THE END OF ALZHEIMER'S, by Dale Bredesen, M.D.
A Book Report and Comments by David G. Schwartz, M.D.

Could we see the end of Alzheimer's dementia? Already hundreds of patients have experienced its reversal since Dr. Bredesen's first report in the journal Aging, in Sept 2014. See my report in the archives, Sept 2015. He has accumulated much more evidence since then. This very readable book includes a summary of that evidence, about how and why this condition develops, and how this recovery program works. This is about lifestyle, nutritional and herbal supplements, and other natural treatments, all also compatible with the possible assistance of future drugs.

If this were accomplished with a drug, the news would be splashed over front pages, the evening news, and into viral spread on social media. It would be hailed as a miracle of modern medicine and would be a global blockbuster, boosting the stock market by the company that patented it. Yet we don't hear much about this program.

Billions of research dollars over decades have not resulted in a single drug that consistently affects the relentless progression of this dreaded condition.

The FDA rejected Dr. Bredesen's proposal for an investigational study, because, in true anachronistic style, it required the study to be for a single agent.

Dr. Dean Ornish's program, proven by a controlled study to reverse coronary heart disease for the first time ever, in the 1990's, was then hardly noticed by the public or the medical community. It too, was not a drug, but a lifestyle program. If it had been a drug, he would have been an overnight celebrity. Now, not until decades later, his program is approved by Medicare and is implemented in several hospitals across the country. Will Dr. Bredesen's work suffer the same fate? Maybe with the current shift in public confidence from the drug model to natural medicine, it could come to light more quickly, so that millions of people could now be saved the anguish of dementia.

Alzheimer's is a very complex disorder, with three types, each of which must be addressed individually. Trying to treat it with a single agent is like, using Dr. Bredesen's phrase, "using checkers strategy to play chess," or to use my words, like using a hammer to fix a software problem.

We have been stuck on the concept of "disease," as if it were an entity, a thing, when it is actually a concept, and abstraction. Every "disease" manifests differently with each individual. We cannot conquer disease, as if it were an enemy. We can work with the biochemical mediators and triggers that result in signs and symptoms, and we can work with symptoms also. If we work upstream, for example, with the biochemical and energy imbalances, such as elevated HS-CRP, lack of sleep, etc., and systems that are not functioning well, such as low hormone levels, we can remove the causes of the symptoms and signs such as cognitive dysfunction and brain shrinkage, which occur years later. This is functional medicine. We were seduced into the "disease" thinking with the ushering in of the antibiotic era, with the miracle drug penicillin (from a natural source,

nonetheless), which attacked many infections caused by bacteria ("the enemy"). Contrarily, now nearing the end of the antibiotic era, we find that soon we will be without effective antibiotics for many drug-resistant infections. We find that the terrain, (our body tissues, gut bacteria and immune defenses), is as important as the invading bugs themselves, and we have to find better ways of interacting with bacteria and viruses in general, rather than just trying to kill off certain ones and end up killing beneficial ones.

Please refer to my article of February 2015 about The Disease Delusion, by Jeffrey Bland, who originally described Functional Medicine. The common concept of one drug, one disease, I would characterize as similar to thinking of "demon possession," like, "Get that thing out of here with this drug." Well, there is no "thing" here. So Alzheimer's is not a thing, but a constellation of symptoms and signs that are different for different people. The same is true of "heart disease" or "autoimmune disease." Now, of course, a drug can control some symptoms temporarily, which is why most people go to the health care provider. But in most cases it does not treat the underlying dysfunction that caused the symptom. The dysfunction, if continuing, will usually cause increasing symptoms that eventually cannot be controlled. That is why no drug has been able to heal the problem of Alzheimer's.

So Dr. Bredesen's work with Alzheimer's is an application of functional medicine, individualizing a program specific to each person, based on each one's unique dysfunctions, resulting in people's recovery of their normal lives, going back to normal work after having been out of work because of cognitive dysfunction.

I covered a lot of Dr. Bredesen's credentials in the previous article. He began his research into this area, not with the vision that would entail many natural methods, herbs, exercise, nutrition, meditation, sleep, etc., as the protocol eventually ended up. He was then looking for a single molecule that would the key to Alzheimer's disease. To his surprise, the results of his research led him away from that quest to the current program. That is a sign of a true scientist who is open to changing the original hypothesis on the basis of new data. Unfortunately most of the medical profession is not currently committed to the scientific quest to that extent, having blinders on to not see evidence that would require a change in point of view.

This book is loaded with information to which I cannot do justice adequately in my summary, but I will give an outline of the basic concepts and strategies. The many case histories in the book, especially by his first patient, make fascinating reading and give substance to the protocol, another good reason to get the book and to not just take my word for this. These stories had never been told previously, because never had there been "Alzheimer survivors."

Here is my attempt to paraphrase his primer on "How to Give Yourself Alzheimer's:" Work late, have a sugary snack before bed, sleep poorly because of sleep apnea due to weight gain, rise in the AM on a few hours of sleep, feel stress about the day ahead, have a donut, a large glass of orange juice, and low fat milk in coffee. Take a proton pump inhibitor to prevent reflux, robbing your body of nutrients due to inadequate stomach

acid, take a “statin” to lower total cholesterol below 150, increasing risk of brain atrophy. Jump in the car without any morning exercise or sunlight. Keep interpersonal interaction high pressure and unpleasant due to irritability from lack of sleep. When blood sugar crashes in mid morning, eat chocolate chip muffins someone brought to the office. For lunch, white bread, loaded with gluten to punch holes in your gut, turkey full of antibiotics, hormones, and other toxins, or some mercury-laden tuna. Add diet soda to damage the gut micro-biome further, then a brownie to add trans fats. Top that off with a cigarette. No time to brush teeth or floss. Have a Frappuchino stored in the fridge.

Then hit the freeway, scream at the idiot riding his brakes in front of you. Get something at the drive-through, get large fries and a burger, thereby getting more trans fats, starches, gluten, and corn syrupy ketchup, omega 6 oils, and acrylamide. Home again, ignore the moldy smell. Flop down to binge on Netflix or other electronic media, have a Margarita or 3 with amaretto cheesecake. Drift off to sleep with the lights still on and the electronics still blaring. Then start the next day over the same way.

Unfortunately, many people do live in this fashion. The damage to the brain occurs over several decades before any symptoms occur.

The author describes the 3 types of Alzheimer’s dementia. Type 1 is inflammatory, more often in people with the ApoE4 genotype, linked also with cardiovascular problems. This type responds most quickly to the ReCODE (Reversing Cognitive Decline) protocol. Type 2 is atrophic, often occurring a decade later than Type 1. Hormone levels and Vitamin D are often low, and homocysteine may be high, due to low B vitamins. Type 3 is toxic and not associated with family history. It responds more slowly to the protocol. The person may have high levels of mold toxins and mercury. A subtype between type 1 and 2 is associated with high sugar and high insulin.

The following is a very brief summary of the many complex biochemical processes in the brain that lead to either making more synapses (connections between neurons), or decreasing synapses and causing neuronal (brain cell) death. It is when the balance is tipped in the direction of more destructive than constructive forces that net loss of brain cells occurs. The deterioration of neurons and synapses is partly a result of the brain’s normal responses to abnormal stressors. Type 1 stressors being inflammation, Type 2, deficiency of nutrients and hormones, Type 3, toxic agents. Amyloid is produced for the purpose of protecting against these insults, but then the amyloid itself is toxic to brain cells and even promotes the production of more amyloid, leading to a vicious cycle.

To reverse this process, the objective is to remove or reduce those chronic stressors, and the brain can heal itself, remove amyloid, stop neuronal death, and increase its synapses. When people recover, parts of the brain that have shrunken actually increase in size, the result of growing new neurons.

About 36 main problem areas of imbalances in biochemistry need to be corrected, triggers that downsize the brain, like a roof with 36 holes. The more holes you patch up, the better the result. For each individual, we don’t know at the outset how many of the

holes in the roof need to be patched in order for the water leaking in to be less than the water being drained away, so we try to patch as many as possible. People who follow the whole protocol recover faster than those who follow parts of it. For some, not all of the protocol needs to be done. If people go off the protocol, symptoms reappear. It is not a short-term cure. After all, the problem took decades to develop. The book goes into detail about the biochemistry, and that part may seem rather technical for the average person to understand, especially for one with cognitive impairment. The people who have improved or recovered are those with subjective cognitive impairment (SCI), mild cognitive impairment (MCI), and early to moderate Alzheimer's. Those with late Alzheimer's did not respond. The earlier a person starts with the protocol, the better. Don't wait until it gets worse. Even persons who are at high risk and no symptoms need to at least do the "cognoscopy."

For the same reason that colonoscopy is recommended to prevent colon cancer, the book recommends cognoscopy for anyone over age 45 to prevent Alzheimer's.

For Type 1, check the genetic test for ApoE, blood tests for HS-CRP, homocysteine, Vitamins A, C, D, E, Omega6/3 ratio, Albumin/Globulin ratio, fasting glucose, fasting insulin, HbA1C, small LDL particles and oxidized LDL, total cholesterol, HDL cholesterol, triglycerides, glutathione, RBC thiamine pyrophosphate, and tests for leaky gut, gluten sensitivity, food intolerances, and auto-antibodies.

For Type 2, check Vitamin D, Estradiol, Progesterone, Cortisol, DHEA-S, Pregnenolone, Testosterone, and Thyroid tests, including Reverse T3.

For Type 3, check mercury, lead, arsenic, cadmium, copper/zinc ratio, C4a, TGF-B1, MSH, HLA-DR/DQ, and levels of magnesium, copper, zinc, selenium, potassium, and calcium in red blood cells.

Others include cognitive performance tests such as CNS Vital Signs, Brain HQ, or equivalent tests, imaging such as MRI with volumetrics or retinal imaging, sleep study, checking the microbiome in gut, oral and nasal areas.

The basic ReCODE protocol can be modified for each type and for other individual variables. This can seem like a daunting task, with the many tests for monitoring biochemical changes, the dietary and other lifestyle measures, and the many supplements. It is very important for family members to support the patient's goals. Health coaches and online support networks are be valuable.

The diet is called Ketoflex 12/3, a flexitarian diet that can be vegetarian or omnivore. An important goal for this diet is mild ketosis that comes from exercise and from using fats as fuel. Carbohydrates are restricted so that the ketones from the breakdown of fats, especially B-hydroxybuterate, increases neuron-and synapse-supporting brain-derived neurotropic factor (BDNF). Ketones are measured in blood, breath, or urine. The goal is 0.5-4mmol/L. The 12-3 refers to a 12-hour overnight fast, and the last meal or snack 3 hours before bedtime. This promotes ketosis and helps the brain cells to do house keeping, cleanup, removing and recycling damaged proteins, etc., while sleeping.

Most food should be whole, unprocessed, mostly with glycemic index less than 35, mostly non-starchy vegetables, and detoxifying vegetables. Meats are limited to small quantities. Protein intake should be no more than 1 gram per kilogram body weight. Avoid damaging the food by cooking at very high temperatures. Include prebiotics and fermented food. Vitamins are supplemented unless tests show they are already at optimal levels.

Gluten and dairy products should be reduced or eliminated, especially for those who are already known to be gluten or dairy sensitive. Eating foods that cause sensitivity or allergy causes leaky gut (intestinal permeability). Tests are available for food sensitivities.

Some other things that cause leaky gut are sugar, herbicides and pesticides, GMO products, alcohol, antibiotics, NSAIDS, and stress. Probiotics, prebiotics, fermented foods, bone broth, colostrum, and L-glutamine can help to heal the leaky gut.

Supplements often included are B-1, pantothenic acid, B-6, B-12, and Folate if homocysteine above 6, Vitamin C, Vitamin D, Vitamin E as mixed tocopherols, resveratrol 100mg, nicotinamide riboside 100mg, Citicoline 250 mg 2x/day, acetyl-l-carnitine 500mg, ubiqiunol 100mg, polyquoinolone quinone (PQQ), Omega 3 fatty acids, and whole coffee fruit extract.

Herbs to support synaptic function are Ashwaganda, Bacopa monnieri, Gotukola, Lion's mane, Rhodiola, and skullcap. For Type 1, triphala. For Type 3, Tinospora codifolia, and guggul. .

If HbA1C remains over 5.5% or fasting glucose > 90, or fasting insulin>4.5, in spite of the diet above, additional supplements to help the insulin-sugar metabolism are zinc, magnesium, cinnamon, alpha lipoic acid, chromium picolinate, and berberine.

Hormones mentioned earlier should be tested and brought into optimal levels with supplementation. Heavy metals and other toxins can be tested for in hair, urine, and blood, especially for Type 3. Certain foods and supplements can help to detoxify.

I have summarized briefly the ReCODE program, and for people with symptoms, many details need to be filled in by getting the book, studying it carefully, and finding a practitioner of functional medicine, or any health provider who is willing to assist with the testing and implementing the program. That includes people with Subjective Cognitive Impairment (SCI), Mild Cognitive Impairment (MCI), or Alzheimer's, or people knowingly at high risk For those who are at low risk and want to prevent dementia as well as cardiovascular problems, cancer, etc., it is advisable to just not do the things in the scenario, "How to give yourself Alzheimer's," and to do some of the tests in the cognoscopy.

Success depends on how much of the program is done. For some people, not everything in the protocol is needed, depending on test results. This is not a permanent

cure. The problems come back if people go off the protocol. Maybe after more years of experience, some people could end up with more lasting results. If people stay on the protocol, they continue to do well.

One more caveat I would add: Before you make a diagnosis of early Alzheimer's, or Mild Cognitive Dysfunction, or even Subjective Cognitive Dysfunction, be sure to rule out other causes of cognitive dysfunction such as depression, fibromyalgia, chronic fatigue syndrome, Lyme Disease, hypothyroidism, anemia, and other chronic energy depleting conditions. One cause that could be quickly remedied would be toxicity from automobile exhaust solvents such as benzene, ethyl benzene, toluene, and xylene. These can be tested in blood or urine, and repairing the exhaust leak could result in great improvement within days to weeks, since these toxins do not stay in the body long. Also organophosphate pesticides in non-organic vegetables, especially the "dirty dozen," and in the air where pesticides are sprayed, supermarkets, restaurants, hotels, and agricultural areas, also do not stay in the body long if the exposure is stopped. Air purifiers can help. Anyone on this planet who breathes, eats, and drinks is exposed to neurotoxins on a daily basis, and when someone has extra exposure, cognitive dysfunction can occur. Symptoms of neurotoxicity are most commonly "brain fog," balance problems, and headache, but brain fog may be the most recognized symptom. Neurotoxicity is more common than we usually realize, and it would be good to correct it if that can remove the symptoms quickly, and thus remove the worry about Alzheimer's.

If you get this book, you have the opportunity to read the encouraging and inspiring stories of the "Alzheimer's survivors, "people who came back from dementia.

In the words of Mark Hyman, director of the Functional Medicine clinic at the Cleveland Clinic, "If you have a brain, read this book."