

---

## A New Model for Health Care

Presentation by Neal D. Barnard  
at the  
Washington Academy of Sciences 2014 Awards Banquet

### Abstract

Neal Barnard, M.D., was the engaging keynote speaker at the Academy's annual Awards Banquet on May 8, 2014. As President of the Physicians Committee for Responsible Medicine, Dr. Barnard is tackling diabetes with a bold new dietary approach to nutrition and health. In his presentation, he explained how a low-fat vegan diet, which contains no animal products, can help reduce the need for diabetes medicines. He began with data from Japan and compared it with data on the United States. He then presented findings from observational studies published by the American Diabetes Association, as well as National Institutes of Health-funded studies by his own organization and other research teams. He further discussed the relationship between nutrition and Alzheimer's disease — suggesting a different approach for what is considered conventional medicine and alternative medicine today. Dr. Barnard closed by describing just how easily a person can make a diet change and his hopes for the future.

**I GREW UP IN FARGO**, North Dakota. And there, nutrition was not our strong suit. My extended family was in the cattle business. More or less every day, we ate roast beef, baked potatoes, and corn. Except on special occasions, when it was roast beef, baked potatoes, and peas. And that's about all I knew about healthy eating.

My father did not care for the cattle business, and he decided to leave the family farm and go to medical school. He spent his life treating diabetes in Fargo. And I never once heard him say that a patient had been cured. Over time, patients always got worse. I never heard him say a patient's hypertension had been greatly improved.

I want to tackle that head on. There's no topic that comes up in conversation in America more often than health. Here's why: One hundred million Americans have diabetes or pre-diabetes now;<sup>1</sup> two out of three are overweight;<sup>2</sup> and cancer attacks one in three women and one in two men.<sup>3</sup> These are current rates, not projections. Our health care costs are hitting \$3 trillion, or \$9,000 a person.<sup>4</sup>

Here is the typical scenario: You go to the doctor who tells you

---

that you have diabetes, and says, “We’ll treat it with a drug called Metformin. It will upset your tummy, but you’ll get used to it, and it will bring your blood sugar down.” And sure enough, it does both of those things.

But as time goes on, this is not enough. The doctor finds that your blood sugar is creeping up some more and decides to add another medication. This one is called Actos.

You do fairly well for a while, but as time goes on, your doctor again says, “Your blood sugar is a little bit worse. Now we have to have a talk about needles; we can bring your blood sugar down with insulin.” You may say, “I’m not sure I want to do that.” ... “Well, you have to,” your doctor replies. “You also need to lose weight. So we can prescribe a drug called Xenical which will block your stomach from absorbing fat. If things get really bad, we can operate on you, and give you a stomach the size of a tennis ball, so you won’t be able to eat much at all. And you will lose weight.”

Now, those of you who are economists are adding up how much all this costs. You might ask, could the doctor have prescribed a diet change instead? The only diet your doctor remembers is the Atkins Diet because he/she saw a magazine article at the swimming pool, and remembers that you are not supposed to eat bread, because bread somehow turns to carbohydrates. So, he dutifully informs the patients, “Don’t eat any carbohydrate, pasta, cookies, cake, or rice.”

### **A Lesson from Japan**

It is time for a reality check. Let’s look around the world a bit. Let’s take a lesson from Japan, where people have historically been thin, with the best longevity figures in the world. What’s the dietary staple of Japan? They eat enormous amounts of rice.

If you look at health statistics in Japan, you get an interesting lesson. First of all, among adults over the age of 40, before 1980, diabetes was rare — just one to five percent of the population.<sup>5</sup>

But what happened to Japan around 1980? Fast-food chains and western eating habits invaded. William Castelli, the former director of the Framingham Heart Study, used to say, “When you see the Golden Arches, you’re on the road to the Pearly Gates.” Meat, cheese, and other animal products are not traditional Japanese staples, but fast-food restaurants now have long lines of people who are skipping traditional rice dishes and are

---

eating burgers and cheese instead. Fat consumption is going up, and carbohydrate intake is falling. The population was eating a high-carbohydrate, rice-based diet, and now they are throwing out the rice and bringing in the burgers. The result is more fat in the diet, and less carbohydrate. What are the results? There is not yet a lot of obesity in Japan, but body weights are clearly going up, particularly among men. And when a population is eating more fat and gaining weight, what happens to diabetes prevalence? Before 1980, diabetes in Japan among adults over age 40 was 1-5%, but by 1990 it was 11-12%.<sup>6</sup>

This shows us two things. First, rice does not cause diabetes. Second, diabetes is not primarily genetic. Now, there are genes for diabetes, and it can run through families. But did genes change from 1980 to 1990? No, what changed was the environment, and that can cause genes to express themselves.

### **A Lesson from the United States**

Let's take a lesson from the United States. In 1909, the U.S. Department of Agriculture (USDA) reported that the average American ate considerably more meat than people ate in Japan: the average was 123.9 pounds of meat per person per year.<sup>7</sup> But it went up from there. By 2004, we were over 200 pounds of meat per year.<sup>8</sup> That's about 75 extra pounds of meat per person per year, although it has trailed off a little since then. What was the big increase? It was not an increase in beef or pork for the most part.

The big increase has been chicken. Americans now eat one million chickens per hour — around nine billion birds per year.<sup>9</sup>

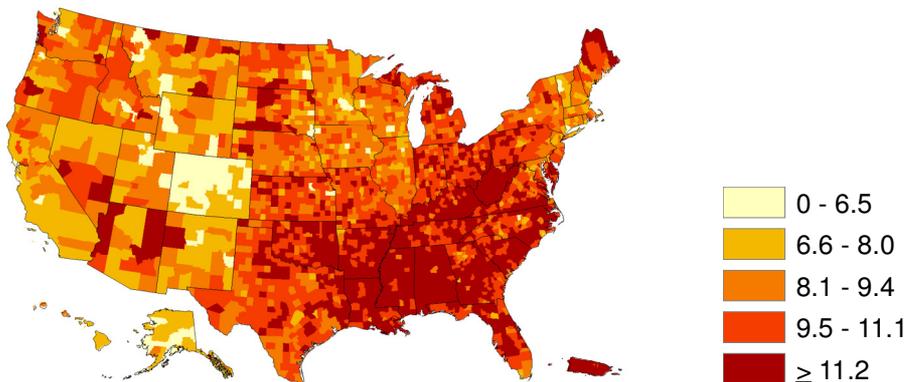
Let me say a special word of condemnation for cheese. Back in 1909, we did not eat much cheese. But what happened? Around 1960, fast-food restaurants started escorting little slabs of cheese onto the bun. Then, pizza became popular. As we all know, pizza is essentially a delivery vehicle for cheese. Compared to 1909, we're now eating about 30 pounds more cheese per person per year.<sup>10</sup> Why does that matter? Because cheese is 70% fat. Most of that is saturated fat, the kind that makes your cholesterol rise. If it were any worse, it would be Vaseline.

Sugar is a more complicated story. Cane sugar and beet sugar intake has fallen over time.<sup>11</sup> But we have more than made up for it with high-fructose corn syrup. If we add it all up, we're eating more total sweeteners.<sup>12</sup>

So, as a population, we are eating 75 pounds more meat, 30 pounds more cheese, and 30 to 50 pounds more sugar per person per year than about a century ago.

So why do we have an obesity epidemic? Some have laid the blame at a lack of exercise. But, researchers have carefully gone through the statistics, and a lack of exercise has nothing to do with the obesity epidemic. Let me repeat: A lack of exercise has **NOTHING** to do with the obesity epidemic. That does not mean that exercise is not good for you. Quite the contrary, exercise is beneficial, and I highly recommend it. But the changes in exercise over the last hundred years have been far too small to account for the massive increase in obesity prevalence; the problem is on the input side of the equation. If you are skeptical, let me encourage you to try an experiment: go to the gym, find a treadmill, and run, flat-out, for a mile. Then wipe your sweaty brow, and punch the little button that shows how many calories you just burned. It's only about a hundred. And on your way back home, if you have a 20-ounce soda, less than half of it gives you back that 100 calories!

As our diets have changed, diabetes prevalence has increased year by year. [Slides showed the progression of diabetes, state-by-state, as the disease reached milestones; diabetes rose first in the states near the coasts and in the South, and now all states have progressed regarding diabetes. See Figure 1.] Diabetes just does not wait. It is still getting worse.<sup>13</sup> Now, it's hitting children and teenagers with what we used to call "adult-onset" diabetes.

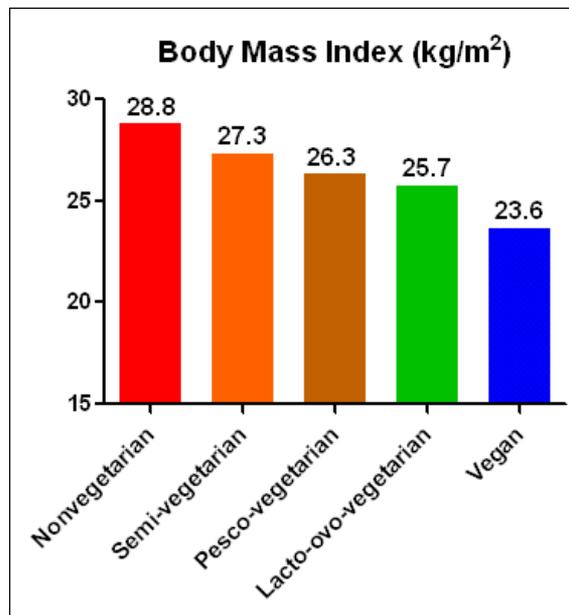


**Figure 1.** Diabetes prevalence, 2009

## American Diabetes Association Findings

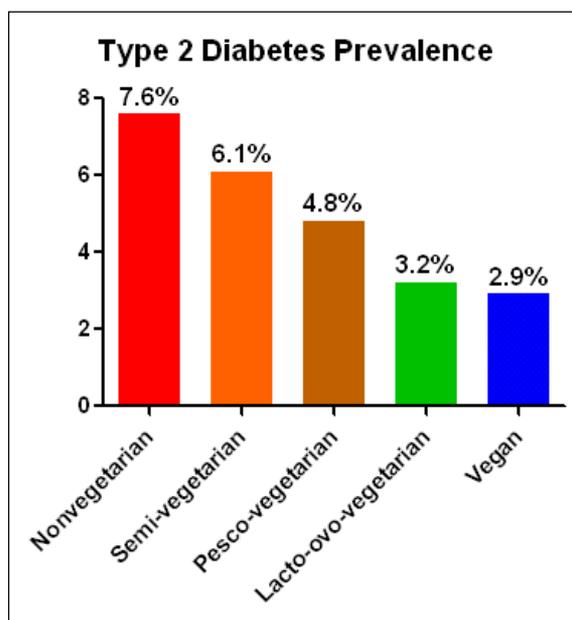
Are there populations that do better? One group that has been put under the microscope is Seventh-day Adventists. When I first started my research career, I wondered why researchers studied Seventh-day Adventists so frequently. The reason is that most Adventists comply with admonitions to avoid tobacco, alcohol, and caffeine, but they vary regarding meat consumption. So researchers have a health-conscious population that varies in diet, which provides a good natural experiment group.

In 2009, the American Diabetes Association published data from the Adventist Health Study-2 which divided the participants into five diet groups.<sup>14</sup> The study first looked at body mass index (BMI), which is essentially body weight adjusted for height [the formula is body weight in kilograms, divided by height (in meters) squared], as shown in Figure 2. A healthy BMI is typically described as below 25 kg/m<sup>2</sup>. The non-vegetarians — that is, the people following a typical meat-based diet — in this group had an average BMI of 28.8. The semi-vegetarians (who eat meat, but less than once a week) were a bit thinner. The pesco-vegetarians (who eat no meat, except fish) were a little bit thinner. The lacto-ovo vegetarians (who eat milk and eggs, but no meat of any kind) were even a little bit thinner than that.



**Figure 2.** Body mass index, Adventist Health Study 2 (60,903 participants, aged  $\geq 30$ , enrolled 2002-2006)

The fifth category was for people following a vegan diet. I should clarify that a vegan is not a person from the planet Vegas. It's simply a person who eats no animal products at all. And they turned out to be the only group whose weight was in the middle of the healthy range. But the reason that the American Diabetes Association wanted these data published was because of the figures for diabetes prevalence. And here we see much the same gradient (see Figure 3). The meat eaters had a high prevalence, the vegans had a very low prevalence, and the other groups were between the two. Even if you control for the fact that vegans tend to be better-educated and more physically active, they still have a decided advantage.



**Figure 3.** Type 2 diabetes prevalence, Adventist Health Study 2 (60,903 participants, aged  $\geq 30$ , enrolled 2002-2006)

### **Diet Research with Washington, D.C.-Area Women**

So my research team decided to test the effects of a vegan diet in people who had never tried anything like this before. We enrolled 64 women in a randomized trial. They were all overweight and eager to try a diet change.

We asked half the participants to follow what many people would consider a “healthy” diet — lean meats, skim milk, and plenty of

---

vegetables and fruits, following the guidance of the National Cholesterol Education Program. That was the control group.

The experimental group began a very different regimen. We asked them to follow a vegan diet. That meant using a graphic we called the “Power Plate,” which includes fruits, grains, legumes and vegetables. And there were only two rules: They were to avoid animal products and to keep oils low. The reason for this is that fat has nine calories per gram, while carbohydrates have only four calories per gram. So while olive oil is better than chicken fat, it still has a lot of calories compared to, say, rice, which is mostly carbohydrates and very low in calories.

They could eat as much as they wanted — there was no calorie counting and no carbohydrate limit. They could eat blueberry pancakes for breakfast or oatmeal with cinnamon and raisins, and they could eat chili for lunch, as long as it was a vegetable chili or bean chili. They would have been good with a vegetable lasagna or linguini with artichoke hearts, wild mushrooms, tomatoes, or whatever, rather than meat sauce.

Those of you with experience in health care know you can’t just say to a patient, “Here’s your diet; come back and see me in six months.” People need support. So we met with the group every week.

At about week number three, one of our participants announced to the group that she had found a treat that fits in perfectly with a low-fat vegan diet. She opened her purse and pulled out a pack of Twizzlers — the red licorice twists sold at convenience stores. She said, “Look at the label.” I did, and it was true. They contain no animal products and no added fat. They are just sugary, starchy, artificially-colored junk. And she made sure everybody in the room knew that they were free to eat all the Twizzlers they wanted in this research study.

So my vegan, low-fat, Twizzler-fueled participants set off on their path to the unknown. After 14 weeks, the average person had lost 13 pounds. We then tracked them for an additional two years. They never regained their lost weight; in fact they were thinner at two years than they were at the beginning.

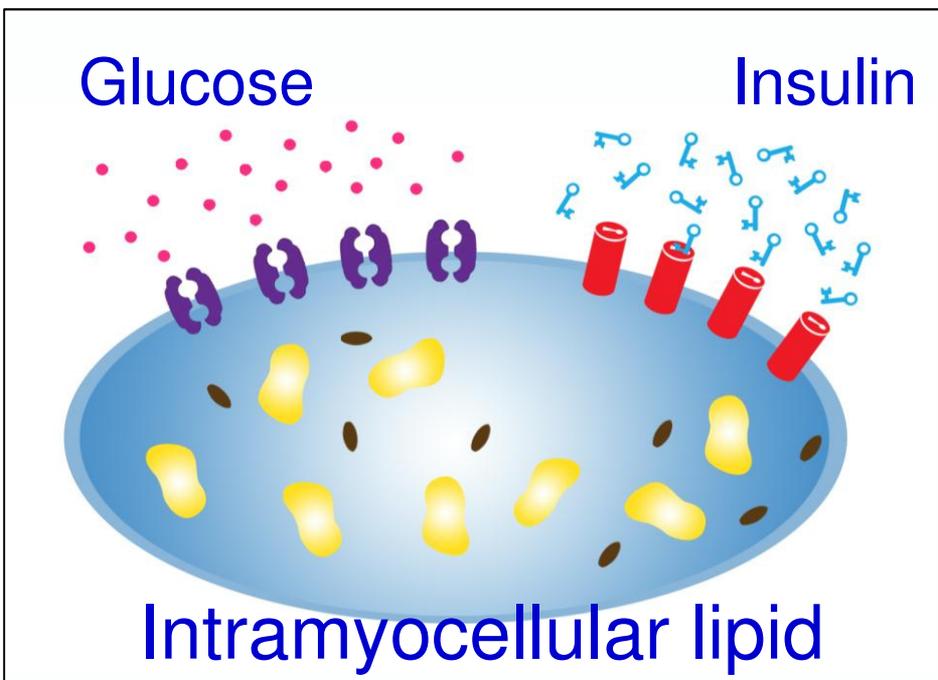
### **National Institutes of Health-Funded Study of Diabetes**

We were then funded by the National Institutes of Health (NIH) to try a similar regimen for people with type 2 diabetes. We did a head-to-head test of a low-fat vegan diet versus what I would call an American Diabetes Association diet, which keeps carbohydrates limited and fairly

constant from day to day, and uses a calorie restriction for weight loss. (I have to admit, calorie-counting gets old by about Wednesday, but that is still the current dietary approach.)

The plant-based diet was not only more effective at lowering blood sugar, body weight, blood pressure, and blood cholesterol, but it turned out to be just as acceptable, or even more so, compared with a more standard “diabetes diet.” How can that be? After all, you are not eating any cheese or meat. The reason for its high acceptability is that you can eat as much as you want. People are never hungry, and instead of trying to starve weight off, the low-fat, high-fiber foods do the work for you.

Now, let me walk you through my most important slide (see Figure 4.) I would like to show you what I believe to be the cause of type 2 diabetes. It has nothing to do with rice, bread, or carbohydrates in general.



**Figure 4.** Inside the muscle cell

This is a muscle cell. Muscle cells are central to this process. Most circulating glucose eventually ends up in muscle cells. Some goes to the brain, some goes to other organs, but most goes to the muscles of your arms, legs, and other parts of your body. When a doctor measures your

---

blood sugar and finds that it is too high, this means sugar that was supposed to be passing from your blood into your muscle cells has not made it. The problem is that sugar — that is, glucose — cannot get through the little channels that lead into the cell without the help of a hormone called insulin. Insulin is like a key that opens channels on the cell. Each tiny insulin “key” attaches to a receptor and signals the channels to open, permitting glucose to enter the cell. That’s the way the system is supposed to work.

But in type 2 diabetes, something inside the cell is interfering with that process. Microscopic droplets of fat are accumulating in the cell. It might have originally come from chicken fat, beef fat, pork fat, fryer grease, or extra-virgin olive oil, but it is now ending up in the cell with surprisingly little biotransformation. By the way, doctors hate words like “fat.” It has only one syllable. So, we call it intramyocellular lipid.

So intramyocellular lipid, or fat, builds up inside the cell and interferes with insulin signaling. Now it may not be the quantity of fat; it may be how the fat is metabolized. But current dietary treatments for diabetes ignore this problem, and focus instead on bread, pasta, rice, or whatever else contributes glucose to the bloodstream.

That’s not the problem; the problem is that the cell can’t accept the glucose. So let’s fix that. How? By getting rid of the intramyocellular lipid to the extent we can.

How can we do this? There are two ways. First, you could have gastric bypass surgery so you just can no longer absorb fat. That will eventually reduce the fat inside your cells. But what if you were to begin a plant-based diet? That means there is no animal fat in your diet at all. And what if you also keep your vegetable oils low? Well, that intracellular fat then starts to diminish.

Let’s put a human face on this phenomenon. This is a participant in our study. [Shows overhead slide.] Over the course of a year, she lost about 40 pounds. She stopped all of her diabetes medication. And the test we use to assess blood sugar control is called hemoglobin A1c. For a person with diabetes, it ought to be below 7.0. She started at 8.3, which reflects poor control. But by changing her diet, even though she had stopped her medications, she got to 6.8, which is a dramatic improvement.

She also discovered that her arthritis went away, which is something we see not infrequently. Certain foods trigger an autoimmune response that lead to inflammation of certain parts of the body, particularly

the synovial lining of the joints. The most common food trigger appears to be dairy protein. Citrus, tomatoes, eggs, or other foods might also be problems for some people, but dairy products seem to be the most common. As she got rid of her dairy protein, she got the extra benefit of eliminating her joint pain.

Here is another study participant. [Shows another overhead slide.] His father was dead by age 30. Our participant was 31 when he got his diabetes diagnosis, and was in his late 30s when he joined the study. Over a year's time, he lost 60 pounds. He stopped all his diabetes medication. His A1c was previously 9.5, which is quite high. After the diet change, it had dropped to 5.3, which is in the normal range.

Doctors are not used to seeing diabetes improve to the point where it is no longer detectable. However, our research team has seen it over and over again, because we are tackling the cause of diabetes. By the way, when I was asking his permission to tell you about this case, he said, "Be sure you tell everybody that my erectile dysfunction got better, too."

### **Study of Two D.C.-Area Corporate Sites: Chevy Chase and Fredericksburg**

When I look out my office window, what I see is the GEICO building, the company's national headquarters on Western Avenue in Chevy Chase, Maryland. There are about 2,500 people working there.

Back in 2007, I was talking with their company health director. We noted together that it would be great if everybody at GEICO followed a healthier diet. Among other benefits, the company would save an *enormous amount* of money! So we decided to do a test. We picked two sites, the one in Chevy Chase and the other site in Fredericksburg, Virginia.

At both sites, everybody who wanted to volunteer was put on the scale. We tracked their weight, their cholesterol, their blood pressure, and their A1c if they had diabetes. And in the Chevy Chase branch, we began the intervention, which had two parts. First, we offered a weekly group to help everyone stay on track. This included a cooking class and plenty of support. Second, the cafeteria served vegan food in addition to its other foods. So it might offer bacon and eggs, but it also offered an oatmeal bar. It might have cheeseburgers, but it also had veggie burgers, or portobello sandwiches, or a salad bar.

All of this was a bit new to the cafeteria manager, and there were a

---

couple of mis-steps along the way. [As an example, Dr. Barnard showed the cafeteria sign, proudly featuring a “Vegan burger with bacon and cheese”!]

The participants in Fredericksburg (the control group) did not lose weight, but the participants in Chevy Chase on the vegan diet lost weight very nicely. The average person lost 11 pounds.<sup>13</sup>

### **Fats, Antioxidants, and Alzheimer’s Disease**

Let’s switch gears and look at Alzheimer’s Disease. Everybody knows someone in the family or a friend’s family who has had this disease. It attacks not quite half of us by the age of 85.<sup>15</sup> And the disease is increasingly prevalent year by year. If you ask your doctor for an effective means to prevent it, your doctor is likely to point out that the disease is largely genetic. The genetic trait we are speaking of is the APOE epsilon-4 allele. If one parent gave it to you, your risk is 3 times greater than for people without the allele. If both parents gave it to you, your risk is 10-15 times greater. Inside the brain, proteins are secreted from brain cells, and they accumulate in beta-amyloid plaques which we can see on microscopic slides after death. There are medications that try to slow that process; none is particularly impressive, although they are widely-prescribed.

In Chicago, a team of researchers took a very different approach. The Chicago Health and Aging Project recruited about 6,000 people and tracked what they ate, and also tracked their cognition over time.

One nutrient that soon came to the researchers’ attention was something I knew about as a child. My mother cooked bacon for her five children, and once the bacon was cooked, she poured the hot grease into a jar to save it. As the grease cooled down, it solidified, which is a sign that it is loaded with saturated fat. There is saturated fat, not just in bacon grease, but in meats in general, and in dairy products as well.

Some people in Chicago ate relatively little saturated fat — about 13 grams of saturated fat a day; other people in Chicago were eating about twice that amount.

Looking at their Alzheimer’s disease prevalence, we see a dramatic difference: This is the low group, and this is the high group. [The slide showed Alzheimer’s risk in the high group was 3.5 times that in the low group.] So by eating more saturated fat, your Alzheimer’s risk triples, if your risk is like that of the Chicago research participants.

Where does saturated fat come from? Two eggs have three grams [of saturated fat]. A slice of bacon has one gram ... And do you know anyone who eats a single slice of bacon?! A chicken thigh without the skin is 4½ grams. A glass of whole milk, another 4½. Pizza for one, 12 grams. When we add that up, we are in the range of the high saturated fat group. And many Americans eat these foods every day.

Then there are trans fats, which are common in pastries and other snack foods. Some people in the Chicago study ate more trans fats than other people did. Let's look at their numbers. There's the low group [1.8 grams], and the high group [4.8 grams]. The people who ate the most trans fats had five times the risk of Alzheimer's compared to those who were eating relatively little trans fat.

How do fats affect Alzheimer's risk? We believe what is going on is that fats in the diet cause cholesterol levels to rise. That doesn't just assault your heart; it also causes the production and deposition of beta-amyloid in the brain. In turn, within the beta-amyloid plaques, free radicals cause damage to the brain. This is the theory. Researchers are still trying to sort out the details, but we do have a lot of evidence that this is what is at work.

Now vitamin E is an antioxidant. It can knock out free radicals and prevent free-radical damage. There is a lot of vitamin E in nuts, seeds, and many plants. In Chicago, some people had low intakes of vitamin E, while others got much higher amounts. If you look at their rates of Alzheimer's disease, you discover something else. The people who generally avoid vitamin E have double the risk of Alzheimer's.<sup>16</sup>

All we are doing is adding up tools that we can use to reduce our risk. If I avoid saturated fat and trans fats, and get plenty of vitamin E, I am getting to the cause of the disease. There is a lot more that we can do, and some of you may have seen my PBS program<sup>17</sup> which goes into elaborate detail about the ways we can deal with Alzheimer's.

### **Drugs and Memory Loss**

But there is one more threat to memory that I want to mention. This was taught to me by Dr. Duane Graveline, a physician and former NASA astronaut-in-training. One day, he got in his car and drove home, and when he arrived, he did not recognize his own wife. Needless to say, he got immediate medical attention. But why did his memory disappear? The only change he had made in the past two months was that he had started taking atorvastatin, a statin marketed under the brand name Lipitor.

It's generally safe. It lowers cholesterol and has very few side effects. Or so we have thought. So he stopped the drug, and his memory promptly came back. He restarted the medicine again a few months later at half the dose, and his memory was again wiped out in about four weeks' time.

So, the FDA now issues a warning, not only for Lipitor, but for every statin, saying that, although it is generally safe, it does have a number of side effects: muscle and liver side effects, increased risk of diabetes, and effects on memory in rare cases. I'm not suggesting that people should not use atorvastatin. What I am suggesting is that 90% of people do not need it. They are taking it because they are selecting — as part of their daily fare — meats, dairy products and other foods that increase their cholesterol levels which they are then trying to drive back down with the drugs that stop their body from being able to produce cholesterol. If they would give themselves eight weeks, and avoid all those cholesterol-producing foods, in 90% of the cases their cholesterol would likely descend into the normal range. Roughly one in ten would not. These are individuals with genetic hypercholesterolemia, and that's where the discussion about lipid-lowering drugs is sensible.

Many other drugs affect memory.<sup>18</sup> If you ever have a patient or family member with an acute change in mental status, the first thing to do is to march into the bathroom and open up the medicine cabinet and see what's new. Many medications can affect the brain, and their effects add together. For example, an anticholinergic sleeping medication adds to an anticholinergic psychiatric medication and, before long, the brain starts to get overloaded.

### **Conventional Medicine, Alternative Medicine**

Currently, prescriptions are viewed as conventional therapy for diabetes, lipid problems, blood pressure, and Alzheimer's disease.

Diet and lifestyle changes are viewed as "alternative" medicine. That distinction made perfect sense a century ago when infectious illnesses were medicine's greatest challenges. Asparagus is no good against tuberculosis.

Today, medical clinics and hospitals are dealing with the consequences of our eating habits. Conventional medicine *should* be taking a good, hard look at our diets. And when a diet change is not enough, we should use medications, surgery, and other treatments as "alternative" medicine.

If we can reverse our notions of what is conventional and what is alternative, we would not be spending \$3 trillion annually on health care. Our costs would plummet, and perhaps our doctors would have Wednesday afternoons off.

So, what is a healthy diet? There are four key food groups: Fruits, grains, legumes, and vegetables, which we have depicted as the four quadrants of The Power Plate. The Physicians Committee for Responsible Medicine sent this graphic to the USDA in 2009. Two years later, USDA released MyPlate, which does look remarkably similar.

### **Beginning a Healthful Diet**

You might be thinking, “Okay, I get it. If I follow your diet, I’ll be healthier and slimmer. But how do I do this? It sounds like a big change”.

Let’s show you how we do it in our research studies. I’ve never seen anyone who cannot do this.

#### ***Step 1: Check Out the Possibilities***

The first step is not to change your diet. Rather, just check out the possibilities. The idea is to think of plant-based foods that you would like for breakfast, lunch, dinner, and snacks. We ask patients to take a week to test them out. For breakfast, perhaps blueberry pancakes or oatmeal with cinnamon and raisins, or maybe a breakfast scrambler with tofu instead of eggs.

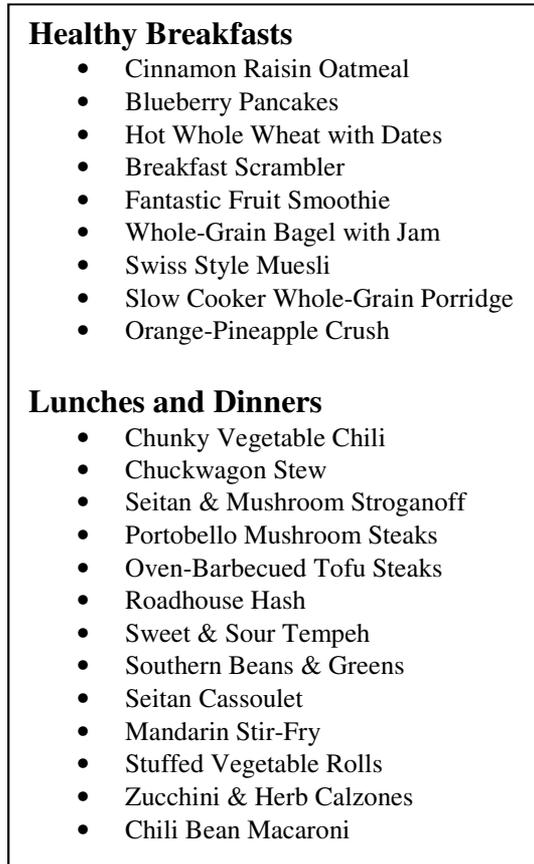
Lunches or dinners might be vegetable chili, bean burritos, or whatever you like. (See Figure 5.)

If you’re at a restaurant, an Italian place will be more than happy to give you a tomato sauce instead of the alfredo sauce. Mexican cuisine might mean bean burritos, veggie fajitas, or beans and rice. Chinese or Japanese restaurants are even easier. A submarine sandwich shop would be more than happy to load up a sandwich with lettuce, tomatoes, cucumbers, spinach, olives, hot peppers, and red wine vinegar. They’ll even toast it for you and call it a “Veggie Delight.” A taco place may not be the pinnacle of culinary art, but they will be happy to give you a bean burrito (hold the cheese).

#### ***Step 2: Do a Three-Week Test Drive***

After a week, when you’ve tried out various foods and you know what you like, it’s time for Step 2: A three-week “test drive.” The idea is

to have an entirely plant-based diet, all the time, but only for three weeks. There's something about human psychology: We'll try anything for three weeks. And at the end of that period of time, two things happen: One, you're healthier. Your weight is improving, your blood sugar is down, your energy is up, and you're feeling better.



**Figure 5.** Examples of healthy breakfasts, lunches, and dinners

The other thing is that your tastes have changed. You're not necessarily expecting this. But let me ask this group: How many of you have ever switched from whole milk to skim or low-fat milk? What was the skim milk like at the beginning? Watery? It didn't even look right, did it, with that bluish tint?

How many of you adapted to the lower-fat milk? Did you ever go back and taste the whole milk again? What was that like? It was too thick, right? Like cream.

Well, your whole life, whole milk tasted fine, and you got away from it only because you wanted to be healthy. And while you lightened your diet, your taste buds adjusted, and now they don't want to go back. In the same way, when people quit smoking, they no longer want to be around tobacco smoke. Your tastes change.

The first week on a vegan diet, it does seem a bit light. You're likely to imagine that you will need to acquire a taste for folk music now. Break out the tie-dye. But by the second week, you will start to discover there are many foods that are really good, and there are a thousand vegan cookbooks available. And there are a lot of people that you know or respect who have made this diet change before you — Bill Clinton, Ellen Degeneres, and countless others are doing it and liking it. They are slimming down and looking better than they have in a long time.

And then, after about three or four weeks, if you were to go back and have a double-bacon-cheeseburger, you would realize you're past that. Unhealthy foods have lost much of their appeal. And your doctor will be saying, "I don't know how you did this, but just keep doing it."

### ***Optional: Use Transition Foods***

Focus on the short term. There are also what I call "transition foods," if you want them. Instead of Jimmy Dean pork sausage, there is Gimme Lean vegan sausage. You will find substitutes for bacon, burgers, and many other products. You can use those substitutes if you want.

### ***21-Day Vegan Kickstart Program***

The Physicians Committee offers a free online program called the Kickstart. At our website [see [www.PCRM.org](http://www.PCRM.org)], you enter your email address, and we send a daily message with menus, recipes, cooking videos, and support, all for free. We also have a free app, called "21-day Kickstart." The program is in English, Spanish, and Mandarin, along with a special English-language program for India, and also a Japanese program. A French one is coming soon.

### **Closing**

The last thing I want to say, apart from thanking you for allowing me to share this time with you, is that, although I hope you've enjoyed this message, the people who need this message the most are not in this room. The people who need it the most are eight years old.

---

If you were to go to school and see what children eat there and the snacks they have on their way home, it's unprecedented. We have a generation that has grown up with all kinds of foods that generations ago never thought of. And they are at high risk of diabetes, obesity, cardiovascular disease, and several forms of cancer. We can't cut that down to zero, but we have to do what we can to cut it as much as we can.

A generation ago, we tackled smoking. It was a challenge. At my hospital — the George Washington University Hospital here in Washington, D.C. — it was a major issue. Could we ban smoking in our hospital? It sounds crazy now, but it was a serious question at the time. But we made the decisions that had to be made: no more cigarettes in the gift shop; no more patients smoking in bed; no more smoking in the doctors' lounge — no smoking, period. On cold February mornings, smokers had to finish their cigarettes outside the building before they were allowed in. And you know what? We won that battle. And now, there's not a person on the planet who doesn't know that smoking is bad for them.

If the previous generation could tackle smoking, it's time to tackle food! We start by changing our diets individually. We get to know new and healthier foods; we talk about them and share with others; we bring nutrition into medical education; and we work with businesses and schools.

And in five or ten years, I predict that some cold February morning, a person will be finishing up his last chicken wing before he's allowed to go into his vegan building, embraced by his vegan friends who aren't playing folk music.

## Discussion

**Question:** Can you address a couple of articles in the *New York Times* about 6 months ago saying cholesterol is not the problem, but rather bacteria in the stomach?

**Response:** There has been a surge of interest recently in the microbiome of the digestive tract. Cholesterol is as big a problem as we ever thought it was because, independent of the context of the intestinal tract, when you lower cholesterol levels — even pharmacologically — you see benefit. But you're touching on a critically important emerging area, and I just wish we knew the answers to it now. We will be a lot smarter in a year or so than we are now.

**Question:** Does a person have to follow a plant-based, or other,

kinds of diets?

**Response:** People can do whatever they wish to. With regard to tobacco, most smokers don't get lung cancer, but the odds of it are so high, that you just don't want to be in that lottery. And there are all sorts of other health issues that come along with it.

So I'm not suggesting that every meat-eater is necessarily going to have a higher BMI or will have diabetes, but the odds are not in his favor, not to mention all the other issues.

Our environmentalist friends are pointing out that we're not being very responsible stewards and not supporting the meat industry. I'm sure I don't have to tell this crowd about all that. Our friends who have a heart for animals are also giving their reasons as well ... all of which I grew up with and ignored, but I no longer view a plant-based diet as an extreme end. It's not hard to eat spaghetti. But, if you like, you can go much further. There are now people who follow diets that are gluten-free, raw, or macrobiotic, all of which are much more challenging than a plant-based diet. Just getting animals out of the diet is a simple and really good step. But people can do whatever they wish.

**Question:** What about fish, compared to mammals?

**Response:** Great question! Fish are higher in omega 3, which are good fats, and that's spawned quite a tremendous industry, in not only fish, but also fish oil capsules and so forth. But several things should be said: Most of the fat in fish is not omega 3. Specifically, 70-85% of fat in typical fish species is not omega 3. It's a mixture of saturated fat and various kinds of unsaturated fat. Secondly, fish does have cholesterol and lacks fiber and vitamin C and other things that you really need. And, when we look at contamination, fish is near the top of the list.

There's an interesting article coming out soon that takes a fresh look at the Eskimo diet. Maybe you've heard in the past that Inuits and Eskimos eat blubber and fish, but they don't have heart disease. However, it turns out that Inuits have quite high rates of heart disease and particularly high rates of hemorrhagic stroke. So fish is looking a lot more like beef than it is like broccoli.

I see I've depressed you, so let me offer one last suggestion ... If you really feel you must cook some fish, take a small amount of salmon, cut it into strips, and cook it thoroughly, then put it on a small plate. You can set it on the floor and call your cat over — because your cat is a carnivore and will be very happy with it!

---

**Question:** Are you a vegetarian?

**Response:** I am now, yes. I grew up on an unhealthy diet, and I smoked. At one point, I threw out the cigarettes and adopted a vegan diet. I only wish I'd done that earlier. Also, a doctor is not a very credible role model if he or she has not made some major diet improvements.

Sometimes when I'm doing my ground rounds, I have to remind my medical colleagues that diabetes is not a joke. There is a high chance of losing your vision, your kidneys, and your feet. In that context, the idea of not eating meat is a trivial thing to do, and all the "side effects" are good — weight loss, lower cholesterol, and better energy. So I strongly encourage physicians to set aside some time and give it a try.

**Question:** What about the French paradox?

**Response:** The idea is that the French seem to have less heart disease, particularly compared to the English. This has been attributed to wine consumption, which may get some of the credit, but statisticians have looked at the data, and the biggest part of the credit may go to the fact that the French data do not include sudden death as a cardiovascular death. In the English data, a sudden heart attack is counted as a cardiovascular death.

**Question:** Geriatric research has studied restricted calorie diets, where the same nutrients are fed with 30% fewer calories, and that extends life by a significant fraction more than due to habits alone. Should we all be on restricted-calorie plant-based diets?

**Response:** I think you can restrict calories, but it's really rough to do it intentionally, and to be hungry all the time. So, here's where our friend fiber comes in. It is in beans, grains, vegetables, and fruits. Fiber has no calories, and it dilutes the calories in the food that you're eating. When we put people on a vegan diet, we don't limit portions or calories, but they've all automatically reduced their energy intake by perhaps 200 calories a day, without being aware of it. They're eating so much fiber that they simply get full sooner. But cheese has no fiber, and that's true of meat and eggs, too. The best way to restrict calories is to make a qualitative shift.

By the way, if any of you would like to be involved in the research or clinical work we do, we would love to have you. And we're starting a clinic in our office in November, which we hope will be not only a site for good medical and nutritional care, but also a place for teaching medical students and residents, so that medical care in the future will look very

---

different from what it is today.

## References

<sup>1</sup> Centers for Disease Control and Prevention. *National Diabetes Statistics Report: Estimates of Diabetes and Its Burden in the United States, 2014*. Atlanta, Georgia: U.S. Department of Health and Human Services, 2014.

<sup>2</sup> Centers for Disease Control and Prevention (CDC). National Center for Health Statistics (NCHS). National Health and Nutrition Examination Survey Data. Hyattsville, Maryland: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2009-2010.

<sup>3</sup> Howlader, N., A. M. Noone, M. Krapcho, J. Garshell, N. Neyman, S. F. Altekruse, C. L. Kosary, M. Yu, J. Ruhl, Z. Tatalovich, H. Cho, A. Mariotto, D. R. Lewis, H. S. Chen, E. J. Feuer, K. A. Cronin (eds). SEER Cancer Statistics Review, 1975-2010, National Cancer Institute, Bethesda, Maryland, [http://seer.cancer.gov/csr/1975\\_2010/](http://seer.cancer.gov/csr/1975_2010/), based on November 2012 SEER data submission, posted to the SEER web site, April 2013.

<sup>4</sup> Centers for Medicare and Medicaid Services (CMS), Office of the Actuary, National Health Statistics Group. National Health Expenditure Projections, 2011-2012.

<sup>5</sup> Kuzuya, T. Prevalence of diabetes mellitus in Japan compiled from literature. *Diab Res Clin Practice*. 1994;24 Suppl:S15-S21.

<sup>6</sup> Kuzuya.

<sup>7</sup> U.S. Department of Agriculture, Economic Research Service, <http://www.ers.usda.gov/Data/FoodConsumption/FoodAvailSpreadsheets.htm#mtpcc>.

<sup>8</sup> USDA.

<sup>9</sup> USDA, accessed February 27, 2014.

<sup>10</sup> U.S. Department of Agriculture. Economic Research Service, [http://www.ers.usda.gov/data-products/dairy-data.aspx#.Ui9QRT\\_4LTI](http://www.ers.usda.gov/data-products/dairy-data.aspx#.Ui9QRT_4LTI), accessed September 10, 2013.

<sup>11</sup> USDA. Economic Research Service. Last updated December 21, 2004.

<sup>12</sup> In dry weight, pounds per capita per year.

<sup>13</sup> [www.cdc.gov/diabetes](http://www.cdc.gov/diabetes)

<sup>14</sup> Tonstad, S., et al. Type of vegetarian diet, body weight and prevalence of type 2 diabetes. *Diabetes Care* 2009;32:791-6.

<sup>15</sup> Hebert, L. E. *Arch Neurol*. 2003;60:1119-1122.

<sup>16</sup> Risk over 3.9 years of follow-up; Morris, M. C. *JAMA*. 2002;287:3230-3237.

<sup>17</sup> Barnard, N D. Protect Your Memory. 2013. <http://video.pbs.org/video/2337867541/>  
[For the program DVD, visit Amazon: [http://www.amazon.com/Protect-Your-Memory-With-Barnard/dp/B00B999EBW/ref=sr\\_1\\_1?ie=UTF8&qid=1403641347&sr=8-1&keywords=Protect+Your+Memory](http://www.amazon.com/Protect-Your-Memory-With-Barnard/dp/B00B999EBW/ref=sr_1_1?ie=UTF8&qid=1403641347&sr=8-1&keywords=Protect+Your+Memory)]

<sup>18</sup> Slide listed the following: Midazolam (Versed), cholesterol-lowering drugs, sleeping medications, antidepressants, antihistamines, anxiety medications, blood pressure medications, and acid blockers.

### **Bio**

**Neal D. Barnard, M.D.** is a clinical researcher, author, and health advocate. He has been a principal investigator on several clinical trials investigating the relationship between nutrition and health. Dr. Barnard received his M.D. degree at the George Washington University School of Medicine in Washington, D.C., and completed his residency at the same institution. He is also Adjunct Associate Professor of Medicine at the George Washington University School of Medicine and Health Sciences, and president of the Physicians Committee for Responsible Medicine.