PRESERVING COGNITION

NEXT LEVEL CONCIERGE WHITE PAPER

Maintaining high level cognitive function over the years is a primary health goal of most all our patients. While general adherence to a healthy diet and lifestyle can be of benefit, there is evolving knowledge on specific things that can substantially help or hurt your chances of staying cognitively intact.

Several distinct areas are important in this regard:

- Preventing the buildup of amyloid beta inside brain cells
- Preventing the aggregation of tau proteins in the spaces between cells
- Lowering inflammation in the nervous system
- Maintaining healthy glucose metabolism
- Strengthening neural networks

The Number One Thing You Can Do to Preserve Cognition is to Use Your Brain for Complex and Demanding Tasks. This builds and overlaps neural networks keeping both the individual cells and their connections alive and functioning.

The best ways to do this are:

I. Continue working and studying, learning new things, and doing complex tasks.
People who continue to work have less cognitive decline on average than those who retire and do not do similarly demanding tasks on a regular basis.

II. Playing a musical instrument – particularly the piano, seems to be of significant value. There is a rumor that no concert pianist has ever gotten Alzheimer's.

III. Learn and use a new language. Persistence and practice matter.

Specific Things That Quantitatively Decrease Dementia Risk

Mediterranean Diet	Decreases Risk by ~23%
Sauna [Finnish]	Decreases risk by ~66% if done 4-7 days/week for 20-40 minutes at 170-190 degrees. Opens heat shock proteins which help clear beta-amyloid, raises heart rate like exercise. [Sulforaphane supplements also opens heat shock protein channels to clear beta-amyloid].
Brain Games [Such as Brain HQ] that require rapid and complex discrimination.	May decrease risk by ~30%.
Vitamin D Supplements	People who use Vitamin D Supplementation may decrease risk by up to ~40%. It is very difficult to get to the healthiest levels by sun alone.
Exercise Fast walking may be especially helpful. Nobel Prize Winner Daniel Kahneman found that fast walking requires the engagement of System 2 – the brain processes that integrate more complex networks. [See his book *Thinking, Fast and Slow*, 2011]	Regular Exercise of many types helps decrease risk up to ~35%. Even doing chores around the house regularly decreases risk by ~21%. Exercise may tell the brain that certain cells involved in movement and perception are still needed and prevent their atrophy. Many of these cells may have dual functions with cognition so keeping them alive may preserve cognitive capacity.
Zoster Shingle Vaccine [Zostavax]	The original shingles vaccine called Zostavax has been shown to decrease risk by ~20%. It is unclear if the new Shingrix vaccine does the same.

REVIEW OF ADDITIONAL MODIFIABLE DEMENTIA RISKS

Air Pollution Exposure – Air pollution, both exposure to specific chemicals and particulates, increases the risk of dementia worldwide. Filtering your indoor air can vastly improve this. [Stay Tuned for Next Level Concierge Review of Air / Water / Food Pollution and ways to minimize these coming in January 2024].

Drinking Espresso – Recent work shows that one Espresso per day – straight or when mixed with milk or even alcohol has benefits in preventing the aggregation of Tau Proteins in the brain. Higher average caffeine levels were also associated with lower rates of cognitive decline.

Blood Pressure Optimization – Ideal target blood pressure is 115/75. For many years higher targets were used by Traditional Western Medicine but the most recent JNC9 guidelines are now in sync with this. The caveat is that if you already have significantly blocked arteries then a higher pressure may be needed to get blood through the narrowing to the heart, brain or other tissue living on the other side of the blockage that needs that bloodflow.

Stress Reduction and Meditation – Meditating just 12 minutes a day lowered biomarkers of dementia after 3 months. This may work by lowering serum cortisol levels which are associated with brain shrinkage.

Low Dose Lithium – Lithium in low to moderate doses is neuroprotective, improves bone density and extends lifespan as well as helping mood by increasing the brain's sensitivity at serotonin receptors. High dose lithium is neurotoxic, and the doses of lithium used for bipolar disorder need to be monitored closely but are neuroprotective. Low dose lithium in the range of 5 to 30 mg per day has many benefits without substantial risks of the side effects of higher dose lithium. It is generally extremely well tolerated.

Adequate Social Contact – Higher levels of social contact are associated with increased brain volume. Social interactions that are more active such as negotiating prices at the Farmer's Market or playing card games are more helpful than passive activities like watching TV.

Correcting Hearing and Vision Loss - Aggressively treating hearing and vision loss- maintaining good hearing and good vision is critical to maintaining cognition. With hearing loss in particular if it progresses, the brain dedicates more and more processing capacity to trying to discern the input which can take away brain function from other areas over time. Correcting hearing and vision loss is critical.

Omega 3 Fatty Acids from fish, krill, nuts, and seeds are important in brain health. EPA lowers inflammation and improves mood and cognition. DHA is a structural component of nerve cell membranes which are vital to brain cell function and survival. Both dietary Omega 3 oils and supplements can be of value. It is possible to measure Omega 3 / Omega 6 levels in blood tests to determine if you are getting enough omega 3 and not getting too much Omega 6.

Minimize Alcohol – while alcohol has some benefit for reducing certain clotting strokes, it increases the risk of atrial fibrillation and embolic strokes. 1 drink/day has been shown to accelerate brain shrinkage by 2 years and 1.5 drink/day accelerates brain shrinkage by 3.5 years.

Depression – pay attention to treating and if possible resolving depression. Depression is a significant risk factor for dementia and a variety of treatments from counseling to medications, to supplements and device-based care such as rTMS and Neurofeedback can all be of value.

Avoid or Rehabilitate from Head Trauma – Head trauma is a major cause of dementia. Early and aggressive care can limit inflammation and improve outcomes. Repeated head trauma is especially high risk so after any head trauma go way out of your way to avoid a repeat blow. Neurofeedback can treat head trauma from the distant past to help restore neural networks.

Sleep Apnea – should always be treated. If you have not succeeded before then keep trying. Depriving the brain of oxygen on a nightly basis is not something that supports a healthy brain over the long term.

Adequate Sleep – adequate amounts of deep sleep, REM and total sleep are all of substantial value in preserving brain function. A minimum of 6 hours is needed. After age 70, then 7 to 8 hours is better. We are happy to work with you on a variety of approaches to optimize your sleep.

Nocturnal Oxygen – small studies have shown that sleeping with nighttime oxygen for 7-9 hours per night maintains a higher level of brain function over time.

Hyperbaric Oxygen – Larger Centers only use Hyperbaric Oxygen for things like diving accidents and wounds that won't heal. More aggressive use of Hyperbaric treatment appears to be safe for most individuals and can help recovery from Vascular based dementia and may have a role in prevention as well done periodically.

Identify and Treat COVID Early Every time – even mild cases of COVID can lead to dramatic cognitive decline as well as greatly increasing the risk of heart attack, stroke, and blood clots for 3 to 6 months after the infection. We have full antiviral protocols available for immune support and antiviral treatment. We recommend most people have or carry COVID tests with them and have access to the drug Paxlovid. We understand that most of us would prefer to have COVID behind us and not worry about it, but it is still the 5th leading cause of death in the US at this time.

Maintain adequate Vitamin B12 levels – Low B12 can not only lead to decreased brain function, it can cause a state called Pseudo-Dementia where the B12 deficiency leads to dementia symptoms that are reversible with the administration of B12.

Maintain adequate CoQ10 levels – CoQ10 is the main antioxidant on the outside of cells. It is important for neuroprotection. Statin medications deplete CoQ10 so people on statins should generally take CoQ10. CoQ10 blood levels can also be monitored.

Keep Homocysteine Levels Low – Homocysteine is an amino acid that builds up with certain genetic mutations and dietary insufficiencies. It can be measured and treated with a variety of agents including methylated Vitamin B12, Vitamin B6, Vitamin B2, various types of folates and certain antioxidants. Elevated homocysteine is a cardiovascular risk factor leading to higher heart attack and stroke risk and also a neurocognitive risk factor for cognitive decline and dementia. First level targets are Homocysteine less than 10 to 11. Second level targets for dementia are <6.8.

Multivitamins – A recent study showed that a multivitamin [Centrum Silver was used] extended the time for cognitive decay by about 2 years. We believe that Vitamins with more sophisticated ingredients could do even better [i.e. tocotrienols and mixed tocopherols instead of simple Vitamin E for instance].

Maintain a Healthy BMI – BMI around 24 for men and 23 for women seems to provide a good balance of national reserve in times of illness and strength while avoiding an elevated BMI which is associated with decreased cognition and less favorable lipid and glucose metabolism profiles. BMI is a less valid measure for individuals who have higher than average muscle mass.

Keep Thyroid Function Intact – Thyroid function declines with age. Mild levels of lowered thyroid hormones may be well tolerated and safe to observe. Higher degrees of thyroid dysfunction and any thyroid dysfunction associated with cognitive concerns should be replaced with thyroid hormones.

Avoid Choline Deficiency – Choline is the precursor for the main memory neurotransmitter Acetylcholine. Dietary deficiency is fairly common and certain genes exacerbate this. Good dietary sources of choline include:

Egg yolks • Cauliflower • Broccoli • Shitake mushrooms • Oysters • Cod and white fish • Milk • Shrimp • Beef • Navy beans • Pistachios

Digital Exercise Improves Memory and Recall – A simple digital exercise can help preserve and improve memory and recall. Start by touching the thumb to the little finger, then thumb to ring finger, then thumb to middle finger, then thumb to index finger. Count the numbers 1,2,3,4 from little to ring to middle to index fingers. As you get better reverse the direction and count 4,3,2,1. Even more complex patterns of 1,2,3,4,4,3,2,1 or even 1,2,3,4,3,4, 4,3,4,3,2,1 and other variations can be of additional value. The original exercise is from a Yoga tradition, and we have also created a modified version of the exercise with a Christian Tradition added. We are happy to teach you any of these in the office. You can do this exercise while riding in a car or standing in line at the grocery store.

MEDICATIONS THAT CAN IMPROVE / PREVENT or WORSEN COGNITIVE DECLINE

WORSEN	Uses	Mechanism
Benadryl [diphenhydramine] and other first-generation antihistamines	Used for allergies and in many over the counter sleep aids.	Opposes the action of acetylcholine the main memory neurotransmitter.
Flomax [tamsulosin]	Used to help urinary outflow in men with enlarged prostate.	Half the studies show this increases cognitive decline the other half don't. Other members of this drug class do not show this issue.
Benzodiazepines – Valium, Xanax, Ativan etc.	Used for sleep and anxiety.	Long term studies suggest increased risks of cognitive decline.
IMPROVE / PREVENT		
Candesartan	Used to lower blood pressure.	Retrospective studies show that long term use is associated with less occurrence of mild cognitive impairment [MCI] in normal individuals and less progression of mild cognitive impairment to dementia in those who have MCI.
Viagra [sildenafil]	Erectile dysfunction	A study that came out last year suggested that regular use of this drug decreases cognitive decline. Re-analysis of statistics questions the validity of this data.
Bumex [budesonide]	Used as a strong diuretic.	Data suggests that this agent can decrease the risk of cognitive decline. It is a strong diuretic and significant electrolyte abnormities can occur.
Belsomra [suvorexant]	Orexin receptor active sleeping pill.	Initial studies suggest this drug can reduce amyloid and tau proteins associated with Alzheimer's.

