Do you hear that rumble in the distance? It’s the silver tsunami. On January 1, 2011 the very first Baby Boomer turned 65 years old. Between 7,000 and 10,000 will celebrate this birthday each day for the next 18 years. As of 2015, 75.4 million Americans, slightly less than a quarter of the U.S. population, are part of the generation that was born following the end of WWII in 1946 until the period ended in 1964.

This shift toward an increasingly older population is expected to endure. By 2056, the population 65 years and over is projected to become larger than the population under 18 years.

By the time we get to age 65, some lives may look like well-tended gardens and others, well, not so much. Aging has a way of magnifying problems which have always been there. Sometimes the answer to the question “Why now?” is not the result of something new or different.

We may be unaware that old habits and lifestyle choices are not be serving us well until we experience a medical or emotional set back, nagging fatigue or pain. Whether evaluating our self-care behaviors or learning habits, keep in mind that human nature is to do what is easiest, not what is associated with the best outcome.

I. The New Face of Aging

A. Obesity and the Risk of Chronic Illness

As of 2012, 69 percent of adults in the U.S. were considered overweight or obese. More than one-third (35.7 percent) of adults are considered to be obese. More than 1 in 20 (6.3 percent) have extreme obesity. Almost 3 in 4 men (74 percent) are considered to be overweight or obese. Being overweight was defined as a BMI between 25 and 30. Obesity is considered 30 pounds overweight and with a BMI above 30. Severely obese is about 100 pounds overweight.

A study published in the May 2012 issue of the American Journal of Preventive Medicine projected that by 2030 over 42 percent, or almost half of Americans may end up obese, and 11 percent could be severely obese, and almost doubling current figures.

Extra weight takes a huge toll on health, creating chronic inflammation and the release of free radicals, and increasing the risk by almost twofold for developing an additional chronic illness such as high cholesterol, blood pressure, Diabetes Mellitus II and heart attack. Risk for other debilitating and chronic illnesses such as stroke, many types of cancer and sleep apnea are increased as well.
B. Obesity and Increased Risk of Dementia

It is well documented that carrying extra weight earlier in life can predispose an individual for the development of dementia later in life. A recently published study in 2011 (Zu, et al.) provides alarming figures on what the risk factors may be. Researchers from Sweden looked at about 8,500 twins in the Swedish Twin Registry and evaluated the correlation between their body mass index in midlife and the eventual development of dementia.

Those who had been overweight in middle age had a 1.8 times (80%) higher risk of being diagnosed with dementia in later life. But for obese people, classified as those having a body mass index (BMI) of 30 or above, the risk soared to almost four times (300%) higher risk of dementia.

Higher body fat is associated with a medical history that frequently includes a diagnosis of high cholesterol, hypertension and Type 2 diabetes. All of these are known factors associated with arteriosclerosis, an artery clogging disease leading to ischemic cerebral vascular disease. Treating these conditions is helpful, but the horse is out of the barn. The ischemic white matter damage
occurring from life style disease is irreversible and places one at increased risk for major stroke or dementia.

**Obesity Increases the Risk of Dementia**

Over 50% of Americans are at 80-300% higher risk of dementia due to weight problems!

While ischemic vascular disease is often considered rather benign, it has the effect of magnifying the effects of normal aging. *It would be wise to remember that what is good for the heart is good for the brain.*

**The Link between Obesity, Type 2 Diabetes and Risk of Alzheimer’s Disease**

Diets high in fructose (fruit sugar) and sucrose (table sugar) can induce metabolic changes associated with Type 2 diabetes. Diagnosis of DMII late in life can increase risk of developing Alzheimer’s type dementia by as much as 40-50 percent according to a meta-analysis of studies in the 2014 World Alzheimer’s Report.

Frequent sugar binges tend to accelerate weight gain and expand fat cells. The larger fat cells become the less sensitive they are to the hormone insulin, which signals the cells to take up glucose from the bloodstream. Decreased insulin sensitivity causes blood sugar levels to remain elevated long after eating a meal. Blood glucose levels that climb high enough can result in a diagnosis of Type 2 diabetes.

Insulin is critical to cognitive health as it kick starts an insulating biochemical cascade that protects brain cells from neurodegeneration. Once neurotransmitters become insulin resistant they begin to falter and degenerate. Specifically, impairments in insulin and insulin growth factor can be linked to Alzheimer’s dementia.
The Role of Ischemic Vascular Disease in Developing Alzheimer’s

While Alzheimer’s disease (AD) is often cited as the most common cause of dementia, cerebral vascular disease is very common in Alzheimer’s disease, with dual pathology thought to have an additive or synergistic effect, that not only lowers the threshold for developing Alzheimer’s dementia but increases the risk of developing either disorder independently. In fact, the frequency of pure Alzheimer’s disease in U.S. population study varied form 21% -56.5 %, with 45% exhibiting mixed Alzheimer’s and vascular lesions.

A longitudinal study of nuns (Snowden, 2001) found that nuns tend to suffer Alzheimer’s at a rate less than the general population. This is likely related to their rigorous lifestyle filled with exercise, mental stimulation and lifelong learning, good nutrition, spiritual devotion and service to others. Conversely, for those nuns exhibiting symptoms of dementia, and found to exhibit Alzheimer’s pathology on autopsy, symptom severity was markedly influenced by the co-occurrence of cerebral vascular disease, including deep white matter ischemic disease and lacunar infarcts in thalamus and basal ganglia region.

The coexistence of strokes increased the likelihood of dementia with Alzheimer’s pathology from 57% to 75% and the presence of smaller lacunar infarcts or TIA’s increased the likelihood to 93%, so times the odds!

Increasingly, Alzheimer's research has identified the role of oxidative damage, inflammation and hypertensive disease in the accumulation of beta-amyloid in the vasculature system of the brain. Cerebral amyloid angiopathy (CAA) is a type of vascular disease that is associated with the deposit of β-amyloid in the small and medium cerebral blood vessels that irrigate the cortical region of the brain.

The fact that clinical dementia is most frequently associated with mixed dementia (MD) or the coexistence of alzheimer’s and cerebrovascular disease rather than alzheimer’s alone is somewhat of a game changer. Lifestyle diseases are not only amenable to prevention but treatment of cardiovascular disease may be a more effective way to protect brain function and serve as a primary or secondary means to reduce or slow the progression of mixed dementia.

How important is maintaining vascular health in protecting against Alzheimer’s’ disease? Huge! In the absence of approaches to detect and treat late stage Alzheimer’s disease, targeting vascular risk factors and improving cerebrovascular health offers the best opportunity for the near future. Lifestyle factors such as diet and exercise and their role in brain health cannot be understated.

Why White Matter Matters

White matter is like the subway for the brain. It contains nerve fibers surrounded by insulating fat or myelin that transmit information rapidly and efficiently across the brain. These multiple networks of interconnected neurons serve not only motor and sensation but also neurobehavioral functions such as attention, memory, language, visuospatial ability, complex cognition, and emotion. Damage to white matter can disrupt or even permanently disable these networks.

Lifestyle diseases can increase risk of white matter change with certain diseases having more serious consequences than others for cognitive health. Chronic high blood pressure can adversely affect the small vessels located deep within the subcortical region of the brain. The small vessels irrigate a group of mid brain structures, including the basal ganglia, known for the production of dopamine and
coordinated motor movement. Dopamine deficiency can result in imbalance, lower extremity weakness, short stepped gait, falls, incontinence, cognitive slowing, brain fog and a lack of get up and go as well as deficits in perceptual motor skills.

Alternately the thalamus can be affected, including the basal forebrain and mediodorsal nucleus, the core brain regions involved in immediate memory and contributing to problems with working memory, consolidated learning and episodic memory, or the “who, what, when, where, why” memory. Because of brain circuitry, changes in the midbrain are likewise registered in the frontal lobe, involving attention regulation and executive function.

In some cases the addition of high serum cholesterol and LDL levels, homocysteine and Type 2 diabetes can result in decreased oxygen flow to the brain. Advanced cholesterol levels can lead to arteriosclerosis or the buildup of plaque in the large arteries that irrigate the heart and brain, increasing the risk of heart disease, TIA’s and stroke. Finally, smoking and chronic lung disease as well as sleep apnea also leads to hypotension or decreased oxygen flow to the brain.

Hypotensive disease tends to damage the periventricular white matter (PVWM) or the cortical region of the brain. The presence of periventricular white matter change as detected on brain scans increases the risk of dementia and the severity of cognitive impairment. As little as 3 percent of periventricular white matter change (PVWM) can result in as much as a 2 standard deviation decline from normal age peers in central processing speed and working memory. Diffuse white matter change in PVWM is frequently linked to cortical atrophy, the single best predictor for dementia.

The location and scope of ischemic white matter change can draw a road map for the future, with PVWM changes having more serious consequences to cognitive health than ischemic disease in the midbrain. The greater the number of chronic health problems the greater risk for periventricular white matter change, cortical atrophy and dementia.

Multiple Life Style Disease

Baby boomers by the sheer number of their medical diagnoses are sicker than their predecessors. In December of 2010, the Department of Health and Human Services issued a strategy report stating that 109 million Americans (or about a third of us) have a chronic illness. These include heart failure, sleep apnea, chronic obstructive pulmonary disease, high blood pressure, Type 2 diabetes, hypertension and depression, just to name a few.

The Domino Effect
More than 25 percent of Americans have two or more chronic health conditions, with two-thirds of Americans over 65 and three-fourths of those over 80 diagnosed with multiple chronic diseases.

And these numbers are expected to rise sharply in the coming decade as more and more Baby Boomers enter their late 60s and early 70s. By 2023, the number of people with multiple chronic conditions is expected to increase by 42% or 81 million, up from 57 million in 2000. These types of illnesses, once developed, usually stay with the individual for life, have a major impact on quality of life, are inherently expensive to treat and can markedly increase the risk for cognitive impairment.

Need we look any further for the reason of increased dementia in America?

C. The True Cost of Multiple Lifestyle Diseases

Spiraling Rate of Alzheimer’s Disease

Every 70 seconds someone in the United States has progressed in their cognitive impairment syndrome to a point of meeting criteria for dementia of the Alzheimer’s type (DAT). As of 2011, five million Americans currently have DAT and aging baby boomers are expected to add 10 million to their ranks. By 2050 Alzheimer’s disease will affect 11-16 million individuals if the disease, or precursor lifestyle diseases, progress as predicted.

Financial Toll

Statistics have become common place warning us of the medical and financial costs associated with obesity, high blood pressure and Type 2 Diabetes. The 65 plus demographic is predicted to raise the national health care costs to 4 trillion in 2030, up from $324 billion in 2013.

Where Medicare Dollars are Being Spent

The Most Common Conditions

Type 2 Diabetes 2013: 27.7

Arthritis 2013: 29.2%

Heart Disease 2013: 27.7

High Cholesterol 2013: 44.9%

High Blood Pressure 2013: 54.4%

Seniors with 6+ chronic conditions account for 15% of Medicare population and tap 41% of Medicare budget.
As of 2012, the sickest seniors, or those with at least 6 chronic ailments, account for 15% of Medicare’s 65+ population, although tap nearly half of Medicare spending!

**The Hidden Cost of Multiple Life Style Disease**

As if the financial cost associated with chronic illness is not alarming enough, what might give Americans real pause is to consider the impending loss of independence and likelihood of residential care associated with multiple lifestyle diseases.

**Loss Aversion**

One of the more dominant theories in behavioral economics is the fact that losing something that we have come to take for granted feels bad. The popular book, “Freakanomics” (Levitt & Dubner, 2009) highlights the point that forfeiting something we already own feels exponentially worse than an unexpected windfall feels good. Once we have something, it’s hard to let it go.

**Risk of Residential Care**

The addition of each chronic health care condition will limit our ability to perform activities of daily living that are required to live independently. While home health care services can reduce the likelihood of self-neglect in the home, the associated cost can rapidly deplete financial resources. For some, the need for additional care with activities of daily living will leave little choice aside from residential care.

**The Hidden Cost of Multiple Chronic Illnesses**

**Loss of Independence**

![Diagram showing the hidden cost of multiple chronic illnesses leading to higher medical costs and residential care](image-url)
II. What’s The Answer?

Prevention and Early Detection

As is true with cancer and cardiovascular disease, the biggest gains in combating age-related cognitive changes will not come in the form of treatment, but in prevention and early detection. Successful aging will take proactive measures, a change in lifestyle and a commitment to reshape behaviors that reduce risk of chronic illness.

In addition to adopting heart healthy behaviors, we need to develop effective memory strategies to compensate for age-related changes in information processing speed and stamina, susceptibility to distraction, fluctuations in medical status and increasing life demands.

A. Prevention

Brain Wellness Activities

Engaging in healthy, active and purpose-driven lives is associated with neurogenesis, or the growth of new brain cells, which can offset age-related or even disease-related damage to the brain. Factors critical to cortical enrichment includes exposure to persistently challenging and stimulating activities, socialization, physical exercise, dietary changes as well as periods of mental restoration, such as yoga and meditation to manage stress.

The effects of participating in a healthy longevity lifestyle program were evaluated by The UCLA Center on Aging. Results indicated that if everyone adopted ONE regular lifestyle change, for example taking a daily walk or eating fish once a week, the prevalence of dementia would decline by 1 million cases within the next 5 years, and 25 million within the next 20 years (Small, 2006).

More recently, a 2014 study by the Mary S. Easton Center for Alzheimer’s Disease Research and the Department of Neurology, UCLA, suggests that memory loss from Mild Cognitive Impairment (MCI) and Alzheimer’s may be reversed through a 36 point therapeutic program that includes dietary changes, brain stimulation, exercise, improved sleep as well as optimal metabolic regulation.

Based on the hypothesis that Alzheimer’s disease results from an imbalance in an extensive neuroplasticity network, the program looks at a number of physiological factors that can mediate synaptic development, maintenance and repair. Variables looked at included hormone levels, trophic factors, glucose metabolism, inflammatory mediators, sleep and exercise related factors as well ApoE genetic status.

Patients underwent complete blood workups to identify suboptimal metabolic function with recommendation for vitamins, minerals, herbs, antioxidants, neurotrophins and nootropics to boost brain health. While the net gain from any one of these supplements or lifestyle changes may be small, a combination was thought to create an effect that was more than the sum of its parts and arrest or reverse the negative metabolic cascade of cognitive impairment.

While the study was small, outcome results were noted in overall health, reduction in body mass index and improvement in functional status, as evidenced by several patients’ ability to return to work.
The Answer to Age Related Cognitive Change

Education
The Ah ha Moment

Prevention
Brain Wellness
Lifestyle

Early Detection
Yearly Brain Wellness
Exams

Strategies
Work Smarter Not
Harder

Case
Management

Memory Tools
Cure For Attention
Failures

B. Early Detection

Yearly Brain Wellness Exams

Beginning January 2011, all Medicare beneficiaries are eligible for the first time for an annual wellness benefit. A mandatory part of this wellness visit will be assessment of cognitive impairment. Medicare’s recent support for detection of cognitive impairment as part of preventative health care could not come at a more critical time. The first wave of Baby Boomers began turning 65 this year and they are advancing into an age of greater risk for development of dementia.

However, increased risk does not need to translate into inevitable cognitive deterioration. Early detection allows time for life changing behaviors to be put in place to offset, mitigate or compensate for disease-related damage to the brain.

C. Strategies

Work Smarter Not Harder

The inability to remember low frequency words such as first names, where you might have left your car keys, or why you walked into a room are common signs of distractibility or forgetfulness. Occurrences like these represent attention failures rather than a form of actual memory loss.

When you consider that conscious attention is limited to about 10 seconds and active memory or working memory is reliability limited to 7 bits of information (about the size of a telephone
number) then you should not be surprised to know the most common type of memory problem is actually a form of attention failure.

Strategies which promote active attention will help us encode and retain information better. Developing daily routines and habits can reduce the burden on the working memory as well as provide needed anchor points to remember future events. Memory tools, like to do lists, schedules, alarms and calendars, offer the most accurate and reliable methods for remembering intentions or reminding oneself to do something in the future.

Strategic problem solving skills, along with brain wellness activities, are our best defense against aging. Will you need to adapt, compensate or bypass the problem situation altogether? Contrary to popular belief, being organized and mindful is not a gift, it is a skill. Being organized is a skill that can be learned or relearned at any age and if practiced frequently it can help us adapt to the aging process.

How to Work More Efficiently

- Look for strategies that will relieve the burden on your overloaded working memory.
- Don’t be afraid to rely on memory prompts and tools.
- Design your life and build routines that allow you to reinforce and practice effective memory habits.
- Never assume that you will remember something that you have not made a deliberate attempt to remember. It is a myth that you would simply remember if it was important to you. What is true is that you would remember to write it down if it was important to you.
- Complex problem solving requires good attention control. Take a personal inventory of factors that reduce attention such as physical or emotional problems, distracters or poor memory habits.

D. Health Care Management

1. Learn To Go With The Flow... Just A Little

Aging requires a bit of give and take on our part. Remember the three A’s to successful aging: acknowledge, adapt and allow. Sometimes by accepting small changes or outside assistance in daily routines, we can avert a major disruption in lifestyle.

2. Appoint a Quarterback for Your Health Care Team

As the number of chronic health care conditions rises, so does treatment by various health care specialists. Cardiologists, psychiatrists, gastroenterologists, pulmonologists, neurologists... well, the list goes on and on. The average elderly patient with five or more chronic conditions sees 13 doctors and fills 50 prescriptions in a year. While specialists are trained to focus on an individual chronic condition, sometimes what is recommended for one disease may counteract what should be done for another.
Having to keep up with frequent changes in medication names and dosage levels can be a real challenge. For individuals recently discharged from the hospital or for those experiencing sensory motor or neurocognitive changes, it can be simply overwhelming. Unfortunately, unless each doctor is fully informed about every prescription taken (including over the counter medications), changes in dosage level or discontinued medications and prior negative side effects, we run the risk of adverse reactions to treatment.

The solution is to have a single doctor, usually a primary care physician, to coordinate all your health care conditions, medications, tests and specialists. A primary care physician usually has a better sense of the “big picture” and can serve as “quarterback” for your health care team. However, as the primary health care consumer, you have a critical role as well.

3. Actively Participate In Your Own Health Care

As leading organizational consultant Steven Covey states in his book, “7 Habits of Highly Successful People,” in order to achieve our life goals we need to be proactive, identify our end point and rearrange our priorities to ensure we get there. You should be prepared to convey to your health care goals to your doctor and ask, “Given my current health status, what’s the best way to reach my goal?”

Communicate Honestly with Your Health Care Providers

Your doctor is not a mind reader. Your physician needs an accurate picture of your self-care habits including nutrition, physical activity, over the counter prescription use, substance abuse and current psychosocial stressors in your life.

Consider Keeping a Health Care Organizer

It just may be the answer to how to keep up with the mind boggling number of medications, changes in prescriptions, doctor appointments and recommendations. Like your trusty Blackberry, a health care planner is a great tool to help you plan, organize, self-monitor and make adjustments in your health care goals. It allows you to easily share medical information between you and your family, health care aides and doctors to ensure your health care goals stay on track.

Basically, it involves a simple 3 ring binder, a calendar for appointments, a current list of medications and a medical directory of providers. Each specialist has a separate tabbed section for Health Care Provider Notes to help track and monitor your health care concerns between office visits as well as take notes during the consultation.

We keep detailed financial records every year. It makes sense that we should be just as careful about tracking the details of our medical health from year to year. At the end of each year, label the notebook by calendar year and store it away. Having a reference book can allow you to monitor your medical issues and treatment outcomes more closely to guide health goals and habits for the next year.
Keep an Updated List of Medications

Although electronic health care records are on the horizon, they are not here yet. While providers make an attempt to keep each other in the loop, it is to your advantage that your treatment team have updated, accurate and detailed medical information at their fingertips during each office visit. It is important to take a list of your medications with you to each appointment so that your doctor can update and correct any miscommunication in frequency or dosage of medication. Other specialists can also see what you are taking to reduce the chance of medication side effects.

4. Become a Smart Health Care Consumer

First, learn as much as you can about your health conditions. Next, pay attention to the details involving your symptoms. Try to see if there is any connection between specific behaviors or habits in relation to a symptom. By focusing only on the symptom, sometimes we miss important triggers or end up blaming the wrong culprit.

Between Office Visits

Be sure to take careful note of what you were feeling and when. It is easy to forget changes in a particular symptom following an adjustment in medication or the particulars of a new health problem. This information can help guide your doctors’ recommendations. If a matter is not urgent, sometimes just writing your observations down will allow you to go on with your day. At your next scheduled appointment you can speak with your doctor in detail about your concern.

In Preparation for Your Next Office Visit

Review your health care notes and prioritize your concerns. Your time with your doctor is limited. Focus on 1 or 2 critical questions to ensure these issues are not overlooked. Family and health care aides who may not be able to attend appointments should be encouraged to write down questions and provide observations and feedback as well.

During Your Next Office Visit

Consider having a family member or trusted health care provider attend all doctor visits with you. They can serve as a note taker as well as provide a balanced picture of your health status. Ask your doctor to write down their response to your question. A written record can reduce the risk of miscommunication. Advice and recommendations can be reviewed at home as often as necessary.

In addition, ask for a written record of all medication changes including the name, dosage level and frequency as well as any special instructions. Just as important, clarify why a medication was stopped or changed. Having a record of prior medications effectiveness or side effects can be very helpful if you are hospitalized or change health care providers in the future.

Before Leaving the Doctor’s Office

Make sure you have a clear understanding of the treatment plan as well as what your role may be to ensure you meet your health care goal.
Successful Aging: Stack the Odds in Your Favor

**Risk Factors**
- Multiple Chronic Illness
- Resistance to Change

**Cognitive Performance Boosters**
- Healthy Heart and Lungs
- Acknowledge, Accept, Allow
- Strategic Problem Solving
- Case Management

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