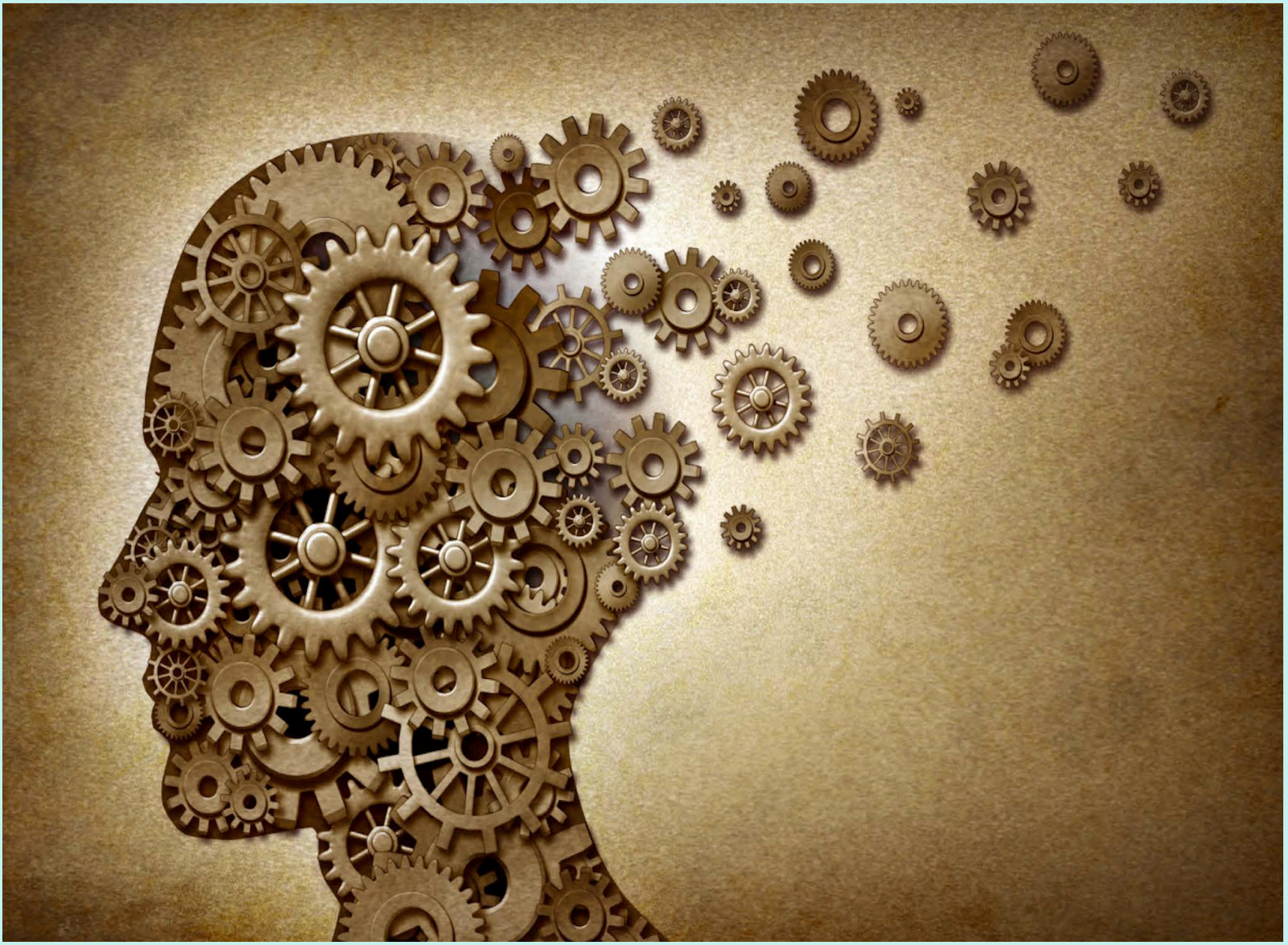
DR. PHILLIP REDD, DO



Reversing Cognitive Decline, Mild Cognitive Impairment, and Alzheimer's Disease

A former FDA Director said the greatest failure of modern medicine is the medical industry's approach to Cognitive Decline.

The lack of progress despite substantial effort may rest, as stated by Leber, former FDA director, 'Not in our methods, but in our ignorance'. (Clinical trials and late-stage drug development for Alzheimer's disease: an appraisal from 1984 to 2014) There is also trouble with their methods, for I believe there is no and will never be a 'silver bullet' for this devastating disease.

Every 6 seconds someone is diagnosed with Alzheimer's disease. Alzheimer's Disease is currently the 3rd leading cause of death in the U.S., killing more Americans than breast and prostate cancer combined. (2017 "The End of Alzheimer's: The First Program to Prevent and Reverse Cognitive Decline" by Dr. Dale Bredesen)

In my opinion, as a society we are becoming sicker and more diseased at an alarming rate. As a consequence the health of our brains is rapidly declining. The rapid rise of cognitive decline and the increased prevalence of conditions like Mild Cognitive Impairment (MCI) and Alzheimer's Disease is quite alarming to say the least.

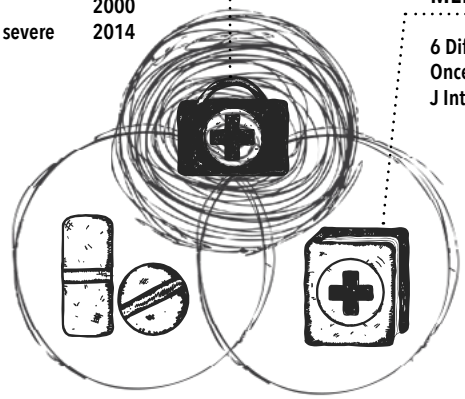
So far modern medicine has been unable to produce a safe and reliable approach that either prevents or slows down the progression of these diseases. Sadly, it is my opinion, as well as the opinion of many experienced healthcare providers, that this failure will continue as long as a "silver bullet" approach is pursued.

Alzheimer's disease and its complications rob the patient of everything that is held dear in life; from treasured memories, the ability to perform simple daily activities, recognizing loved ones and eventually life itself.

CURRENTLY APPROVED MEDS FOR AD

FDA Approved			
1. donepezil	Aricept	All stages	1996
2. galantamine	Razadyne	Mild to moderate	2001
3. memantine	Namenda	Moderate to severe	2003
4. rivastigmine	Exelon	All stages	2000
5. Donepezil	Namzaric	Moderate to severe	2014

At best these might relief the worse symptoms for a very brief period of time



MEDS IN THE PIPE LINE FOR MCI

6 Different Clinical Trials underway.
Once again not great promise at all.
J Intern Med March 01 2015

1. Many patients got worse and reached endstage alzheimer's with the newest category of drug which is Anti-amyloid.

2.WHY? Failed Rat Study, Stupidly Followed by failed human study with 2600 subjects (Eli Lilly)

Turns out amyloid plaques, which were initially believed to cause the disease, are actually the result of protective measures taken by the brain. In other words they are friends not foes and are not a causative factor, but instead a protective response to the actual root causes.

Amyloid Plaques, Friends or Foe's

Amyloid formation is a hallmark of many human diseases including Alzheimer's, Huntington's and the prion diseases.

J Alzheimers Dis. Author manuscript; available in PMC 2009 May 1.

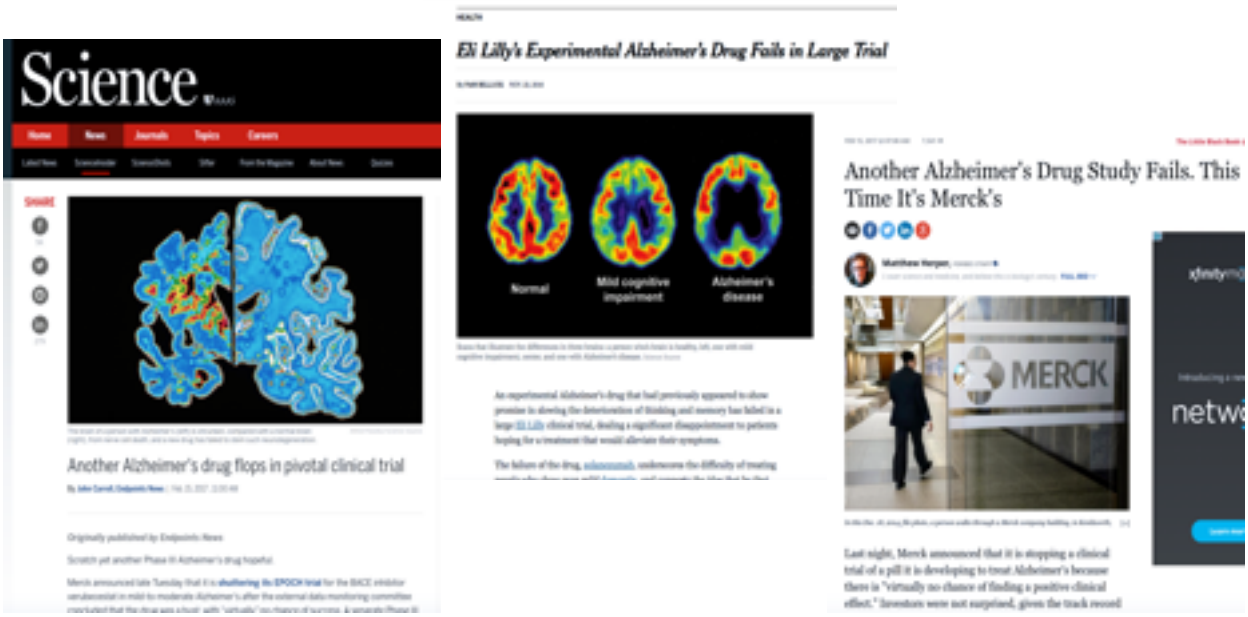
Amyloid is a distinct β-sheet-rich fold that many proteins can acquire. Frequently associated with neurodegenerative diseases in humans, including Alzheimer's, Parkinson's and Huntington's diseases, amyloids are traditionally considered the product of protein mis-folding. However, the amyloid fold is now recognized as a ubiquitous part of normal cellular biology. Functional amyloids have been identified in nearly all facets of cellular life, with microbial functional amyloids leading the way.

Trends Microbiol. 2012 Feb;20(2):66-73. doi: 10.1016/j.tim.2011.11.005. Epub 2011 Dec 23.

Recent studies also suggest a protective action of chaperones in their promotion of the assembly of large, tightly packed, benign aggregates that sequester toxic protein species.

Semin Cell Dev Biol. Author manuscript; available in PMC 2012 Jul 1.

Alzheimer's Drugs Flop



J Intern Med. Author manuscript; available in PMC 2015 Mar 1.

The Reason Why a Silver Bullet Will Never Work

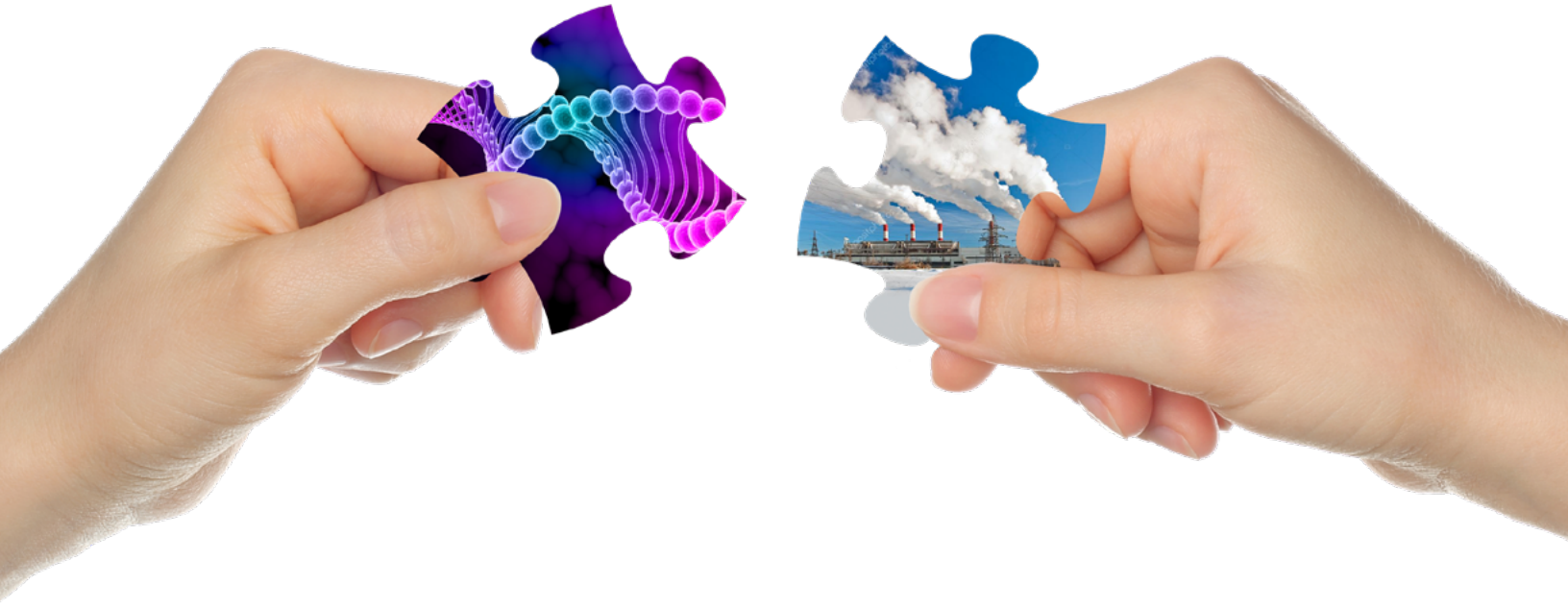
The pursuit of medications (the silver bullet approach) to cure illnesses is an idea that is heavily engrained in the current drug therapy model of healthcare. It is a principle that has worked miracles in the field of acute illness, trauma and infectious disease. So much so that many of the world's worst infections have been completely eradicated.

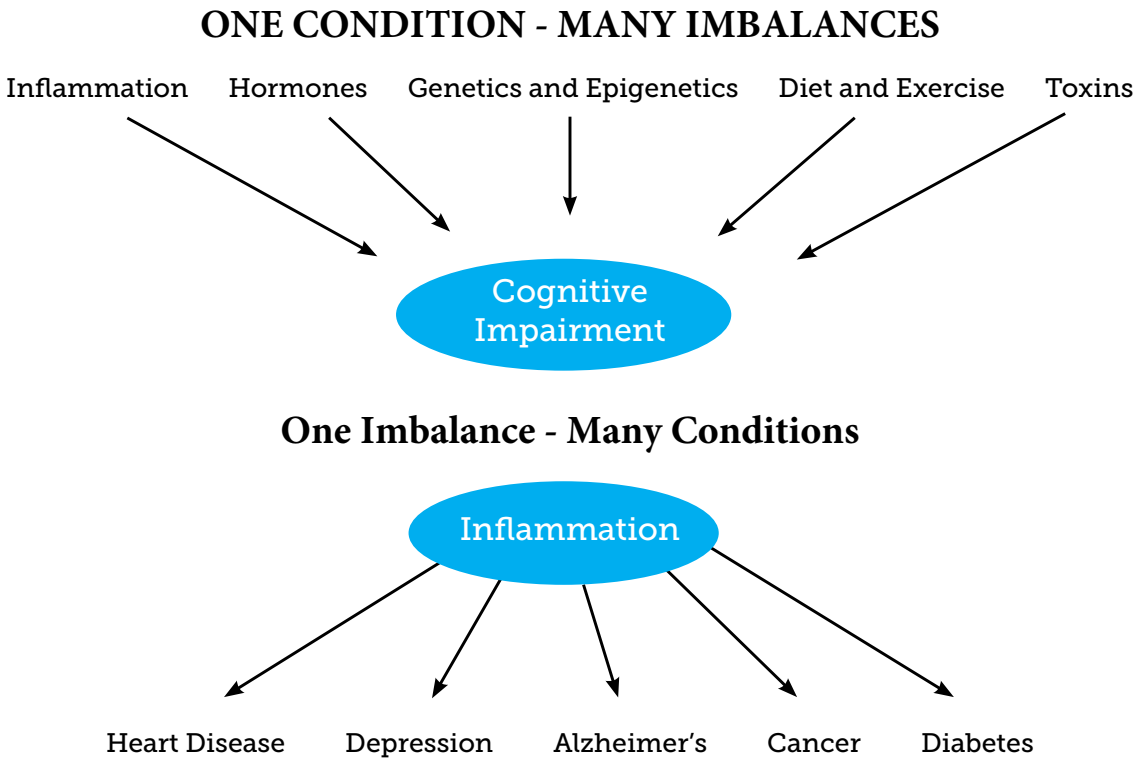
However, the plagues of this century are very different than those for which silver bullets (antibiotics, mono-mechanistic drugs, etc.) were originally designed.

We have entered and are knee deep in the era of chronic disease. It is quite shocking to learn that 70% of people who die in the United States do so due to a chronic disease.

Conditions like Alzheimers, diabetes, cancer, auto-immunity, cardiovascular disease, and many more are wreaking havoc on our communities. These diseases are all very complex and poly-mechanistic, which is to say they are caused by a multitude of factors. For example, it is now known that Alzheimers is not a single disease, but rather a collection of small diseases that ultimately leads to the brain's demise.

Chronic and degenerative diseases are ultimately caused by a very complex web of feed forward, bi-directional viscous cycles. This complex web of dysfunction ultimately short circuits the body's ability to heal and self regulate. To be clear, the spectrum of cognitive decline is fraught with a dysfunctional play between our physiology, biochemistry, environment, and unique genetic makeup.





The Path to Alzheimer's Disease

Subclinical Cognitive Impairment (SCI)

SCI is a stage within the spectrum of cognitive decline that is now identified as the earliest possible stage where atrophy of the hippocampus, or cortex begins to occur. This gradual decline in the size and function of these critical areas is often the first step on the path to full blown Alzheimer's disease. In fact we are now learning that SCI was likely present 25-30 years prior to the onset of full blown Alzheimer's disease.

Until very recently memory loss has been thought to be a normal part of the aging process. Science is now coming to understand that what we often call senior moments are often being caused by a downsizing of the brain's neural network. We have now discovered that there are a multitude of threats responsible for this phenomenon.

Hallmarks of SCI:

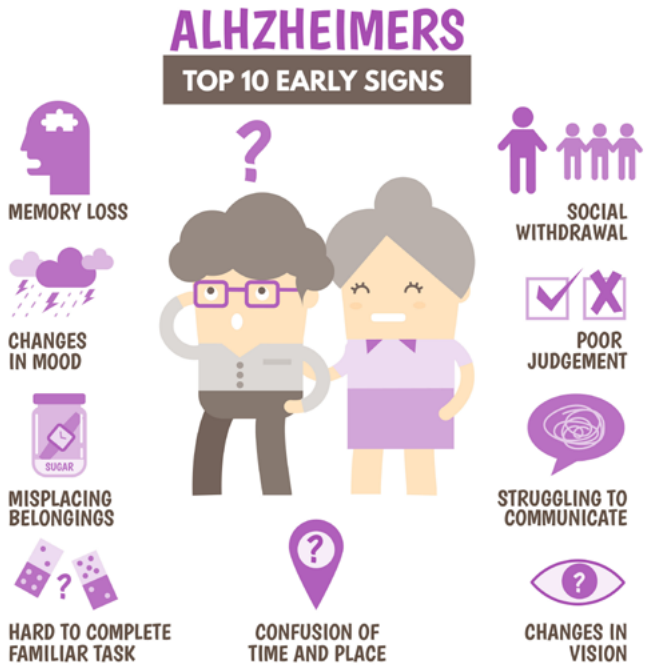
The affected individual starts noticing their brain is not as sharp as it once was. Others may not be able to tell, but they certainly know something is not right. Learning becomes more difficult and memory recall is not as easy.

Mild Cognitive Impairment (MCI)

Mild cognitive impairment (MCI) is a widely cited condition within the research of age related cognitive disorders. In general it refers to complaints of poor memory within the elderly community. MCI is also associated with an increased risk of developing full-blown Alzheimer's disease.

Hallmarks of MCI:

The most telling presentation of this stage is that for the first time others begin noticing the forgetfulness and decreased cognitive ability. In other words not only is the person suffering aware of decreased function, but the dysfunction reaches the point where it is obvious to others. This stage of cognitive decline is highly alarming as it is an indicator of advanced degeneration of the brain.



Alzheimer's Disease

Moderate to Severe Memory Loss and Declining Cognitive Function at times accompanied by other symptoms such as:

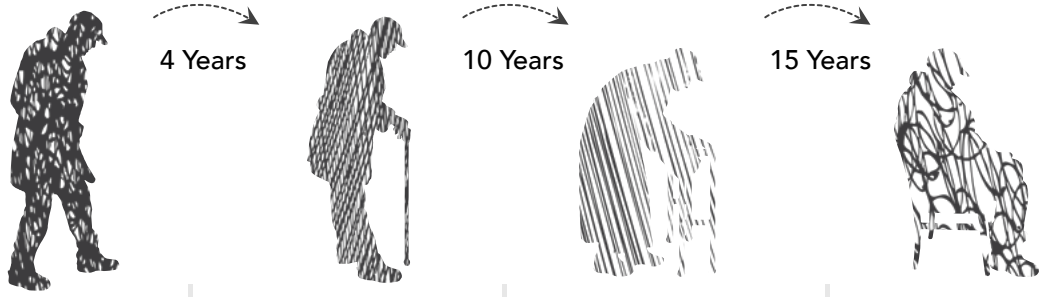
Cognitive: mental decline, difficulty thinking and understanding, confusion in the evening hours, delusion, disorientation, forgetfulness, making things up, mental confusion, difficulty concentrating, inability to create new memories, inability to do simple math, or inability to recognize common things Behavioral: aggression, agitation, difficulty with self care, irritability, meaningless repetition of own words, personality changes, lack of restraint, or wandering and getting lost

Mood: anger, apathy, general discontent, loneliness, or mood swings Psychological: depression, hallucination, or paranoia
Whole body: loss of appetite or restlessness
Also common: inability to combine muscle movements or jumbled speech

Progression of the Disease after SCI and MCI;

Stages of Alzheimer's Disease

Alzheimer's Dementia has 7 Identifiable. Preclinical and MCI are left out of the graphic (Stage 1 &2 / Pre-Alzheimer's). Additionally the times between each stage are just estimates as the disease will manifest differently in each patient based on the underlying mechanism of disease.



Stage 3
Mild Decline

1.Finding the right world during conversations.
2. Remembering names of new acquaintances.
3. Planning and organizing

Stage 4
Moderate Decline

1.Have difficulty with simple arthmetic
2. May forget details about their life histories
3. Have poor short term memory (may not recall what they ate for breakfast, for example)
4. Inability to manage finance and pay bills.

Stage 5
Moderate Severe Decline

1. Significant confusion
2. Inability ti recall simple details about themeselves such as their own phone number.
3. Difficulty dressing appropriately (Can still bathe and use toilet)

Stage 6 & 7
Severe Decline and Very Severe Decline

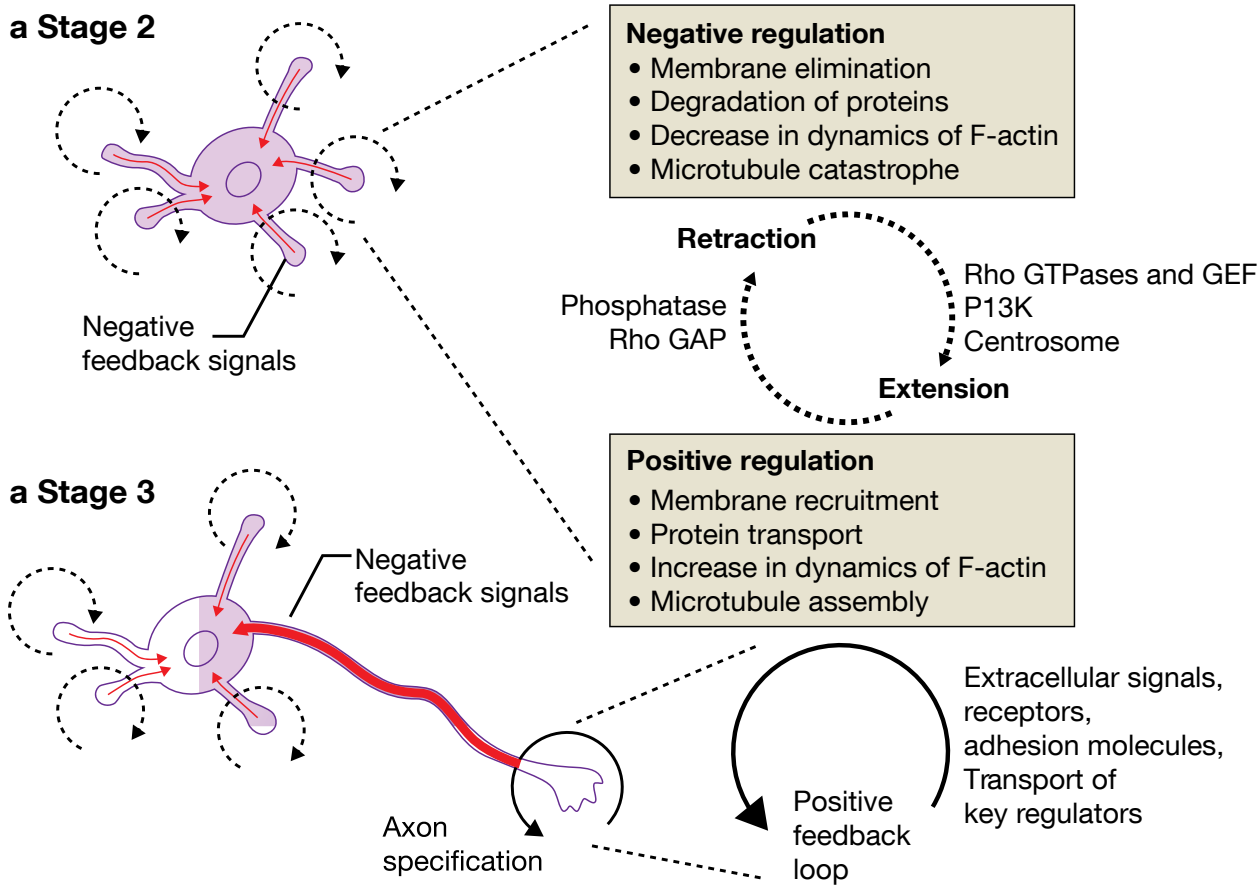
Assisted Living and Professional Care
Nearing Death and Death

The Underlying Cause

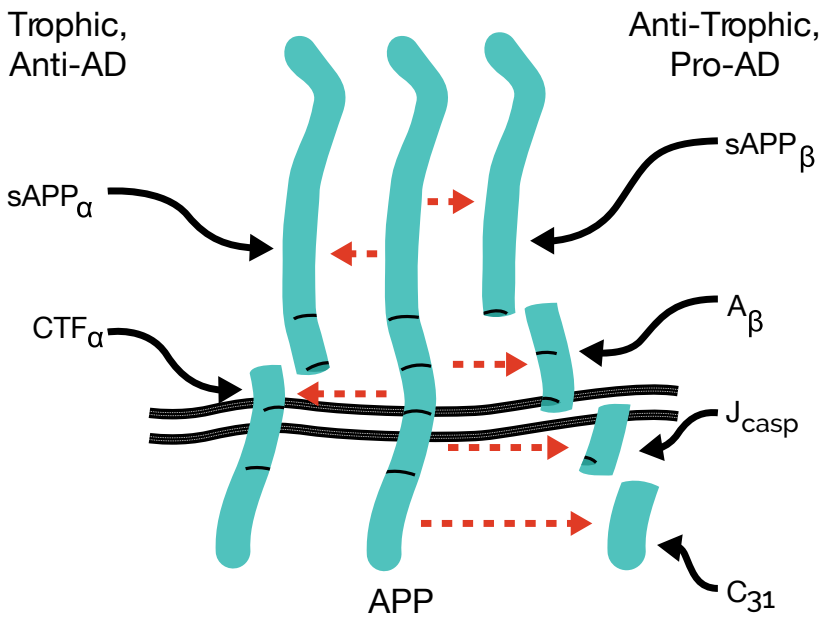
Millions of individuals develop Alzheimer's disease. The disease does not appear to discriminate as it afflicts people from all walks of life. So what is driving this destructive and terminal disease?

The answer certainly appears to be a pre-programmed piece of software within the brain that gets activated due to several factors. Once operational this program begins to direct the brain to begin the process of downsizing neural networks, what researchers call a prionic loop. This decrease in neural infrastructure causes the loss of critical connections between brain cells. In addition the brain's powerful ability to reorganize itself by forming new neural connections throughout life is progressively lost. This function is known as neuroplasticity.

Understanding Amyloid Precursor Protein and The Cleaving Process



The Key to Memory and Neuroplasticity. Neurite Extension through correct Amyloid Precursor Protein Cleaving.



On the left we see what is called trophic cleaving of the APP protein. When the protein is cleaved at the CTF-alpha site, the neuron will be signaled to grow that neurite and thus create more connections. The growth of neurites increases neuroplasticity and improves cognition.

When the APP protein is cleaved at any of the anti-trophic sites, the neuron will be signaled to either retract the neurite (downsizing the neural network) or in some instances something called caspases will be activated causing neuronal death. As you can imagine both scenarios are deleterious to health and promote Alzheimer's disease.

What determines how the APP protein gets cleaved?

The answer to this question is actually quite simple. If the brain is under no physiological, metabolic, trophic, toxic, vascular or traumatic stress, neurons will continuously trend towards expanding the neural network.

When a threat is present and it is chronic, the brain initiates a downsizing campaign to protect itself and conserve its resources for more primitive and essential physiological functions. For example, if your brain is given the choice of remembering how to dress and feed yourself, or remember what you had for breakfast yesterday, it will choose to preserve your ability to feed and clothe yourself.

So What Are The Potential Threats?

The 6 Primary Threats To Brain Health:

Threat 1

Ongoing Inflammation

Prolonged elevation in systemic and cellular inflammation causes the brain to degenerate. Under this threat the brain will in turn begin creating the first plaques. The first plaques can set off an imbalance in what is called the Prionic Loop. Threat 1 can have either a genetic (APOE4 Status) or non-genetic origin (Systemic Inflammation).

Threat 2

Trophic

Is the brain continuously receiving all it requires for survival and optimal function?

What does the brain need?

As you can imagine it needs a lot!

- Sensitivity to insulin
- Healthy Glucose Control
- Activated Thyroid Hormones
- Brain Derived Neural Growth Factor (BDNF)
- Neural Growth Hormone
- Testosterone in males
- Estrogen and Progesterone in females
- And much more

When the brain is deprived from any of its requirements it will often begin the process of systematically downsizing to conserve resources for higher functions.

Threat 3

Glycotoxic

Commonly referred to as Type 3 Diabetes.

There is a deadly combination found in many diabetics, which is a population at the highest risk of MCI and Alzheimer's disease.

High blood glucose is very inflammatory and as such can stimulate the inflammatory threat mentioned above. Additionally many diabetics have insulin resistance which can cause a trophic deficiency (Threat 2). This deadly combination is a strong trigger of the prionic loop that leads to downsizing of the neural networks and can lead to Alzheimer's.

Threat 4

Toxic Illness

Many toxins have been now linked and confirmed to be causative in the development of Alzheimer's disease.

The toxins can be divided into two subgroups: Inorganic and Bio-toxins.

Inorganic:

Aluminum, Cadmium, Lead & Mercury are the most referenced. In addition a history of chronic alcoholism, drug use, and multiple rounds of general anesthesia have been shown to be problematic.

Bio-toxin- The most commonly referenced are mold infections and Lyme disease.

Threat 5

Vascular

A common sign found on brain imaging for the aging population is small vessel disease.

Decreased blood flow to the brain, resulting in decreased neuronal perfusion is a concrete reason why the health of brain cells could take a wrong turn.

Vascular traumas like stroke and/or ruptured aneurysms have been implicated in the prionic loop cascade that can lead to MCI and Alzheimer's.

Threat 6

Traumatic

Multiple head traumas, concussions, and a history of intracranial trauma is also a known trigger for the prionic loop and thus causes a downsizing of the neural network. The net effect can cause MCI and Alzheimer's disease.

The Silver Lining

Research is now indicating that cognitive decline to include, SCI, MCI, and certain stages of Alzheimers can be reversed.

How is it being done?

Like all great Healthcare, a good treatment approach must start with an accurate and comprehensive diagnosis. This is an area where the field of Alzheimer's treatment has struggled immensely.

Historically one of the biggest issues is that the diagnosis is often obtained from neuropsychiatric testing. This process is typically very taxing on the patient, takes a long time, and is not specific at differentiating the cognitive decline from other neurological disorders. In addition patients may even be asked to undergo a lumbar puncture in order to extract cerebrospinal fluid (CSF). The CSF is then analyzed for Tau proteins and amyloid, which can confirm the presence of disease. This process is not only impractical, but also very risky.

Advances have been made!

We now have access to high field imaging packaged with very cutting edge software that can help us visualize the volume of the neural networks in the areas of the brain most commonly associated with Pre-Alzheimer's and other stages of Alzheimer's disease. Remarkably, this innovation allows us to see very early changes in the brain that often lead to severe cognitive decline.

Volumetric imaging of the brain is the first step in determining whether or not you are a candidate for care. Unfortunately this advanced testing and analysis

can be difficult to access for many patients suffering from the many stages of this health problem.

Typically, individuals with SCI, MCI and early stages of Alzheimer's disease are good candidates for this treatment. I go through a very rigorous process that not only determines whether patients are a good clinical fit for care, but also a good fit overall.

Sadly some patients are too advanced in the disease process to reasonably expect a positive outcome.

What happens if imaging confirms that I am a clinical candidate?

The next step is almost always comprehensive laboratory analysis to begin determining the threats that are driving the sickness of the brain. In other words we must begin the process of determining the root cause of the problem.

Testing the Body to Understand the Brain

Comprehensive testing to identify the root cause of the cognitive decline is currently available and accessible to individuals at any stage of the cognitive decline spectrum. This testing includes, but is not limited to, extensive blood chemistry, genetic testing, stool, saliva and other specialty tests. In addition the health history and timeline helps to complete a very complex picture.

A Functional Medicine Approach to Reversing Cognitive Decline, Mild Cognitive Impairment, and Certain Stages of Alzheimer's Disease.

The Functional Medicine model is an individualized, patient-centered, science-based approach that empowers patients and practitioners to work together to address the underlying causes of disease and promote optimal wellness. It requires a detailed understanding of each patient's genetic, biochemical, and lifestyle factors and leverages that data to direct personalized treatment plans that lead to improved patient outcomes.

By addressing root causes, rather than symptoms, practitioners become oriented to identifying the complexity of disease. They may find one condition has many different causes and, likewise, one cause may result in many different conditions. As a result, a functional medicine approach targets the specific mechanisms of disease in each individual.

The Institute for Functional Medicine

The Pillars of Care

Research has found some foundational tools that are very useful to start shifting the direction and progression of the disease. Here are a few general pillars for your consideration. Of course you should consult a qualified healthcare provider to determine which, if any, are right for you.

1. Ketogenesis - The body's ability to switch from primarily a glucose driven fuel system, to a ketone driven fuel system. Ketones are the product of fat metabolism. A diet higher in healthy fats and lower in sugars and refined carbohydrates has been linked in the literature to support healthy brain function.

2. HIIT- High Intensity Interval Training. Exercising at high intensity even if it is just for brief intervals has been shown to increase Neural Growth Factor and Brain Derived Neurotrophic Factor. These are 2 critical hormones needed for the rebuilding of neural pathways.

3. Intermitent Fasting- Fasting can help facilitate the process of moving into ketogenesis and allowing the brain to choose ketones as a primary fuel source. Ketogenesis should be mild, not aggressive. Consult with a trained healthcare provider.

4. Brain Stimulation Exercises- There are many cognitive exercises out there and even though most deliver some benefit, it is difficult to curate a set of exercises that includes all the functions required to increase

cognitive pathway in the brain. I have researched extensively and have chosen a few programs that I believe are both highly therapeutic and can also be used as progress assessment tools.

5. Sleep- Sleeping is essential for brain repair. The state of sleep is where the brain prefers to rebuild and heal since it is not burdened by the tasks of daily living. I recommend a minimum of 8 hours of uninterrupted sleep. In addition falling asleep and waking at the same time is greatly beneficial. Many patients suffering from cognitive decline may experience insomnia and receiving proper support from your healthcare provider is critical. For many a combination of melatonin and 5-HTP can be life changing, yet for others it might not get the job done. Always consult a trained professional before taking any supplements.

6. Music- There is strong evidence showing that music can stimulate memory pathways, especially music that was popular in your youth. Lyrics tend to be deeply ingrained into memory pathways and it can help stimulate brain function. Shoot for 10-15 Minutes daily.

7. Supplementation- There is a large amount of evidence showing that consistent and long term supplementation can be immensely therapeutic for these conditions. Supplementation must be completely customized to each patient based on their individual needs.

8. Medications- Medications might be necessary for short therapeutic windows. Common for Type 3 Toxic Illness and Type 4 Vascular, although other mechanisms might require some form of support. This should always be done by a trained prescribing physician.

The Power of Customized Care

Sadly as we already know mono-therapeutics (pharmacological agents) like Aricept or Namenda have failed miserably. As a matter of fact there is strong evidence that shows that, regardless of the minimal benefit and associated risks,

once an individual goes on one of these medications they will have to stay on them for the rest of their lives. The withdrawal effect of these is so severe that patients get worse extremely fast when they discontinue their use.

There is no cookie-cutter solution. Each individual is very unique relateing to the mechanisms that are driving their disease. The idea of a silver bullet is completely obsolete for a disorder this complicated. Instead what we need is what Dr. Dale Bredesen coined, a silver buckshot. A tool that allows us to address multiple mechanisms at the same time.

The Turnaround

Although this treatment approach is complex and time consuming research and clinical experience is showing it to be a worthwhile endeavor. Many patients who have committed themselves to this type of treatment have found remarkable success. Generally patients can begin to see progress in as little as six weeks, however it can take anywhere between six to eight months to see a dramatic turnaround in memory. For some it has been radically life transforming. Many have been able to return to work after having lost the ability to perform basic arithmetic. Many more have been able to start remembering the faces and names of friends, acquaintances and loved ones. Family members never cease to be amazed at the changes their loved ones are experiencing.

I strongly believe this approach has the power to allow patients to effectively treat, reverse, and most importantly prevent cognitive decline, MCI and Alzheimer's.

It's time to take back our brains, as well as those of whom we love.

Dr. Phillip Redd, DO
23, October 2018