



# SAVE YOUR BRAIN

## Information for Healthcare Providers

The **Save Your Brain Quiz** was created to address the increasing rates of cognitive decline and dementia in society today. It targets risk reduction in patients who do not yet have mild cognitive impairment. As patients live longer lives, cognitive decline continues to increase as a major health problem - Alzheimer’s disease is the 6th leading cause of death in both Iowa and the United States. As there is no definitive treatment yet, prevention is of the utmost importance.

This quiz uses the available research for your patients to adopt healthy habits that may not only reduce risk of cognitive decline, dementia, and Alzheimer’s disease, but can improve other aspects of health such as cardiovascular disease and weight management. The modifiable risk factors have been divided into four domains: “Eat Well,” “Get Moving,” “Stay Sharp,” and “Be Social.” By focusing on these four areas, patients can target specific areas based on their specific lifestyles.

### Overview and baseline risk <sup>1,2</sup>

It is estimated that 23% of Americans age 65 and older have ‘mild cognitive impairment’, or MCI. MCI is often experienced prior to dementia when individuals begin having difficulty with their memory, but are still able to complete activities of daily living such as bathing, dressing, and feeding themselves. Each year, 12% of those with MCI progress to dementia - a decrease in brain health that is severe enough to interfere with normal daily activities and independence, and includes Alzheimer’s disease. Females are more likely than males to develop cognitive decline as well as dementia and Alzheimer’s disease.

More than 5 million Americans have Alzheimer’s disease – by 2050, this number is expected to rise as high as 16 million. Alzheimer’s kills more Americans than breast cancer and prostate cancer combined. In Iowa, Alzheimer’s affected 63,000 people in 2016 and was responsible for 1,1313 deaths in 2015.

Even if your patients are not yet 65, they can begin to use the lifestyle interventions discussed below to reduce their risk of developing dementia. After age 65, risk continues to rise – starting good habits now could be very helpful down the road. If your patients would like their risk estimation of dementia and are age 40-65, there is a phone application called ‘CAIDE (Cardiovascular Risk Factors, Aging, and Incidence of Dementia) RiskScore App’<sup>3</sup> that will estimate dementia risk for the following 20 years.

### Lifetime Risk <sup>4,5</sup>

Age	Risk
40-65	Low risk – can use CAIDE Dementia Risk Score <sup>3</sup> to estimate probability of dementia within next 20 years.
45	Men: 10.3% Women: 19.5%
65	Men: 11.6% Women: 21.1%

### Eat Well <sup>6,7,8,9,10,11</sup>

Questions 1-15 are based on the MIND diet. This diet is a combination of the Mediterranean and DASH diets with some special additions to help boost brain health. According to US News, the MIND diet is ranked #1 in easiest diets to follow, #2 in best diets overall, #3 in best diets for healthy eating, and #4 in best diabetic diets. The MIND diet is not only brain healthy, but is also heart healthy and can help with weight management. There are 10 ‘brain healthy’ foods - green leafy vegetables, all other vegetables, nuts, berries, beans, whole grains, fish, poultry, olive



oil, and wine - and 5 unhealthy foods that are limited - red meats, butter and margarine, cheese, pastries/sweets, and fried or fast foods.

Particularly helpful for brain health are green, leafy vegetables and blueberries. Patients do NOT have to follow every aspect of the diet - even following it in moderation has been shown to have brain-healthy effects! For example, recommendations include eating green leafy vegetables every day and eating a handful of blueberries each week. Since berries can be expensive or seasonal in Iowa, frozen berries (without added sugar) are a good alternative. If they eat red meat or meat products every day of the week, advise them to substitute some of those meals with chicken or fish.

**An example of a detailed MIND diet regimen would look something like this:**

- *Daily:* 3 servings whole grains, salad (not iceberg lettuce) and another vegetable, and drink a glass of wine. Less than 1 tbsp butter
- *Snack:* nuts
- *Every other day:* half a cup of beans
- *Twice a week:* poultry and a half-cup serving of berries (blueberries)
- *Weekly:* Unfried fish and poultry. Less than 5 servings of sweets or pastries of any kind. Less than 1 serving of cheese, fried food, or fast food

**Get Moving** <sup>12,13,14,15,16,17,18</sup>

Before patients start an exercise program, they should talk with you and be medically cleared. If starting a weight training program, patients should work with a professional to learn how to use weights and weight machines correctly to ensure they prevent injury.

It is important to stress to patients that physical activity does not have to be 'going to the gym' – it can include anything that gets your patient off the couch and increases their heart rate. For example, they can walk their dog, garden, or clean the house. A good rule of thumb is that if they're working hard enough that it is more difficult to carry on a conversation, they are experiencing beneficial physical activity. This should take place 3 or more days a week, for a total of 30 minutes per day (this can be done in segments of at least 10 minutes at a time). Being active for 1-2 times per week can help reduce risk of cognitive decline (and have other health benefits, such as decreased weight, decreased risk for heart disease, and increased energy!).

**Strength<sup>19</sup> and Balance**

Strength and improving balance are not known to reduce the risk of cognitive decline, but they have been shown to improve overall health. Strength training can range from lifting weights at the gym to using resistance bands, completing body weight exercises such as push-ups or crunches, carrying laundry around the house, or moving boxes. It is recommended to complete these activities 2 or more times per week. This helps patients maintain strong bones and lean muscles and prevent osteoporosis. One study cited decreased muscle mass as a risk factor for Alzheimer's and increased rate of cognitive decline, so there is some evidence that staying stronger throughout life can positively impact cognitive decline risk.

Improving balance is key in preventing falls, a major risk factor for loss of independence in older adults. 30-40% of independent individuals over the age of 65 fall each year, and 50% of individuals 80 and older experience falls that can result in major injuries such as broken bones, head injury, or serious lacerations <sup>20</sup>. Several exercise programs incorporate balance, and simple exercises such as standing on one foot while brushing teeth can be beneficial.



### **Sitting** <sup>21</sup>

'Sitting is the new smoking'. There is concern about how harmful sedentary behavior can be, whether that is sitting while driving, working, or lounging on the couch for long periods of time. It is thought that sitting for 2 hours or longer can be harmful to several aspects of health - it can increase the risk of heart disease, type 2 diabetes, and there is an association with cognitive decline. This article further outlines that patients should undertake at least 2 hours of 'light' activity during the day - this includes light walking and/or standing.

### **Outdoor Activity** <sup>22</sup>

The weather in Iowa is not always the most friendly when it comes to outdoor activities. However, a study in Japan showed a correlation between the number of times older adults left their apartment or house and their cognitive function. The risk for cognitive decline and dementia decreases the more patients venture outside their homes, whether that be for social activities, to go to the grocery store, or to be physically active. When the weather is favorable, encourage them to get out and walk on Iowa's many sidewalks, gardens, parks and bike paths! And when the weather is bad, this can be substituted with walking around a mall.

If you would like more information on how to motivate your patients, go to: Behavior Change with Fitness Technology in Sedentary Adults: Review of the Evidence for Increasing Physical Activity<sup>23</sup>. It details action planning, restructuring negative attitudes, enhancing environmental conditions, and identifies other barriers to regular physical activity. It also discusses current fitness tracker applications and smartphone initiatives, detailing different plans to fit the needs and wants of your patient.

### **Stay Sharp** <sup>24,25,26,27,28</sup>

Cognitive decline decreases the more your patients are mentally engaged. However, it is important to stress the difference between passively engaging and actively engaging their minds. For example, rereading a book is not the same as reading a new book and discussing it at a book club.

The following skills have been shown to improve cognitive function. These are in the early stages of research, so their impact on decreasing risk of cognitive decline has not yet been defined; however, they have shown short-term improvements in cognitive functioning, which make researchers hopeful that long-term they can decrease the risk of cognitive decline.

### **Languages** <sup>29</sup>

Studies have found that speaking two or more languages can delay the onset of Alzheimer's disease by up to 5 years (there are cultural and situation-specific influences). Learning a second (or third, or fourth) language at any point in life has been linked to decreased risk of cognitive decline.

### **Learning a New Skill**

A study completed in Tasmania showed that 92.5% of adults (average age of 60) who participated in university classes part-time for a year had significantly increased cognitive reserve. This indicates that stimulating the brain via actively engaging in learning may counteract the effects of cognitive decline. Potentially, other activities such as learning how to play a musical instrument and gaining new life skills (like quilting or digital photography) can have the same beneficial effect. Studies have shown that sustained engagement in learning new skills in older adulthood can improve memory. Examples include: learning how to play a new musical instrument or learning a new card game with friends. It is important for patients to challenge themselves for cognitive improvement and protection against cognitive decline.

### **Be Social** <sup>30,31,32,33</sup>

Overall, poor or limited social networks can increase the risk of dementia by 60%. Those who interact with others



often, either face-to-face or on the phone, may have up to a 50% decreased risk of cognitive decline when compared to those who are not socially active. Activities may include interacting with friends and/or family and participating in activities at church, community centers, book clubs, coffee groups, and many others. According to current studies, individuals with 5-6 social ties (individuals whom they interact with on a regular basis) are less likely than those with none to develop cognitive decline.

It is important for patients to interact with others – whether that is their family, friends, caregivers, or within groups – to stimulate the brain. For example, studies have shown that group activities such as therapeutic writing, group exercise, and group art experiences increase brain function after 6 to 12 months. The quality of the social interactions is just as important, as checking in with a healthcare provider to report medications is not the same as having an in depth discussion with a peer or loved one on current events.

### **Confidant**<sup>34</sup>

In one study that looked at several variables indicating sociability, not having a confidant was significantly associated with increased risk of Alzheimer’s dementia. This person can be anyone – a spouse, a child, another family member, or a friend. Having someone you can talk to about concerns or problems is thought to be important because of the strength and quality of the relationship. This study did not find a significant relationship between having more than one confidant and increased cognitive benefits - having one had similar benefits to having several.

### **Final Thoughts**

The risk reductions described above are not cumulative, and it is likely that the risk reduction in each category overlaps with others. This is not hard science, as research into this field is ongoing. Some studies support decreased risk of overall dementia while others support decreased risk of MCI or Alzheimer’s dementia.

The goal of this quiz is to identify areas that patients can address in their everyday life to decrease their risk of cognitive decline, dementia, and Alzheimer’s disease, and may improve cognitive health as well as overall health.

We appreciate any and all feedback that you have about this tool! If you have comments or suggestions, please contact Elizabeth Gerdis at [elizabeth-gerdis@uiowa.edu](mailto:elizabeth-gerdis@uiowa.edu), Kevin Rivera at [kevinjohn-rivera@uiowa.edu](mailto:kevinjohn-rivera@uiowa.edu) or Dr. Patricia Quinlisk at [patricia.quinlisk@idph.iowa.gov](mailto:patricia.quinlisk@idph.iowa.gov).

*Note:* Many of the questions on the survey were gleaned from research articles, but were modified in order to make the survey more user-friendly as well as for score interpretations. Risk reductions were modeled on research studies, but in some cases risk reduction numbers were extrapolated due to lack of specific data. Extrapolations were calculated with care and knowledge of available research.

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