



DEFEATING DEMENTIA

What You Can Do to Prevent Alzheimer's
and Other Forms of Dementia

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Revell

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Grand Rapids, Michigan

Richard Furman, MD, FACS, *Defeating Dementia*
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To Katy and all the caregivers
who gave such loving care to Mrs. Dell

Grow old along with me—
the best is yet to be.

Robert Browning

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Foreword

When I was serving as the US Senate majority leader, I regularly traveled with my close friend Dr. Furman on medical missions throughout the world. From responding to medical emergencies such as Hurricane Katrina here at home, to earthquakes in Haiti, to leading medical emergency responses more than a dozen times throughout Africa, we have operated as surgeons side by side. I know him well. He is a man of action. I have witnessed his compassion and his skills as a caregiver operating one-on-one, improving the health of the individual. He now operates in the even larger arena of interpreting the medical literature on prevention for the benefit of us all. His focus today, as so well demonstrated in *Defeating Dementia*, is to prevent health problems.

As a surgeon, you can touch hundreds, maybe thousands—but through the dissemination of medical research and public education that can shift behavior you can reach millions. We often hear the phrase “an ounce of prevention is worth a pound of cure.” When it comes to health that is doubly true,

because medical services account for just 10 to 15 percent of our health outcomes. The biggest determinant of health (40 percent) is human behavior: how we eat, live, work, worship, and play. The long-term success of my heart and lung transplant patients—once we get over the initial hurdle of organ rejection—is largely determined by diet, exercise, tobacco use, and related lifestyle choices.

Most Americans are familiar with actions that can be taken to reduce our risk for heart attack, stroke, cancer, diabetes, and a number of other leading ailments. But what about for Alzheimer's disease and related dementias? Every one of us is affected today in some way by Alzheimer's dementia, though clearly some much more directly than others. Current trends suggest those connections will grow closer and more painfully personal with the passing of each year. So it makes sense to learn everything we can and take control through action grounded in current medical science to alter the trajectory of those trends. It is our nation's sixth leading cause of death, yet few can answer the question, What can be done to prevent cognitive decline?

Within these covers, Dr. Furman tackles this question head-on. He shares what he has gleaned from exhaustively reviewing recent medical literature and presents what changes we can make to lessen our odds of developing Alzheimer's, as well as steps to slow the process if it has already begun. The many medical advances in recent years concerning Alzheimer's dementia, due to the use of MRI and PET brain studies, shed light on disease development and progression, as beta-amyloid protein accumulates in the brain and kills

off cells well before symptoms are apparent. Dr. Furman succinctly translates these brain imaging studies to give readers a profound glimpse of the obscure happenings inside as we watch the obvious outside. Drawing upon his own enlightening observations of his mother-in-law going through the progressive stages of Alzheimer's over a fifteen-year period, he writes this compelling treatise to raise our awareness of what we can do at whatever age to counter this devastating process. While many books have been written about individuals with Alzheimer's, none has so seamlessly connected the disease biology, the patient experience, and the preventative science as Dr. Furman does so skillfully.

I first read this work, as you will, through the eyes of my own experiences. As a heart specialist and transplant surgeon, I learned what Alzheimer's does to the brain, beginning slowly but progressing day by day. In my specialty, it is broadly known that when the arteries that feed the heart become clogged with plaque, the heart muscle begins to progressively fail. Dr. Furman explains the parallel relationship that few others address: the vital connection between the health of the arteries feeding the brain and its normal functioning. Most importantly, he spells out what we can do—the specific, controllable lifestyle steps we can take to improve the supply of nutrients to the brain.

As I think back to our mission trips overseas, it was clear to Dr. Furman and me the overwhelming public health benefit we as Americans enjoy because of prevention. Childhood vaccination efforts have eradicated diseases such as smallpox, measles, and polio. Clean water and sound sanitation

systems prevent waterborne illnesses and diarrhea that can be deadly to young children. Safe roads, seat belts, and airbags significantly reduce morbidity and mortality in traffic accidents, and the list goes on. Our approach to cognitive health should be no different. With over five million Americans currently living with Alzheimer's, and triple that number projected for 2050, it's time for us to consider how to be proactive in addressing this very real threat to public health. With no cure or medication yet developed to halt the progress of this debilitating disease, we must seriously consider lifestyle changes as a first line of defense.

Dr. Doug Brown, director of research and development at the Alzheimer's Society, said, "Though it's not inevitable, dementia is currently set to be the 21st century's biggest killer. We all need to be aware of the risks and start making positive lifestyle changes." And this is what Dr. Furman's book is all about: taking peer-reviewed academic research and turning it into a way of living that will support brain health.

Dr. Furman's work will serve as the definitive guide on preventative measures to decrease one's chances of developing Alzheimer's dementia. It gives specific steps to take in your everyday life to reduce risk and delay symptoms. By reading this book, you are proactively learning how to protect and preserve your brain health and longevity. I strongly encourage readers to develop the lifestyles explained in *Defeating Dementia* to help guard against one of the most dreaded diseases we know.

Senator Bill Frist

Foreword

Alzheimer's is one of the most dreaded diseases of our age. It is estimated that more than 5.5 million people in the United States alone suffer from its debilitating effects. Since the vast majority of those afflicted are over sixty-five, there are tens of millions of spouses, children, and grandchildren who sadly must learn how to deal with a loved one who is slowly slipping away.

I had always thought that there was little one could do to prevent or slow the symptoms of Alzheimer's. However, in this amazing book, *Defeating Dementia*, Dr. Richard Furman explains in an easy-to-understand and detailed way that there are actually things you can be doing right now to decrease your odds of developing Alzheimer's dementia.

I have been friends with Dr. Furman for more than four decades. I have known him as an outstanding surgeon who has spent many years operating on patients whose arteries were clogged with damaging plaque, one of the known high risk contributors to the eventual development of Alzheimer's. When his mother-in-law, Mrs. Dell, contracted

Alzheimer's, he began exhaustive research into managing the risk factors of the disease, and he found that there are a number of simple preventative measures one can take to successfully fight Alzheimer's.

What I like about this book is that it is written based on a careful review of the medical literature and is explained in such a way that everyone can understand. What I especially like is that it is a great book of hope. It gives hope that you don't have to spend the latter years of your life not recognizing or knowing your children's names, not recognizing your best friends or your spouse, and eventually becoming completely dependent on someone else to care for all your needs.

This book offers more than just hope for defeating dementia—it shares the hope for life Eternal. In the epilogue, after sharing the story of Mrs. Dell's journey with Alzheimer's, Dr. Furman relates the story of Mrs. Dell's husband at a time several years before her passing. Mr. Dell realized he himself could be on his deathbed and talked about where he planned to spend eternity. The obvious reality is this: everyone is going to die. No one can defeat the grave, but everyone can have a new body, including a new mind, by accepting Jesus as their personal Savior.

This book can change the way you live. It can give you a new hope and practical steps to deal with—and even help prevent—Alzheimer's. I encourage you to not only read it as if you were reading medical literature but also study the entire material presented—especially Mr. Dell's decision in the epilogue.

Franklin Graham

Introduction

Few times in life can you look back at one specific event that made a life-changing impression on you. But that's what happened to me one day a few years ago. I was sitting on the beach in the shade under a casuarina pine tree, reading from a stack of medical literature in preparation for writing *Prescription for Life*. I was writing about the health of the arteries and what kills more than 50 percent of all Americans—heart attacks and strokes.

Even as a surgeon, I had no in-depth medical knowledge about what causes Alzheimer's. I didn't realize the complexity of the disease process. I had not read or heard discussions concerning factors that I, or anyone else, could control in order to decrease the risk of "getting" Alzheimer's. But I did realize one thing: there is no medication that can prevent the disease, much less cure it.

In the stack of medical journal articles I was reading that afternoon, a title caught my eye: "Physical Activity, Diet, and Risk of Alzheimer's Disease." I thought for a moment,

Exercise and diet. That's interesting. I was writing *Prescription for Life* to show how exercise and diet affect the risk of heart attacks and strokes. But I had not considered how those two lifestyle choices might have an effect on Alzheimer's.

I had so many other articles to read that I started to put that one aside. But the report gave specific statistics on preventing such a dreaded disease. So I read on. That article completely changed my thinking about Alzheimer's, and I hope it will change yours too.

The article that inspired me to write this book was published in the *Journal of the American Medical Association*. It reported on a study of eighteen hundred individuals, covering a period of fourteen years, who were researched for Alzheimer's dementia. Each person was studied in terms of what foods they ate, what foods they didn't eat, and how much they exercised. Here is what the researchers found.

The first topic of the study was food. At one end of the scale were the people who ate the most red meat, fried foods, and dairy, which included cheese, butter, and cream products. These are the harmful foods containing the highest amounts of harmful fat. On the other end of the scale were those who adhered to a diet rich in fruits, vegetables, high-fiber grains and cereals, nuts, fish, and olive or canola oil rather than oils from animal fats.

Researchers concluded that *those who ate the healthy diet had a 40 percent less likelihood of developing Alzheimer's dementia* than those who ate the poor diet. Remember that number.

The second topic was exercise. On one end of the scale were the sedentary people, the couch potatoes. On the opposite end were the ones who exercised the most. *Those who exercised the most had a 48 percent lower risk for Alzheimer's dementia* than those who weren't active. Remember that number too.

Now for the most exciting part of the report. The people who did both, *the people who exercised the most and ate the healthy diet, had a 67 percent lower risk of Alzheimer's*. That's the third number I want you to remember.

What I liked most about this article was the statement at the conclusion that made a bold declaration of hope regarding steps to fight Alzheimer's. The conclusion read, "In this study, both higher Mediterranean-type diet adherence and higher physical activity were independently associated with reduced risk for Alzheimer's Disease." Exercise and diet are two lifestyle choices you can make to decrease your chances of developing Alzheimer's.

I reread the article, underlining the numbers 40, 48, and 67. I couldn't help myself. I got up out of my lounge chair and started showing the article to five or six couples I knew. Every one of them was astounded. Just like me, they couldn't believe there was actually something they could be doing that could delay, defer, or even help prevent Alzheimer's.

"Just remember those three numbers," I told them. "The next time you want the bad foods or to sit idle all day, just recall 40, 48, and 67. Food, exercise, both. 40, 48, 67."

The next morning I knew I had gotten my point across to at least one of them. He waved to me and said, “40, 48, 67.” That’s all he said. That’s all he had to say.

That one article changed my thinking about Alzheimer’s from that day on. I knew right then I had to go back to the medical literature and look up specific articles about what can be done to reduce the risk of Alzheimer’s. What I found was almost shocking to me.

Alzheimer’s is not an unknown entity that happens with no cause. It develops more often in connection with certain risk factors. The good news is that those risk factors are controllable. There are preventive steps you can take to fight the dreaded disease process of dementia.

We once accepted mental decline as “just a part of aging.” But today is different. *Alzheimer’s disease affects 9.7 percent of people older than seventy.* A survey of people over fifty-five revealed that Alzheimer’s is feared more than any other disease. That includes heart attacks and strokes. It is even more dreaded than cancer. More people are becoming more aware of what they can do to avoid ending up as part of that 9.7 percent.

Today we’re learning that we can stall or perhaps even prevent Alzheimer’s dementia by making better choices about the amount of exercise we do each day, the foods we eat and the foods we avoid, and what we weigh.

That is what this book is about. It is a guideline for lifestyle changes you can make, starting today, that can make a difference in your future. It’s about understanding Alzheimer’s in today’s world.

If you knew there were changes you could make that would reduce your chances of developing Alzheimer's, would you make them? If you tested positive for Alzheimer's, would you change your lifestyle habits? Even if you tested negative for Alzheimer's, would you change your lifestyle habits to prevent it from happening in the future?

"It is something everybody ought to know." I read those words in a medical journal article detailing new findings about Alzheimer's. New studies reveal there is hope to markedly decrease your odds of developing the most dreaded disease in later life.

As a vascular surgeon, I spent many years operating on arteries that were filled with obstructive plaque buildup that resulted in a decrease of blood flowing to the brain. I began reading about factors that increased the odds of developing Alzheimer's. But more importantly, the medical literature also showed you could play a protective role in lessening your chance of developing the disease. I was surprised at what I found. Numerous studies utilizing brain-imaging techniques examined the progressive process of Alzheimer's dementia. Researchers found that a greater percentage of people who had certain risk factors developed Alzheimer's than did the individuals without those factors. The big takeaway was that those risk factors are *controllable*. *There are preventive steps you can take to fight the dreaded disease process of dementia*. I want to motivate you to begin making lifestyle changes that can lower your chances of developing Alzheimer's. You do that by lowering your odds of developing the disease process

we can see in the brain-imaging studies, images that give a picture of what is happening even before the initial symptoms.

There is no cure. Once Alzheimer's begins, it slowly progresses until it eventually causes death to the nerve cell it has affected. That cell will never again function.

There is no pill you can take that halts the progression of what is happening. There is no known way to reverse the symptoms of what has already taken place in your brain. However, today there is hope. Controlling certain lifestyles is your only hope for prevention of Alzheimer's, as well as slowing or halting the progression once it has begun.

I believe *Defeating Dementia* will be the most informative book about Alzheimer's and other age-related dementias you will ever read. I don't say that in a prideful manner. No other book takes you through the biological process of Alzheimer's in conjunction with the day-to-day life experiences of someone who has the disease. I watched my mother-in-law, Mrs. Dell, go from being symptom-free until the inevitable finale. This book explains what is happening biologically within the brain of someone with Alzheimer's while also following a person's behavior through the life-changing process as the disease slowly progresses.

I will explain medical reports that expose certain risk factors closely associated with the development of Alzheimer's. But more importantly, this book explains what you can do to fight these factors and significantly decrease your odds of getting Alzheimer's or slow the progression if you are already having symptoms.

If you visited your physician and took a mental test for early signs of Alzheimer's, would your lifestyle habits change if you tested positive?

I bet they would. But why wait when you can start a new course today?

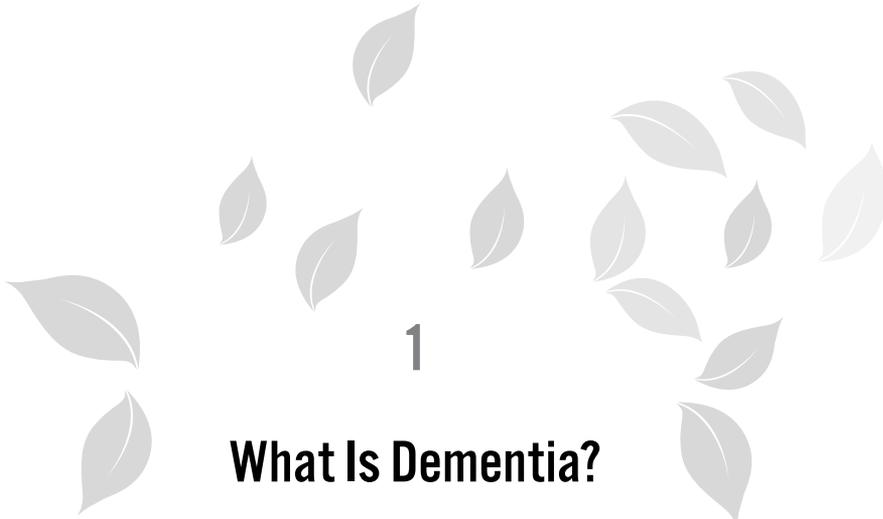


PART 1

Understanding Dementia

Richard Furman, MD, FACS, Defeating Dementia
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1

What Is Dementia?

Dementia Defined

If you had mentioned “dementia” to Mrs. Dell, she would not have known exactly what you were talking about. She had heard of Alzheimer’s disease but didn’t realize that Alzheimer’s is a type of dementia.

Dementia is a condition in which the brain gradually loses its ability to think and remember clearly. It involves a decline in memory or other thinking skills—such as judgment, orientation, comprehension, and language—that affects a person’s ability to carry out everyday activities. Whenever nerve cells in the brain are significantly damaged, the result is eventually dementia.

Dementia begins with damage to a number of nerve cells followed by initial symptoms beginning to show. As more nerve cells are damaged and eventually die, more symptoms occur, and the individual starts having more difficulty with

memory and the ability to think clearly. Their behavior also begins to change. No one notices these symptoms at first, but as more brain cells die, the symptoms become more noticeable. Eventually, one's ability to carry out daily activities becomes so impaired that someone else has to assist them in their everyday routines. This is the point at which a person is given the diagnosis of dementia. Perhaps the person first loses the ability to drive to the store. Then they are unable to perform basic functions such as dressing themselves or walking or eating without assistance. Eventually, they become bed-ridden and require care around the clock. Dementia is fatal, but the sad part of dementia is that life is gone long before death arrives. An article published in the medical journal *Annals of Internal Medicine* explains the definition of dementia best. Dementia is characterized by a change in memory, plus judgment, orientation, comprehension, or language, that is severe enough to interfere with daily life. We will cover the three stages of Alzheimer's shortly and you will see that the term *dementia* corresponds with the beginning of the third stage of Alzheimer's. When a person's memory or reasoning or thought or understanding or awareness gets to the point of interfering with their daily life, from that point on, the process will be called *Alzheimer's dementia*.

One other word you will see frequently mentioned in these medical reports is the word *cognition*. That word is used in the evaluation of mental testing of Alzheimer's that relates to the participant's memory, awareness of what is going on around them, comprehension and understanding

of instructions, or their reasoning in making good decisions. The tests that are given to evaluate whether the Alzheimer's is progressing or not is a measure of cognition. As your cognition worsens, so does the degree of Alzheimer's progress.

Alzheimer's Dementia

I have had people ask if a particular person had Alzheimer's or dementia. One individual told me that both his grandfather and father lost their memory and ended up bedridden and dependent on others. He said his grandfather had dementia and his father had Alzheimer's. They were different diseases in his thinking. If you say someone has Alzheimer's, most people have a picture in mind of what is going on with that individual. They have known people with Alzheimer's, have seen such people in movies, or have read books about such people. But if you were to tell the same people that someone has dementia, the picture that comes to mind is not nearly as clear. Most people are not sure what dementia is, and many think dementia and Alzheimer's are different disease processes. The fact is that Alzheimer's is a form of dementia. We will cover the three stages of Alzheimer's later, and you will see that dementia corresponds with the third stage of Alzheimer's.

Alzheimer's dementia is the most common form of dementia. Alzheimer's dementia is a complex entity. From a medical standpoint, we do not yet know what the initial step in the process is or what exactly causes Alzheimer's dementia to get

worse. We do know there are two basic markers within the brains of Alzheimer's patients. These two protein products are called beta-amyloid and tau. In earlier years, to make the diagnosis, one had to perform an autopsy on someone with dementia symptoms in order to see the beta-amyloid plaques and the tau tangles imbedded in certain parts of the brain. In more recent years, brain-imaging devices have been developed that can detect the buildup of these products while a person is still alive. This process has been found to begin more than twenty years prior to any symptoms.

We also know there is more to Alzheimer's than genes. A report in the medical journal *Experimental Gerontology* stated that Alzheimer's is a chronic degeneration process in which *less than 5 percent of all cases are solely due to genetics*. If you had asked Mrs. Dell, she would have said Alzheimer's is caused by a person's genes. She would have been partially right, because a gene that is passed on in families can affect a person early on, usually between the ages of thirty and sixty. This type of Alzheimer's is called familial Alzheimer's disease. Very few people who develop Alzheimer's have this early-onset type. It accounts for less than 5 percent of overall cases.

What is more common is called sporadic Alzheimer's disease, and this usually occurs later in life, after the age of sixty. A gene called APOe4 makes a person more vulnerable to this type of Alzheimer's disease. About 20 percent of Americans have this gene, but not everyone with it will end up with Alzheimer's, and some people without the gene

develop Alzheimer's. The gene doesn't cause the disease, but it can increase the risk.

The bottom line is this: you can't change your inheritance, but you can make lifestyle changes to lower your risk of developing such a dreaded disease.

It wasn't well known back in the day when Mrs. Dell was living a "normal" life, but now the Alzheimer's Association says that about *half of all people over the age of eighty-five have Alzheimer's*. If Mrs. Dell had known, perhaps she would have taken steps at a younger age to help prevent it or at least postpone the symptoms. She did not realize there were things she could do to slow or stop the progression even after she began showing symptoms.

Mrs. Dell had no idea what was happening between and within the cells of her brain. It would be twenty years before the initial symptoms would show themselves. Her life looked completely normal. She was happily married, had one married daughter, and embraced life to the fullest. Her days were fairly routine. She awoke early, fixed her husband's breakfast, then turned to her favorite hobby, the colorful, blooming flower garden completely covering the front yard.

Every afternoon Mrs. Dell drove to the grocery store to pick up what she needed for dinner. It was a small store, and she knew the owners by name. She charged everything each day and paid her invoice once a month. The one item she replenished on a daily basis was ice cream. Strawberry

was her favorite. On Saturdays she would buy extra for the weekend because the store was closed on Sundays.

Every night for dessert she had her pint of ice cream. But that wasn't her only addiction. Mr. Dell brought home boxes of ice cream bars. There were six in a box, and her habit was one mid-morning and another in the middle of the afternoon.

Other than ice cream, she ate fairly normally for someone living in the South. She didn't like fish but would eat anything else—beef, pork, a lot of hamburgers, anything fried, even fried green tomatoes.

Her blood pressure was “a little high,” as she liked to say with a laugh. But to her, “a little high” rather than “really high” meant that if she missed taking her blood pressure medicine now and then, it didn't make that much difference.

Mrs. Dell had no clue what beta-amyloid was nor that it was beginning to build up in her brain. Neither did she realize that Alzheimer's disease was one of the most dreaded diseases there is. That was not something anyone talked much about back then, even though Mrs. Dell's mother had died with Alzheimer's. She didn't know about certain genes that would make her more vulnerable to Alzheimer's, nor did she have any idea that certain genes would cause the disease early in life rather than late. All she knew was that her mother had developed it in her later years, and she was thankful that she had no such symptoms at her age. Mrs. Dell believed there was nothing that could be done to prevent Alzheimer's, delay its onset, or slow its progression. She accepted it as just a part of aging.

Vascular Dementia

The second most common form of dementia is caused by disease in the arteries leading to the brain and within the brain. This is called vascular dementia. The symptoms of Alzheimer's dementia and vascular dementia are practically indistinguishable, but pathological findings within the brain tissues reveal which type of problem is causing the symptoms of dementia.

If you were to do autopsy studies on the brains of people who have such symptoms, you would find certain specific abnormalities in the brain. If you were to look under a microscope at a thin slice of a particular area of the brain of someone who had the symptoms of forgetfulness or problems with their thinking process, you may see some unusual-looking protein plaques surrounding an area of brain cells that had died. If you looked closer inside those cells and saw a special type of protein called tau and saw these strands of tau protein were all tangled up, you would have the combination of findings for the diagnosis of *Alzheimer's dementia*.

As we already discussed, the brains of people with Alzheimer's dementia contain beta-amyloid plaques and tau tangles. The brains of those with vascular dementia contain very few of these plaques or tangles but do contain medium-sized or smaller arteries that became diseased and closed off from an inflammatory response with bleeding or became plugged due to plaque buildup within their walls. The autopsies of such brains would reveal large areas of brain damage as a result of a stroke. In such cases, the patients most

likely experienced a stroke that was obvious to themselves and everyone else. It may have affected speech or some type of motor movement. This may have been followed sooner or later by the dementia symptoms we have been discussing. This form of vascular dementia is a result of disease of the larger arteries to the brain.

There is another form of vascular dementia that is different from the kind that reveals large strokes at autopsy. In this second form, autopsies of brain tissue reveal blockages in extremely small micro-arteries, and only a very small area of brain tissue is affected. Such areas are also the result of a stroke, but the blockage was so small and the area of brain tissue affected so petite that no symptoms of a stroke occurred. The patient didn't even know they had a light stroke. Such a stroke is called a silent stroke, and a multitude of such events can lead to vascular dementia.

This type of stroke was highlighted in an eye-opening study done by the National Alzheimer's Coordinating Center and published in the medical journal *Neurology*. In an autopsy study of brains, *researchers found that 79.6 percent of individuals showing evidence of a stroke upon examination of the brain did not have a history of a stroke during their lifetimes*. They did not have any symptoms.

If a small stroke is a little bit larger, the patient may witness a tinge of a problem that lasts only a short time, and then they completely recover. Such a stroke is called a transient ischemic attack or TIA. The symptoms are very transient, or brief, and then they disappear and the person is back to normal.

If I were back in medical school taking notes on a lecture on vascular dementia, I would write a short summary statement like this: a significant part of preventing dementia is the health of my arteries—from my largest artery to my smallest.

The Connection between Alzheimer's Dementia, Vascular Dementia, and Mixed Dementia

If you were to go to your doctor with memory problems or with difficulty making decisions or because you weren't able to figure out how to do something you used to do well, they would not be able to tell you definitively whether you had Alzheimer's or problems in your brain caused by disease of the arteries. If you presented with memory symptoms, would the cause be solely beta-amyloid plaques, solely problems with the arteries, or a combination of the two?

The answer to that question is that the majority of Alzheimer's cases have a mixed cause. Examinations of brain structure reveal a mixture of the Alzheimer's beta-amyloid plaques *and* problems with the arteries of the brain.

An article published in *Biomechanical Pharmacology* concerned Alzheimer's dementia and vascular dementia. The report stated that *Alzheimer's is a mixed disease and that the idea that these entities are completely separate has vanished.*

You might think it would be simple to figure out if dementia were caused either by those beta-amyloid plaques and tau tangles that make the diagnosis of Alzheimer's dementia

or by the disease of the arteries that make the diagnosis of vascular dementia. But it is not that simple.

An article in the medical journal *Lancet* reported that the majority of dementia in the aging population is a mixture of plaques and tangles with arterial involvement. Researchers pointed out that if they examined the brains of individuals over the age of eighty who had been diagnosed with Alzheimer's, they would likely not find only plaques or only blocked arteries as the sole cause. This combination of beta-amyloid plaques and arterial disease is called mixed dementia. A Statement for Healthcare Professionals from the American Heart Association/American Stroke Association states that a mixed cause, including the arterial component and the Alzheimer's component, is the most common explanation for cognitive impairment in aging. This study showed that *the effects of arterial disease on the brain were found in 84 percent of Alzheimer's patients.*

Another statement from the medical literature concerning the intertwining of Alzheimer's dementia and vascular dementia is found in the medical journal *Archives of Neurology*. It stated, "Although Alzheimer's dementia and vascular dementia have traditionally been viewed as distinct disorders, it is now generally agreed that the two *rarely* occur in isolation." The article pointed out that what is a risk factor for one is a risk factor for the other. With there being no medication that can prevent or cure Alzheimer's, modifying your lifestyle to alleviate the risk factors remains the cornerstone for the prevention of Alzheimer's.

Several studies have found that in patients with a combination of Alzheimer's disease and arterial disease, fewer of the hallmark beta-amyloid plaques are necessary to cause dementia symptoms if there is associated arterial disease. A key reminder is that the greater the decrease in the flow of blood in the brain, the greater the decline in cognitive function. We know steps that can be taken to prevent the arterial part of the problem. *The health of your arteries is a key player that you control in the fight against Alzheimer's.*

It is not known whether arterial problems are the primary causes of Alzheimer's or whether damage to the arteries makes a person more susceptible to the formation of beta-amyloid plaques in the brain. Either way, arterial damage lowers the threshold for the symptoms of Alzheimer's disease to manifest themselves. Even though the overall cause of Alzheimer's is complex, it is important to understand as many of the causative factors as possible if your ultimate goal is prevention.

Whether you have high LDL cholesterol or are overweight or don't exercise or have high blood pressure or diabetes—you want to go after any risk factor that shows up in so many people who have Alzheimer's. You want to fight the good fight.

Mrs. Dell didn't undergo an autopsy. No slices were ever taken of her brain. I wonder what was going on inside her nerve cells. As I read the medical literature, I got a good visualization of what happens to those with dementia. As you continue to learn more about the medical aspect of the

progression of Alzheimer's, you too can have the same understanding of what goes on in the brain. The more you know and understand what is going on in the brain, the better chance you have of preventing the ongoing process that leads to dementia.

For many years, I flew my own plane. Mr. Dell had told me that as far as he knew, Mrs. Dell had never flown in a plane. So I invited her to experience the excitement of flying ten thousand feet above the city to see the amazing view I knew she would enjoy. One sunny afternoon we took off and flew for what seemed like hours. At one point, we were just above the clouds. She looked out her window, then at me, and gave a big smile as she spoke so authoritatively. "I just love flying." She turned and looked back at the bank of fluffy white clouds. Her statement took me by surprise since I had been informed she had never been in a plane.

"Have you flown before?" I asked inquisitively.

"Oh, sure. It's so much fun."

"Where have you flown?" I waited expectantly to see what kind of answer she would come up with.

"Oh, I flew at the county fair when I was fourteen. They had a pilot who would fly you around the fairgrounds. You could even see the people on the Ferris wheel. My dad paid to let me go. I just loved it." I said no more.

Looking back to that day of flying, I now realize the disease was already building up within the nerve cells of her brain.

That day she was “normal.” No symptoms. But now, knowing how the disease begins and progresses without anyone suspecting it has started, I realize Alzheimer’s had already begun. Changes were already happening to her—long before any symptoms stuck their head out from the horrible shadows of Alzheimer’s.
