A Road Map to Prevention

Prevention is always better than cure and this also applies to Alzheimer’s disease (AD). Unfortunately, there is no cure for AD, but you can reduce your risk of developing this terrible disease using multiple different strategies. In this booklet, you will learn more about how we age over time and becoming proactive in fighting against AD.

How does our brain change overtime as we age?

Many people experience mild memory difficulties as they get older. Sometimes, they experience this problem frequently and seek medical attention. These individuals may ultimately develop one of these conditions:

**Subjective Cognitive Decline (SCD):** Patients who experience and report to their doctors, frequent confusion or memory loss within the past 12 months, but problems are not apparent on detailed cognitive tests. Although SCD is a risk factor for Alzheimer’s disease and other dementias, many people with SCD do not progress to developing these diseases.

**Mild Cognitive Impairment (MCI):** Patients who have more problems on cognitive testing than is expected for their age, but their problems do not impair their ability to complete basic tasks such as cooking, driving, or paying the bills. A person with MCI or their family members often notices frequent memory lapses and maybe some worsening of memory over time. MCI is a risk factor for Alzheimer’s disease and other forms of dementia but not everyone with MCI advances to a form of dementia.

**Dementia:** Patients who have more problems on cognitive testing than is expected for their age and the problems do affect their ability to complete at least some daily tasks. Dementia is a general term that implies some decline in daily functioning, which separates it from SCD or MCI. Dementia can be caused by many diseases, including Alzheimer’s disease (about 60-80% of cases), strokes, and Parkinson disease, among others.

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**What are normal changes in memory?**

As we age, it is normal to experience some changes in memory. Most older adults experience some type of cognitive change. The following changes are the most common:

- Forgetting names more frequently
- Having trouble switching from one subject to another in conversation
- Requiring effort and time to learn new information

Normal age-related memory loss may result from your brain’s decreased ability to retrieve information. It can take more time to remember or learn new things. Although it might be frustrating, these memory changes should not be significant enough to affect your daily living.

**When is memory loss normal?**

A sudden memory lapse such as one of the following:

- Forgetting why you walked into a room
- “Word-finding” difficulty in conversation
- Misplacing items around the house
- Forgetting a bank card PIN number or password

To some degree, we all experience memory loss in one instance or another. This does not mean that you have Alzheimer’s disease. However, frequent memory loss is concerning. A neurologist or a psychologist can perform multiple tests to determine the cause of your memory problems.

**How can you reduce your risk for Alzheimer’s disease?**

Steps 1-8 can help decrease your chances of developing Alzheimer’s disease. These are all brain healthy behaviors that are also important for healthy cognitive aging. Please remember it is never too late or early to start incorporating these strategies into your life.

**Step 1. Eat a healthy diet**

<table>
<thead>
<tr>
<th>Every Day</th>
<th>Eat in moderation</th>
<th>Avoid</th>
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<tbody>
<tr>
<td>• Whole grains (ex. 100% Whole Wheat bread and brown rice)</td>
<td>• Poultry</td>
<td>• Refined sugars—&gt; These sugars are extracted and processed from natural foods to enhance flavor (Example: High Corn Fructose Syrup, white flour, artificial sweeteners)</td>
</tr>
<tr>
<td>• Green leafy vegetables</td>
<td>• Eggs</td>
<td>• Red meat—&gt; If eaten, try to purchase leanest option (less saturated fat) and meat grass-fed cows, as they eat a cleaner diet</td>
</tr>
<tr>
<td>• Fruits</td>
<td>• Dairy</td>
<td>• Saturated Fats—&gt; These are solid at room temperature (ex. butter) which can clog your arteries if eaten in excess</td>
</tr>
<tr>
<td>• Fish</td>
<td>• Alcohol (wine)</td>
<td></td>
</tr>
<tr>
<td>• Beans, lentils, and nuts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Use Olive Oil</td>
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</table>
Step 2. Exercise frequently

Aside from eating a healthy diet, exercise is extremely beneficial for your brain and heart. Research indicates that 30-60 minutes of aerobic exercise 3-6 times per week can lower your risk of developing dementia.

There are plenty of exercises whether you are mobile or not. Below are some simple exercises:

*Stationary exercises should be performed three times each with 10-15 repetitions

**Mobile exercises:** walking, jogging, running, swimming, and stair climbing.

**Stationary exercises:**
- Hand grip: slowly squeeze a tennis ball and then release
- Toe stands: stand behind a chair and slowly stand on your tiptoes and then lower your heels to the floor
- High knee reach: sit comfortably in a chair and raise your arm and the opposite leg simultaneously (perform on each leg)
If you are going to maintain a healthy diet and exercise plan for your body, you must do the same for your brain!

Step 3. Stay socially active and mentally fit

Instead of staying isolated, we encourage you to interact with your friends and family through activities such as playing games, attending social gatherings, or taking a class together. This can help enhance your memory and processing speed when completing various tasks. Some of our recommendations are below:

- **Puzzles and games**: crosswords, sudoku, jigsaw puzzles, board and card games
- **Socializing**: phone or video calls with family, visiting with friends, hosting gatherings
- **Reading**: books, newspaper, magazines, surfing the internet for information
- **Community Activities**: volunteering, trying new restaurants, attending concerts and lectures
- **Learning**: new technologies, taking art classes, dance classes, continuing education, crafting
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Step 4. Build your cognitive reserve

Cognitive reserve is a term used to describe how resilient the brain is when it is really “put to the test”. This can happen during times of stress or at the beginning of cognitive decline, among other circumstances. When someone carries out brain healthy behaviors like those discussed in this Roadmap, they are constantly “building up” their cognitive reserve. For someone who has SCD or MCI, having a high cognitive reserve allows them to resist the effects of the brain’s biological changes and use alternative ways to continue to function optimally. For example, if one connection in the brain is weakened by a neurological disease, then a brain that has a high cognitive reserve can either strengthen that connection or create a new one and still achieve the desired outcome.

The following factors can contribute to **building up** and **breaking down** your cognitive reserve:

**Building up**: health factors (ex. diet), education, social engagement, and mental fitness

**Breaking down**: poor health, poor sleep hygiene, poor nutrition, substance abuse, smoking, depression, and anxiety/stress

Step 5. Develop a healthy sleep hygiene

The quality of sleep is often overlooked but it is crucial to your brain health!! It is important to have some amount of uninterrupted sleep every night allowing our brain to remove harmful toxins as it goes through the normal stages of sleep. If this process is not completed properly, toxins can build up, and can contribute to cognitive decline, along with causing increased stress and daytime tiredness.
<table>
<thead>
<tr>
<th>Age group</th>
<th>Recommended Hours of Sleep</th>
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<tbody>
<tr>
<td>18-60 Years</td>
<td>7 or more hours per night</td>
</tr>
<tr>
<td>61-64 Years</td>
<td>7-9 hours</td>
</tr>
<tr>
<td>65 years and older</td>
<td>7-8 hours</td>
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Some habits that can improve your sleep hygiene:

- **Be consistent**: Go to bed at the same time each night and get up at the same time each morning, including on the weekends.

- **Get some exercise**: Stay physically active during the day, as that can help you fall asleep more easily at night.

- **Make sure your bedroom** is quiet, dark, relaxing, and at a comfortable temperature.

- **Remove electronic devices**, such as TVs, computers, and smart phones from the bedroom.

- **Avoid** large meals, caffeine, and alcohol before bedtime.

- **Talk to your doctor** if you have insomnia, snoring, fatigue, or excessive daytime sleepiness.

**Step 6. Lower your stress**

Unfortunately, we all experience stress in our lives. Some may experience more than others, but we can all benefit from finding ways to reduce our stress. Stress can damage your brain cells, lead to hypertension or heart disease, and is associated with other chronic conditions and overall poor wellbeing. Everyone has their own way of handling stress, but here are some widely used techniques: meditation, mindfulness practice, excising regularly, getting more and better sleep, and talking with someone.

**Be aware of some medications and supplements**

Overall, you should **always** meet with your doctor to ensure that your medications are appropriate and brain healthy! For example, some **antihistamines** (like Benadryl) which treat seasonal allergies can sometimes cause confused thinking, blurred vision, and dry mouth, especially in older individuals.

Other ingredients to look out for in over-the-counter medications and consider alternatives with your doctor are: Diphenhydramine, brompheniramine, and chlorpheniramine, which often part of allergy medications.

**Prescriptions**

Medications that are **anticholinergic** can have the side effect of blocking chemical messages that helps brain cells to communicate with each other. This can cause
memory or cognitive difficulties. It is worth talking to your doctor about all medications and, where possible, choosing medications that do not have cognitive side effects.

**Supplements**
Vitamins and supplements can have varying effects on your cognitive health. While some supplements related to memory or aging may be helpful for some conditions and for certain individuals, most have little proven benefit from research studies. Many supplements are marketed as “brain-boosters” or “natural cures” but have not been studied for safety or efficacy. Please talk to your doctor for more information.

**Step 7. Maintain your health**
There are some common, medical conditions that can impact not only your cardiovascular and mental health, but also increase your risk for Alzheimer’s disease and related dementias (ADRDs). In the chart below, we listed a few conditions and what we understand about how they can impair someone’s cognition physiologically. In addition, guidelines are listed on what actions you can take to help you lower your risk for ADRDs and achieve better health.

<table>
<thead>
<tr>
<th>Medical condition</th>
<th>Physiological response</th>
<th>Action to Take</th>
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<tbody>
<tr>
<td>High blood pressure</td>
<td>Reduces blood flow to the brain</td>
<td>Keep below 120/80 mm Hg</td>
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<tr>
<td>High cholesterol</td>
<td>Increases the risk of stroke and may increase amyloid buildup in the brain</td>
<td>Keep below 180 mg/dL</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Causes inflammation and disrupts glucose metabolism in the brain</td>
<td>Keep blood sugar between 100 mg/dL and 140 mg/dL</td>
</tr>
<tr>
<td>Metabolic syndrome</td>
<td>High blood pressure, excess fat, low HDL cholesterol, and high blood sugar</td>
<td>Keep BMI between 18.5 and 24.9</td>
</tr>
<tr>
<td>Depression</td>
<td>Associated with high cortisol (stress hormone) levels and chronic inflammation in the brain</td>
<td>Meet with your doctor if you are experiencing symptoms</td>
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**Is research right for me?**
Research participation is critical to finding a cure. Whether or not you have been diagnosed with Alzheimer’s disease or related dementia (ADRDs), you may be able to participate in research. People participate in research for a variety of reasons. Healthy volunteers and people living with ADRDs say they participate in clinical trials to help others, contribute to moving the science forward, and to gain personal benefit from promising new treatments.

The Massachusetts Alzheimer’s Disease Research Center (MADRC) at Massachusetts General Hospital (MGH) and the Center for Alzheimer Research and Treatment (CART) at Brigham and Women’s Hospital (BWH) offer a variety of different types of studies ranging from observational studies to clinical trials that test new medications or other interventions.
If you are interested in research, please contact either center below to hear about their available studies:

**Brigham and Women’s Hospital**  
Massachusetts General Hospital

**Center for Alzheimer Research and Treatment**

(617) 732-8085  
cart@partners.org

**Massachusetts Alzheimer’s Disease Research Center**  
*Help us find a cure for Alzheimer’s disease!*

(617) 643-5200

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Resources for Patient and Caregiver Support

Alzheimer’s Association
The premier source of information for advocacy, research information, support programs, and education.
MA/NH Chapter contact: 617-868-6718
24-hour national Helpline: 1-800-272-3900

The Association for Frontotemporal Degeneration
Research, awareness, support, education, and advocacy for people affected by Frontotemporal Degeneration and their caregivers.
Helpline: 1-866-507-7222

Lewy Body Dementia Association
Provides support through outreach, education, and research to those affected by Lewy body dementias.
Lewy Body Dementia Caregiver Number: 888-204-3054

National Institute on Aging: Alzheimer’s Disease Education and Referral Center (ADEAR)
The latest dementia related news and publications on diagnosis, treatment, care, and research.
Toll-free contact: 1-800-438-4380

Alzheimer’s Foundation of America
Provides direct services and educational resources to patients and caregivers.
National toll-free hotline: 866-232-8484

National Clinical Trial Information
You or a loved one’s participation in research studies will significantly help in the search for more effective treatments for Alzheimer’s Disease and related dementias. The following resources provide information regarding the range of national clinical trials:

National Institute on Aging: Alzheimer’s Disease Education and Referral Center (ADEAR)
Toll-free contact: 1-800-438-4380

Alzheimer’s Association TrialMatch
24-hour Helpline 1-800-272-3900

Alzheimer Prevention Network
alzpreventionnetwork.org

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<thead>
<tr>
<th>MADRC Research Clinics</th>
<th>Phone Number</th>
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<tbody>
<tr>
<td>BWH Center for Alzheimer Research &amp; Treatment</td>
<td>(617) 732-8085</td>
</tr>
<tr>
<td>Frontotemporal Disorders Unit</td>
<td>(617) 726-1728</td>
</tr>
<tr>
<td>Lewy Body Dementia Movement Disorder Unit</td>
<td>(617) 726-5532</td>
</tr>
<tr>
<td>Alzheimer’s Clinical &amp; Translational Unit (ACTRU)</td>
<td>(617) 643-2351</td>
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