Lowering the Risk for Alzheimer’s Disease (AD)
Top Risk Factors

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Memories: Hippocampus, the Sea Horse

The hippocampus & cortex are areas of brain affected by AD
“Hippocampus” means “seahorse”
It is important for spatial memory*

Neuron lose synaptic connections, then dendrite branches & eventually die in AD.

Other cell types are involved:

- astrocytes
- oligodendrocytes
- microglia
- endothelia
AD brain tissue has microscopic Aβ plaques & neurofibrillary tangles of p-tau

The brain shrinks in advanced AD
We identified a compound that increases in pro-cognitive sAPPα.

F03* is now in clinical trials for Mild Cognitive Impairment (MCI)

*Spilman Brain Res. 2014
Early diagnosis & treatment are key. More than one intervention will likely be necessary. Drugs are more likely to work if health is improved.
**Output: Body & Mind**

Exercise improves cognitive function. Use body & mind together by dancing, playing tennis or golf, or by yoga practice. Strength building equally important – it increases Brain-Derived Neurotrophic Factor (BDNF).

**Intake**

Scientific/biochemical bases for how what/when we eat & how medications we take affect cognition are presented.

**Output**

The importance of social interaction, intellectual challenges, exercise, and general health to the preservation of cognition are discussed.

**Intake: Nutrition & AD**

The Top Nine Risk Factors for AD

1. Obesity
2. Smoking
3. Carotid artery narrowing
4. Type 2 diabetes
5. Low educational attainment
6. High homocysteine
7. Depression
8. High blood pressure
9. Frailty
What is Risk?

The single greatest risk factor for Alzheimer’s disease (AD) is Age.

~50% of people over 85 will develop AD

Some risk is genetic, but can be reduced.
Q: Obesity
A: Exercise
Exercise improves cognitive function!
Strength building is equally important – it increases Brain-Derived Neurotrophic Factor (BDNF)*

Walk or hike! Walking/hiking combined with a spatial memory (navigational) challenge is excellent for spatial memory.

Q: Carotid artery narrowing
A: Treatment – stent, medication, stop smoking

CAD may be silent early on, but result in TIA or stroke.
Signs/symptoms:
* Sudden numbness or weakness
* Sudden trouble speaking and understanding
* Sudden trouble seeing in one or both eyes
* Sudden dizziness or loss of balance
* Sudden, severe headache with no known cause
Q: Type-2 (adult onset) diabetes
A: Exercise & lower “glycemic index”

Type 2 diabetes is associated with obesity
Q: Low Educational Attainment
A: Keep learning
  ▪ A musical instrument
  ▪ A skill
  ▪ Attend classes
  ▪ A second career
Q: High homocysteine
A: This naturally-occurring amino acid can be lowered by higher folate (B9) intake
Q: Depression
A: Medication, support, sleep. Poor sleep itself is a risk factor for AD
Q: Frailty
A:
- Exercise
- Nutrition
- Bone Density
- Activity

Support the Health of Others

*Christakis N Engl J Med. 2007*
Accurate Diagnosis is Critical

Diagnostics include:

- Computer-assisted tomography (CAT) for structural abnormalities
- Positron emission tomography (PET) for glucose use & amyloid imaging
- Function magnetic resonance (fMRI) for blood flow
- Tests of cognitive function

Other causes of memory loss:
- Depression, infection, multiple sclerosis, low B12, hypothyroidism, medication interactions, tumor

Not all dementia is AD:
- Vascular dementia, Parkinson’s/Lewy Body disease, frontotemporal dementia

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