Conversation with Dale Bredesen, MD

Interview by Dick Benson

***Dale Bredesen,** MD, an internationally recognized expert in the mechanisms of neurodegenerative diseases, Dr. Dale Bredesen's career has been guided by a simple idea: that Alzheimer's as we know it is not just preventable, but reversible. Dr. Bredesen's dedicated pursuit of the science that makes this a reality has placed him at the vanguard of neurological research and led to the discoveries that today underlie the ReCODE Protocol.*

Dr. Bredesen earned his MD from Duke University Medical Center and served as Chief Resident in Neurology at the University of California, San Francisco (UCSF), before joining Nobel laureate Stanley Prusiner's laboratory at UCSF as an NIH Postdoctoral Fellow. He held faculty positions at UCSF, UCLA, and the University of California, San Diego. Dr. Bredesen also directed the Program on Aging at the Burnham Institute before joining the Buck Institute in 1998 as founding President and CEO.

***Integrative Medicine: A Clinician's Journal* (*IMCJ*):** To start off and for this interview, can you explain from the 30 000-foot level what the Bredesen Protocol is all about?

Dr. Bredesen: The basic point here is very straightforward. Alzheimer's has been an untreatable disease. And so, if we're going to try to treat this previously untreatable disease, why would we do it in a blind fashion by just giving a drug that has nothing to do with what's actually causing it? Our research showed that this is a multifactorial disease, that there are many potential contributors. And for each person, we want to identify the contributors and target those with a precision medicine type of approach. So, the 30 000-foot view is simply to identify what's causing it and treat those things. And I know for people who study functional medicine and integrative medicine, that's not a surprise. Root cause medicine is very understandable. However, as you know, it is not the standard of care at memory centers throughout the world.

People are coming in every day for memory issues and their evaluation does not include the various factors that are actually causing the decline; nor does the treatment address the factors that are causing the decline.

There's not, even in a best case scenario, improved cognition or even stabilized cognition from pharmaceutical treatments. What was suggested as a positive, as a benefit, was that in some cases they seem to slow the decline. In contrast, we just posted in medRxiv our recent clinical trial, in which we actually saw people improve their cognition, not simply slow the decline. So that's the fundamental difference between going downhill more slowly and going uphill. The approach, as I say, is to identify and treat.

Now, what we found is there are 4 major groups of inducers of Alzheimer's disease. Alzheimer's, at its heart, is an insufficiency. Just as a deficiency of vitamin C causes scurvy, Alzheimer's is an insufficiency, a complex insufficiency. There is a plasticity network within your brain, and it requires certain things to function normally. This is an interesting network, and it requires certain things in your brain. And then as you get these degenerative conditions what happens is that there is a chronic mismatch and you have an insufficiency in 4 different areas, any of which can contribute to the decline.

The first is inflammation, anything that is contributing to inflammation. That could be a leaky gut, chronic sinusitis, a poor oral microbiome with poor dentition. It can be a systemic infection, often undiagnosed chronic infections. Any of these things can contribute.

The second group is anything that creates toxicity, and this can be inorganics, organics or biotoxins. So of course, there has been a lot of press on the relationship between air pollution and cognitive decline, but also heavy metals like mercury may contribute. It can also be organics, things like toluene or benzene. Or it can be biotoxins, such as trichothecenes, ochratoxin A or gliotoxin. These all essentially create drag, increased requirements on the system.

The third group is energy. If you don't have enough energy to support this neural plasticity network, it starts to involute, and that relates to cerebral blood flow, oxygenation, mitochondrial function and ketones. You've got to have something to burn for energy, of course. And so, again, if those things are suboptimal, you increase your risk for Alzheimer's disease.

The fourth group is trophic support. So, that's growth factors like nerve growth factor and brain-derived neurotrophic factor (BDNF). It's hormones, things like estradiol, testosterone, progesterone, pregnenolone, thyroid, so forth and so on. And then nutrients like vitamin D, vitamin B12, and related nutrients.

So, those are the 4 major groups that contribute to cognitive decline. And everybody who's got Alzheimer's or pre-Alzheimer's is on the wrong side of that balance.