YOU GOTTA HAVE HEART!

HUMAN HEART HEALTH – PROTECTING OUR OWN WELL-BEING IN A HIGH STRESS WORLD

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Metabolic and cardiovascular health are inextricably linked. They are at the core of our wellness. This paper and presentation discuss new (and sometimes old but forgotten or ignored) information and science related to diet, diabetes, coronary artery disease, myocardial infarctions, testing modalities, and other pertinent topics. Only by protecting our own health can we protect our families and your patients. Take action now! Have we been duped by those who for decades have force fed us the "Food Pyramid" and anti-fat agenda? Are you a TOFI? What the heck is a CAC and why do you need one? Do Keto and Atkins lifestyles have merit or are they mere fads foisted upon us by reality TV and Hollywood? Why do some people LOL at their LDL and get away with it? All of this and much more will be revealed in this dynamic and perhaps occasionally irreverent session. This program is bound to make its participants rethink what is important and how all of us can better control our fate.

If you are reading this or attending the presentation, I assume you have at least a passing interest in your own health. Time is short, so I will cut immediately to the chase. Here are several things you MUST do. We will discuss these in detail below, but if you go no further I beseech you to take a few hours ASAP and do the following, preferably in this order:

1 View **"Widowmaker TV Version"** on YouTube

https://www.youtube.com/watch?v=WygYk81gXXk

2 Schedule a **Coronary Artery Calcium (CAC) Test**

3 View **"Eat, Fast & Live Longer BBC Documentary"** on YouTube

https://www.youtube.com/watch?v=Ihhj_VSKiTs

4 Read **"Dietary carbohydrate restriction as the first approach in diabetes management: Critical review and evidence base"**

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5 View **"Longevity & Why I now eat One Meal a Day"** on YouTube

https://www.youtube.com/watch?v=PKfR6bAXr-c

6 Read **"Banting Memorial Lecture 2012 Reversing the twin cycles of Type 2 diabetes"**

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3593165/

7 Obtain your **fasting blood glucose (BG), hemoglobin A1c (HbA1c) AND fasting insulin** values

8 Buy a **glucometer and begin testing your blood glucose before and one to two hours after meals**

9 Watch **"Heart of the Matter Part 1 Dietary Villains"** and **"Heart of the Matter Part 2 – Cholesterol Drug Wars"** on YouTube

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Much has lately been written and debated about the mental health of veterinarians. Much less has been discussed in regard to our collective physical health, yet both are intimately entwined and both are critical to overall well-being.

Heart disease is the number one killer in the USA today. Within this category, coronary artery disease (CAD), also known as ischemic heart disease, is the most common malady. Among adults age 20 and older, about 18.2 million Americans have CAD (about 6.7% of that population). CAD killed 365,914 of us in 2017, almost invariably through myocardial infarction or so-called "heart attacks". About 2 in 10 deaths from CAD happen in adults less than 65 years old.

Every year in the United States roughly 805,000 Americans have a heart attack. That's one about every 40 seconds. Of these, 605,000 are a first heart attack and 200,000 are a repeat. Interestingly, approximately 1 in 5 heart attacks is silent—the damage is done, but the person is not aware of it.

The Widowmaker movie cited above graphically reviews much of this information. It focuses particularly on the acute, catastrophic heart attacks stemming from complete blockage of the left anterior descending coronary artery or LAD, the major supplier of blood to the heart musculature. Frequently these often fatal infarctions strike with absolutely no warning in seemingly otherwise fit and healthy individuals. This is why you must view the movie and determine your CAC score through a heart CT scan. Forewarned is forearmed. Please don't wait. This simple, painless test may save your life.

It is increasingly evident that type 2 diabetes is inextricably linked to coronary heart disease. Indeed, diabetes, *or more accurately hyperinsulinemia*, is linked closely to the even more significant problem known as metabolic syndrome (aka "Syndrome X" or "dysmetabolic syndrome"). This perilous, life-threatening, multifactorial condition includes the trifecta of hyperglycemia, hypertension, and hypercholesterolemia (often including hypertriglyceridemia), and is usually also accompanied by excess midsection fat. These factors dramatically increase one's risk for CAD and its inherent heart attacks and stroke.

If I don't have your attention yet, I'll mention here that it is now estimated that *over one third of US adults* – at least 37% - have this devastating syndrome. In fact, for those over age 60 the number rises to 50%. Couple these statistics with this information from groups like the US Centers for Disease Control (CDC):

It is estimated that since 1975 obesity has tripled globally

Since 1980, worldwide cases of diabetes have quadrupled from 108 to 422 million

Today 1 in 3 adults in the US are pre-diabetic (88 million Americans, “even puppy lovers”, as one public service ad proclaims)

For people 18 and over, more than one in ten – roughly 34.2 million Americans and growing—actually have diabetes

By 2050 it is likely that one in three Americans will be diabetic

Diabetes is the seventh leading cause of death in the USA, and if it was correctly linked to the cardiovascular deaths (including stroke-related fatalities) to which it contributes, it would be the number one cause

Bottom line? The picture for our collective metabolic and cardiovascular health is fairly bleak.

This is why I’m here today to speak with you. I mentioned above that time was short. It is. For I am cardiovascularly and metabolically a walking time bomb. I am at risk for having a widowmaker heart attack this very second (as well as a dissecting aortic aneurysm – but more on this later).

Up until a few years ago I felt I was a relatively healthy human being. For most of my life – I’m now 58 – I had been active in fitness and outdoor pursuits and watched what I ate. Professionally, in addition to being a DVM, I had worked as a wildlife biologist tracking, capturing, tagging and studying creatures like wolves, mountain lions, eagles, wolverines, black-footed ferrets and falcons in some of the continent’s most extreme environments and conditions that require heightened physical aptitude. Additionally, I used to spend summers working as a wildland firefighter on elite helitack and hot shot crews in the West. I’m also a former Marine, and for most of my adult life have exercised more or less regularly, stretched and done yoga, trained with weights, and occasionally competed as an amateur bodybuilder – in so-called “natural”, drug-tested events – more or less embracing what I believed was overall a very healthy lifestyle. I should note too that my ex-wife of 20 years, in addition to being a competitive runner, is a highly capable dietitian and health coach with a BS in nutrition and a MS in sports science. So my diet was certainly based on sound nutritional and healthful principles.

As I noted, this was all well and good until about 5-8 years ago when my annual physical exams revealed a gradual progressive creep in my cholesterol profile. Hypercholesterolemia? What? How? I ate a lot of chicken and fish and hardly ever red meat!

Fast forward a few more years, to 2017, and I was diagnosed with high blood pressure (HBP). Damn! You’re kidding, right?! I haven’t put salt on food since college in 1982!

And about at the same time, as if the HBP wasn’t enough, the fasting glucose level in my annual bloodwork had been creeping up and now showed I was pre-diabetic and at risk for tumbling over the edge into actual type 2 diabetes. How the heck could that be, I didn’t eat a lot of crappy food, soda pop, sugar, or candy!

This was my wake-up call. I started devouring every resource I could trying to understand what was going on and why in my mid-fifties, after leading what seemingly had been a reasonably healthful life, I was now falling apart so drastically. In the process I was dismayed to discover that I was almost certifiably not just diabetic but in full-blown metabolic syndrome. Interestingly, my physician, who is very well-read and current, had *never even broached this latter subject* with me, despite seeing my lipids, glucose, and pressures all climbing!

Clearly I was largely going to need to navigate my own way through this morass of metabolic mayhem. That is actually another of the big lessons here: Everyone needs to be their own best advocate. And among our families and close friends, an advocate for those who can't be their own.

In hopes of helping at least some of you avoid the same life-threatening quagmire, I've put together this presentation. Our lives as animal health professionals are already stressful enough. Let's not add unnecessary major medical problems to the mix.

Having said that, one bright spot in all of this is the fact that much of what we will discuss here is preventable, and – in cases where it has actually set in – even reversible!

So, first, where did I go wrong?

One, CARBOHYDRATES! For most of my adult life I was more worried about avoiding fats than I was concerned about this dangerous other macronutrient.

Two. From roughly 1992 to 2019 – 27 years! - I routinely ate 6-8 times a day, mostly consuming small meals or seemingly healthy snacks like protein bars (oops, check the sugar!). Sometimes I actually even ate up to 10 times a day, in essence more or less eating nonstop all day, if I was actively trying to gain weight. Most of my meals included some form of carbohydrates, which I failed to consider are virtually all metabolized as sugar (more on this later). All of this placed my pancreas and liver into an unhealthy state of almost constant insulin secretion, glucose overload, and fat accumulation. In essence, while I looked to be in good shape, metabolically I really was a "TOFI", thin outside but fat inside, insidiously packing on internal adipose tissue.

Three, as much as I wanted to believe I was in shape and regularly exercising, I wasn't. In my life as a vet both in practice and then later in the world of pharma, I had let my commitment to fitness slide. Working since 2005 in the pharmaceutical industry I virtually lived on the road, worked extra-long hours – 15 to 18 hour days are common – and had become at best a sporadic exerciser. Yes, fortunately, I watched what I ate, but probably more frequently than I care to admit in my life of eating out almost every day and night this was a case of making the *best bad choice* from a restaurant menu.

Four, finally, alcohol. I like my cocktail hours. And while I rarely overindulge, drinking a Martini or gin and tonic and one or two glasses of wine with dinner three to four nights a week can add up to a bad outcome. Ethanol is a toxin, and no matter how one slices it, *or mixes it*, it is tough on the body.

Let's drill down into all of this.

First, it's critical to understand that dietary protein, in the form of certain amino acids, are essential to the body. Certain fats are too. *Carbohydrates, which of course include sugars, are not*. The one possible exception to this is that certain carbs are fibrous, which helps our digestion, but even fiber isn't an absolute necessity. Moreover, keep in mind that during digestion – with the exception of fiber – all carbohydrates, if they aren't already, are converted to sugar!

I hate to break this to you, but in essence we have all for many decades been duped.

Introduced in 1956, the concept of the "Four Food Groups" with which many of us grew up, is flawed. And in the case of the US Department of Agriculture's (USDA) famous "Food Pyramid", the Food Group offshoot which we have been force-fed since 1992, dangerously so. In fact if I had to cite one overriding

factor that has created the unmitigated diabetic plague our country, and indeed the globe faces today, it is this much-publicized and masterfully marketed bit of dietary discombobulation which recommends massive amounts of carbohydrates – *glucose!* – concealed in the form of rice, breads, pasta, and grains, versus modest or even miniscule amounts of protein and fats.

Although Dr. Atkins and diets like Keto and Paleo get the credit, the alternative concept, that a low carbohydrate lifestyle is beneficial, is not new. In fact as far back as the 1940s Dr. Alfred Pennington was using such diets to help corporate executives at DuPont lose weight. And in 1957 in the Journal of the American Medical Association, Dr. George Thorpe published an article, "Treating Overweight Patients", which espoused a low-carb meal plan consisting of meat, fat, water, coffee or tea, and – when the patient needed some variety – certain fruits and vegetables.

Writing about this, modern day health expert Richard Gerhauser MD says this:

"Dr. Thorpe was no lightweight. He was chair of the American Medical Association's Section on General Practice – in other words, a prominent, respected voice in mid-century American medicine. But even in the late 1950s, the moneyed interests were aligning against him, Pennington, and other low-carb pioneers, such as the brilliant British physiologist John Yudkin. All these sane, sensible voices were horrifying to the sugar, wheat, and corn conglomerates. After all, carbohydrates are cheap to grow and process and are highly profitable."

"The fact that they are less healthful than nutrient-rich, carb-poor foods, such as meat and veggies, was exceptionally inconvenient. By the late 1960s, the pro-carb brigade had found its shill – a charismatic researcher named Ancel Keys, who would cherry-pick data to drive home the mistaken notion that dietary fat, not carbohydrate, was the culprit in weight gain, diabetes, and cardiovascular disease. *Time* Magazine put him on its cover in 1961. We've been getting fatter and sicker ever since."

As if this possible dietary duplicity isn't enough, there is even more to the story, including no shortage of industrial intrigue and conspiracy theories.

For example, recently released documents prove that in the 1960s the Sugar Research Foundation paid three Harvard scientists to obfuscate the truth and publish a paper in the New England Journal of Medicine (NEJM) shifting blame for heart disease from sugars to fats. It may give one pause to know then that one of these scientists, Mark Hegstead, subsequently served in a high-ranking role with the USDA, helping develop the very Food Pyramid discussed above.

We can't effectively cover the subject of this paper without going into a bit of physiology and metabolism. So, the simplified metabolic path for non-fiber carbohydrate digestion and processing is this: Carbs, whether sugary candy or seemingly 'healthy choice' pasta, grains, and bread, are ingested and converted to glucose. Whatever portion of this glucose the body needs for immediate energy is used, thus sparing the body's fat stores. In starving cavepeople this might be good. In our modern world of readily available food, it isn't.

At this point, having taken what it needs for the here and now, the body converts as much of the remaining glucose as possible to glycogen and store it for rapid-access, backup energy in muscles and the liver. When eventually the muscles and liver are fully loaded, which they invariably will be when ingesting anything near the 6-11 daily servings of carbs recommended in the Pyramid or, now similarly so today by its USDA replacement, "MyPlate", the liver converts all remaining glucose to triglycerides

and begins shipping them out to other sites and fat deposits, notably including adipose tissue and internal organs. This includes the mesentery and pancreas. It also stores them itself, potentially leading to fatty liver or conditions like non-alcoholic steatohepatitis (NASH).

I'll note here that, as opposed to dietary intake, which so many people consider to be the "bad guy", it is well-established that *the production of cholesterol and lipids by the liver is the principal source of problematic cholesterol in our bodies.*

Two other things worth noting are that adipose fat basically functions as a pro-inflammatory organ, which inherently isn't a good thing, and two, as most of you know, insulin secreted by the pancreas is the obligate glucose "handler", instrumental in the transport and deposition of glucose in cells throughout the body. As carbohydrates are processed, and particularly in the face of their excess, thus overloading the natural system and its feedback loops, the pancreas is pouring out more and more insulin – creating hyperinsulinemia and seemingly insulin resistance – as it works harder and harder to force extra dietary glucose into the liver and elsewhere. One expert uses the apt analogy of trying to stuff more clothes into an already overflowing suitcase until the zipper fails. Eventually, in the case of the pancreas, exhaustion sets in – or perhaps simply overload and damage from the continual fat deposition with which it is faced – and the organ ceases its secretion of insulin (which is when exogenous insulin is prescribed to a type 2 diabetic).

Herein lies the problems. Too many carbohydrates creating too much glucose, too much insulin, and too much fat as well, all of which directly or indirectly strains the body, most specifically the liver, pancreas, and arteries. In support of this concept, Roy Taylor, in the Banting Memorial Lecture cited above, points out compellingly from his Counterpoint Study that leading up to the actual onset of type 2 diabetes there is in fact a predictable one to two year insidious history of alanine aminotransferase (ALT) creep, "a long silent scream", as he calls it, reflecting increasing steatohepatitis in the liver.

In my case, while I haven't yet become diabetic, my body's 'scream' was a steadily, incrementally rising fasting BG. I don't recall that my liver enzymes ever got out of whack. But in any case, if we hear and heed these screams, whichever they are, we can stave off the onset of diabetes. And in fact, even when hyperinsulinemia, diabetes, insulin resistance, coronary artery disease, dyslipidemia, metabolic syndrome, obesity (overt or occult) and all their effects are entrenched, they may still be reversible. We'll talk more about this below.

If the reader finds this concerning, the Coronary Artery Calcium (CAC) test recommended above is critical, because instead of measuring surrogates for arterial disease such as cholesterol levels in the blood, it looks specifically at the buildup of plaque and related calcium – the body's attempt to protect itself by ensheathing or entombing the plaque - in the arteries themselves. As described in detail in the Widowmaker movie, produced by the Irish Heart Disease Awareness group (www.ihda.ie), the CAC is arguably critical for every adult. As IHDA spokesperson Ivor Cummins advises, "Know your score and take action."

Why this heart scan, which runs about $100-200, isn't considered mainstream one can only guess. Unfortunately as the documentary suggests, there is probably more intrigue and politics involved, and egos too. But it is worth pointing out that while you and I may have to beg our doctors to order the test, or pay out-of-pocket for it as I did, *every president and astronaut* has the test performed. Let's not keep

it secret any longer. If this little known test is important and valid enough for them, it is important enough for me and my loved ones. And it should be for you, too!

As also noted above, if you don't know what your fasting BG is, you need to. Ideally it should be measured along with your HbA1C and fasting insulin. You may have to beg your MD to request this latter component, but regardless of your BG or HbA1c value it is important to know whether or not your basal insulin level is hovering in the hyperinsulinemic, resistant range.

As for HbA1c, as many vets already appreciate, this is a measure of the body's glucose level over the preceding three months or so. So it is an excellent indication of long-term glucose status and trends. A value below 5.7 is in the safe, non-diabetic and non-pre-diabetic zone.

While you can't measure your own insulin or A1c, you can easily measure your own BG. It may save your life. Pick up a glucometer at the drug or grocery store, purchase the correct accompanying test strips and lancets, and test away. The whole kit might cost you a nominal $15-20 or $25. The necessary pin-prick is a minor inconvenience. Ideally you should test first thing in the morning, but additional testing before meals and then one to two hours after can also be incredibly illuminating.

Eat a steak, salad, and large plate of broccoli, and compare that test result to that which you get following some pizza, pasta, or even the same steak and salad, but with some garlic bread and a potato (or rice) instead of the broccoli. Similarly, eat a plate of buttermilk pancakes with butter and syrup and then compare the post-prandial result to that attained after eating a plate of buckwheat pancakes, which are virtually all fiber, plus the same butter and a sugar-free syrup. The differences will likely be huge. Such testing can help one make pancreas- and insulin-sparing food choices.

Test yourself in relation to eating a banana vs a traditional candy bar vs a low-carb or keto-type brand of candy bar and you'll see what I mean. Or eat a wrap with a normal tortilla and then the same wrap with a legitimate low-carb one. The results of your personal investigations may help clarify the vast difference between 'living to eat' and 'eating to live'. Knowing there is very likely a healthful, life-extending difference between the two, which do you choose?

For the record, while one can get as fancy as they want, including Blue Tooth technology and the like, I like the FreeStyle Precision Neo glucometer, by Abbott, because both it and its test strips are very inexpensive compared to other many other units. Shop around; you may find and even better deal. Just beware, the real expense of home testing is in the long-term utilization of test strips, not so much the initial cost of the meter.

For the record, normal fasting BG is below 100 mg/dL. Pre-diabetes is diagnosed between 100-125, or with a 140-199 two hour post-prandial reading.

Simply in the name of good health you should also know what your lipid profile is. There are even now home test kits for this. Keep in mind though, that as mentioned above, blood values for these entities are but a surrogate for what may or may not be happening in one's arteries. Additionally, if one really wants to get into physiology and pathology, there is a lot more to the story than simply HDL, LDL, triglycerides, and total cholesterol. This includes, for example, C-reactive protein (CRP) and apolipoproteins A and B.

With the foregoing discussions in mind, I now am convinced it makes sense to conscientiously and vigorously minimize carbohydrate intake. In short, with the exception of fiber, carbs are sugar and sugar is…well, if not poison then still very detrimental to our survival. Do I like eating carbs? Yes? Is it hard to cut back on them? Yes, but not overly so. Do I recommend the Atkins or Keto diet, or complete elimination of carbs? Not necessarily, but again, watching your carbohydrate load, which is what those diets are predicated upon, is critical.

Do I subscribe to the ingestion of any and all fat? No, I think healthy, natural, non-industrial fats are the best choice.

Importantly, cutting back on carbs and shifting one's energy more toward utilization of external fat, and hopefully the burning of internal fat, too, seems naturally to lead to weight loss as long as the food intake is reasonable and not excessive. Eating fat appropriately will not make one fat. Nor does it necessarily load the coronary arteries with problematic lipids and such.

One other consideration is that carbohydrates tend to be appetite stimulants, especially when their energy effect starts to wane. Eat a bowl of oatmeal, bananas, and brown sugar at 7 AM and by 11 you may literally feel as though you are starving as your resulting massive post-prandial blood sugar spike finally plunges precipitously. By replacing carbs with healthy fats and proteins, one tends to stabilize their blood glucose and lose their food cravings. Indeed, protein tends to be an appetite neutralizer.

This leads naturally to the concept of "OMAD", one meal-a-day, "IMF", intermittent fasting, or "TRF", time-restricted feeding, which many people are embracing as a way to treat their pancreas and liver more lightly, as well as better prevent, possibly reverse, or at least halt, their diabetes. This is why I urge you to watch the "Eat, Fast & Live Longer" BBC documentary and short YouTube video on eating one meal a day linked above. They convincingly describe the value of fasting and otherwise limiting the number of our daily meals.

OMAD is self-explanatory. Eat one meal a day and thus have at worst only one release of insulin every 24 hours. So much the better if that meal is carb-light or carb-free, in which case the pancreas is spared of virtually any activity and allowed to fully rest and recover as the liver burns off its glycogen and the body really starts tapping into fat stores for energy. Having adapted to a lower carb existence with no appreciable cravings due glycemic ups and downs, many people find that eating only once daily is remarkably doable and satisfying. Bear in mind that OMAD is in essence the same thing as fasting for 24 hours. With that accomplishment well under their belt some people find then that occasionally going 36 or 48 hours between meals becomes tolerable and perhaps even invigorating.

The idea behind TRF and IMF is similar; eat only during a limited window each day, so that there is a prolonged fast and metabolic rest between at least the last meal of the day and the first meal of the next. Most people utilizing IMF eat only 2 two meals a day, for example consuming 2 meals in the 6 hours between noon and 6 PM, and then waiting 18 hours – till noon the next day – before eating again. This is an 18-6 approach. Some may prefer to do a 20-4 cycle, eating, say, between 1 and 5 PM and then not eating again until 1 the next day.

One can mix and mingle OMAD and IMF depending on their feelings, schedule, and needs. The bottom line is that these strategies, especially when combined with caloric moderation and low carbohydrate intake, dramatically lessen the body's need for insulin and increase demand for its fatty reserves. And

frankly, if you can't stomach – pun intended – the idea of eating only once or twice a day, take heart (sorry, another pun). In his Counterpoint study Roy Taylor halted or even reversed diabetes in patients via the weight loss and carbohydrate reduction that accompanied the study subjects eating three small protein-rich meals a day along with all the salad they wanted.

A final note on this. As we all have been warned since childhood, not surprisingly it is best to avoid before bedtime meals and definitely any snacks! Get your calories in well before you retire for the night.

While time doesn't afford us the luxury of a deep, thorough dive into the subject, I'd like to mention the gigantic ACCORD Trial, as it demonstrated – to the chagrin of conventional wisdom – that intensive management of diseases like diabetes, atherosclerosis, and HBP does not improve patient outcomes. It seems heretical, but it is true. Yes, in essence the ACCORD trial, *involving over 10,000 type-2 diabetics* and designed to conclusively demonstrate life-saving benefit of statins and state of the art medications for controlling hyperglycemia and hypertension, *failed miserably.*

Time precludes further analysis and debate, and pharmaceuticals have come a long way since 2010, but if the best medications and doctors of modern day failed to demonstrably save diabetic and CAD lives, do we have little to lose by trying other options that we ourselves can control, including changing our lifestyles, diets, and other habits, choices that have clearly shown the ability to dramatically improve dyslipidemias and lower factors like insulin, BG, HbA1c, bodyweight, and hypertension?

I urge you all to consider this in your own life. *For your own life.*

As medical professionals we all know there is no doubt that certain medications in certain situations are life-saving. The "Heart of the Matter" documentary linked at the start of this paper sheds insight into how sometimes medications may be misunderstood or misrepresented.

As we wrap up this discussion, you may be wondering, "Well. I'm not worried about heart attacks and I'm not diabetic, so why is any of this important?"

In short, the diet and lifestyle changes discussed here can be beneficial in helping prevent cardiovascular disease and diabetes. I urge you to consider these thoughts:

Eat less

Eat less carbs

Eat less frequently

Fast more often for as long as you reasonably can

Live, love, laugh, learn, and leave a legacy

As in most things, moderation is key.

You may also be wondering, where I am at on the path to health? Was I able to apply my learnings to help stop my seemingly inexorable descent toward metabolic syndrome, diabetes, and a catastrophic heart attack?

Thankfully, yes. But I realize that without eternal vigilance I will simply revert to the danger zone I was in before.

My fasting BG now tends to be in the range of 90 instead of the borderline pre-diabetic zone of 100.

My HbA1c has decreased from its borderline pre-diabetic zone of 5.7 to 5.2 or even recently 4.9. I hope to sustain that and keep lowering it even further.

My blood pressure seems to be under great control, and I am hopeful I can soon wean off of at least one of the two medications I'm taking to manage it. I believe that thanks to both dietary changes and medication, I have favorably fallen from a reading of 160/100 to 100/70. I didn't go into detail earlier, but insulin leads to hypertension as it causes sodium absorption at the proximal renal tubules. My belief is that atop my medications' benefits, by reducing insulin secretion I am also seeing corresponding benefit in a reduced blood pressure. Additionally, incidental to my diet changes I have lost weight, approximately 25 pounds, and that too presumably helps with BP regulation.

Regarding my CAC score, originally I was at slightly over 400, which – while fairly concerning – is not terrifying. I plan to repeat the test at roughly the one-year mark, this fall, using the same Houston-area medical center as before. Hopefully I will have fallen into the much lower risk zone of <400. One of my highest priority goals is to this this critical CAD factor.

Moreover, regarding the CAC test, as I alluded to earlier, my screening also frighteningly revealed an aortic aneurysm. I'll definitely reassess this too when I repeat the CAC test. If it has expanded, I'll need corrective surgery. Had I not had the CAC, I may have never known about this other life-threatening cardiovascular anomaly…u*ntil perhaps it was too late!*

Readers may now be wondering what were/are my interventions?

First, instead of eating multiple small meals each day I now almost always just eat two modest-sized meals, usually skipping breakfast, which unfortunately I have always loved, and waiting until 12 PM or 1 to eat lunch, and then eating again by 6 or 7 PM. Sometimes I might actually eat three times a day, and also on rare occasions I'll eat once a day – virtually a 24-hour fast. I really do love to eat, so even more rarely I may summon the fortitude to fast for 36 hours. Regardless, importantly I have cut way back on non-fibrous carbohydrates – especially rice, potatoes, and to lesser extent bread, which I also love – and am much more attuned to reading food labels, not to avoid fats as I used to, but to be more carb-aware.

Thanks largely to the questionable guidance of the Food Pyramid – which should truly be totally inverted – the average American's daily carbohydrate intake is roughly 400 grams. This is the Standard American Diet. Figuratively and literally it is SAD! I don't count carbs, per se, but qualitatively I try to stay below 50-75 or 100 carb grams a day. So, difficult as it might be to totally eliminate them, I still have some wiggle room to do so if future blood values show I need to scale back further. I can also adjust the times I eat and do better by not eating so late in the evening, which sometimes happens when I'm distracted with things like, say, working on this presentation.

As for fats, as mentioned above, I am much less concerned about them than I used to be. For the record, nuts are my main source of fats (and carbs too).

While I never ate substantial amounts of red meat – my ex-wife Jacquie ate only white meats and fish – I scaled that back too and eat a lot more fish than previously. Admittedly I still love and, on special

occasions, happily ingest a huge burger – no bun, of course! – a tender filet Mignon, or nice New York strip.

As for snack foods, for most of the past 20 years I have not been a big dessert or candy eater, or for that matter a juice-drinker. Still, I am much more careful about these now and yes, let's be honest, admittedly I was probably ingesting too many hunks of carrot cake and Dairy Queen Blizzards and Moolattes. I did also formerly eat a lot of sugar- and carb-rich protein bars, too, which I am now *way more* conscientious about and largely avoid.

As a result of all this, my dyslipidemia has markedly improved. Full disclosure, the daily administration of a combination drug comprised of simvastatin and ezetimibe has undoubtedly helped, too. Simvastatin is, as its name suggests, a 'statin'-type drug to lower cholesterol. Statins help block the formation of cholesterol by the liver. As opposed to the diet, this is the major source of problematic cholesterol. In my case I also like the possibility that similar to aspirin a statin may have anti-inflammatory benefit for the cardiovascular system. The other component, ezetimibe, helps lower the absorption of cholesterol through the intestine. So the combination drug covers both sources of cholesterol. My version is a generic. The branded version is known as "Vytorin".

Regarding weight loss, which I mentioned earlier, adopting a carb-conscious diet has facilitated about a 20 pound weight loss, perhaps even more. That wasn't my goal necessarily, but it is a side benefit of changing my eating habits. Importantly, it is the fat I can't see – internal adipose and organ fat – that I feel has most importantly been reduced.

In terms of exercise, I still need to do better. In all reality, exercise likely won't save the day like major dietary changes will, but it probably won't hurt. Importantly, at least for me, exercise is mentally therapeutic. As I said, I need to do better, to be better about committing time to it.

As for alcohol, which is all carbohydrate, regrettably I have also cut way back on this. Instead of enjoying cocktails and/or wine four to six nights a week, I now imbibe alcoholic beverages only one to two evenings, or even less. I miss my old routine cocktail hour, which I found to be very relaxing and mentally therapeutic, but prefer to reduce my alcohol intake now if it helps preclude the need for insulin injections or other medications later. In the end, rationing makes each drink all the more savory. And as with carbs in general, and the timing of meals, I have wiggle room to, *heaven forbid*, cut back further if necessary.

I hope this crash-course in cardiovascular concerns, diabetes deferral, and carbohydrate caution has helped its readers and presentation participants think more clearly, or at least differently, about their lives, lifestyles, and dietary habits.

The article by Drs. Feinman, Westman, and others linked at the start of this article, "Dietary carbohydrate restriction as the first approach in diabetes management: Critical Review and evidence base", wonderfully summarizes most of the topics this presentation has covered. PLEASE READ IT!

I'll close by recommending some other resources that I find credible, compelling, unsensational, and enjoyable.

YouTube videos by mild-mannered Dennis Pollock on his Beat Diabetes channel. Dennis is like the Mister Rogers of diabetes. He is a missionary by profession, but on the side is a self-made diabetes

expert and counselor. His work is inspirational and motivational, and mostly focuses on sensible dietary choices and the power of a glucometer in one's dietary decision-making and monitoring.

YouTube videos by Ivor Cummins, spokesperson for the Irish Heart Disease Awareness group. Ivor is a biochemical engineer who found his own lipid profile to be concerning and undertook to better understand it and how to mitigate the risks it imparted. He dives deep into physiology, the evidence base, and the best current science around human biochemistry and metabolic and endocrine disease. Pleasantly laconic, he is an engaging presenter as well as interviewer.

YouTube videos by or featuring Dr. Jason Fung. Fung is a nephrologist and ardent proponent of fasting and TRF or IMF as effective treatments for type 2 diabetes.

Ditto for videos and materials from Dr. Eric Westman, a MD and diabetes specialist with Duke University.

Books, videos, and other works by Dr. Robert Lustig and Michael Yudkin, both of whom focus on the dangers of sugar and diabetes.

I realize there are lots of different perspectives and philosophies on diet, nutrition, fitness and life. For each of us, it's personal. Do your own research and make your own decisions, but BE IMFORMED! The old adage, "We are what we eat", is absolutely true. If you care about your health – your survival – take this seriously.

Good luck!