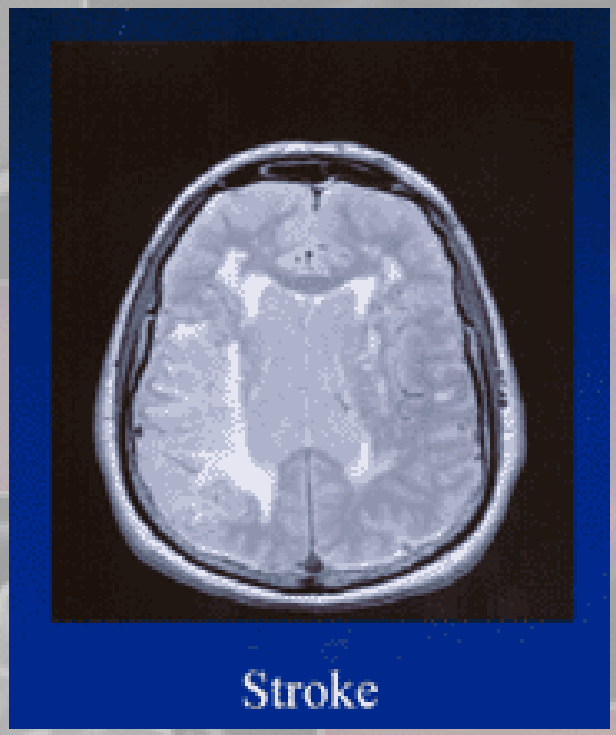
- Some evidence that aluminum involved in the genesis of DAT.
  - Higher incidence in patients receiving renal dialysis
    - Due to concentration of aluminum in the water
  - Rabbits fed aluminum found to develop tangles similar to those found in patients with DAT
  - High concentration of aluminum thought to be found in the plaques of DAT patients
  - No increased incidence of DAT in areas with high aluminum in the water
- Concentration of free radicals implicated in the development of DAT.

Vascular Dementia

- Vascular dementia (VaD) accounts for 20-30% of all dementias
- Primarily a disease of the arteries
  - Patients typically show vascular disease in other areas of the body (e.g., heart disease, poor circulation to the legs, high blood pressure)
  - Different types of VaD. Most common is multi-infarction dementia (MID)

Vascular Dementia – *Cont'd*

- Etiology
  - Basically MID caused by atherosclerotic blood vessels to the brain
  - Periods of decreased blood flow, resulting in repeated ministrokes in brain
  - Ministrokes cause areas of cell death called infarcts.
  - If the ministrokes continue, symptoms similar to DAT appear



Vascular Dementia – *Cont'd*

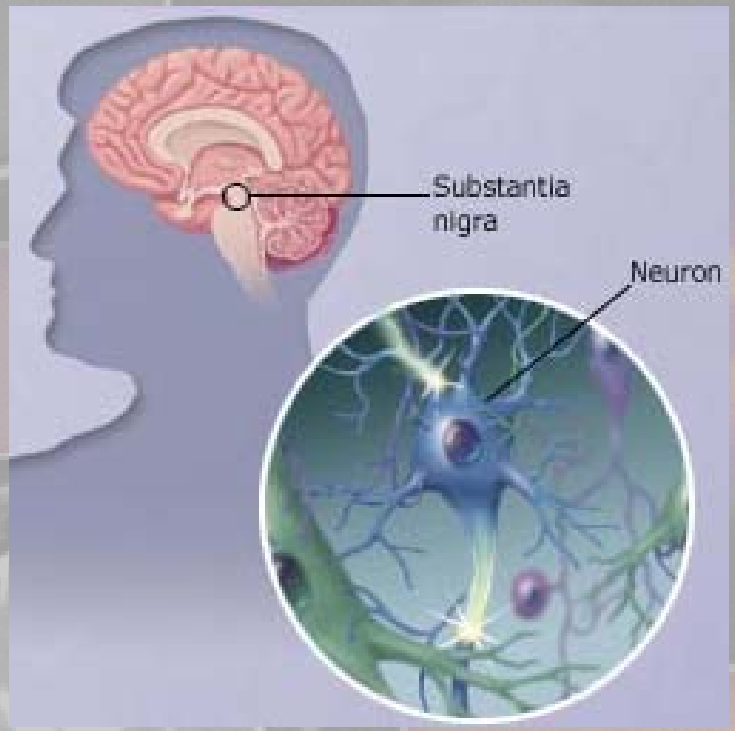
- The causes and risk factors for VaD generally same for vascular disease in general:
  - high levels of serum cholesterol and triglycerides
  - high levels of homocysteine and C-reactive protein
  - smoking, etc.
- People with VaD seem to have exposure to higher levels of fibrinogen (clotting factor) over a long period of time

Parkinson's disease

- Best known due to celebrities with PD
- 1.5 million Americans with PD, 60,000 newly diagnosed cases each year
  - Usually develops after the age of 65, though 15% of those diagnosed are under 50.
- About 20% of patients develop DAT, so PD is considered to be a type of dementia

Parkinson's disease

- Etiology
  - Neurons in part of the brain (substantia nigra) die or become impaired (cause unknown).
  - These cells produce the dopamine.
    - Dopamine allows smooth, coordinated function of the body's muscles and movement.
    - When approximately 80% of the dopamine-producing cells are damaged, PD symptoms appear.



Parkinson's disease – *Cont'd*

- PD symptoms: tremor (shaking), slowness of movement, rigidity (stiffness), and difficulty with balance; may also include small, cramped handwriting, stiff facial expression, shuffling walk, muffled speech and depression
- In PD, dopamine unable to cross the blood-brain barrier
  - L-dopa, however, is a precursor to dopamine, and can help reduce muscle rigidity and tremors, and improve posture and speech

Family & Dementia Care

- Families bear the major responsibility as caretakers for dementia patients
- How families react and cope with dementia sufferer plays a significant role in outcomes…both for the sufferer and the caregivers
- Family reactions to dementia
  - the dying relationship
  - the changing relationship
  - the continuing relationship.

Family & Dementia Care – *Cont'd*

- The dying relationship
  - Due to the decline in personality, self-care and intellect, dementia has been described as living death.
  - Family members often experience feelings of loss and go through the phases of grief related to death

Family & Dementia Care – *Cont'd*

- Caregivers may experience depression
- In one study about 35% of caregivers were classified as depressed
  - Scores positively correlated with frequency of using coping strategies to manage distress as well as frequency of the patients' disruptive behavior
  - Scores correlated negatively with the educational years of the caregivers

Family & Dementia Care – *Cont'd*

- The changing relationship
  - Relationship between family and sufferer tends to change as family comes to terms with the sufferer's decline
  - Change primarily characterized by the sufferer's shift to dependence upon the family, or family member
  - Caregivers tend to judge their own health to be poorer than that of controls
    - Caregiving in dementia appears to be at least as stressful as that in chronic physical illness and depression.

Family & Dementia Care – *Cont'd*

- The continuing relationship
  - Providing care is heavy task, often associated with varying degrees of difficulty, stress and burden
  - The continuing relationship will likely require some outside help
    - Should be introduced gradually and sensitively
  - Research shows a positive outcome from the continuing relationship may be raising a child with a greater sense of empathy and caring

Family & Dementia Care – *Cont'd*

- Carer support agencies
  - Family Caregiver Alliance
  - National Family Caregiver Support Program
  - The Alzheimer's Association
  - The National Family Caregivers Association
  - The National Respite Locator Service

Dietary & Nutritional Guidelines

- Energy requirements (i.e.,kcal)
  - Decrease in energy is appropriate since basal energy requirements decrease with advancing age
  - For elderly:
    - Low stress: 20 kcal/kg/day
    - Moderate stress: 25–30 kcal/ kg/day
    - Severe stress: 35 kcal/kg/day
- Carbohydrate requirements
  - Should comprise about 55% to 60% of total energy intake with whole grain and complex carbohydrate rich in fibers foods being emphasized

Dietary/Nutritional Guidelines – *Cont'd*

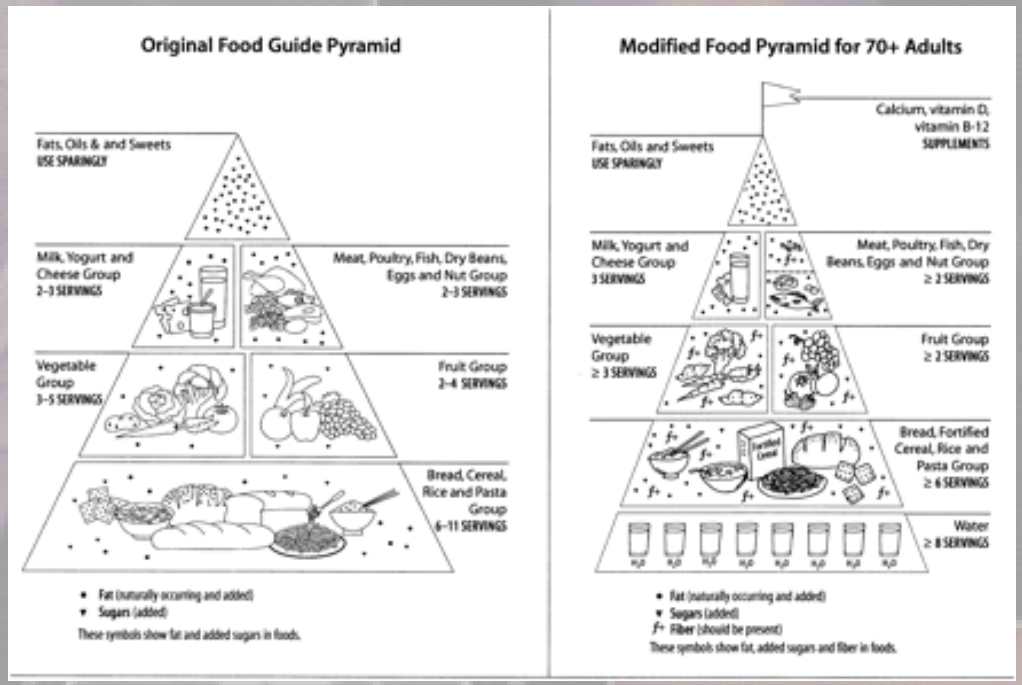
- Protein requirements
  - 1 g/kg/day (and further increased to 1.2 to 1.5 g/kg/day in periods of stress to offset a negative nitrogen balance).
- Fat requirements
  - 30% or less of fat, with 10% polyunsaturated fatty acids, 10% to 15% monounsaturated fat, and less than 10% saturated fat
- Fluid requirements (3 guidelines):
  - 30 mL/kg body weight
  - 1 mL/kcal/energy consumed
  - 100 mL/kg, 50 mL/kg for the next 10 kg, and 25 mL/kg for the remaining kg

Dietary/Nutritional Guidelines – *Cont'd*

- Micronutrient requirements
  - 50% of older adults fail to meet RDIs for vitamins & minerals
    - 10%-30% have subnormal levels
  - All elderly should use a multiple vitamin supplement (at least)
    - More on this later

Modified Food Pyramid

- Highlights specific selections within each food group category in order to emphasize foods with a high ratio of nutrients to energy to help ensure adequate nutrient intakes
- Narrowed to reflect lowered energy needs.
- Includes a small supplement flag at the top and symbols for water and fiber.



Individual Dietary Supplements

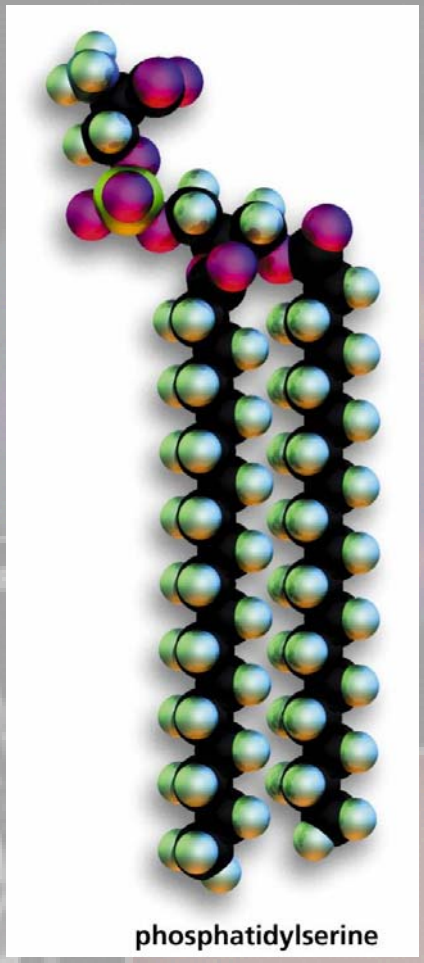
- Ginkgo biloba extract
  - Improves cerebral & peripheral circulation
  - Vast amount of research treating dementias and other cognitive functions
  - 8 randomized, db, pc studies on Gbe showed modest effects on improving the symptoms of dementia and cerebral insufficiency.
    - Improvement equivalent to therapy with ergoloid mesylates (Hydergine)

Dietary Supplements – *Cont'd*

- Ginkgo biloba extract (cont'd)
  - A meta-analysis showed significant benefit of Gbe on objective measures of cognitive function in patients with Alzheimer's disease
    - Comparable with the benefits of donepezil (Aricept)
  - In studies lasting at least 6 months, Gbe was equally effective in mild to moderate Alzheimer's dementia in comparison to second-generation cholinesterase inhibitors
  - In 309 patients with mild to moderately severe forms of Alzheimer's or multi-infarct dementia, Gbe was capable of stabilizing cognitive performance and social functioning
  - Excellent safety profile
    - Possible increase risk of bleeding when used in combination with antiplatelet medications such as warfarin
  - Dosage: 120-240 mg daily

Dietary Supplements – *Cont'd*

- Phosphatidylserine (PS)
  - Phospholipid active at cell membranes (including synaptic membrane zones)
  - In a db, pc study of 33 Alzheimer's patients, PS improved symptoms & shifted EEG power more towards the normal level.
  - In a db study of Parkinson's patients with Alzheimer's, PS improved symptoms & EEG



Dietary Supplements – *Cont'd*

- In a preliminary trial elderly patients with multi-infarct dementia, Alzheimer's disease or minor depression, PS significantly decreased depression & improved biochemical parameters; with benefits persisting after PS withdrawal.
  - Excellent safety profile
    - Compatible with most drugs
  - Dosage: 300 to 700 mg daily

Dietary Supplements – *Cont'd*

- Huperzine A
  - Natural substance derived from extract of *Huperzia serrata*
  - Acetylcholinesterase (AChE) inactivates acetylcholine
    - A normal function
    - Can get out of hand & adversely effect cognitive functions
  - Huperzine A is a selective AChE inhibitor

Dietary Supplements – *Cont'd*

- Huperzine A (cont'd)
  - In db study of patients with multi-infarct, senile dementia, huperzine A significantly improved cognitive functions
  - Similar research has shown memory, cognition, and behavior improvements in Alzheimer's patients
  - Huperzine A has an ability to reduce neuronal cell death (caused by exposure to a toxin)
  - Safety
    - No severe side effects have been reported in human trials using huperzine A
    - Theoretically, concurrent use might have additive effects with drugs that promote acetylcholine activity
  - Dosage: 60-100 mcg daily

Dietary Supplements – *Cont'd*

- Vinpocetine
  - Natural substance derived from Periwinkle seeds
  - Improves brain circulation and oxygen utilization
  - Elevates cerebral concentrations of ATP
  - Increases the firing rate of certain neurons (cholinergic pathway)

Dietary Supplements – *Cont'd*

- Vinpocetine (cont'd)
  - Helped improve cognitive function and short-term memory in both animal and human research (extensive studies in Europe)
  - Effective for patients with cerebrovascular disease
  - Excellent safety profile
    - Even has antioxidant properties
  - Dosage: 10-15 mg daily

Dietary Supplements – *Cont'd*

- Alpha-GPC
  - Alpha-glycerylphosphorylcholine (Alpha-GPC) is an acetylcholine precursor derived from soy
  - Increases acetylcholine release
  - Found to produce symptomatic improvement in patients with mild to moderate vascular dementia
  - Resulted in significant improvements in patients with probable Alzheimer's dementia

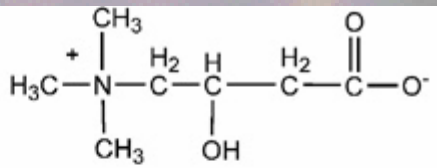
Dietary Supplements – *Cont'd*

- Alpha-GPC (cont'd)
  - Helped promote functional recovery of patients with cerebral stroke
  - 71% of the patients 2044 patients suffering from recent stroke or transient ischemic attacks experienced "no cognitive decline" or "forgetfulness" when given Alpha-GPC
  - Safety: Well tolerated
  - Dosage: 1,200 mg daily

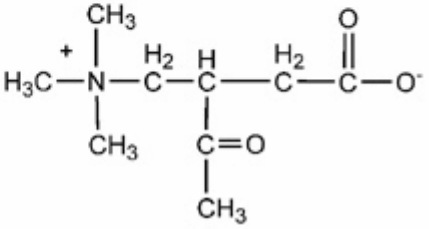
Dietary Supplements – *Cont'd*

- Acetyl-L-carnitine (ALC)
  - Ester derivative of the amino acid l-carnitine
  - Structurally related to acetylcholine
  - Clinical trials found that ALC supplementation delays the progression of Alzheimer's disease, improves memory and enhances overall performance

L-Carnitine

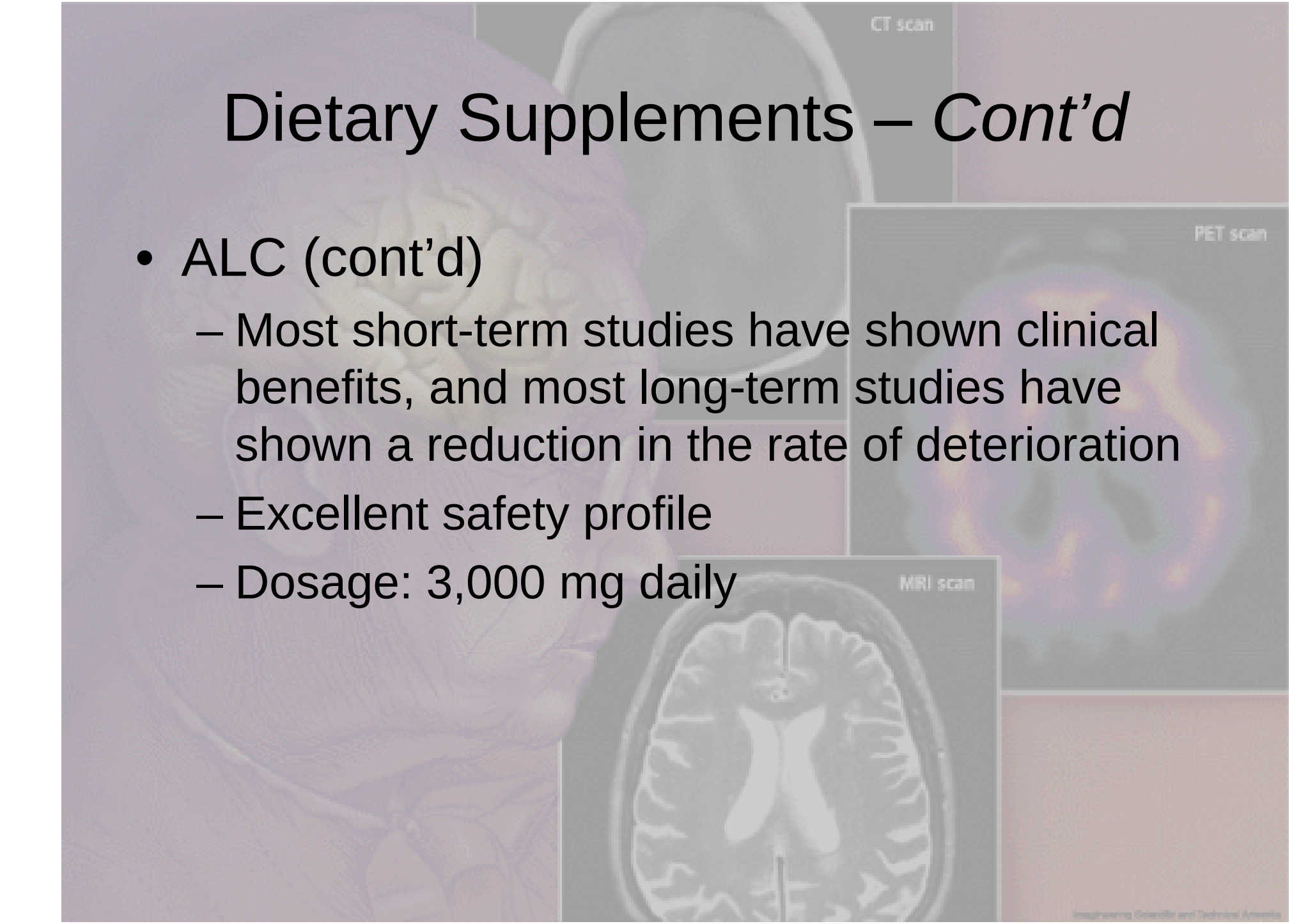


Acetyl-L-Carnitine



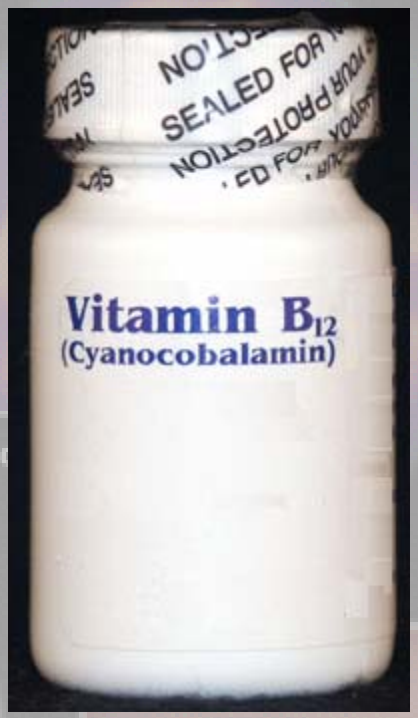
Dietary Supplements – *Cont'd*

- ALC (cont'd)
  - Most short-term studies have shown clinical benefits, and most long-term studies have shown a reduction in the rate of deterioration
  - Excellent safety profile
  - Dosage: 3,000 mg daily



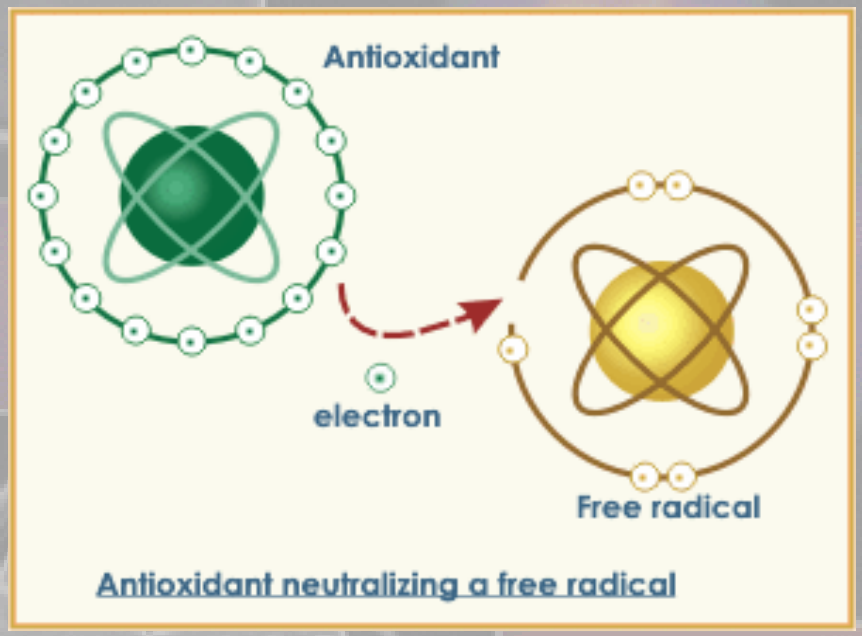
Dietary Supplements – *Cont'd*

- Vitamin B12
  - Studies indicate that Alzheimer's patients often have significantly lower serum vitamin B12 than control subjects
  - Possible relationship between B12 levels and severity of cognitive impairment in patients with AD
  - Dosage: 1,000 mcg twice weekly
    - Sublingual or methylcobalamin preferred



Dietary Supplements – *Cont'd*

- Antioxidants
  - Free radicals associated with cognitive decline in dementia
  - Alzheimer's patients have statistically significant decrease in serum levels of glutathione peroxidase, vitamins E, C and A, and the mineral zinc
    - Nearly 60% had serum vitamin E levels below the accepted normal range

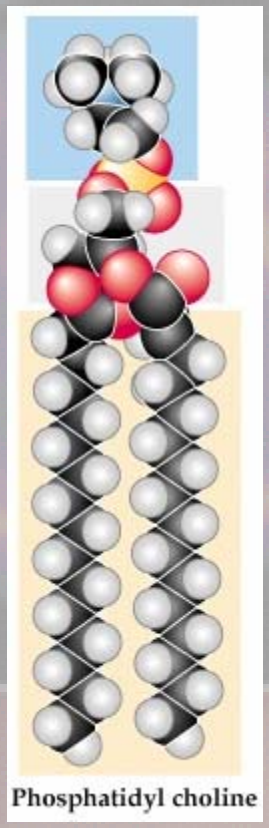


Dietary Supplements – *Cont'd*

- Antioxidant's (cont'd)
  - In db study of Alzheimer's patients, 2000 IU vitamin E daily allowed them to continue caring for themselves (e.g., bathing, dressing, and other necessary daily functions), compared with people taking a placebo
  - In study of people with early Parkinson's disease given 3,000 mg of vitamin C and 3,200 IU of vitamin E daily, they were able to delay the need for drug therapy by an average of about two and a half years, compared with those not taking the vitamins
  - A higher consumption of green tea was associated with a lower prevalence of cognitive impairment in humans

Dietary Supplements – *Cont'd*

- Phosphatidyl choline (PC)
  - Derived from soy
  - Research shows the less choline uptake in RBC, the more severe the dementia in Alzheimer's
  - Some research demonstrated moderate improvements in orientation, learning and memory in AD
  - In research showing no improvement, PC still seemed to delay the rate of progression of the disease
  - Dosage: 900 mg daily


Phosphatidyl choline

Dietary Supplements – *Cont'd*

- Co-enzyme Q10 (CoQ10)
  - A vitamin-like substance involved in cellular energy metabolism
  - An antioxidant that is beneficial in the prevention and treatment of various cardiovascular disorders, including angina, congestive heart failure, and hypertension
  - In db study of Parkinson's patients, 1,200 mg CoQ10 daily for 16 months significantly slowed the progression of the disease, compared with a placebo
  - Excellent safety profile

Natural Protocols

Alzheimer's disease	
Primary Recommendations	*Dosage*
BFP	4 tablets taken with breakfast or lunch
Ginkgo biloba (24% flavonoid glycosides and 6% terpene lactones)	120 to 240 mg daily, taken in two to three doses
Acetyl-L-Carnitine	3000 mg daily, taken in three doses
Vitamin E (d-alpha)	2,000 IU daily
Huperzine A	60 to 100 mcg daily, taken in two doses
Phosphatidylserine	300 to 700 mg daily, taken in two to three doses
Secondary Recommendations	*Dosage*
Vinpocetine	10 to 15 mg daily
Phosphatidyl choline	900 mg daily
Green tea	3 cups daily
Vitamin B12 (sublingual)	If deficient, 1,000 mcg twice weekly

Natural Protocols

Vascular dementia	
Primary Recommendations	*Dosage*
BFP	4 tablets taken with breakfast or lunch
Ginkgo biloba (24% flavonoid glycosides and 6% terpene lactones)	120 to 240 mg daily, taken in two to three doses
Vitamin E (d-alpha)	800 IU daily
Huperzine A	60 to 100 mcg daily, taken in two doses
Alpha-GPC	1,200 mg daily
Vinpocetine	10 to 15 mg daily
Cardiovascular support supplements (Coenzyme Q10, Policosanol, etc.)	Varying
Secondary Recommendations	*Dosage*
Phosphatidylserine	300 to 700 mg daily, taken in two to three doses
Green tea	3 cups daily

Natural Protocols

Parkinson's disease	
Primary Recommendations	*Dosage*
BFP	4 tablets taken with breakfast or lunch
Coenzyme Q10	1,200 mg daily
Vitamin E (d-alpha)	3,200 IU daily, taken in four divided doses (Note: this high dose should only be used when working with a physician monitoring serum vitamin E levels)
Vitamin C	3,000 mg daily, taken in three to four divided doses
Phosphatidylserine	300 daily, taken in two to three doses
Secondary Recommendations	*Dosage*
Ginkgo biloba (24% flavonoid glycosides and 6% terpene lactones)	120 to 240 mg daily, taken in two to three doses
Green tea	3 cups daily

Conclusion

- The treatment of the dementias requires a multifaceted approach. Ideally, this includes a family support structure, a healthcare professional support structure, proper nutrition for the elderly, and the use of select dietary supplements.

Thank You - Questions?

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