

Quarterback Your Own Health – How to Take and Lower Your Chronic Disease Temperature™



Greetings participants of the Immune Defense Summit. We invite you to read our book “Quarterback Your Own Health” and take part in our program designed to empower every individual to improve & optimize their own health.

Here is how it works:

For Individuals Interested in Health Improvement:

Step 1. Go to www.quarterbackyourownhealth.com

Step 2. Sign up and take the **RealHealth Living Profile™**. This is a comprehensive risk assessment evaluation that takes about 30 minutes to complete. When you are done with the profile you are provided with a risk “grade” and self-directed “actions” for you to complete that will help you improve your grade – and improve your health.

Actions are generated from any answer that we know may create a health risk for you. The actions are quite simple – they are designed to educate you on the risk and how to correct it. Actions include videos and written materials specific to your risks. Thus the Living Profile provides you with a Personalized and Precision program of health enhancement.

Step 2a. Find a health coach from our website. This coach understands our program and can guide you through completion of some of the more medically-oriented tasks. Your coach will be your partner in your journey to “Quarterback Your Own Health.” Your coach may recommend a doctor if your health journey requires a greater degree of medical help.

Note: Most people will experience significant health improvement by just completing the actions that are personalized to them – often without a coach. We do recommend a health coach because of their vast experience at helping people get well.

Step 3. Obtain labs tests based on our **Chronic Disease Temperature™ (CDT)**. Contact us to help you obtain these tests – or input the tests you have already obtained into our software to calculate our CDT.

The chronic disease temperature looks at common biomarkers – but from a chronic disease (not acute/immediate disease) perspective. Our program automatically calculates your CDT from your biomarker results. Now you have an objective value to:

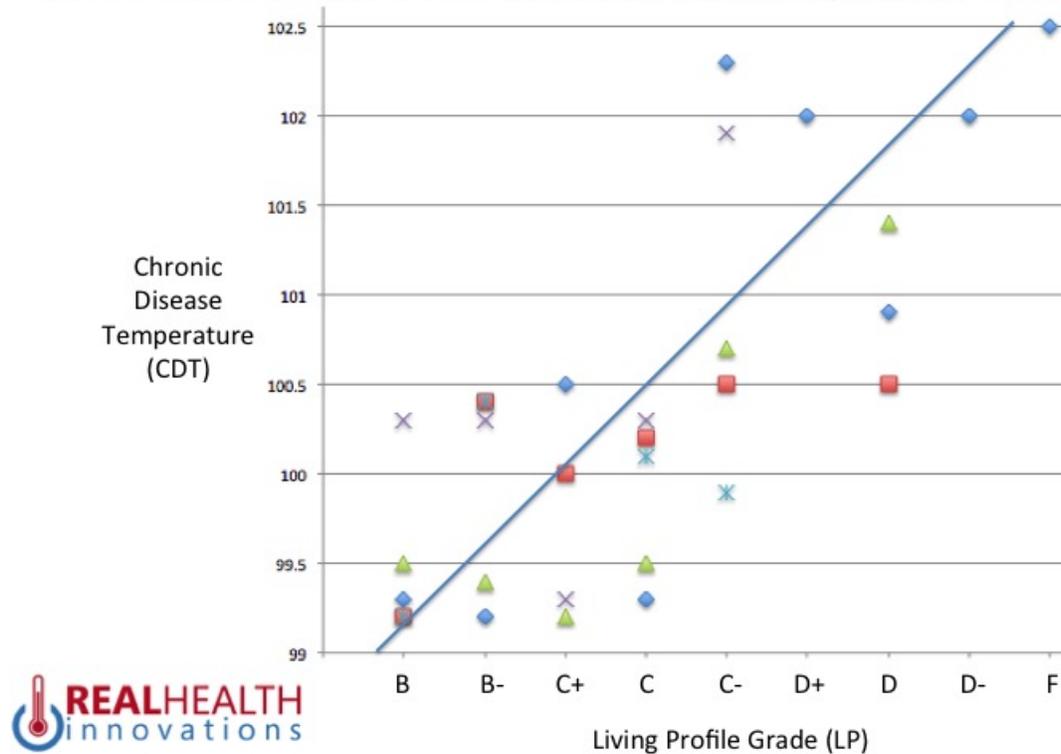
- Measure your health baseline and creation progress.
- Measure the value of the program (your CDT will go down as you get healthier).
- Measure the benefit of your actions to Quarterback Your Own Health.
- Measure the value of your care team – coach and doctor if you choose to engage with them.

Chronic Disease Temperature™ (CDT) Example: White blood cell count (WBC) is a \$5 test that measures the activity of cells that fight to maintain your health. Most doctors view the normal range for WBC as 3,500 – 11,000 cells per volume. In our CDT, the “normal range” is 4,000 – 6,000. Why? Because outside those limits, individuals have an increase in chronic disease and early mortality! Two significant studies – the Women’s & Nurse’s Health Studies (128,000 women evaluated) show that women with a WBC of 7,800 (well within normal limits) die at a **310% faster rate** compared

to women with a WBC of 5,300 – within a scant 6 year period! Our CDT measures your RealHealth risk using sensitive measures like WBC.

Please view the chart below that shows how simply improving your health by following the “action” plan will also improve your blood – aka physiological health. As you complete action items, your Living Profile grade will go up and your blood labs will improve.

Correlation Between RealHealth HRA (Living Profile™) Grade and RealHealth Biometric Screen (Chronic Disease Temperature™) Results



The different symbols represent different 10-year age groups.

Note the clear association – people with a better Living Profile™ risk “grade” have better blood labs. Since the lab values are tied to mortality (early death rates) – improving your grade not only improves your health but also reduces your risk of premature death from all causes.

For Coaches Interested in Assisting Individuals “Quarterback” Their health:

Health Coaches: Contact us at www.quarterbackyourownhealth.com under “coaches” and join our team. Go through our on-line education program to become a **Health Creation Coach™** and start helping “quarterbacks” improve their health.

What coaches will obtain:

- Training on root-cause / health creation created by our Harvard, MIT, Emory, and Indiana U team of doctors and medical scientists.
- Access to our coach friendly software that provides a simple yet effective program to guide individuals on their path to wellness.
- Access to “quarterbacks” motivated to improve their health – either in person or via tele-coaching.

- Ability to significantly improve your clients' health through foundational root-cause science and support from our medical and scientific team.

For Doctors:

Doctors and Other Medical Professionals: Contact us at www.quarterbackyourownhealth.com under "Doctors."

Our data shows that about 10% of individuals who attempt to improve their health, either on their own or with the help of a coach, hit a roadblock before they reach their health goals. We encourage doctors to join our program and help those who need that extra level of expertise and care.

Doctors will obtain the same resources as coaches. And we are establishing a hipaa compliant social media-type platform for doctors to present and discuss cases with other doctor members – essentially creating "grand rounds." Dr. Charles Mayo, founder of the Mayo Clinic perfected grand rounds. Clearly, the quality of the care team is directly related to the level of improvement any individual experiences.

We look forward to helping you achieve your health goals and establishing a new, cost-effective model for healthcare.

Be Well,

Your RealHealth Founding Medical Team

Drs. Lewis and Trempe

Note to Readers: Most headings and subheadings are active hyperlinks that will help you navigate through this book.

www.quarterbackyourownhealth.com

Quarterback Your Own Health



How To Take and Lower Your Chronic Disease Temperature™

Clement L. Trempe, MD
and
Thomas J. Lewis, PhD

Quarterback Your Own Health

How To Take (and Lower) Your Chronic Disease Temperature

Too many people die suddenly and unexpectedly, despite appearing “apparently well” in the years, weeks, or even days before their deaths. In reality, these individuals are diagnosable as ill, and yet they slip through the cracks because our healthcare system, by design, is *reactive* to disease. Annual physical exams are theoretically intended to check the proactive boxes of “*early detection*” and “*prevention*,” but these exams haven’t changed much over the last century. Worse, they lack predictive power.

In this book, we present readily available medical information and research that provides a better way to determine your immediate and future risk of becoming chronically sick or dying prematurely. We include explanations of tests that can help you determine if your health is at risk, how great your risk actually is, and where you reside on the health-disease continuum.

Our objectives are simple. We strive to show you:

1. How to determine where you reside on the health-disease continuum long before your health is impacted.
2. How to stay on the healthy side of the health-disease continuum.

My medical team—from Harvard and Yale Medical Schools, as well as from MIT—have developed tools to achieve both objectives:

- The RealHealth Living Profile™
- Your Chronic Disease Temperature™

The RealHealth Living Profile provides you with an overall *risk score*, as well as risk scores in several subcategories of risk. The simple survey format is designed to understand how you live today, as well as procure information about your past. The intent is to discover risk factors created by your lifestyle, behavior, environment, family, attitudes toward health, and other factors that influence your daily actions and therefore your health. We will delve into more details about the RealHealth Living Profile in subsequent chapters.

Your *Chronic Disease Temperature* is an amalgamation of up to 35 biomarkers that measure your physiology (the functioning of your body at a cellular level) and pathology (an evaluation of the subtle changes in tissue). We have spent significant time and effort reviewing the medical literature to determine *true* normal versus abnormal values for all of these critical markers of health. We assign a “risk value” to each biomarker by way of a temperature increment, and then we present you with a single number that reflect your *health score*.

Your physiology and pathology do not lie. Your health score is a true reflection of how healthy you are. Even more importantly, your Chronic Disease Temperature value gives you a target for either maintaining or improving your health.

Your action plan is simply to obtain our recommended medical tests and plug your results into our proprietary Chronic Disease Temperature calculator. We use a simple-to-understand scale: You are

healthy, with little risk for future chronic disease, if your Chronic Disease Temperature is 98.6—the generally accepted temperature for a healthy human body. Any elevation *above* this value implies risk or an existing disease; the greater the number, the greater your risk for actual disease in your body, even if you feel perfectly well today. We provide you with both your current “number” as well as your custom “target number.” Armed with this information, you can proactively make lifestyle changes, and you can use these values to objectively measure improvements in your own health and your reduction in risk of future premature death or disease.

In this book, we will also provide ways to restore your health and lower your Chronic Disease Temperature through a “Life-Preserving Consumption Pyramid” (our reinterpretation of the food pyramid, designed for optimal health), and other simple, healthful measures.

We want all our readers to live long, healthy lives.

Stay Well,

Dr. Trempe and Dr. Lewis

Quarterback Your Own Health

Learn How To Take (and Lower) Your Chronic Disease Temperature

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Websites: <http://www.realhealthinnovations.com>; <http://www.realhealthclinics.com>;

<http://www.quarterbackyourownhealth.com>

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Dedication

This book is dedicated to Dr. Claude Bernard of nineteenth-century France—the “Father of Experimental Medicine.”

Bernard maintained that disease could be caused by a breakdown of the self-regulating mechanisms of the body. In Bernard’s lifetime the germ theory of disease, proposed by Pasteur and others, captured the imagination of doctors as well as the general public. Tremendous advances in medicine took place in the early years of microbiology, and Bernard’s idea that disease might be caused by faulty regulation of the internal environment was largely ignored. It has been said that Bernard and Pasteur debated in a friendly way the relative importance of the microbe and the general condition of the patient’s body. Pasteur reportedly said on his deathbed, “Bernard was right. The seed is nothing, the soil is everything.”

One of Bernard’s most important ideas is that pathology, the study of abnormal function, is a part of physiology. Bernard insisted that the study of disease must not be separate from the study of health. “There is only one science of life,” he wrote. Claude Bernard worked hard to break down the barriers between physiology and medicine, health and disease.

Bernard never practiced medicine “by prescription,” and his discoveries did not include miracle drugs or lifesaving surgical techniques. He changed the world of medicine in a different way—by showing that medical knowledge does not differ from any other scientific knowledge, in that it can be won by systematic experiment—both through defeat and triumph.

Twentieth and twenty-first century medicine has lost its way in favor of the “by prescription” method for profit. Thus, this book is further dedicated to the tens of millions of people who have died unnecessarily over the past 100 years because modern medicine has let them down.

Finally, this book is also dedicated to the thousands of patients who have bucked the system and sought medical care from a humble ophthalmologist, Dr. Clement Trempe, who practices Bernard’s “scientific medicine” rather than relying on the current standard-of-care.

“The fixity of the milieu supposes a perfection of the organism such that the external variations are at each instant compensated for and equilibrated. Therefore, far from being indifferent to the external world, the higher animal is on the contrary constrained in a close and responsive relation with it, of such fashion that its equilibrium results from a continuous and delicate compensation established as if by the most sensitive of balances.”

—Dr. Claude Bernard

Modern civilization depends on science ... knowledge should not be viewed as existing in isolated parts, but as a whole, each portion of which throws light on all the other, and that the tendency of all is to improve the human mind, and give it new sources of power and enjoyment ... narrow minds think nothing of importance but their own favorite pursuit, but liberal views exclude no branch of science or literature, for they all contribute to sweeten, to adorn, and to embellish life ... science is the pursuit above all which impresses us with the capacity of man for intellectual and moral progress and awakens the human intellect to aspiration for a higher condition of humanity (a forgotten concept in medicine).

—Joseph Henry

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Foreword

Quoted from Frank Shallenberger, MD, HMD, ABAAM

“One of the questions that I hear a lot is this, “I went to Mayo Clinic [or some other well known allopathic ivory tower] and had \$34,000 worth of lab tests, but I had to come to Carson City to get well. How is it that your therapies fixed my problem when nobody else could?” It’s a logical and important question. Here’s the answer.

Everybody knows what it’s like to see a doctor who uses allopathic medicine. That’s because allopathic medicine is the system of medicine that has been exclusively used in the United States for the last one hundred years. It is the only system taught in medical schools and used in hospitals. And it is the only system that the American Medical Association, most insurance companies, and Medicare recognize. The reason that doctors like me can get resolution to problems that allopathic medicine fails at is because we don’t limit ourselves to a strictly allopathic approach.

When people ask me what kind of system of medicine I practice, I tell them I practice orthomolecular medicine. Now if you’re like most people, you probably have no idea of what that means. But it is really very simple. “Ortho-” comes from the Greek word that means “to correct”. “Molecular” refers to molecules.

I stand on very high ground by practicing orthomolecular medicine, because the concept was developed by Linus Pauling, MD. Everyone has heard of Linus Pauling. Dr. Pauling was a two time Nobel Prize winning physician, and is considered one of the greatest scientific minds of the twentieth century.

The term orthomolecular medicine was coined in 1968 by Dr. Pauling. He defined orthomolecular medicine as “the preservation of good health and the treatment of disease by varying the concentrations in the human body of substances that are normally present in the body and are required for health.” Drugs are not “substances that are normally present in the body”, and so they are not used in the orthomolecular system.

I received my medical degree from the University of Maryland School of Medicine, and then had post doctoral training at The Mount Zion Hospital and Medical Center in San Francisco. But even though both of these institutions only teach the allopathic medical system, I don’t use it. I decided long ago that the orthomolecular system made much more sense to me. So before you see me, I want you to understand that the orthomolecular approach I use is fundamentally different from the allopathic approach you are used to.

The things that an orthomolecular doctor does often look like what an allopathic doctor does - there is an examination, tests are ordered, and treatments are prescribed. But that’s where the similarities end. Here are the key differences between these two systems of medical treatment.

Treatment

The allopathic system treats with drugs. The drugs are by definition not natural to the human body. In fact, most people don’t realize it, but in order for a pharmaceutical company to obtain a patent on a drug, they have to prove that it is not natural to the human body.

These drugs are not prescribed to cure or prevent disease. They are prescribed for one thing only, to alleviate symptoms. And they usually do that very well. The drugs that an allopathic doctor uses cannot treat the cause(s) of the disease or condition being treated, only the symptoms. That’s why a

doctor who exclusively uses the allopathic system will tell you that it is not possible for him to prevent or cure a disease.

Orthomolecular medicine is different. Orthomolecular doctors do not use drugs. They use substances that are naturally found in the human body such as foods, herbs, hormones, amino acids, enzymes, vitamins, etc. to correct the imbalances in the body that brought about the condition. We combine that with lifestyle guidelines such as how you eat, sleep, and exercise. It turns out that where the drug approach fails, this approach really works. An old friend and alternative colleague of mine, Roby Mitchell, MD is fond of saying, "You can't medicate yourself out of a disease you behaved yourself into."

Next, and this is even more important to understand, orthomolecular treatments are not prescribed simply to alleviate symptoms. Instead they focus on removing the cause(s) of the disease or condition that is causing the symptoms. An orthomolecular doctor will tell you that it is very possible to both prevent and cure disease, because he is treating on a causal level.

Not Quick – Not Simple

The allopathic system is quick, simple, and easy. This is because simply treating symptoms is easy, and can be handled in a cook book fashion. Everybody receives the same treatment

regardless of what is causing the symptom. You have a headache – here's a pain drug. You have an infection – here's an antibiotic. You have high blood pressure – here's a drug that lowers your pressure. This is fundamentally different from orthomolecular medicine.

Orthomolecular medicine is often not quick, simple, or easy. Investigating causes and finding the right treatment can take weeks to months instead of mere minutes. That's because the imbalances in the body that are causing the symptoms are often completely different in each individual patient, even though the symptoms themselves can be the same.

Safer

However, as effective as the orthomolecular approach is the primary driving force that moved me toward orthomolecular medicine was not effectiveness. It was safety. The treatments used are natural and inherently safe. Nobody gets hurt – ever. Furthermore, once the condition has been cured, the treatment can be stopped. This is not true about allopathic medicine.

According to the United States Office of General Accounting, over 125,000 people are killed every year from drugs that are properly prescribed by allopathic doctors. This is because drugs are inherently dangerous. They often produce side effects, many of which then need to be treated with yet one more drug. These days it is common to see a patient receiving allopathic medicine who is on more than five different drugs. Additionally, since the drugs are used only to alleviate symptoms instead of removing the conditions causing the symptoms, they can never be stopped.

But drugs are not always bad, and the truth is that sometimes they are needed. I am trained both in allopathic and in orthomolecular medicine. So sometimes I will prescribe a medication to help with the symptoms while I am using the orthomolecular system to create a cure.

How it Works

Would you like to buy a car that fixed itself? The tires would never wear out. Spark plugs would be continuously renewed. If someone crashed into it, the car would automatically repair the dent. And as soon as the engine started getting out of tune, it would immediately tune itself so that decades later it would still be running perfectly well. Here's an absolutely amazing fact. God designed our bodies to be just like that - to heal themselves. And in general, that's exactly what they do hundreds of times a day.

You receive an injury – your body fixes it. You get a cold or a flu – your immune system cures it. You're exposed to a toxin – your liver eliminates it. The only time you really need to see a doctor is when it doesn't do what it is supposed to do. There are two reasons why this might happen.

One is that you are not giving the body enough of all the things it needs to heal itself. This would include anything from sleep to vitamins to hormones to exercise.

Two is that your body is being or has been exposed to some toxin that is blocking its healing ability. This would include anything from heavy metals like mercury and lead to smoking to infections to allergens to chemicals to drugs – even the drugs that doctors prescribe.

In the orthomolecular system, the doctor's job is not to diagnose your condition and put you on the latest miracle drug. The doctor's job is twofold: 1. Find out what things your particular body needs that it isn't getting, and make sure that it gets them, and 2. Find out what factors are blocking the healing process in your particular case, and get rid of them. The first process is called rejuvenation, and the second is detoxification. So the doctor and the remedies he prescribes don't actually do the healing – your body does.

The Challenges

There are three really big challenges that both doctor and patient face in doing this. One is obvious - no two human beings are the same. Thus, even though an awful lot be determined about a person from history, physical examination, and testing, in many cases there is a fair amount of trial and error before the "code is cracked". This requires diligence and some patience.

Second, although the body can heal itself of almost anything, it often doesn't do this quickly. This is especially true for long term conditions. The longer that a condition or disease has been present, the longer it is going to take for a cure. In our modern day instant gratification mentality, the process can require considerable time. Many patients make the mistake of giving up on an orthomolecular program that is working simply because it is not working fast enough.

Third, most people have been programmed to think that medicine is by its very nature like the allopathic system - a cook book affair. They often consult with an orthomolecular doctor thinking that they are going to simply get a diagnosis and a pill – something quick and easy. When they are told that they need to exercise, change the way they eat, get more sleep, receive detoxification procedures like colonics and chelation therapy, and take a handful of vitamins, hormones, and herbs, they may feel surprised and intimidated.

Dealing with these challenges is what orthomolecular doctors have been trained to do. I have been practicing orthomolecular medicine since 1981. I know that the orthomolecular approach takes some getting used to, and I also know how to guide, encourage, motivate, and help you to do whatever you need to do in order to get well again.

Prevention

The best way to treat a disease is not to get it. The only thing that I don't like about my job is having to regularly see people who are sick from diseases that could have been prevented. No one has to have a stroke, get a heart attack, have diabetes, get Alzheimer's, be diagnosed with cancer, or get arthritis. Let me repeat that. No one has to get sick with anything! The medical literature is irrefutable on this subject – just as Dr. Pauling said some fifty years ago, all diseases are preventable.

Doctors who practice orthomolecular medicine have a vision for the future of medicine. That vision was stated by one of the other great geniuses of the twentieth century, Thomas Edison. Mr. Edison saw the future, and he said, "The doctor of the future will give no medicine, but will interest his patients in the care of the human frame, in diet, and in the cause and prevention of disease." And for

those who want it, that future is here right now. I long for the day when I go to the office, and everyone I see is healthy, and is only there to learn how to stay that way.

But prevention is a hard thing to sell. When people are sick and miserable they have a very high level of motivation to spend money and to make whatever changes are necessary to feel better. But, when they feel all right, the motivation is not nearly so intense. However, when you are feeling good is actually the best time to be working on staying that way. That's one of the reasons why I focus so much on preventive testing. From Bio-Energy Testing (www.bioenergytesting.com), to panels that assess toxicity, and hormone, vitamin, mineral, and circulatory status, there are many ways to tell whether or not a person is on the road toward a disease long before they actually get it.

Getting a less-than-perfect test report often provides the motivation to make any needed changes. This is certainly my goal. For a definitive and fully referenced treatise on this subject, I ask you to read my book, *Bursting With Energy*. It will help you to understand in detail just how your body heals itself, and what you can do to help it. You can get it from amazon.com, all major book outlets, and also from the clinic.

Summing It Up

So the bottom line is this. An orthomolecular approach is not for everyone. It often takes time. It always requires lifestyle changes. It is not usually quick. And some of the treatments and tests are not covered by insurance. But it is literally the only way to go if you want to insure a healthy, fully functional life free of disease.”

by Frank Shallenberger, MD, HMD, ABAAM

Preface

“The seeds of great discovery are constantly floating around us, but they only take root in minds well prepared to receive them.”

- Joseph Henry

Healthcare spending continues to rise at an alarming rate. Equally alarming is the increase in chronic diseases—they parallel each other. How can both of these be happening at the same time? The answer is that our medical system is truly one of “*sick care*”—not health care. The medical profession *reacts* to illness rather than using its vast knowledge to proactively *prevent* illness. This approach works for a broken arm, but is unacceptable for cancer and other chronic diseases.

Interestingly, modern medicine treats almost everything the same way—it treats the symptoms. In chronic disease we refer to this as “the hammer and nail approach.” Here are some examples:

Cancer: Medicine attacks the tumor—but the tumor is the symptom, not the cause.

Heart disease: Medicine attacks cholesterol—again, this is the symptom.

Diabetes: Medicine attacks blood sugar—but the cause is inflammation and our bodies produce sugar to save our cells and our organs.

Alzheimer’s: Medicine attacks amyloid plaques in the brain (or at least intends to)—but we now know that amyloid protects the brain, Yet, amyloid-based drug development continues.

Need proof? Treating symptoms, not curing disease, would lead to proliferation of disease. That is exactly what we have. Do you really think that, in the twenty-first century, medical professionals (researchers and doctors) do not know how to “cure” someone of a chronic disease?

Globally, almost one trillion dollars (\$1,000,000,000,000—one million times one million dollars) is spent annually on medical and related research. Are we getting what we pay for? We are getting 2,000,000,000 publications each year, but how much of this information is making it to our doctors?

First, getting research from lab to clinic is taking too long. Some estimate that the time lag between discovery and clinical application is ten years but I believe it is at least, on average, twenty years. Compare this to other industries such as information technology. The time from discovery to the shelf is often less than one year and we, the consumers, demand that new technologies are at our fingertips immediately. It is likely that the lag time between discovery and clinic will only lengthen. This is in complete contradiction to essentially every other enterprise.

Second, healthcare decisions are business, not health, decisions. There is an enormous amount of medication and treatment ideas that never make it into the drug development pipeline. Why? There is a choke point created by cost and resource limitations that control the drug pipeline. Only the ten biggest pharmaceutical companies have the financial and technical resources to spend upwards of one billion dollars and ten or more years developing a drug. Do scientists and doctors have the final say on what candidate drugs will be developed? No. So, who *does* have the say? Ultimately, the CEOs of those ten largest pharma companies make the final decisions—based on the bottom line and shareholder value.

Worse is the issue of “translational medicine.” Consider this example: According to *U.S. News* in 2010, Harvard Medical School was ranked *first* in medical research globally. That same year, Massachusetts General Hospital, a Harvard Medical School teaching hospital, was ranked 57th. Yet these two institutions are connected. Mass General is part of Partners Health Care, and Partners is affiliated with Harvard Medical School. Most of the doctors at the hospital hold Harvard Medical School appointments. Why is there such a large discrepancy, first in research, yet 57th in clinical

delivery? There is an apparent lack of translation between research and patient care even within the same organization! Researchers perform research (mainly on animals that have artificially induced disease, thus have little correlation to actual disease in humans) and clinicians treat humans, and the two groups do not talk (and experimental ideas must pass over ten years of FDA muster).

The entire medical industry is incredibly segmented into tight verticals, and there is little cross-pollination. Shrinking research dollars leads research groups to be very protective of their novel ideas, which exacerbates this. Also, doctors are busier than ever trying to care for patients while earning a decent wage as both Medicare and commercial insurance reimbursement are diminished. Are you aware that major hospitals are training their doctors to make a ten-minute visit feel like thirty minutes?¹ Yes, medicine has decayed to that point, far away from the house call.

My father taught me long ago that, when something doesn't make sense, money is involved. I believe the same holds true in modern medicine. There are plenty of medications and even supplements that work to prevent and/or treat disease, but they never get notoriety. Why? Who is going to spend the money to test and promote generic drugs or even vitamins for this purpose? Yes, there is some degree of testing, but marketing drives our world, and drugs or products without a strong potential for financial reward have no backers.

The drugs that are pushed are those that are "on patent" because the drug companies and their tremendous marketing machines have the financial impetus to drive these into doctors' offices. Many good drugs that are or become generic (and no longer have patent protection) just fade away from use in clinical practice because young medical students are not taught about them. Why? These medications do not make drug companies money, so young doctors are not taught about their value. To exacerbate this problem, since about 1980, drug companies have been allowed to sponsor medical school curriculum, and that "education" focuses on new "on patent" drugs, which are controlled and marketed by the pharmaceutical companies.²

We can no longer count on modern medicine to save us. It has become an industry constructed on verticals, profit motives, and general lack of translation from research into the clinic where the information can benefit the patient. The good news is that you can save yourself. The Internet is not structured into verticals, and you can translate the information for your own health and wellbeing with the help of this book, which offers a detailed translation for you.

I hope you find the information we've translated for you compelling, and I hope above all that you use this new knowledge to prevent and beat chronic disease.

I hope you find the information we've translated for you compelling.

Good luck.

You can avoid and beat chronic disease.

Be well,



Thomas J. Lewis, Ph.D. 2015

¹ Private communication between Dr. Lewis and attending clinicians

² Wilson, Duff. "Harvard Medical School in ethics quandary." *The New York Times* (2009).



Chapter 1

You MUST Quarterback Your Own Health

Introduction

The help you receive from our modern healthcare system seldom returns you to good health. It is especially poor at predicting chronic diseases that often strike suddenly or degrade the quality of your life over time. These types of diseases are an epidemic in our society, and yet our medical establishment is focused on only two things:

1. Managing acute (immediate) illness with drugs or procedures
2. Reacting to chronic disease *after* it impacts a person's health

Doctors know better, but the financial, regulatory, and payer (insurance) pressures override their good judgment, pushing them to follow the path to best reimbursement.

Modern medicine is armed with a very limited “toolbox” to make you well. Why? Because healthcare is a big business that relies on proprietary drugs as a mainline for treatment. Their financial interests are protected through patents. The US patent laws have much to do with the inadequacies of our healthcare system. Simply put:

A Natural Substance Cannot Be Patented.

In other words:

Only a Synthetic (Unnatural) Substance Can Be Patented.

The consequence of the patent law is that natural substances do *not* have financial sponsors, so no large organizations back these types of substances for treatment. They simply cannot make money unless they can gain patent protection for their testing and marketing efforts. The result?

The drugs you take are synthetic, unnatural substances—
period.

Even when you are provided with a diagnosis, the treatments that doctors prescribe are almost always for your symptoms, not the root causes. If your doctor indicates that you may be on a drug for a long time, only your symptoms are being addressed. Treatments for life never treat the cause, they just contain symptoms. This calls into question the accuracy of the diagnosis you received at the outset. The intent of this book is to equip you with the knowledge and resources to improve your prognosis for healthy longevity. The first step? Questioning your diagnosis.

History can teach us quite a bit about what is possible in medicine today, and also what is *not possible*. In 1860 Dr. Oliver Wendell Holmes said:

“With a few exceptions, if the drugs could be sunk to the bottom of the sea, it would be all the better for mankind—and all the worse for the fishes.”

But there is also hope spelled out by history. Dr. Claude Bernard of France, from the same period as Dr. Holmes, developed what is known as “Experimental Medicine.” It is a simple concept that is lost today as modern medicine keeps doing the same thing over and over again and, not surprisingly, keeps getting the same poor results.

Here are some insights into what could (and *should*) exist today in healthcare: science-based (not biased) medicine. Dr. Bernard was the first to state that physiology—the study of the functions of the body by which life is carried on—and pathology—the study of disease or abnormal function—are the same. During his time, and today, these are considered separate disciplines. Bernard insisted that the study of disease must *not* be separate from the study of health. “There is only one science of life,” he wrote. In simple terms, this means that health and disease are on the *same* continuum.

“There is only one science of life”

- Dr. Claude Bernard, the Father of Experimental medicine.

What we know about what makes someone sick helps us understand how to keep someone healthy. In other words, what we know about what makes someone healthy helps us understand how to keep someone from *getting* sick.

Few, if any, drugs fit this model. Drugs, particularly for slowly incubating chronic disease, are often prescribed late in the disease process—and again, they are prescribed to treat symptoms of disease, not the causes.

Our team, and the many functional, integrative, and anti-aging health professionals are (re)creating a “learning engine” for healthcare, in which doctors are allowed to go outside the box—and then objectively measure how well their treatments work. That is the essence of “Experimental Medicine”—it is process of continuous improvement that is used in every industry today *except*

healthcare. Today, we call this approach “Objective Medicine,” whereby medical protocols are measured against optimal outcomes: restoring health, not just managing symptoms.

Author Jerome Tarshis defines this term in his work *Claude Bernard— Father of Experimental Medicine*¹:

“Experimental medicine is NOT what your doctor does when he/she prescribes a drug and then prescribes another drug when the first one doesn’t work. Your doctor is trying to relieve your individual distress, whether or not he/she understands why his/her treatment works. The laboratory scientists (better defined today as the ‘scientific doctor’), on the other hand, is not trying to relieve the distress of an individual patient; he/she is trying to add to the world’s knowledge of how the body functions in health and disease.”

So, the ultimate endpoint is a cure, not a treatment.

Arguably the most important aspect of this “one science of life” approach is that disease should be detected and corrected *before* illness strikes. This concept recognizes that disease, particularly chronic disease, develops over time. When a person “suddenly” gets ill or dies, in truth there is nothing “sudden” about it. The illness was brewing for a long time: a week, a month, or, more likely, a year or even a decade. Yet, if a disease is present and potentially measurable, it is not until an individual becomes ill that the medical community deems the issue clinically relevant.

This is why our two main tools for measuring health—the RealHealth Living Profile™ and Chronic Disease Temperature™ (CDT)—are vitally important and provide a “1-2” punch for measuring and correcting disease: Both tools arm you with information about the current state of your health so that you can take the *proactive* approach to your wellness that our modern, reactive healthcare system neglects. If your CDT reports a value above 98.6—the commonly accepted measure of a healthy body temperature for acute sickness—this implies that your health is at risk, and that you may have chronic disease brewing. However, by taking action now, you can take control of your health starting today.

Three Case Studies

Do you really need our advice or is your current doctor able to keep you well? Let’s take a brief look at three people who are no longer with us today, but might have been saved if they had access to the simple and fundamental information on early diagnostic and the health/disease continuum.

Dave Goldberg:



Dave Goldberg was in the prime of his life at 47 years old when he suddenly and unexpectedly passed away. His only symptom of illness was a heart arrhythmia. Doctors studying his case had no idea what happened to him except that he “fell off” a treadmill while exercising. His wife, a founder of Facebook, said in the wake of his death, “I cry myself to sleep every night.” This is a tragedy that we believe could have been prevented.

What is the current standard-of-care if you have an arrhythmia? You will be prescribed blood thinners and possibly drugs that impact the “Q-T interval” of your electrocardiogram. Further you may undergo expensive procedures like a cardioversion or an endocardial ablation. More informed doctors prescribe magnesium supplements that may alleviate many cases of arrhythmias, but not atrial fibrillation.

Few, if any, doctors recognize arrhythmias as a chronic inflammatory disease of the heart; however,

medical research fully understands the connection. A search of PubMed^a yields over 85,000 research articles when using the keywords “atrial fibrillation” and “inflammation.” One reason why our medical establishment ignores this link is due to our payment system. Doctors and hospitals make significant revenue from procedures—over \$100,000 for an ablation, for example. Diagnosing and treating causes of inflammation are much more time consuming and lack significant financial reimbursement.

The tests that are part of our Chronic Disease Temperature measurement look broadly and deeply into chronic inflammation that is associated with many of the major diseases of our modern society. This measurement also looks at immune system strength and helps us determine who is more and who is less susceptible to disease and sudden or premature mortality. We believe that Goldberg would have had an elevated Chronic Disease Temperature. He could have followed our recommendations and worked proactively with informed doctors to lower that “temperature” and possibly save his own life.

James Lee:



“Jimmy” was a prominent JPMorgan investment banker who died suddenly at the age of 62. He helped arrange some of the biggest corporate deals for companies including General Motors, News Corp. and Facebook. JPMorgan announced Lee’s death, saying he passed away “unexpectedly.” Our question is: “Why?” In 2015, the year he died, did we really lack the means to predict premature decline in health and sudden death?

We are convinced that if Lee had routinely had his CDT measured, a trend in decaying chronic health not obvious to himself, his family, or even his doctors, may have been revealed and then easily reversed. There is an important distinction between acute sickness and chronic sickness. You can be chronically ill, and even near death (Lee and Goldberg are examples) with no obvious symptoms. And, since the existing medical system reacts only to sickness and eschews prevention, it is not positioned to help you.

On the other hand, our system, which is based on the Chronic Disease Temperature, *is* designed to detect a myriad of “silent” conditions that, if detected early and properly, can be treated by doctors who understand the connection between the whole body, health, and disease.

Tim Russert:



When TV journalist Tim Russert died from sudden cardiac arrest, it was heartbreaking news for his family, friends, and fans. Chief of the Washington bureau of NBC News and longtime moderator of “Meet the Press,” Russert was known for asking tough questions. He leaves us with two more: How could death come so fast to a man who, on-air and off, had always seemed so full of life? And, couldn’t something have been done to prevent the tragedy?

According to reports, Russert died from sudden cardiac arrest—his heart stopped working. This occurred when plaque ruptured in his left anterior descending coronary artery, a major vessel that supplies blood to the heart. Why did Russert have his heart attack just then, and why did it kill him? No one in modern medicine can say because they do not perform the meaningful tests that help understand risk factors.

a PubMed is a service of the US National Library of Medicine® that: Provides free access to MEDLINE®, the NLM® database of indexed citations and abstracts to medical, nursing, dental, veterinary, health care, and preclinical sciences journal articles. Includes additional selected life sciences journals not in MEDLINE.

Here is what modern medical experts say about Russert's death: "Russert had bad luck because his heart went into arrhythmia," says Dr. Scott Monrad, director of the cardiac catheterization lab at Montefiore-Einstein Heart Center in New York City. "But we don't know who will, or when will go into arrhythmia and die."

Maybe you find this statement acceptable, but we don't. And by the end of this book, neither will you. That's why we, with the help of the enormous but untapped amount of available medical knowledge, have developed a better way for you to predict and prevent these types of unfortunate (but predictable) occurrences..

What was Russert's condition before his heart attack? He had been diagnosed with asymptomatic coronary artery disease—his doctors knew he had some buildup of plaque in his coronary arteries—but he was not experiencing negative effects. This is not unusual: Of the men who die of coronary artery disease, more than half don't show symptoms. Other times, mild symptoms such as shortness of breath or pains in the back, neck, or shoulders may be present, but are ignored.

Russert had a stress test with "normal" results and was found to have a reasonably low risk score using the most advanced diagnostics offered today in your standard-of-care doctor's office; these "state-of-the-art" tests clearly did not paint an accurate picture of his chronic disease status.

The sad truth is, because the medical community focuses so much attention on cholesterol as the cause of heart disease, the true culprit(s) go undetected. Our medical establishment has advanced little in terms of both diagnosis and treatment of cardiovascular disease, especially with respect to early detection methods.

The medical community focuses so much attention on cholesterol as the cause of heart disease, the true culprit(s) go undetected

To successfully quarterback your own health, answer this simple question: Were any of these three men perfectly healthy the day before he died? How about the week, month, year, or even decade before? Now ask your doctor if he or she knows what tests to perform to determine if you have the same risks that these gentlemen obviously had. If your doctor's answer is "cholesterol and high blood pressure," go find a better doctor. You can be sure the cholesterol and blood pressure readings for these prominent figures were well known, but useless in preventing their true causes of death.

Modern Medicine Has No Answers for Chronic Diseases

Did the late Russert, Lee, or Goldberg have an elevated Chronic Disease Temperature? We will never know, but we doubt that any of the simple yet meaningful tests that are included in our Chronic Disease Temperature calculator were performed on them. We will cover a number of these important tests in subsequent chapters. Here, as an example, we will present a summary on one of the tests used to calculate your Chronic Disease Temperature: your white blood cell count.

White blood cell count is a simple but powerful risk-assessment tool and is an example of a missed opportunity in medical diagnosis. It is a solid starting point for doctors to help us assess our risk of chronic disease. White blood cell count *is* part of our Chronic Disease Temperature measurement. Standard-of-care doctors "record" white blood cell counts but seldom interpret them, and when they do, their interpretation is based on inaccurate assumptions about risk.

White blood cells are part of the innate immune system, involved in defending our body against both infectious disease and foreign materials. Healthy people have a baseline level white blood cell count (WBC) of between 4,500 and 6,000, and differences lie in the individual physiology of each of us. This value rises when our body goes on the defense against illness. Interestingly, several labs

and other authoritative sources publish very different “normal” ranges, as shown in Table 1.

Source	WBC (cells/ml) Normal Range
LabCorp	4,500 – 10,000
Mayo Clinic	3,500 – 10,500 ^b
WebMd	5,000 – 10,000
Quest Diagnostics	3,800 – 10,800
MedLinePlus	4,500 – 11,000

Table 1. White blood cells – “normal” (standard-of-care) ranges.

The medical research world knows there are serious health consequences associated with white blood cell counts **well within** the upper limits published by the clinical experts. Here is one such example:

“Patients with white blood cell count $\geq 7,900$ have **3.1 times higher risk of death** than those with levels $< 6,300$.”²

Note that 3.1 times higher is 310% higher! And, for every death, there are approximately ten others who suffer adverse events like heart attack or stroke. Thus, the count of 7,900 versus 6,300 causes 3,100 percent (31 times) more heart disease that could have been detected early and even prevented. High cholesterol only raises your risk of dying by about 3%— but only for a very specific set of men who are in their 50s and with diagnosed severe cardiovascular disease.

Note LabCorp, Mayo, WebMD, and Quest do not give the slightest indication that a count of 7,900 is related to a health risk. It is considered in the “normal” range. If you have a count of, say 8,100, your doctor will say you are healthy. Yet that same medical professional will have little explanation for sudden death or chronic diseases.

What were the white blood cell counts of Lee, Goldberg, and Russert?

The following graphic, an Internet ad, sadly tells the truth about medicine today as it relates, in this instance, to cardiovascular disease. Today’s healthcare system does *not* know upon whom or when chronic disease or sudden death will strike. But could we?



The truth is white blood cells are your defense against disease that can cause heart attacks. Instead we are fed “consensus” values polished by medical professionals, lawyers, insurance companies, the FDA, and actuaries. Shouldn’t you know your real clinical risks of disease or death? You deserve

^b Same on you Mayo Clinic – surely you know better.

better.

In the ensuing chapters, we provide a guide that helps you interpret medical tests that we recommend, but which are seldom prescribed in the “standard-of-care.” We provide you with a list of critical tests that delve into your chronic disease health that are based on the most current research in the field of medicine. When you put the values for these various tests into our chronic disease calculator (Appendix 1), it provides you with a “Chronic Disease Temperature.” Any value over 98.6 implies that you have an asymptomatic chronic disease (assuming you are presumed healthy). The higher the value, the higher the risk, just like your “acute” temperature mom used to take with a thermometer.

An elevated Chronic Disease Temperature, translated, means you are at unnecessary risk for premature disease and/or death. If your Chronic Disease Temperature is elevated, now is the time for you to take action, before you have symptoms. We also outline what you can do to advocate for—and protect—your own health when modern medicine does not provide adequate answers or solutions.

You Must Be in Charge of You!

We are a reactionary society rather than a proactive one, and modern medicine is no different. Unfortunately, the business model of modern medicine is misaligned with preventative care. Your doctor cannot determine if you are heading toward serious disease during a ten-minute check-up.

We are redefining prevention and the measurement of your future risk of a serious disease. The biomarker tests we conduct indicate the slightest changes in your internal balance. They are designed to measure the action of your immune system when it activates to protect you from toxicity and disease. These tests help us define the *how*, *what*, and *why* of illness. More importantly, they help us explain to people who feel well (we call them the “apparently well”) that their bodies are actually NOT well—and they are at risk of becoming “clinically” sick. With this information in hand, we can avoid heading down a path toward disease, and ultimately stay well.

The quality of your health is in your own hands. Most doctors speak about managing your health by the “numbers.” The reality is, if your numbers are in range according to their standard-of-care, you are “healthy.” Next patient, please!

When you become ill, who is to blame? Too often we do not practice a healthy lifestyle, get sick, and blame our genetics. However, research and experience tell us that good health, for the most part, is a choice. Heart disease is the biggest killer throughout the world. The Centers for Disease Control and Prevention has this to say about heart disease: ³

“Nearly 1 in 3 deaths in the US each year is caused by heart disease and stroke. At least 200,000 of these deaths could have been prevented through changes in health habits.”

The Mayo Clinic gives us an even more sobering statistic on heart disease. They state that 80% of heart disease is preventable. However, what Mayo does not state is that the same things you can do to prevent heart disease is the exact same things you can do to reverse heart disease. Instead, Mayo, like all other traditional medical practices, relies on synthetic drugs.

The statistics for diabetes are even more in your favor and control. According to the Harvard School of Public Health, “The good news is that type 2 diabetes is largely preventable. About 90% of cases could be avoided by taking several simple steps.” Even lofty Harvard doesn’t indicate that the disease is reversible.

Most of us find it hard to take action against something we cannot touch, feel, or measure. Thus, if we are told we are “normal,” why make changes? We pay more for medicine compared to any other country in the world, over \$10,000 per person per year. Yet this expensive system is unable to

inform us about our future risk or how sick we truly are. We have to be sick to get help. That is why our system is so expensive.

It's Not in Your Genes

A *National Geographic* researcher explored the world seeking the answer to healthy longevity.⁴ The author focused on centenarians (people who live to at least 100 years old), looking for key common denominators. He focused particularly on areas with unusually large numbers of these folks, still healthy at very ripe old ages. The findings are surprising.

“[...] genes alone are unlikely to explain all the secrets of longevity... And in the end, genes probably account for only 25 percent of longevity. It's the environment too, but that doesn't explain all of it either. And don't forget chance.”

Do you believe good health is determined by “chance”? That is a cop-out by *National Geographic*, and by modern medicine. The facts are quite contrary to this “gene hypothesis.” The last century saw a sudden and dramatic increase in chronic diseases, leaving modern society is replete with diabetes, cardiovascular disease, cancer, and Alzheimer's disease. Genetic changes cannot develop that quickly. What *has* changed is our environment. Environmental changes *do* parallel the upswing in these diseases. And by environment, I'm discussing our *internal* environments.

Our Internal Environment Has Changed for the Worse!

Claude Bernard, a giant of nineteenth-century medicine, coined the term “*milieu interieur*,” which translates to homeostasis.⁵ In even more simplistic terms, it means *internal balance*. The bodies of the chronically ill, and those who are predisposed to illness, are out of balance, and we, personally and individually, are to blame—not our genetics.

We have all heard the platitudes: don't smoke, avoid trans fats and junk foods, get plenty of sleep and exercise, drink plenty of water. There are a myriad of books and articles providing valuable information on how to best take care of our health, but we are not listening. Maybe we believe that these diseases will not happen to us. And our doctors tell us we are well, even when we are not. What is *your* reason? I'm sure many readers feel healthy today, yet are unaware of the insidious workings of chronic disease that may be damaging their health right now.

Your Chronic Disease Temperature™ will provide you with the tools to understand the health of your internal environment *before* you are clinically sick.

The Current State of Prevention—The Health Physical Exam

Dr. Ezekiel Emanuel, a breast oncologist, was a close ally of the Obama administration, having served from 2009 to 2011 as a special advisor on healthcare in the crafting of the Affordable Care Act (ACA). Dr. Ezekiel says, “Skip your annual physical.” He voiced his belief in an opinion piece in *The New York Times* where he states, “Not having my annual physical is one small way I can help reduce health care costs—and save myself time, worry, and a worthless exam.”⁶

Is the concept of an annual physical worthless? Or is it the *diagnostic information* gathered during that exam that is worthless? Chronic disease prevention statistics emphasize the need for an annual prevention-based checkup. However, the current program is failing our health. Dr. Emanuel cites the 2012 Cochrane Collaboration, an international group of medical researchers who systematically review the world's biomedical research. They analyzed fourteen randomized controlled trials following more than 182,000 people for nine years. This analysis sought to evaluate the benefits of routine, and general health checkups—that is, visits to the physician for general health and not prompted by any particular symptom or complaint.

The unequivocal conclusion about annual health physicals is that the appointments are unlikely to

be beneficial. Regardless of which screenings and tests were administered, studies of annual health exams dating from 1963 to 1999 show that the annual physicals did not reduce overall mortality or specific causes of death from cancer or heart disease. And the checkups consume billions of dollars. Further, Canadian guidelines have recommended *against* annual physical exams since 1979.

However, the solution is *not* to abandon the annual health physical! The solution is instead to *reinvent the process* and make it relevant to today's society and today's diseases. Medicine has the ability to solve the health physical conundrum by a process we call "retro synthesis." It's a big word for a very simple concept: look at a problem, and work backward to a solution. In the context of an annual physical, then, we should therefore be trying to prevent or reduce the incidence of chronic diseases. The main goal of the annual physical exam should be to detect latent biomarkers for chronic diseases and determine future risks and causes.

You Are in Good Company

Where modern medicine lacks in proactivity, it excels in marketing. At major teaching medical schools, doctors are trained on how to make a ten-minute office visit feel like a half-hour. Doctors are encouraged to make physical contact by touching a patient's shoulder to show they "really" care. However, we would simply prefer meaningful tests.

Medicine also uses fancy terms like "patient-centered" to show how much they "care." A new term is "evidence-based" medicine. A colleague of ours, Dr. Richard Laudon, upon hearing this new term said, "Okay, but what evidence is influencing their decision process? I see medicine as more evidence-*biased*, rather than evidence-based." Patient-centered and evidence-based are all nice marketing terms, but what we all truly want, whether we are healthy or ill, is a favorable health outcome. We want "Outcome-Based Medicine." Forget those ten-cent catch phrases with no backbone; we all want results.

The good news is medicine has not singled you out by stonewalling your quest for good health. We are all in this together. No one is getting special treatment. Consider this excerpt from Walter Isaacson's biography of Steve Jobs: ⁷

"Jobs allowed his wife to convene a meeting of his doctors. He realized that he was facing the type of problem that he never permitted at Apple. His treatment was fragmented rather than integrated. Each of his myriad maladies was being treated by different specialists—oncologists, pain specialists, nutritionists, hepatologists, and hematologists—but they were not being coordinated in a cohesive approach, the way James Eason had done in Memphis. **"One of the big issues in the health care industry is the lack of caseworkers or advocates that are the quarterback of each team,"** Powell (Job's wife) said. This was particularly true at Stanford, where nobody seemed in charge of figuring out how nutrition was related to pain care and to oncology."

—Laurene Powell, wife of Steve Jobs

If even Steve Jobs couldn't get a comprehensive and cohesive explanation about his health, how can you?

Medicine has all kinds of nifty diagnostic methods to assess your current and potential future health (or disease). Sadly, much of the best information is gathered and evaluated in isolated ivory towers known as medical "specialties." Gone are the days of medical "Grand Rounds" perfected by the founder of the Mayo Clinic, Dr. Charles Mayo. Grand Rounds brought together a team of experts from various areas of medicine to the patient, at the same time. Why is this important? Because our bodies are connected systems, and your diagnosis and treatment should reflect that connectivity.

The Mayo Clinic, too, has succumbed to the pressures of a diagnostic "rush to judgment" in order to

maintain solvency. Grand Rounds are just too expensive, short term. But “short term” is how business is run—it’s based on quarterly earnings. Medicine has been taken over by business ethics, and lost is what is best for patient care.

Medicine has replaced Grand Rounds with your primary care physician (PCP) who is called upon to gather, interpret, and coordinate all of the information from every specialist who has weighed in on your health. This expedient system does not allow your PCP the time, freedom, knowledge, or authority to quarterback your health in our highly constrained insurance-based healthcare system. This is not to say that your PCP is not a skilled doctor. We are simply stating that “Grand Rounds” were more effective due to the many different viewpoints offered about each patient by a diverse team.

As Steve Jobs’ wife implied, you are therefore left to quarterback your own medical “Grand Rounds.” This book will help you become empowered to quarterback your own health in five ways:

1. Provide you with the right questions to ask your healthcare provider, focusing on the most serious diseases that impact our health in this modern society.
2. Empower you with knowledge to interpret the results of tests performed on you, based on new (and not-so-new) science.
3. Arm you with a method to determine your chronic disease risk based on your lab results. This is your “Chronic Disease Temperature.”
4. Suggest additional diagnostics that delve deep into your physiology and find root causes of disease rather than simply assess symptoms.
5. Provide preventative measures and methods that will a.) prevent your Chronic Disease Temperature from elevating, and, if your Chronic Disease Temperature is elevated, b.) provide you with methods to lower it.

Be prepared for your doctor to dismiss certain aspects of this information even in the light of the evidence. What your doctor does today is based on the medical (diagnostic and treatment) codebook (i.e. medical insurance and the associated ICD-9 and 10 prescription for medicine). If it is not in the codebook, your doctor will not get paid. The problem proactive people like you will encounter is that new evidence is not incorporated into the codebook until years after its discovery.

An argument against some of the biomarker tests in our Chronic Disease Temperature is that they are non-specific. Doctors will use this as an excuse not to order these tests. The truth is that disease is non-specific. We have developed disease names and categories, not our bodies. Our immune system, for example, produces just five types of white blood cells, which are our first line of defense against disease. These cells elevate in numbers to protect us against cancer, diabetes, arthritis, Alzheimer’s, and heart diseases. So much for that argument about specificity.

Further, those who determine what makes it into the codebook—the tests your doctor can order and obtain payment—are not necessarily the people with your best health interests in mind. The drugs you take are developed by the drug industry, and approved for you to take, based on business decisions, not health reasons. Medicine is distinctly a business, not run by doctors any longer, but by large corporations. Table 1.2 below shows the large healthcare companies by overall global market cap (a measure of the size of the company).

Company	Ranking
McKesson	5
UnitedHealth Group	6
CVS Health	7
Walgreens Boots Alliance	19

Company	Ranking
Cardinal Health	21
Express Scripts Holding	22
Anthem	33
Johnson & Johnson	39
Aetna	46
Humana	52
Pfizer	55
Merck	72
Roche	80
Gilead Sciences	86
Sanofi	89
Rite Aid	107
AbbVie	123
Community Health Systems	125
Amgen	130
Abbott Laboratories	138
Tenet healthcare	140
Eli Lilly	141
Novartis	167
Glaxo Smith Kline	278
Novo Nordisk	364

Table 1.2. Healthcare companies by market cap.

Most of us are shareholders in some of these companies. If we watch daily and quarterly earnings and stock prices, we are telling these companies we want earnings. Profits are not made by curing disease, but by distributing drugs that make profits by treating symptoms.

The list above begs the following question: why are drug distribution and healthcare insurance companies at the top of the list? Why isn't a medical group at the top?

Healthcare insurers are *not* benevolent organizations. Since the implementation of the Affordable Care Act, the largest insurers like United, Aetna, Cigna, and the rest have not only grown in revenue, but they have grown even faster in profits. ^c

Consider this simple concept: American businesses spend one half of their profits on employee and dependent healthcare. How can America stay competitive against the Chinese, Mexican, or even Canadian labor force if half of our profit goes to healthcare?

Half of American business profits goes to employee healthcare.
This is the main reason businesses are fleeing the U.S.

Biological Clock and Disease Prevention

Since the days of Aristotle and later, Ponce de Leon, we have sought longevity and the fountain of youth. The Book of Genesis refers to Moses who died at age 120. We believe this is an achievable goal today, considering the small handful who have lived to 116.

^c <https://www.healthinsurance.org/blog/2016/03/01/no-obamacare-isnt-killing-the-insurance-industry> (October 3, 2016)

Google now comes to the forefront with their new venture “Calico.” According to their website^d, “We’re tackling aging, one of life’s greatest mysteries. [...] Calico is a research and development company whose mission is to harness advanced technologies to increase our understanding of the biology that controls lifespan. We will use that knowledge to devise interventions that enable people to lead longer and healthier lives. Executing on this mission will require an unprecedented level of interdisciplinary effort and a long-term focus for which funding is already in place.”

The Calico model is ultimately to “control” lifespan.^e Their approach is to alter genes and modulate other aspects of our biological (lifespan) clock. What they are *not* pursuing are methods to allow each and every one of us to reach our already pre-programmed lifespan that few, if any of us, actually achieve.

The Calico approach is meaningless if latent, existing chronic diseases are not detected early or properly treated. As an example, we met with Dr. Craig Atwood, a brilliant researcher who explained how we are programmed to age based on our reproduction cycles.⁸ After Dr. Atwood’s departure from our offices, Dr. Trempe commented, “What Dr. Atwood has to say is all well and good but if one of my patients has periodontal disease and I don’t treat their teeth well, all those genetic and hormonal efforts to extend lifespan are to no avail.”

In other words, there is no “magic pill,” genetic or otherwise, that will protect us from the consequences of daily living. We have to actively manage our health in order to reach the pre-programmed limit of our lifespan. If you wait until you have symptoms of chronic disease and then go about “symptom-only” treatment provided by the standard-of-care, your health and longevity will likely be impacted. This is where quarterbacking your health, and stopping chronic disease before it impacts your health, is of vital importance.

None (but a few?) of us live to our “biological clock” maximum.
To live to that point – approximately 120 years – we must
focus on preventing chronic disease.

We strongly advocate that you monitor your health regularly, even if you are symptom-free. Too many of us have disease but are unaware of it until it strikes suddenly causing sickness or death. If each of us does not pay close attention to our health, from birth-to-death, the misguided work of Calico and others will not help us. One way to determine if you are on the right path to a long, healthy life, is to determine your chronic disease temperature™ and work hard to lower it as much as possible. If you have markers and measures that contribute to a chronic “temperature,” take immediate action based on recommendations in this book. You will then stay on track to live your life to the healthiest.

Evidence-Based or Evidence-Biased Medicine

We are strong advocates of evidence-based medicine. Even a layperson can sift through PubMed and find “novel” ways to “cure” diabetes and Alzheimer’s disease. However, the medical literature often presents stumbling blocks to your good health. The reason lies in how medical information is obtained, reviewed, and interpreted. A second stumbling block is translation. Translation, in this

^d The image on the splash page of the Calico website shows a section of a tree and its rings. Does anyone, including the Calico staff, know where, in the human body, one can observe the human “rings of the tree?” The answer may surprise you: it is the lens of the eye.

^e This is an educated guess as to the Calico approach based on the research interests of their scientific board.

context, refers to the delivery of new evidence through clinical medicine. In our book on Alzheimer’s disease^f, we coined the phrase “the trillion dollar conundrum.” Globally, almost one trillion dollars (\$1,000,000,000,000—that’s one million times one million dollars) is spent annually on medical and scientific research but only a tiny fraction of this research makes it to your doctor.

The following are the primary reasons that today’s medicine does *not* rely on the best evidence (even though fantastic health-creating evidence does exist in the medical literature):

1. Relative versus Absolute Statistics:

The difference between relative and absolute statistics is profound. Most of what we hear about health is reported in relative statistics.

The entire chain of the medical delivery system relies on fundamental research data that is used to determine both the safety and efficacy of the treatments and procedures that doctors either prescribe or perform. The research often starts in the laboratory on cell cultures or animals. Regardless of the subjects being tested, the results are most often reported in terms of statistics. For example, “20% fewer animals developed cancer using XYZ drug.” What we *don’t* know is whether the value is presented on a relative or absolute basis.

The difference between absolute and relative statistics is best illustrated by quoting cardiologist Malcolm Kendrick who wrote *Doctoring Data*.⁹

“One hundred people start taking a blood pressure medication and one hundred do not (the control group). At the end of a year, one person in the group taking the medication has died, and two people in the group not taking medication have died.

- The absolute difference in deaths is 1 person per 100 vs. 2 people per 100 (1 in 100, or 1%).
- The relative difference in deaths is 1 vs. 2 ($1/2 = 50\%$).

I shall now claim that if you take my medication, your risk of dying has been reduced by 50% i.e. halved (which is true—sort of).

Let’s try this again, with numbers that are 1000 times as big.

100,000 people start taking a blood pressure medication and 100,000 do not (the control group). At the end of a year, 1 person taking medication has died, and 2 people not taking the medication have died.

- The absolute difference in deaths is 1 person per 100,000 or 0.001%.
- The relative difference is 1 vs. 2 ($1/2=50\%$)

I shall now also claim that if you take my medication, your risk of dying has been reduced by 50% (which is true only if you happen to be one of the two). In the real world, the absolute statistical value of 0.001% is equivalent to the risk of being struck by lightning and probably not worth your worry. More importantly, if 100,000 people must be treated to temporarily delay one death, the medicine is ineffective, especially considering the side effect potential (watch the evening news and pay attention to a drug add).”

Here’s another way to understand this vital difference: Imagine a person it struck by lightning. If that person was part of a twosome, then the chance of dying, using relative statistics, is 50%. Do you think your chance of dying from a lightning strike is 50%? If we look beyond the twosome to everyone on the golf course or everyone in the clubhouse or everyone in America, you can see how

^f Lewis, TJ and Trempe, CL, *The End of Alzheimer’s* 2nd Edition. <https://www.elsevier.com/books/the-end-of-alzheimer-s/lewis/978-0-12-812112-2>

the “chance of dying from the lightning strike” decreases dramatically.

In healthcare, there a lies, damn lies, and then there are
statistics.

1. Association versus Causation:

We need to know *causes* of disease, not just symptoms that are associated with diseases. Treatments for causes have a great impact on health while those for associations are likely to only impact symptoms. We know we are being treated for symptoms if our doctors tell us that we will be on the treatment for a long time. Different types of studies in medicine address association and causation differently.

- Retrospective studies look back in time at how populations suffered from disease and what made a difference among those populations.
- Prospective studies follow two groups of people going forward. One group is given some type of intervention, a medication for example, while the other is the so-called “control,” and is not treated. Studying the difference between these populations after a period of time helps us understand cause and effect.
- Epidemiological studies look at trends in populations and are analyzed with statistics to draw conclusions.

In general, prospective studies are able to provide meaningful information on cause and effect, and the magnitude of the effect. However, variations between people in the study group must be minimized, otherwise identifying the actual cause of the effect is a bit of a guess. These types of studies sometimes, but not often, are able to provide “causation,” or information on what causes disease. In epidemiological studies, there are much less controls on the data. What really comes out of these studies are associations, and not causes.

A result from an epidemiological study, as an illustration, may go something like this: Blond-haired and blue-eyed people have more skin cancer. We all know this is true, but does it provide us with causation or association? The answer is *association*. A cause of skin cancer is overexposure(s) to sun and a myriad of other physiological processes associated with the body’s response to the overexposure(s). A stronger association, compared to eye color, is skin composition. Yet darker-skinned people still get skin cancer. Based on this data, is the solution for the blue-eyed, blond-haired person to undergo some genetic procedure to change their eye and hair color? Of course not. The solution is to manage sun exposure.

This may seem like an extreme example, but it really is not. The medical industrial complex is feeding us with associations, and not causations, all the time, and treating us for the associations. We are bamboozled by their relative statistics. Any drug you take that treats symptoms is a drug for an association, not a causation. These drugs do not improve the trajectory of your long-term health. We are being treated based on a bias toward association and relative statistics, and not based on absolute statistics and causation. That’s why diabetes, cardiovascular diseases, dementias, and cancer rates are so high. *We are not being treated for causes.*

It’s easier to be fooled than to be convinced we have been
fooled.

- Mark Twain

1. Lack of Translation:

Medical research and delivery of medicine to patients is highly disconnected. Medical research and clinical medicine have grown apart over the last few decades and are fully separate businesses. Medical research, in particular, is now a big independent business. Most research MDs never see patients. They spend their time overseeing research projects and preparing new grant proposals. As stated earlier, Harvard Medical School (HMS) research ranks *first* in the world according to a recent *US News and World Reports* article. However, clinically, HMS, by way of Massachusetts General Hospital, ranks 57th globally. What does that tell you about translation of research into the clinic to help you?

2. Big Pharma Controls Medicine:^g

Translation of medical research into clinical medicine is inhibited by some serious roadblocks, including big pharma, the FDA, and health insurance organizations (payers). Ultimately, translation of research occurs by way of new drugs that reach our doctors, pharmacies, and ultimately our bodies. Who decides what drugs get to us? The ten CEOs of the largest drug and biomedical companies make those final decisions. They head the few companies with enough technical and financial resources to get drugs from design to patients. So, are you receiving the best drug, or simply the most lucrative?

Ultimately, less than 1% of medical ideas published in the medical literature make it to the marketplace. These ideas are, in some cases, of high value, but they don't make the financial cut and so are buried in the bowels of medical journals for people like us to find.

3. Liability and the Standard-of-Care:

Medicine suffers from an affliction known as “the standard-of-care.” It is a legal term now, and it is stifling innovation and protects those who conform to a system no longer run by doctors.

We think of the “standard-of-care” as the definition of proper care that a patient receives from the medical establishment. A hoped-for benefit of this concept is that patients with the same, or similar, ailments receive the same care, the standard-of-care, no matter where they are. However, the concept has evolved into a disadvantageous way to quickly and impersonally delivery symptoms-only medicinal treatment.

According to Blumenthal and Woodward:¹⁰ “Standard of care’ sounds like a medical term, but it is a universal legal concept. It is codified differently by individual state statutes and is written into each state’s uniform jury instructions. The phrase increasingly appears in scientific articles discussing the management of patients with headaches. But, the term usually is not defined nor is evidence presented to justify the notion that the so-called standard has any scientific basis. In a courtroom, jury instructions using this phrase can be a legal sword aimed at a defendant doctor, rather than a shield. At risk is a physician’s basic right to care for a patient according to that individual’s particular needs.”

Strauss et. al., state in their article titled, *What does the medical profession mean by “standard of care?”* “There is no medical definition for standard-of-care, although the term is firmly established in law and is defined as ‘the caution that a reasonable person in similar circumstances would exercise in providing care to a patient.’^h The term represents an essential component of an action in medical malpractice in proof that the doctor in question failed to provide the required standard of care under the circumstances. In wider terms, a physician has a duty to exercise the degree of care

^g Pharmaceutical companies are allowed to, and do, provide financial support to the FDA.

^h The Legal Dictionary Standard of Care. <http://legaldictionary.thefreedictionary.com/standard+of+care>.

expected of a minimally competent physician in the same specialty and under the same circumstances.”¹¹

Let’s take a closer look at the implications of the standard-of-care. Clearly, it exists to protect patients from the inappropriate actions of physicians, which is a good thing. But the broader consequences include a seldom considered outcome: squelching innovation. Medicine is as much art as it is science. The standard-of-care is unwittingly removing any educated art from medicine and turning doctors into plumbers who just follow the prescriptive diagnosis and treatments allowed by insurance actuaries, the FDA, and the drug companies.

The “Standard-of-Care” in medicine is a legal term designed to protect doctors and patients – but it stifles innovation.

Dr. Alois Alzheimer who characterized the very first “Alzheimer’s” disease patient said, “Outcomes and observations in the clinic should drive medical research.” Today, just the opposite is true. Medical research is driven by the development of new drugs, first tested on animals, then brought to the clinic after testing on humans. Which one of these methods do you think is best? We could debate that for days in the absence of facts. However, consider the research of Dr. Paul Clayton who investigated some of the healthy and long-lived populations of the past 200 years. His conclusions are provided here:¹²

“Analysis of the mid-Victorian period in the U.K (1870s) reveals that life expectancy at age 5 was as good or better than exists today, and the incidence of degenerative disease was 10% of ours.”

One potential conclusion is that our “standard-of-care” medicine is not working. Over 100 years ago when “observations in the clinic drove medical research,” we had 10 times *fewer* instances of serious disease.

Many of the tools we provide to help you “quarterback your own health” are outside of the standard-of-care, thus very few doctors will be willing to help you with the diagnosis and treatments that are inferred by these “non-standard” diagnoses. That’s why we also present you with detailed science to back up the conclusions—so *you* can take charge!

1. Medical Training:

It is a daunting task for a busy doctor to keep up with the latest medical literature. The faster route is to rely on the glossy, well-designed brochures that drug company reps provide over an expensive lunch. And we know they *are* influenced by these lunches. A recent *New York Times* article titled “Drug Company Lunches Have Big Payoffs”¹³ asserts that a doctor will change the drugs prescribed after one free lunch valued at twenty dollars.

The *New York Times* reveals that free lunches are just part of the problem with the drug company-doctor relationship. Many of these drug reps who are providing the information to doctors that is influencing their buying decisions are not scientists or fellow medical professionals—they are actually *former cheerleaders*! I wish we were making this up, but we are not. Please read, “Gimme an Rx! Cheerleaders Pep Up Drug Sales.”¹⁴

Although doctors are required to attend continuing education programs, they generally occur at luxurious locations underwritten by drug companies, all under the guise of “sponsorship.” Consequently, doctors acquire prescription and treatment habits from these events. Good medicine is becoming a lost art. And, in some instances, the so-called “in range” values from today’s diagnoses do not necessarily reflect good health. To quote a colleague,

“When my blood labs are in range on some of these standard tests it does not mean I’m healthy, it just infers that I am not currently acutely sick.”

—Joe Straight

2. Financial Incentives

Procedures pay a doctor more handsomely compared to a treatment. A procedure, especially those used in chronic disease cases, *never* create a cure. But they do create dollars for the doctors and the hospitals. You may argue that cancer surgery is a cure—but what caused the tumor? If we continue to settle for surgery (and surgery pays handsomely), will we ever find a true cure for cancer?

Drug companies are using deceitful ways to fund and influence doctors and researchers. Even though there are now strict rules about giving money to doctors, the drug companies are providing unrestricted grants to institutions like Harvard Medical School. Another favorite “work around” is to donate large sums of money to societies like the Alzheimer’s Association and the American Cancer Society, who then fund doctors and researchers. Sadly, if you are giving money to one of these charities, it really is a tale of the poor giving to the rich.

Financial Misalignment

We want you to obtain the best diagnosis possible so you understand your health risks and are empowered with options for treatments. Today, within the standard-of-care, diagnoses and treatments are intimately linked through the medical coding system. Thus, diagnosis is driven by treatment—but it should be the other way around. Take heart disease as an example. A common treatment is statins. Medicine markets cholesterol as the cause of heart disease, thus dictating the treatment. But what if cholesterol is *not* the root cause? That doesn’t matter in our current medical system, because medicine works backward from the treatment to the diagnosis. Drug companies produce treatments, and the doctors will diagnose for the treatment. It’s the standard-of-care. With this model everyone makes out, the doctor is protected, and profits are made. But what about the patient?

Marc-André Gagnon educates us on the finances of medicine through his paper titled, “*Corruption of Pharmaceutical Markets: Addressing the Misalignment of Financial Incentives and Public Health.*”¹⁵ Dr. Gagnon states:

“Over the last two decades, the dominant business model of major pharmaceutical companies has been characterized by massive spending on promotion. In particular, there has been an explosion of pharmaceutical promotion directed towards physicians. At the same time, little therapeutic innovation has been coming out of these firms’ research labs. According to Bill Burns, chief of Roche’s pharmaceutical division, the dominant business model in pharmaceuticals can be characterized as the “me-slightly-different-marketed-like-hell” model. It is a model based on the over promotion of “blockbuster” drugs, many of which do not even provide any therapeutic advance. Pharmaceutical firms do not need to come up with new beneficial drugs to increase earnings. In fact, it becomes clear that the profit motive in the pharmaceutical sector does not encourage the development of new drugs as the main way to increase earning capacity.”

Consider this tragic coincidence: The FDA is in charge of approving drugs presented to them through a complex approval process. The role of the FDA is to protect us by assuring that new drugs meet safety and efficacy standards. For example, a new cancer drug will be approved if it roughly matches safety standards of existing drugs and has better efficacy. In this context, efficacy may mean increasing the survival of a patient by as few as three months. Are you shocked to learn that most new cancer drugs improve survival by only three months? Thus, drug companies will be able to produce new and profitable cancer drugs forever, whereas a cure would have dire financial consequences for those companies.

How does this financial misalignment impact your efforts or those of your doctor to take care of your health? Consider two diagnostic markers, homocysteine (HcY) and c-Reactive Protein (CRP). Both of these are biomarkers in the blood and are highly associated with chronic disease and future risk of cardiovascular and Alzheimer's diseases, and early death. Dr. Ridker of Harvard Medical School published a book titled "C-Reactive Protein" where he basically states that it is inflammation (as measured by CRP), and not cholesterol, that correlates best with cardiovascular disease.¹⁶

Dr. Kilmer McCully, the pioneer of the homocysteine theory of cardiovascular disease humbly states that elevated homocysteine accounts for maybe 10% of cardiovascular disease. However, in the standard-of-care, there are no treatments—old, new, or emerging—for either elevated homocysteine or c-Reactive Protein or the underlying mechanisms that cause their levels to be high. Thus it is challenging to get a doctor to order tests for these markers, and it is even more difficult for you to get your insurance company to pay for the tests.

In several states within the U.S., you cannot order medical tests yourself, even if you intend to pay for the tests out of your own pocket. This means you do not have the right to evaluate your own body without a doctor's approval. And if your doctor will not approve important tests, how can you quarterback your own health? According to Quest Diagnostics, a medical testing laboratory, individuals cannot order tests themselves, due to state regulatory requirements, but if you are interested in having a specific laboratory test performed, please ask your healthcare provider if the test is appropriate for you, and if he/she can order the test(s) for you. Quest is not strictly correct, as many states fortunately do allow you to order your own tests.

Due to restrictions at the state level, an individual cannot order their own tests in Maryland, Massachusetts, New York, New Jersey, or Rhode Island. Curiously, these are all liberal states that supposedly look out for "the little guy." Looks like they have it backwards. This list is expanding, so if you want the freedom to order your own tests, write to your representatives.

Financial misalignment is highlighted in a most surprising way through an article in the *Journal of the American Medical Association*.¹⁷ A major retrospective analysis showed that when doctors were away at national professional meetings, heart failure and cardiac arrest patients died at a much lower rate compared to when the doctor was in! Here are the actual numbers:

"During non-meeting days, 24.8 percent of heart failure and 69.4 percent of cardiac arrest patients died within 30 days. But while cardiologists were at meetings, only 17.5 percent of heart failure and 59.1 percent of cardiac arrest patients died within a month."

The lead author, Dr. Anupam B. Jena, an assistant professor of health care policy at Harvard, said that the difference in death rates may be attributed in part to overly aggressive treatments, such as when a stent is inserted unnecessarily. Generally, the "overly aggressive treatments" pay more.

The Challenge Quarterbacks Face

Here is testimonial proof that quarterbacking your own health, properly, is a challenge.

Paul's Story:

"In July 2013 I had my annual physical exam at a prominent Boston-area medical clinic with the doctor I'd had for the past decade. Under the advice of several forward-thinking doctors, it was recommended that I ask for a homocysteine and C-reactive protein blood tests. I thanked my doctor friends for their suggestion, and a week later, I went in for my annual physical. As my PCP was writing up his schedule for blood tests, I asked that he include homocysteine. His emphatic reply was, "You don't need that!" I did not want to get into a pissing contest with who I considered at the time to be a really good PCP—but I wanted to.

On September 11, 2013 I was on my way to Boston from New Hampshire for business and had

some chest congestion, which I related to bronchitis. In my path was my clinic and I decided it might be a good idea to get a chest x-ray for the bronchitis. The x-ray proved negative for bronchitis, but positive for heart-related issues. It turns out I did have angina, and they recommended I stay a few days for further tests which ultimately showed some degree of blockage in one of my heart arteries and labeled it ischemia. Subsequently a stent was placed to resolve the symptoms.

Had my PCP just acquiesced to homocysteine and c-reactive protein tests, perhaps an earlier diagnosis would have shown I was a walking heart attack. Instead, it was determined at the point of insertion that that artery was blocked 99%. This country lacks the will to perform valuable preventative and predictive tests. It relies on responding to disease in a reactive manner, after the patient is already sick. It's wrong, and your only option is to look out for your own good health."

Paul went to a Harvard Medical School affiliated hospital. He has high lipids due to a rare genetic condition. He explained to his doctor that statins do not control his cholesterol and named a specific medication that worked in the past. The doctor prescribed a drug that Paul understood to be something new. Unfortunately, it was not; it was the statin Lipitor, which just happens to be the most prescribed drug in recent history.

There is a profound irony to this story. *Proto* is a Massachusetts General Hospital¹ publication that provides information to patients. In 2011, *Proto* published a feature article called "Questioning Statins." The byline is: "WHAT STATINS MIGHT DO FOR YOU: Lower cholesterol // Reduce risk of cardiovascular disease // Cause muscle pain and fatigue; Fail to significantly prolong your life."ⁱ Other gems in this publication include phrases like, "Statins don't seem to confer the ultimate health benefit— longer life. So is lowering cholesterol as important as everyone has been led to believe?" Followed by: "Why did statins appear to protect the hearts of people who didn't have high cholesterol? It could be that they not only lower cholesterol but also reduce inflammation." If you read between the lines, it appears that Harvard Medical School is saying that cholesterol is not the cause of cardiovascular disease—instead, inflammation is.

So, should Paul's Harvard doctor (who should be reading his own magazine, *Proto*) have prescribed Lipitor? And if Harvard is recognizing the role of inflammation, why weren't blood tests measuring inflammation ordered? One answer is financial misalignment between prescriptions and positive health outcomes. Harvard Medical School, through its affiliated hospitals, receives hundreds of millions of dollars annually from big drug companies and they appear to be showing their appreciation through their prescribing patterns.

Steve's Story:

"I, like most, rely upon my physician to educate me on my health. Case in point, upon arriving in New England, I was in need of a new physician. I arrived at my appointment with a list of tests for him to order, but he instead proceeded to give me the standard initial screening looking in my eyes, ears, throat, checking for enlarged glands, heart rate, blood pressure, and listening to my breathing.

He did not ask a single question about my history. So I asked one question, "Does what you do create health?" Shockingly, he stated, "no." I then proceeded to ask him if he would order the list of blood tests such as c-Reactive Protein (which indicates inflammation), homocysteine (possible risk for cardiovascular disease), and other tests that may indicate something is not in balance. He simply stated that he could not. He went on to discuss the difficulties that would follow if he ordered these test because there were no symptoms to suggest they were necessary, according to

ⁱ Massachusetts General Hospital (MGH) is a Harvard Medical School-affiliated hospital.

^j www.protomag.com

those who would audit him, the providers of payment.

He is controlled by a process not of his choosing but nonetheless affects every patient he sees. To truly practice medicine, you cannot be controlled by third parties telling what you can or cannot do, how much you can charge, and when you will receive payment. Our bodies are systems that need to be addressed systemically. To treat a symptom is not a cure. My doctor, whom I personally like, will never be allowed to actually "practice" medicine as long as he is part of the current system. The system is truly incapable of viewing medicine with proper long-term outcomes in mind. It is driven by the sick and is blind to the opportunities of sustaining itself on people being healthy."

You can overcome these seemingly overwhelming impediments to your good health—by being your own quarterback.

Medical Pioneers

The best medical innovations have come by way of medical pioneers. But they have often paid a heavy price for their leadership. The same is happening today with many doctors who work outside the standard-of-care. They are called "quacks," and in some instances have their medical licenses threatened or revoked. Why are doctors paying such a high price for their crusade to help people stay well?

Here are some historical examples of significant pioneers in the medical field.

Hygiene: The "Semmelweis Reflex" is both an insightful and disturbing look at how new knowledge and new evidence is integrated into our health system. Ignaz Semmelweis was a Hungarian obstetrician who discovered that often fatal puerperal fever, common among new mothers in hospitals, could be eliminated if doctors simply washed their hands before assisting with childbirth. He proposed a technique that physicians would wash their hands with chlorinated solution before assisting in a child's birth. His recommendation resulted in a significant decrease in deaths. Despite its demonstrated effectiveness, the medical community largely ignored and even ridiculed this mandate. Dr. Semmelweis was dismissed from his hospital post and later died in an asylum. Obviously, there is more to the story, but it is an important lesson in human behavior. Semmelweis' approach eventually earned widespread acceptance after his death, and he is considered a pioneer in antiseptic procedures.

Sterilization: Joseph Lister was the surgeon who introduced new principles of cleanliness, which transformed surgical practice in the late 1800s. Widespread acceptance of Lister's procedures was rather slow, as is often the case with revolutionary new ideas. Some found it difficult to believe in germs because they were too small to see. Others tried Lister's procedures, but did so incorrectly and therefore failed to obtain the desired result.

Scurvy: In the twentieth century, scurvy^k was shown to result from a deficiency of the essential food factor ascorbic acid (vitamin C). Vitamin C, in adequate quantities, completely prevents and cures the disease, which is now rare. The protagonist of this medical history was James Lind. His report of a prospective controlled therapeutic trial occurred in 1747. Although the importance of Lind's findings on scurvy were recognized at the time, it was not until more than 40 years later that an official Admiralty Order was issued on the supply of lemon juice to ships. With this, scurvy disappeared almost completely from the Royal Navy.

Ulcers: Dr. Warren, a pathologist from Australia, made a revolutionary discovery during a routine diagnosis of diseased tissue. Through his advanced diagnosis—driven by his personal curiosity—he was able to prove a cause-effect relationship that has profoundly impacted treatments of stomach

^k Scurvy mostly manifested as severe gingivitis.

ulcers. Warren, along with his colleague, Dr. Marshall, hypothesized that a specific bacteria known today as H-Pylori causes stomach ulcers. At that time (and inexplicably still by some medical professionals today) the belief was that these ulcers were caused mainly by stress and excess stomach acid. Marshall and Warren's suggestion that ulcers may be caused by bacteria was initially viewed by some researchers as absurd and outrageous. Martin Blaser of the Division of Infectious Diseases at the Vanderbilt University School of Medicine thought a 1983 talk by Marshall was "the most preposterous thing I'd ever heard; I thought, this guy is a madman."¹⁸ In fact, these two Australians, Warren and Marshall, were not even invited to present their data at gastroenterology society meetings for many years. Blaser has since become one of the leading researchers on *Helicobacter pylori*, having changed his belief in the face of overwhelming evidence. Warren and Marshall won the Nobel Prize for Medicine in 2005.

Blood Circulation: William Harvey's discovery of blood circulation caused the scientific community of the time to ostracize him. Harvey's lecture notes show that he believed in the role of the heart in circulation of blood through a closed system as early as 1615. Yet he waited thirteen years, until 1628, to publish his findings in his work "*Exercitatio anatomica de motu cordis et sanguinis in animalibus*," or "On the Movement of the Heart and Blood in Animals." Why did he wait so long? Galenism, or the study and practice of medicine as originally taught by Galen, was almost sacred at the time Harvey lived. No one dared to challenge the teachings of Galen. Like most physicians of his day, William Harvey was trained in the ways of Galen. Conformation was not only the norm, but was also the key to success. To rebel against the teachings of Galen could quickly end the career of any physician. Perhaps this is why he waited. Today the prescription pad, drug companies, and the standard-of-care have replaced Galen, but that climate of fear surrounding medical innovation still hasn't changed.

If you want to maintain your good health, you must find a doctor who is not afraid to follow his or her own instincts, rather than adhering blindly to the standard-of-care.

"The seeds of great discoveries are constantly floating around us, but they only take root in minds well prepared to receive them."

—Joseph Henry¹

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¹ Joseph Henry (December 17, 1797 – May 13, 1878) was an American scientist who served as the first Secretary of the Smithsonian Institution, as well as a founding member of the National Institute for the Promotion of Science, a precursor of the Smithsonian Institution.

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Chapter 2 Proliferation of Chronic Diseases



“They were as long lived and their incidence of degenerative disease was 10% of ours.”

- Paul Clayton referring to the mid-Victorian (1870) poor of Britain

Do you need to Quarterback your own health? A look at the grim statistics on the proliferation of chronic diseases in American and the World, provide an obvious answer. A convenient crutch of our modern era is to believe our destiny is mainly controlled by our genetics. Regarding our health, this is abjectly not true. A prominent Harvard Medical School Professor and geneticist, says in his book, “Super Brain,” that environment is more important compared to genetics and that those with strong genetic disposition to Alzheimer’s, for example, comprise less than 2% of all sufferers of the disease.¹

In the last chapter we discussed another case against a genetic “crutch” from National Geographic Magazine. The article suggested that a baby born today will live to 120. The authors went all over the world to examine people and populations that live into their 100s today. They attempted to solidify a case for genetics being the key factor that determines longevity, and by inference, the lack of chronic diseases of aging presumed to be due, in large part, to genetics. However, they concluded that genetics actually plays a small part in longevity. The majority was attributed to environment and luck!

Clearly our own free will is responsible for most of our good health and longevity. Our internal environment, that is the balance we create within ourselves to exist and (hopefully) thrive is the main contributor to our good health. It is diet, exercise, habits, exposures and all the circumstances that contribute to your phenotype (all the things that make you – you).

What about the term “luck?” “Luck” just represents a lack of understanding of disease and how it starts, develops, and proliferates. Luck is eliminated through a knowledge-acquiring process of well-being and, if you do become ill, a differential diagnosis that addresses the fundamental problem(s) and does not simply focus on symptoms. Luck may be eliminated by knowing and acting upon that which creates health. Performing the right tests that measure our health and disease

status helps steer us on the right path. Claude Bernard, the father of the concept of internal balance stated:

“The experimenter who does not know what he is looking for will not understand what he finds.”

Modern medicine is looking in the wrong places for chronic disease causes – thus treatments. Examples, that will be explained in more detail later, include:

- Diabetes (II) – Insulin/Glucose is the wrong target.
- Cardiovascular diseases – Cholesterol is the wrong diagnosis and target
- Alzheimer’s disease – beta amyloid and Tau are the wrong targets.
- Cancer – The tumor is NOT the disease, it is a symptom.

Chronic diseases have very rapidly infiltrated our modern society. This further puts the nail in the genetics coffin and shifts responsibility to you. Genetic changes occur slowly, over generations, and usually in just small populations. Bad mutations lead to populations not adapting and thus dying off. Positive mutations lead to proliferation, thereby replacing the less well adapted. By the time populations are replaced, tens to hundreds of generation must reproduce, passing the positive or negative gene. It is safe to say, massive changes due to genetics do not occur in a scant generation or two. But we are experiencing massive adverse changes in our health by way of chronic diseases.

A new field of genetics, however might hold some answers. That field is epigenetics. In biology, epigenetics is the study of cellular and physiological trait variations that are not caused by changes in the DNA sequence. Unlike genetics based on changes to the DNA sequence, the changes that underlie epigenetics have other causes, thus use of the term epi- (Greek: επί- over, outside of, around) -genetics. So what is at the root of epigenetic changes? Indeed it is our internal environment over which we all have implicit control.

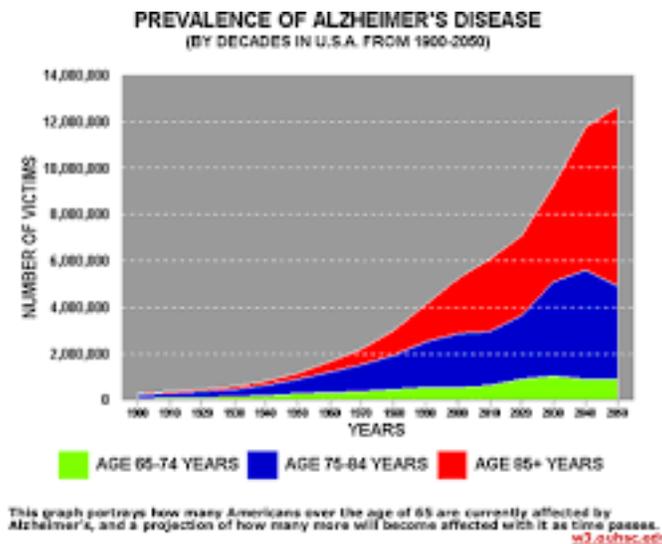


Figure 2.1. Increase in Alzheimer’s disease since 1900.

Disease Statistics

Lets look at some graphic representations of the expansion of modern diseases:

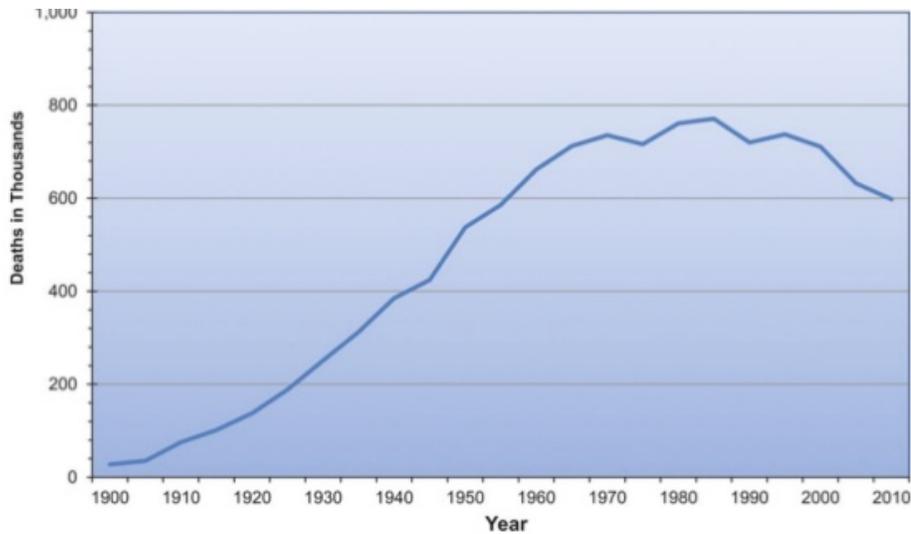
Alzheimer’s Disease

Alzheimer’s is a new and emerging epidemic. An estimated 5.4 million Americans have Alzheimer’s disease in 2016. This figure includes 5.2 million people age 65 and older and 200,000 individuals under age 65 who have early-onset Alzheimer’s.

- One in eight people age 65 and older (13 percent) has Alzheimer’s disease.
- Nearly half of people age 85 and older (45 percent) has Alzheimer’s disease.
- Of those with Alzheimer’s disease, an estimated 4 percent are under age 65, 6 percent are 65 to 74, 44 percent are 75 to 84, and 46 percent are 85 or older.

Because Alzheimer’s disease is under diagnosed, more than half of the 5.4 million Americans with Alzheimer’s may not know they have it. In addition, another large group of individual have a pre-dementia or pre-Alzheimer’s state that includes mild cognitive impairment, glaucoma, and macular degeneration. The association between eye diseases and Alzheimer’s was discussed in detail in our book titled, “The End of Alzheimer’s.”^m

Cardiovascular Disease



Go A et al. Circulation 2014;129:e28-e292

Figure 2.2. Increase in cardiovascular diseases since 1900.

Heart disease statistics offer both good and bad news. According to the Centers for Disease Control and Prevention (CDC), “Heart disease and stroke are among the most widespread and costly health problems facing our nation today, even though **they are also among the most preventable.**” The use of the term “preventable” implies that our personal environment, that is, self-selected behaviors cause this disease.

The CDC goes on to say, “Heart disease and stroke are the first and third leading causes of death for both women and men. They are also major causes of illness and disability and are estimated to cost the nation hundreds of billions of dollars annually in health care expenditures and lost productivity.

The number of people dying from heart disease has dropped in recent decades, thanks largely to the success of quit smoking initiatives and to a much lesser extent, advances in certain classes of medicines. From 2000 to 2010, death rates attributable to vascular diseases declined 31.0%. Yet in

^m https://www.amazon.com/End-Alzheimers-Differential-Diagnosis-Toward/dp/0692349855/ref=sr_1_1?ie=UTF8&qid=1475574637&sr=8-1&keywords=the+end+of+alzheimer%27s

2010, these diseases still accounted for almost a million American deaths, or 1 of every 3 deaths in the United States. ² The downward trend is greater in Europe than in America. ³

Commenting on the study's findings, Simon Gillespie, chief executive of the British Heart Foundation charity, said while the picture of heart disease mortality is improving "we are an awful long way from back-patting and hand-clapping". "More than 2 million people are battling coronary heart disease in the UK and while our work in science labs and improving prevention and care has made a huge difference, that's 2 million people too many," he said in a statement. **Sadly, the downward trend in deaths is starting to level off, indicating we have reach the full potential of our current prevention and treatment approach for this disease.**

Has medicine found a cure for cardiovascular diseases? Statins and other cholesterol lowering drugs to "treat" cardiovascular diseases are the most prescribed medicines in history. Beta blockers, ACE inhibitors and other drugs are targeting heart diseases. But are they treating symptoms or are they treating the root cause of the disease?

This is the new science on statins, from an article published in the most prestigious New England Journal of Medicine. ⁴

"Two well-done meta-analyses of statins for primary prevention showed no mortality benefit." "A Cochrane analysis showed a small reduction in all-cause mortality associated with statin use. However, the authors noted evidence of selective reporting of outcomes, failure to report adverse events, and inclusion of patients with cardiovascular disease and concluded that, "caution should be taken in prescribing statins for primary prevention among people at low cardiovascular risk." ⁵ In addition, we find the dismissal results of the Women's Health Initiative data surprising, considering that **this study showed an adjusted increase of 48% in the risk of diabetes among women receiving statins.**" ⁶

Statins have made the drug companies more money than any other class of drug, ever. Statins and your health are financially misaligned.

A deeper analysis on cardiovascular disease and its treatment is provided in Chapter 5.

Diabetes

Nearly 12 percent of Chinese adults (about 113.9 million people) are suffering from diabetes, according to a new study published in the Journal of the American Medical Association (JAMA). ⁷

Almost 26 million Americans have diabetes, 8.3 percent of the U.S. population. Of these, 7 million do not know they have the disease. In 2010, about 1.9 million people ages 20 or older were diagnosed with diabetes. ⁸

Almost 80 million Americans over the age of 20 have prediabetes. Up to 70 percent of them will go on to develop diabetes, but 90 percent don't even know they are at risk. In fact, as many as 28 percent of adults with full-blown diabetes don't know they have it, according to Edward W. Gregg, a senior epidemiologist at the Centers for Disease Control and Prevention. ⁹

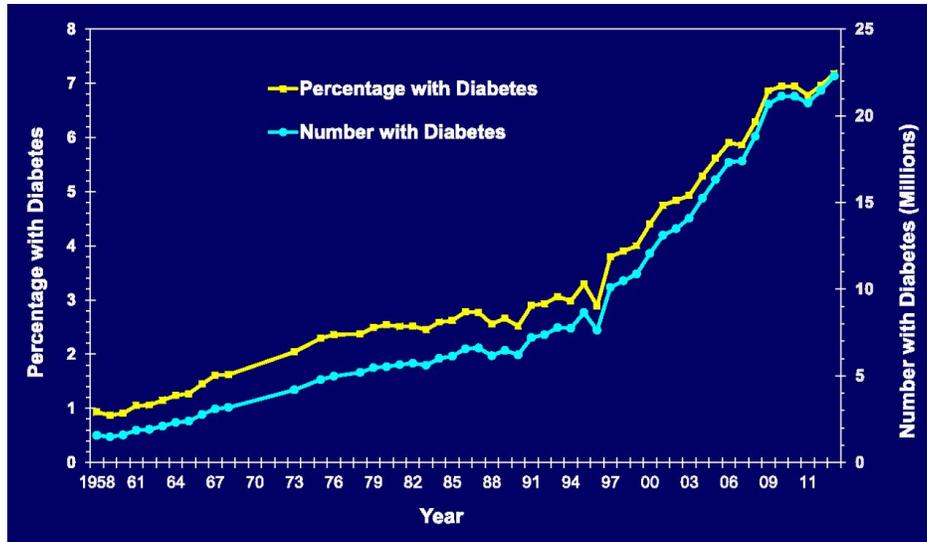


Figure 2.3. Increase in diabetes since 1958.

Would you like to know if you are one of the 7 million Americans walking around with diabetes but do not know it or the 72 million Americans at risk? Determining your risk for diabetes is not just about measuring blood glucose. Type II diabetes is an inflammatory disease that is associated with insulin resistance ⁿ The insulin resistance is compensated by the action of the brain by first regulating the pancreas to produce more insulin and then, as needed, your brain tells your liver to produce more glucose. Hence the level of insulin is increased first in people heading toward type II diabetes. If you want to know if you are heading for diabetes, the best test is fasting insulin, not a fasting glucose or A1C test. Eventually, as insulin resistance increases, blood glucose levels also rise. The elevated levels of insulin and glucose are actually protective as they make sure that the brain and other tissue in the body receive the proper energy-producing fuels for proper cellular function.

The best diabetes test is fasting insulin, not a fasting glucose or A1C.

At the root of insulin resistance is inflammation and its causes. A search of the medical literature reveals over 1.8 million research papers documenting the association. Each published research paper costs about \$500,000 to produce. Thus, us tax payers have shelled out:

\$900,000,000,000

Almost \$1 trillion has been spent on research showing the connection between inflammation and diabetes (insulin resistance) yet the only treatment we get are for lowering blood sugar! Why? (reread “Financial Misalignment” in Chapter 1 for a refresher on this topic)

The mechanism by which insulin resistance occurs is not well understood by your traditional doctor (how could it be, he/she was taught by a former cheerleader) thus modern medicine treats the symptoms, elevated glucose. However, those doctors and healthcare professionals who chose to dig deeper understand that constantly challenging our metabolism with “sugar spikes” leads to

ⁿ Insulin resistance is the decrease in the ability of insulin to facilitate the entrance of glucose inside the cells where it is metabolized to produce the energy the cell requires to function properly.

adaptations in our bodies. It is well appreciated that inflammation is part of that adaptation and fundamental to the disease. Thus measuring **for inflammatory parameters is critical to determining your risk.**^{10,11,12}

If you are one of the 7 million undiagnosed diabetics, you are relatively symptom-free. What is the chance your doctor will prescribe you tests for inflammation? The answer is nil. What is the chance he/she may order a blood glucose or insulin test? The answer is probable for glucose, unlikely for insulin, but neither test is useful for determining the cause of the disease.

Dr. David Perlmutter is arguably the top functional neurologist in American. In his book, "Grain Brain," Dr. Perlmutter shows research that normal blood glucose, but on the high side of normal, actually predisposes you to neurodegenerative diseases like Alzheimer's disease.¹³ There is a reason for the dramatic uptick in Alzheimer's and other degenerative diseases, and insulin resistance is one of many. And there are means to determine your risks. But, again, it is very difficult for you, the apparently healthy, to get the tests you need to determine your risks.

According to Dr. Perlmutter, even if you get tested, your doctor is probably going to tell you there is no risk if your blood glucose is any where in the normal range and these "quacks" (like Perlmutter and other functional medicine doctors) are trying to scare you. Your response should be, "why are diseases on the rise then, and what are you doing about it to help me, your patient?"

"Why are diseases on the rise then, and what are you doing about it to help me, your patient?"

Based on the trends in disease, are the treatments, thus the diagnoses for these chronic diseases meeting your expectations? We hope you do not find this chronic disease pandemic acceptable. A solution is for you to supplement your doctor's approach for these diseases.^o Indeed you can control or even reverse diabetes through lifestyle changes. For many, though, the first step is identification of the disease – at its earliest stages. That is where our chronic disease temperature plays an important role.

Cancer

There is good and bad news about cancer survival and deaths. The good news is that cancer death rates appear to be declining in recent years. The bad news is the way medicine "measures" cancer deaths have changed. It's a confusing subject that we attempt to clarify here. However, the take-home lesson from this exercise is that chemo/radiation/surgery has done little to change cancer mortality rates despite what you have been led to believe.

A paper titled, "measuring cancer survival in populations: relative survival vs. cancer-specific survival." Discusses the challenge of measuring cancer mortality.¹⁴ An excerpt from this paper is provided here:

"Two main methods of quantifying cancer patient survival are generally used: cancer-specific survival and relative survival. Both techniques are used to estimate survival in a single population, or to estimate differences in survival between populations. Arguments have been made that the relative survival approach is the only valid choice for population-based cancer survival studies because cancer-specific survival estimates may be invalid if there is misclassification of the cause of death. However, there has been little discussion, or evidence, as to how strong such biases may be,

^o We do not expect you to become a medical scholar. But you can gain specific knowledge that your doctor does not have. He/she is mired in the standard-of-care and asked to do too much in too little time. Also, your doctor has restrictions on what he/she can pursue – you don't. It is your health at stake.

or of the potential biases that may result using relative survival techniques, particularly bias arising from the requirement for an external comparison group.”

That was a confusing paragraph, but the take home lesson is that researchers and drug companies do not have a standard way to measure the success of their cancer treatments. Thus, we are being bamboozled by “lies, damn lies, and statistics.” To add to the confusion, here is an excerpt from Dr. Malcolm Kendrick’s book, “Doctoring Data.”¹⁵

“The word survival does NOT mean that you will actually survive (when it comes to cancer). In the world of cancer screening the term “survival” is taken to mean that you are still alive five years after the cancer was first diagnosed. Five year cancer survival rate is the measure used for almost all interventions in this area. Or to turn this around slightly, if you survive for five years after your initial cancer diagnosis, the statisticians will consider that you have been cured.”

“As a result of this, if a screening test picks up cancer five years earlier than would have happened, had it appeared through symptoms, the five-year survival/cure will automatically appear to be astronomically better. Especially with a slow growing cancer (such as prostate).”

Statistical mumbo jumbo is a manifestation of the drug company’s takeover of medicine. Thus, this trend began around 1980. The chart below reflects true cancer trends.

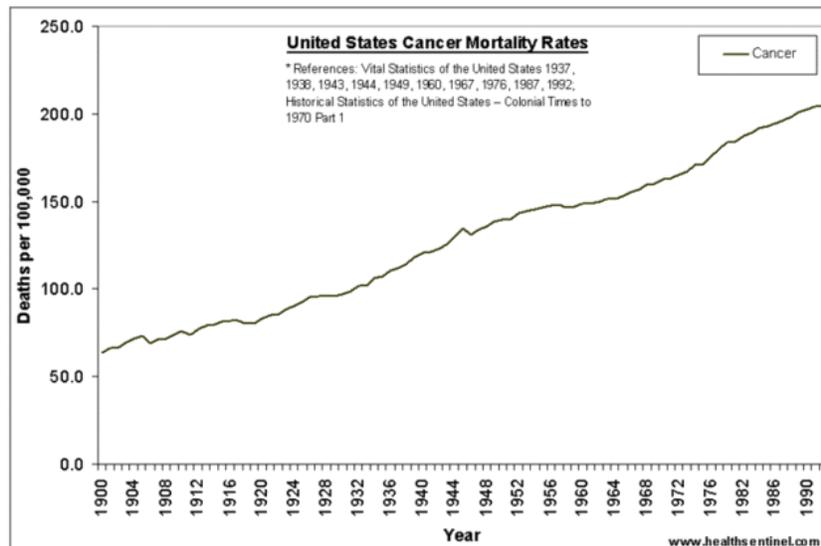


Figure 2.4. Increase in cancer rates since 1900.

Current Cancer Statistics:

Cancers figure among the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases and 8.2 million cancer related deaths in 2012.¹⁶ The number of new cases is expected to rise by about 70% over the next 2 decades. Among men, the 5 most common sites of cancer diagnosed in 2012 were lung, prostate, colorectal, stomach, and liver cancer. Among women the 5 most common sites diagnosed were breast, colorectal, lung, cervix, and stomach cancer.

Around one third of cancer deaths are due to the five leading behavioral and dietary risks:^p high body mass index, low fruit and vegetable intake, lack of physical activity, tobacco use, alcohol use.

^p We have a slightly different list. Low fat diets, lack of healthy fats, and other behaviors that lead to low immune system function and manifests inflammation and infection are the major factors in cancer risk. Low vitamin D status is an excellent indicator of high cancer susceptibility.

Tobacco use is the most important risk factor for cancer causing around 20% of global cancer deaths and around 70% of global lung cancer deaths.

Cancer causing viral infections such as HBV/HCV and HPV are responsible for up to 20% of cancer deaths in low- and middle-income countries.¹⁷ However, viral and other infectious causes of cancer are probably severely underdiagnosed thus underappreciated. The inflammation component of cancer points directly at infectious origins. A prime example is stomach cancers caused by H-pylori infection. World Cancer Report provides clear evidence that action on smoking, diet and infections can prevent one third of cancers and another third can be cured by properly understanding the cause of the cancer and not just treating the tumor.

Inflammation

Persistent, systemic inflammation is implicated as the root of practically all known chronic health conditions, including everything from rheumatoid arthritis, type II diabetes, and cardiovascular diseases to dementia and cancer. Modern medical research appreciates the connection between inflammation and disease, but clinical medicine is slow to catch up with the science. Thus doctors seldom test for inflammation.

Inflammation is the common thread of major chronic diseases that have invaded our society over the past several decades.

Cancer, in particular, is not regarded as a disease associated with inflammation. The cause(s) of cancer is presumed to escape the scrutiny of our immune system – thus cannot be detected by monitoring the health and activity of our immune system. Medical researchers know a very different story as illustrated by Table 2.1.

Disease:	Heart	Cancer	Alzheimer’s	Diabetes
Number of PubMed Research Papers	2,610,000	2,780,000	51,500	1,390,000

Table 2.1. Number of medical research articles in PubMed that address inflammation and cancer, heart disease, diabetes, and Alzheimer’s disease.

Undoubtedly this is an unexpected finding for many of you reading this because there is at least some discussion about inflammation and heart disease and diabetes by the main stream information outlets. Little is heard about inflammation and cancer. Even less is practiced regarding the connection between inflammation and cancer in clinics. C-reactive protein is one of the most common markers for inflammation as are white blood cell counts. Have you been screened for inflammation if you are concerned, have, or have had cancer?

To put this table into context the amount of research dollars spent showing a connection between cancer and inflammation is:

\$1.4 Trillion

I believe we have enough evidence to justify screening and testing populations for inflammation – especially for the early detection and prevention of cancer. Our clinics do, and the Chronic Disease Temperature focuses on biomarkers for inflammation.

Financial misalignment is again KILLING YOU!. And this has been known for a long time. Read the article titled, “Cancer docs profit from chemotherapy drugs,” published by NBC News and others.¹⁸ The article states, “Unlike other doctors, oncologists make most of their income by buying drugs

wholesale and selling them to patients at a marked up prices. Ethicists see a real problem with the structure. NBC's Rehema Ellis reports.”

It is well known that chemotherapy barely works. About 2.5% of those treated with chemotherapy receive any benefit. Most of them still die, but life is extended a few month. Now you know why they continue to be prescribed. This is a shameful situation. And, based on the research on inflammation, doctors and the drug companies know the truth but that choose to follow profit instead.

America’s Health Ranking in the World

America, when compared to other developed nations, enjoys a lifestyle that contributes to a body burden of inflammation. We also consume more drugs per capital compared to any other nation, those numbers being 50% of all pharmaceutical and 80% of all pain pills, while our population is only 5% of the world’s, Table 2.2,. Since we are getting all these great drugs, we must be more healthy compared to other nations that are not getting these goodies. Let’s see how it actually is working out.



* Market Size in Billion USD

Table 2.2. Top 10 pharmaceutical markets in the world.

A good place to start researching global health trends is at the Organisation for Economic Co-operation and Development (www.oecd.org). The mission of the (OECD) is to promote policies that will improve the economic and social well-being of people around the world. The amount of comparative health information collected and known at OECD the World Health Organization, and the Centers for Disease Control is daunting. A simple way to understand where American stands in comparison to other nations is to look at the ends of the spectrum – that is birth and death.

When it comes to birthing a baby, America has great hospitals, doctors, pre-natal care programs, pharmaceuticals to help with labor, eliminate pain, battle infections, and surgery to remove the baby in case of complications. Surely we have close to the lowest infant mortality rates on the planet. These assumptions could not be further from the truth. Figure 2.5 shows infant mortality rates for many developed countries. Our rate of mortality is astoundingly high, being above Poland, Cuba, Hungary, the Czech Republic, Slovakia, and all the nations we would consider civilized and developed.

Interestingly, the U.S. and New Zealand are at and near the bottom of this list. These are the only countries that allow direct-to-consumer (TV) ads for drugs. Coincidence?

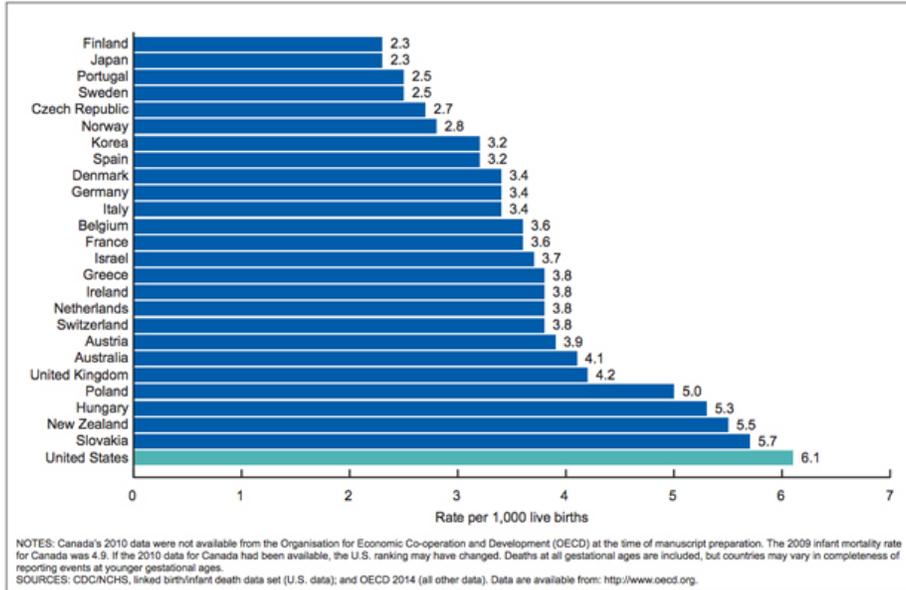


Figure 2.5. Infant mortality rate per 1,000 live births.

Our premature birth rates are comparatively worse. Figure 2.6 gives the percentage of preterm births compared to European countries in 2004. The U.S. ranks around 80th globally, tied with Thailand and Somalia! - Yes Somalia.

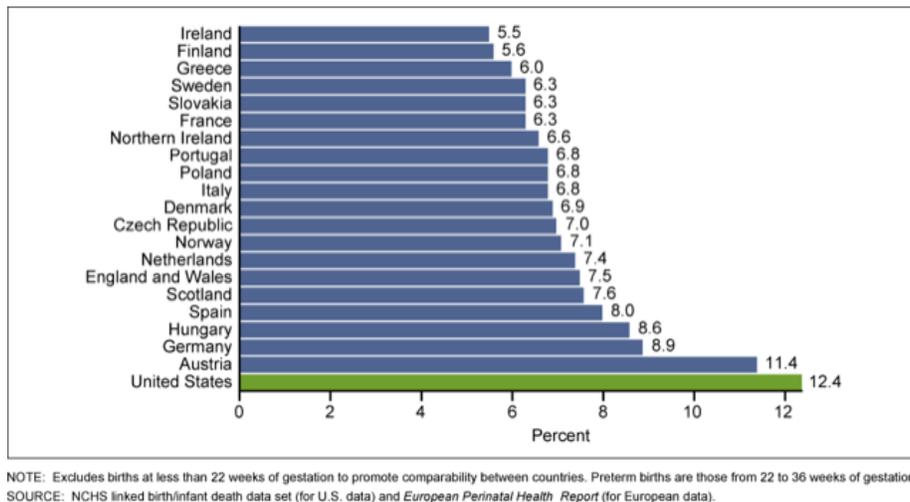


Figure 2.6. Premature birth rates by percentage of births.

Recently a group from San Diego, California boasted on national news that they were able to get their community premature birth rate down to 11.5%, well below the national average. Congratulations San Diego, you are still at the BOTTOM of the list. America's healthcare system is among the worse at helping introduce new, healthy life into the world.

How is America at keeping its population health? A good measure of “health span” is lifespan. The association between lifespan and health span is well described in a National Geographic article from May, 2013.¹⁹ Simply put, people who die at age 80 experience 19 years of declining health while those who die at 100 experience a mere 9 years of declining health. The centenarians experience 20 extra years of life and ENJOY an additional 30 years of good health.

People who live to 100, when compared to people who live to 80 – actually enjoy 30 more years of high quality life.

Figure 2.7 shows how the U.S. stacks up in lifespan. This is taken from the OECD.

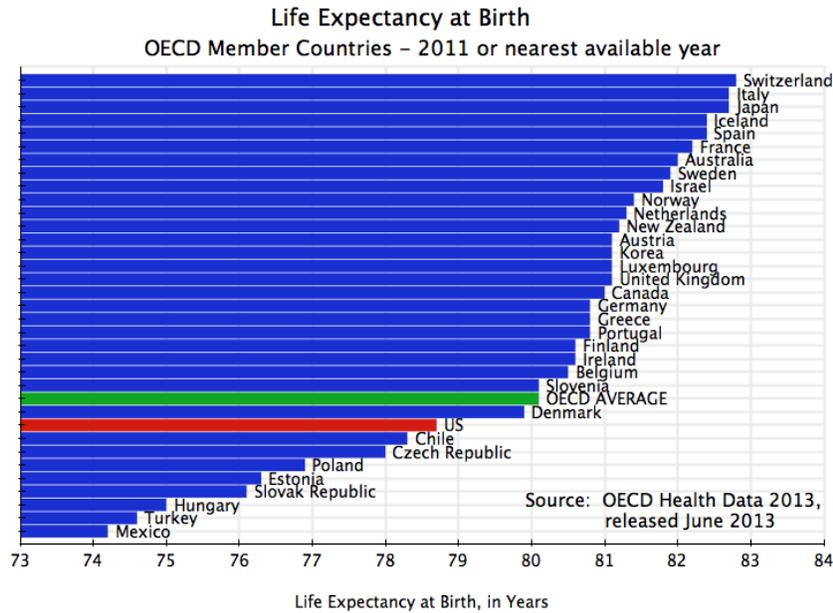


Figure 2.7. Life expectancy of people from developed nations.

Americans die sooner compared to people in other developed countries
 Americans suffer more declining health compared to most of the developed world.

For all that bad health, American spends the most money – by a wide margin, Figure 2.8. We are NOT getting what we are paying for. But healthcare executives are getting very very rich.

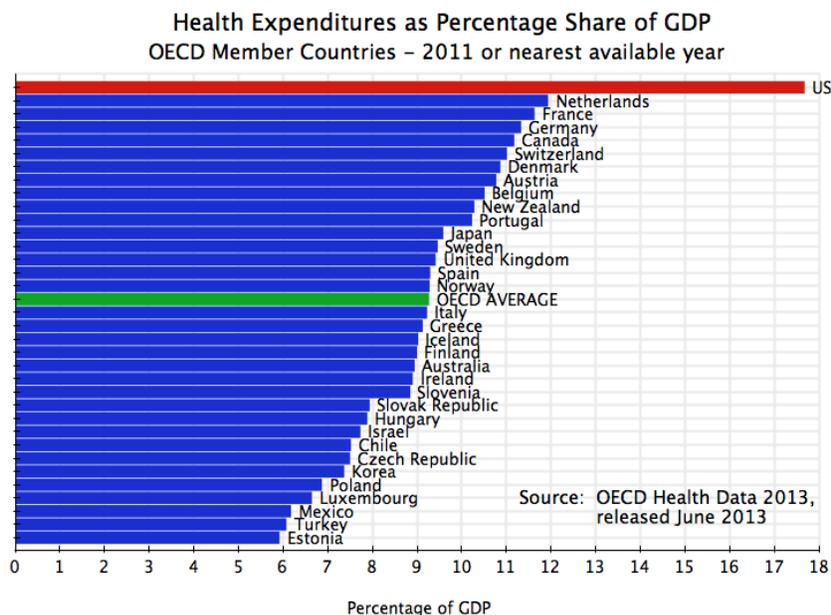


Figure 2.8. Health expenditures as % of total nation budget.

Books have been written on what is wrong with U.S. healthcare but the core reasons are really not that complicated. It all revolves around a combination of finances and regulation. Normally, a capitalistic approach contains costs and enhances quality. But healthcare fails both cost and quality.

Consider this simple question. Who delivers your healthcare? It is your doctor, of course, but is he/she in control or how your health is managed? The answer to this question is a resounding **NO**. Healthcare is the only business where the person providing the product, the doctors, has no control over product and pricing. The product is overregulated through ICD-10 codes – so much so that a doctor is hardly needed to carry out the standard-of-care.

Doctors pay (reimbursement) continues to decline. Doctors are beholden to the payer system. This is not capitalism. The consequence is, in order to make their expected living, pay for malpractice, office space, employees, medical staff and all the other requirements of their business, they must see more patients in less time. Doctors do have some choice but often make the one that favors reimbursement (handsome payment). That choice is to prescribe expensive procedures over less well reimbursed and more time-consuming health-creating practices. Surgery, as an example, never cures a disease, but garners a nice reimbursement. It is much more difficult to diagnosis the root cause of chronic pain and treat it than it is do perform surgery – as an example. Also America and only one other nation (New Zealand) allows direct-to-consumer drug advertising. The drug companies know they make \$2.50 for every \$1.00 spent on direct-to-consumer drug advertising. This is our fault for being fooled by Madison Ave.

A solution, just like the problem, is not as daunting as it may seem. Bring back capitalism to medicine. One way to do that is to replicate what some of the best thinkers and companies have done in the past. Take Proctor and Gamble Corporation, as an example. They perfected the concept of pull-through marketing. They make consumers very aware of the features and benefits of their products before they were widely available. Customers go to stores to obtain the products, that are not yet on the shelves. The customers request that the stores carry these products, so they do.

You can create a pull-through marketing revolution in healthcare. It's simple. Go to your current doctor (or find a new doctor) and demand to have your health risks properly assessed by evaluating inflammation and your immune system strength and activity. One way is to have them

take your chronic disease temperature. Now you have a measure of your health. Next, you work with your doctor to lower your chronic disease temperature. You will probably need to see a doctor who you accepts private payment only, but if enough people do this, the revolution will begin.

Sure - staying well may be expensive,
but look how expensive sickness is.

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Chapter 3 Inflammation



It is time to stop blaming inflammation for our diseases and ailments and face the hard facts about what inflammation really means. Inflammation, after all, is our immune system activated. ⁹ It is working for us! Sure it is plausible that there can be collateral damage from the inflammatory response and there are probably rare instances where the body truly attacks itself. But we believe that the blame is mostly misplaced. Claude Bernard, as brilliant a scientist and doctor ever know to this world astutely states:

“The experimenter who does not know what he is looking for will not understand what he finds.”

Our concern here is not with acute inflammation caused by a sudden traumatic event, but rather chronic, low-level inflammation that has a myriad of chronic diseases in its association. Chronic low-grade inflammation is generally the result of chronic, low-grade, often stealth infection. And the fundamental root of both the inflammation and infections are within your control. Only you can strengthen your immune system and hold the inflammation-infection monster in check. Here is what medical researcher know that your doctor does not:

Table 3.1 shows the result of a search of PubMed, the medical online database of medical research. There are 2,610,000 medical research papers that link heart/cardiovascular disease with inflammation. There are 2,540,000 medical research papers that link heart/cardiovascular disease with infection.

⁹ Inflammation (Latin, *īnflammō*, "I ignite, set alight") is part of the complex biological response of vascular tissues to harmful stimuli, such as pathogens, damaged cells, or irritants. Inflammation is a protective attempt by the body to remove the cause of the attack on the body and to initiate the healing process. Inflammation is not a synonym for infection, but it is very often associated with infection. Although a microorganism causes infection, inflammation is one of the responses we have to the pathogen. Inflammation is considered a mechanism of innate immunity, as compared to adaptive immunity, which is specific for each pathogen. There are two classes of inflammation that can have similar or the same causes, acute inflammation and chronic inflammation.

Disease	Heart / Cardiovascular	Cancer	Diabetes / Metabolic	Alzheimer's & Dementias
Inflammation	2,610,000	2,780,000	2,480,000	484,000
Infection	2,540,000	2,730,000	2,650,000	424,000

Table 3.1. Comparison of the association between diseases, inflammation, and infection.

Notice that in all the major categories of diseases of today, the research community looks for and finds essentially infection and inflammation at about the same level of connectedness.

Coincidence? or

Is inflammation and infection attached at the disease “hip?”

Chronic low-grade inflammation is generally the result of chronic, low-grade, often stealth (occult, ectopic) infection

Are you surprised by the connection between inflammation, infection and cancer? How about the same connection for diabetes and Alzheimer’s? Your doctor is, but medical researchers around the globe are not. And, someone is funding this research. All tolled, this research has cost:

\$4,000,000,000,000

\$4 trillion

Do you really think this connection is unknown, or just suppressed?

Chronic Infection Causes Chronic Inflammation

Dr. Gail Cassell has a distinguished career. She is involved in drug development and a visiting professor in the Department of Global Health and Social Medicine at Harvard Medical School. Almost two decades ago, as Vice President and Distinguished Lilly Research scholar for Infectious Diseases at Eli Lilly and Company, she published a most interesting paper. It is titled, *“Infectious Causes of Chronic Inflammatory Diseases and Cancer.”*¹ To date, only 69 authors have cited this work, a very small number. Medicine appears to be somewhat in denial about a (not the – it’s NEVER one thing in chronic disease) root-cause of chronic inflammation. Here are excerpts from Dr. Cassell’s abstract.

“Powerful diagnostic technology, plus the realization that organisms of otherwise unimpressive virulence (they do not cause immediate disease or high levels of inflammation) can produce slowly progressive chronic disease with a wide spectrum of clinical manifestations and disease outcomes, has resulted in the discovery of new infectious agents and new concepts of infectious diseases.”

“The genetic makeup of the infecting agent is indicating that a number of chronic diseases of unknown etiology (cause) are caused by one or more infectious agents. One well known example is the discovery that stomach ulcers are due to *Helicobacter pylori*. Mycoplasmas may cause chronic lung disease in newborns and chronic asthma in adults, and *Chlamydia pneumoniae*, a recently identified common cause of acute respiratory infection, has been associated with atherosclerosis (heart and vessel diseases).” (Author’s note: *chlamydia pneumoniae* is also strongly implemented in Alzheimer’s disease.²)

“A number of infectious agents that cause or contribute to neoplastic diseases (cancers) in humans have been documented in the past 6 years. **The association and causal role of infectious agents in chronic inflammatory diseases and cancer have major implications for public health, treatment, and prevention.**”

McCully and Ravnskov clearly explain how microorganisms are at the root of heart disease. We are all taught that the “cause” of heart disease is LDL cholesterol, but, considering that over ½ of first-time heart attack sufferers have normal cholesterol, this is hard to fathom. McCully et. al. explain this conundrum.

Dr. Kilmer S. McCully is the Chief of Pathology and Laboratory Medicine Services for the United States Department of Veterans Affairs Medical Center. McCully was the first to propose the homocysteine theory of cardiovascular disease, and is the author of the book, “*The Homocysteine Revolution.*” He is a thoughtful man and historian. His path to brilliant discoveries and conclusion was not an easy one as highlighted in *The New York Times* article titled, “*The Fall and Rise of Kilmer McCully.*”³

You see, McCully knew that cholesterol was not at the root of cardiovascular disease way back in the early 1970s, but Harvard didn’t want this “convenient” theory uprooted. They were working with drug companies on new, profitable drugs. So not only did they fire Dr. McCully, but they blacklisted him. Dr. McCully had to travel far from his home to obtain employment. Harvard was and continues to be a despicable institution filled with greed and ego – with some exceptions, of course. But the most prestigious at Harvard, in medicine at least, are the most corrupt.

In 2009, along with his coauthor, Uffe Ravnskov, he authored a “Review and Hypothesis” on how infection and LDL cholesterol contribute to heart disease.⁴ Here he gently presented six facts that dispel the notion that LDL is bad. He also reminds us that vulnerable plaques, the type that kill or debilitate us by way of heart attack or stroke, do NOT form from inside a blood vessel as depicted on TV and at your doctor’s office. Instead they start on the outside of the vessel and work their way inside. Dr. McCully does not get full credit for this discovery as he was scooped by at least 140 years by a German doctor by the name of Koester.⁵

Dr. Trempe explains this “new” concept of heart disease this way:

“Heart disease is a disease of the small vessel of the large vessel.” Say this 3 times fast and then give it some deep thought! This means that large vessel walls are large enough to have their own blood supply. These smaller vessels that support the structure of large vessels become diseased first, and lead to the disease of the larger vessels – and eventually lead to heart attacks and stroke.

LDL cholesterol is part of the immune system.
It helps control and sequester harmful pathogens (bacteria and viruses).

Here are some key excerpts from Dr. McCully’s 2009 paper:

“A century ago, bacteria and viruses were considered as the main cause of atherosclerosis, a view that was based mainly on post-mortem observations. Thus Thayer reported a high frequency of arterial lesions in patients who died from typhoid fever and a high prevalence of hardened radial arteries in those who survived.⁶ Wiesel found an association between the degree of atherosclerosis in people who had died from an infectious disease and the length of the preceding infection.”⁷

“Ott et al identified fragments from >50 different microbial species within atherosclerotic plaques (heart disease), but not a single one in normal arterial tissue. ⁸ On average, each patient had microbial remnants from 12 different species; some patients had more, some had fewer, and other investigators have found various virus species as well. ^{9,10,11}

On average, 12 different species infectious species in their diseased tissue and other investigators have found various virus species as well.

Quarterbacks – are doctors testing for low-grade bacterial and viral infections as part of either a routine or deep investigatory examination when you have diseases of “unknown origin?” An argument that modern medicine uses against infection is that antibiotic-based clinical trials in heart disease fail. Let’s explore if this is true and, if so, why. We continue with more excerpts from Dr. McCully’s work.

“It is highly unlikely that a single antibiotic could eliminate >50 different microbial species. It is not even likely that antibiotics could eliminate *Chlamydia pneumoniae* (a common infection attributed to vessel disease), because this species is able to survive inside living cells, where they are resistant to the effects of antibiotics. ¹² Furthermore, antibiotics are generally ineffective against viral infections. Whether the total burden of multiple microbial invasions or the effect of a single pathogen is the key to progression remains to be determined.” ¹³

Roxithromycin ^r is a very good drug because of its ability to control inflammation and to eliminate certain hard-to-treat intracellular (inside of cells) infectious species. A study looked at the ability of roxithromycin to prevent recently implanted stents from becoming blocked again. ¹⁴ The study concluded, “Non-selective use of roxithromycin is inadequate for prevention of restenosis after coronary stenting.” However, when you dig into the guts of the paper you find this quote, “With respect to high-grade restenosis, roxithromycin conferred a strong and statistically **robust** preventive effect in patients with the highest *Chlamydia pneumoniae* titres.”

What the results from this study tell us is when a proper diagnosis is made (*Chlamydia pneumoniae* infection), and the proper treatment is used (roxithromycin), the treatment works. Detecting and treating intracellular infectious species, that arguably are the cause of much low-grade inflammation we suffer as a society, is no fools game. That’s why we keep repeating the quote from Claude Bernard about experimenters not understanding the results of their studies.

For the sake of perspective for your life, here are the diseases and conditions likely linked to low-grade chronic inflammation and infection:

1. Chronic pain including pain in the joints and arthritis.
2. Autoimmune diseases like Lupus and Rheumatoid arthritis
3. Cardiovascular diseases
4. Cancers
5. Diabetes and other metabolic disorders

^r Roxithromycin is not available in the United States. A closely related medicine is Clarithromycin that goes by the common name, Biaxin.

6. Mood disorders including schizophrenia, sleeplessness, antisocial behavior, autism, ADHD, suicidal tendencies, addiction, and depression
7. Alzheimer's, Parkinson's, dementias, and mild cognitive impairment.
8. Oral cavity disease (even loss of height with age is tied back to infection – see Chapter 7)
9. Stomach-related issues
10. Eye diseases such as glaucoma, cataracts, and macular diseases

As you see, inflammation and infection are at the base of most of the modern conditions that impact all our health daily – and it's being ignored. No wonder chronic disease is expanding, not contracting.

Drs. William Mitchell and Charles Stratton from Vanderbilt School of Medicine spent years studying the life cycle and treatment of one infectious species, chlamydia pneumoniae. They have several pending and issued patents on the diagnosis and management of Chlamydia species. Here is an abstract and excerpts from one of their patents.¹⁵

“The present invention provides a unique approach for the diagnosis and management of infections by Chlamydia species, particularly *C. pneumoniae*. The invention is based, in part, upon the discovery that a combination of agents directed toward the various stages of the chlamydial life cycle is effective in substantially reducing infection. Products comprising combination of antichlamydial agents, novel compositions and pharmaceutical packs are also described.”

The doctors make some very important points:

- A combination of agents (antibiotics mainly) are required to treat the infection.
- Chlamydias have different “stages” of life and different forms. Treatments must target the prevailing stage or form to be effective.
- Treatments mostly likely only reduce the infection, but not cure it. Healthy people may carry Chlamydias forever, but when healthy, the infection does not impact health.
- When you become unhealthy, you also become vulnerable to the growth (proliferation) of the infection. Thus, infectious species like chlamydia pneumoniae are referred to as “opportunistic.” They lie in waiting in your body for that right moment.

Regarding the many forms of Chlamydias, Stratton et. al. offer the following explanation. “Members of the chlamydial genus are considered bacteria with a unique biphasic developmental cycle having distinct morphological and functional forms. This developmental growth cycle alternates between 1) intracellular life forms, of which two are currently recognized, a metabolically-active, replicating organism known as the reticulate body (RB) and a persistent, non-replicating organism known as the cryptic phase; and 2) an extracellular life form that is an infectious, metabolically inactive form known as the elementary body (EB).

The Vanderbilt team make it clear that detecting and treating this one bacteria is challenging. Recall from the McCully paper that, on average, 12 infectious species are found in diseased tissue. Who is analyzing for all these species and then how can we expect treatment to work?

J. Thomas Grayston, Professor Emeritus of Epidemiology at University of Washington School of Public Health, wrote an editorial in the journal *Circulation* in 2003.¹⁶ His comments are in regard to treatment of cardiovascular disease, presumed caused by microbes, with antibiotics. He found that the clinical trials involving antibiotic treatment were poorly designed, thus doomed to failure. He stated:

“I have previously described the errors in study design and the inadequate treatment course of this trial (referring to the ROXIS clinical trial). The short antibiotic courses used in the London and ROXIS studies influenced the treatment course in a number of subsequent studies. This was despite my efforts in cardiology journals in 1998 and 1999 to educate cardiologists about the microbiology of Chlamydia and treatment requirements for chronic Chlamydia infection.”^{17,18}

“There is a large body of experience with antibiotic treatment of chronic Chlamydia trachomatis and Chlamydia psittaci infections, the other Chlamydia species that infect humans. Successful treatment has been uncommon and has required vigorous, long-term, carefully controlled antibiotic administration. The life cycle of Chlamydia explains why treatment is difficult. The infectious, extra cellular, nonreplicating form of the organism (elementary body) is not susceptible to antibiotics. It may remain viable in the body for weeks to months before reinfesting a susceptible cell. This is why eradication of the organism after acute infection is difficult. Furthermore, the intracellular replicating form (reticulate body) that is susceptible to antibiotics is capable of entering a “persistent” phase for an indeterminate time that is not susceptible to antibiotics.”

“Based on experience treating chronic infections and knowledge of the life cycle of the organism, I recommended that the treatment course in clinical trials with coronary heart disease be for one year.”

A Small Sampling of Opportunistic Pathogens

McCully documented that as many as 50 microbial species are involved in cardiovascular diseases. Here we point out just a couple to put the infection/inflammation/disease concept into perspective. This section is titled, “A Sampling of Opportunistic Pathogens.” The word “opportunistic is used because we all live with pathogens (bacteria, virus, and fungi). Something triggers a bacteria, virus, or fungi to go from benign (physiological) to harmful (pathogen). That something is our health – more specifically – the health of our immune system. Thus, two different people may be infected with a bug, but one will stay healthy and the other will become sick. The difference lies in the strength of their immune system. And the strength of their immune system is directly connected to how well that person took and takes care of their own health.

Two different people may be infected with a bug, but one will stay healthy and the other will become sick. The difference lies in the strength of their immune system.

C. pneumoniae (Chlamydia pneumoniae, Chlamydophila pneumoniae): This infection is ubiquitous. Virtually everyone is infected at some point in life, and reinfection occurs commonly. Antibody prevalence (the diagnosis for the presence of the infection) increases rapidly at ages 5 to 14, reaches 50% at the age of 20, and continues to increase slowly to 70% to 80% at ages 60 to 70.¹⁹ The 70% - 80% of 60 year olds with *C. pneumoniae* are not sick, they are simply carriers of the bug. They may never become ill due to this pathogen. But, if their immune system weakens, this opportunistic pathogen is ready to take advantage of that condition and proliferate – causing disease.

Toxoplasmosis: The Center for Disease Control (CDC) is concerned about Toxoplasmosis and its health consequences. Toxoplasmosis is an infection due to the parasite *Toxoplasma gondii*. According to the CDC, Toxoplasmosis is considered to be a leading cause of death attributed to foodborne illness in the United States. More than 60 million men, women, and children in the U.S.

carry the *Toxoplasma* parasite (and it likes brain tissue), but very few have symptoms because the immune system usually keeps the parasite from causing illness.

Toxoplasmosis can come from eating raw meat. Toxo infection exacerbates schizophrenia and other brain diseases.

Women newly infected with *Toxoplasma* during pregnancy and anyone with a compromised immune system should be aware that toxoplasmosis could have severe consequences. Toxoplasmosis can cause serious problems for an unborn baby. During early pregnancy, it can lead to miscarriage. If a pregnant woman catches toxoplasmosis, her unborn baby can develop water on the brain (hydrocephalus) or brain damage. It can also damage the baby's eyes or other organs. At birth, some babies affected by toxoplasmosis have no obvious problems. But these babies may develop symptoms during the next few months or years, such as:

- damage to the eyes
- hearing problems
- learning difficulties

Sadly, some babies are stillborn or survive only a few days after birth as a result of toxoplasmosis.

Toxoplasmosis is considered one of the “Neglected Parasitic Infections,” a group of five parasitic diseases that have been targeted by CDC for public health action. By the way, the CDC created this target a decade or more ago and still nothing is being done to educate the public or doctors. I suggest you reread Chapter 1, particularly the section on financial misalignment.

What does this information mean in the context of your health? Potentially deleterious infectious species are present in many (all?) of us. Toxoplasmosis is present in 1/6th of Americans and there are many more “latent” bacteria like Toxoplasmosis that are not well understood or appreciated as causes of disease. Thus they are not tested for or detected.

These bacteria are often not active, or at least are not present at clinically significant levels, in most people because of their healthy immune systems. People with inflammation have immune systems that are active and possibly compromised. These individuals are the ones susceptible to the adverse consequences of bacterial and other pathogenic infection. It is in these inflamed “hosts” (the host is you and me) in which the bacteria are opportunistic and proliferate, causing disease. Simple blood tests that screen for inflammation can alert those of us at highest risk for current or future disease exacerbated by these infections. Our Chronic Disease Temperature is a screening tool for inflammation.

The entire purpose of the Chronic Disease Temperature™ is to detect chronic inflammation in our bodies as early as possible. This inflammation is very often tied to harmful pathogens that, when detected early, can be effectively treated – restoring the person to good health.

Tuberculosis: One-third of the world's population is thought to be infected with *M. tuberculosis*,²⁰ with new infections occurring in about 1% of the population each year. As of 2007, an estimated 13.7 million chronic cases of TB were active globally.²¹ The rate of tuberculosis varies across the globe; about 80% of the population in many Asian and African countries tests positive in tuberculin tests, while only 5–10% of the United States population tests positive.²² More people in the

developing world contract tuberculosis because of a poor nutrition and impaired immune systems that has been accentuated by high rates of HIV infection and the corresponding development of AIDS.

Note that many people have the tuberculosis bacteria but relatively few show clinical symptoms of the diseases of tuberculosis. In fact only 0.21% of those infected with tuberculosis actually show diseases symptoms. What prevents 99.79% of people from having disease is healthy immune systems. Those with the disease have a compromised immune system, suffer immune system decay (immunosenescence) and/or suppression. These people have more activation of their innate immune system to control infection as seen through an increase in inflammation. Note that inflammation is a key to diagnosis, but not treatment.

Borrelia burgdorferi (Bb): Do you know what this causes? If so – kudos, you are well studied in infectious disease or were diagnosed with Lyme disease. In 1981, this causative agent of Lyme disease was first identified. Bb is from the general class of bacteria called spirochetes due to their spiral shape. They are also considered “obligate” like other bacteria connected to chronic diseases, because they are “obliged” to us (their hosts) for energy. They do not synthesize their own.

Bb are microaerophilic (requiring oxygen to grow but not as much as is found in the atmosphere) and slow-growing, the primary reason for the challenges often experienced when diagnosing Lyme disease. This disease has great “strain diversity,” that is, multiple bacterium are associated with Lyme, than previously estimated.²³ The strains differ in clinical symptoms and/or presentation as well as geographic distribution.²⁴

In the U.S. we test for only 1 strain of the Lyme bacteria. If you are “free” of the bacteria, based on lab testing in the U.S., and you have symptoms of disease, are you really “free,” or are the tests performed on you inadequate? One way to test for bugs that doctors do not appreciate is to test for inflammation. But tell your doctor that you want to know what your levels are, even if he/she considers them “normal.”

Normal blood labs for inflammation may mean “healthy” to your unaware doctor, but it may also mean low-grade chronic inflammation caused by the Lyme bug, for example. The limits your doctor is using is for acute inflammation. The upper limits for chronic versus acute inflammation must be viewed as different, but they are not. Remember, chronic disease incubate and develop slowly over years. Doesn’t it make sense that the inflammation associated with these diseases is also low especially early on in the disease process? Of course, this is exactly when medicine SHOULD be diagnosing these diseases.

Does infection cause disease? The answer is a decided “NO.” But infection is very much involved in the disease process. An apt way to describe the involvement of infection in disease is it “strikes the final blow.” Many microbial species are present in our bodies at all times, most being synergistic – in our gut for example, aiding in digestion. Infection, when allowed out of its pen due to a weakened immune system, can accelerate and exacerbate the effects of the other processes caused by our weakened state of health.

Infection is not the cause of many chronic diseases – but it often “strikes the final blow.”

Quarterbacks: Although fighting these stealth infections may seem daunting, there is a simple solution. Do what you know is right, now, to boost your immune system and protect your health. Your immune system is your best defense against any germ and disease. The best drugs simply

augment what your immune system is trying to do anyway. Focus on anti-inflammatory, pro-immune system foods, supplements, and habits.

There are literally hundreds of illnesses associated with chronic inflammation that medicine has classified as unique and unrelated, when in fact they are all products of the same underlying imbalances inside our bodies. Chapter 10, “Unified Disease Theory” covers this concept. When the root causes of these imbalances are properly addressed, the chances of disease taking hold and producing or increasing inflammation is significantly reduced. Paul Clayton, author of “Out of the Fire,”²⁵ reminds us that our healthy ancestors consumed levels of micro- and phytonutrients at approximately ten times the levels considered normal today and had but 10% of the chronic diseases that afflict us now.

Can you eat as well as the 1870 poor of England? If you can you too can avoid chronic diseases of inflammation/infection. However, these Brits were very physically active as well. To be healthy and avoid proliferation of harmful infectious species in our bodies we have to relearn both lessons from our ancestors.

Inflammation and Aging

Yale University researchers teach us, “Infectious diseases remain an important cause of morbidity and mortality in aged adults, who are more susceptible to severe infections, take longer to recover from infections and are frequently less responsive to vaccination. This is in part a consequence of immunosenescence or the deterioration of the immune system with age.”²⁶

Many rules regarding health maintenance change as we age. Higher blood pressure readings are more optimal for the older brain due to aging vessels. Cholesterol levels much higher than accepted in standard practice leads to good health and longevity in the silver set. The same is true regarding inflammation. The reason is immunosenescence, that is the gradual deterioration of the immune system brought on by natural age advancement. There is no curing immunosenescence but here we discuss many ways to detect and curb its acceleration.

One consequence of immunosenescence is, as we age, our body burden of inflammation trends higher compared to when we were younger and healthier. This is not a bad thing, it is our older bodies on the defensive for our good health. Older people with elevated inflammation are not just the sick, but the healthy. A research group from Italy state, “The increased production of pro-inflammatory cytokines by stimulated mononuclear cells of healthy aged subjects may be relevant to several aspects of age-associated pathological events...”²⁷ This elevated level of inflammation is now our “new normal” not to be fought, just like older people are best off with slighter higher blood pressure and cholesterol. What we do want to fight is levels of inflammation, caused by stealth infection, above our age-dependent new normal.

Here is one simple example of what happens when we age and why a “new normal” of higher inflammation in our bodies is a good thing. Tissue in older people become leaky. Picture the cobblestone sidewalks of old Beacon Hill in Boston. Centuries ago, the cobbles were laid down in straight lines and tightly together. Today, their surfaces are irregular, with grass and weeds sprouting up in between. This is what is happening with cells in our body. In addition, tissue thins with age. We have all seen the “onion skin” of people in their 90s. This is true for our skin, which is difficult to measure. However, this is also true of tissue in the eye, which we can measure with great precision using laser light.

The lining of our bowel thins and becomes more leaky as we age. When this happens, pathogens are able to pass into our blood stream. What does our body do in response? It activates our immune system to “control” the bacteria that is now slowly being released into our blood. We observed this as an increase in baseline inflammatory markers. We cannot treat the leakiness of the lining in our

bowel, so our body creates a survival adaptation – that being more immune activity as detected by inflammatory markers. Antioxidants and other traditional anti-inflammation drugs and supplements are the wrong thing to take to quell this inflammation. We need a little excess inflammation to maintain good health when we are older.

Older people particularly should avoid antioxidants because they need “inflammation” (the immune system using its oxidative powers) to protect them.

We do, of course, have control over our “baseline” inflammation burden. When we maintain better health, immunosenescence is slowed, and our immune system is stronger, thus our inflammation baseline is lower. No two seniors are identical, and those with lower baseline inflammation were most likely doing the right things to protect their good health for a long time. Regardless of age, strategies to improve health and lower inflammation – but not strategies to “treat” inflammation directly, will usually achieve this result.

Italian researchers used the term inflammaging in 2000, to describe the burden of inflammation as we age.²⁸ A subsequent paper, published in 2007 had the provocative title: *“Inflammaging and anti-inflammaging: A systemic perspective on aging and longevity emerged from studies in humans.”*²⁹ The abstract of that paper is included here:

“A large part of the aging phenotype, including immunosenescence (slow deterioration of the immune system), is explained by an **imbalance between inflammatory and anti-inflammatory networks**, which results in the low grade chronic pro-inflammatory status we proposed to call inflammaging. Within this perspective, healthy aging and longevity are likely the result not only of a lower propensity to mount inflammatory responses but also of efficient anti-inflammatory networks, which in normal aging fail to fully neutralize the inflammatory processes consequent to the lifelong **antigenic** (disease causing) burden and exposure to damaging agents.

Such a global imbalance can be a major driving force for frailty and common age-related pathologies, and should be addressed and studied within an evolutionary-based systems biology perspective. Evidence in favor of this conceptualization largely derives from studies in humans. We thus propose that inflammaging can be flanked by anti-inflammaging as major determinants not only of immunosenescence but eventually of global aging and longevity.”

Here inflammatory networks really refers to the causes of inflammation including poor nutrition, sedentary lifestyles, and the other usual suspects we have discussed in this chapter like infection. Toxicity, especially from pesticides, herbicides, and heavy metals must also be considered. Anti-inflammatory networks are the components of our immune system working to manage the “assault.” The Italians refer to “efficient anti-inflammatory networks” that neutralize “lifelong antigenic burden.” What is an antigenic burden? An antigen is a molecule that induces an immune response in the body. It is a cagey scientific way to say pathogen (bacteria, virus, or fungus) or toxin (metals and other poisons, many of which are modern manmade molecules we encounter in our homes every day).

The Italians go on to say “inflammaging can be flanked by anti-inflammaging as major determinants not only of immunosenescence but eventually of global aging and longevity.” What this means in practice is exercise, eat right, behave, take your cod liver oil, vitamin D, magnesium, and K2 as a starter. Remove toxicity from your body by eating green leafy vegetables and consuming minerals

that are deficient in our normal foods, again, just as a starting point. There is no silver bullet simple solution but all too few of us are doing the simple things that can to support our immune health.

The causes of chronic low-level inflammation may be threatening your health at this very moment, without you realizing it. Of the ten leading causes of mortality in the United States, chronic, low-level inflammation contributes to the pathogenesis of at least seven. These include heart disease, cancer, chronic lower respiratory disease, stroke, Alzheimer's disease, diabetes, and nephritis (inflammation of the kidneys). In general, the suffix "itis" infers some type of inflammatory disorder. The good news is that there are low-cost tests that can assess the inflammatory state within your body. Chapter 4 on the eye provides the easiest first line diagnostic evaluation. Other tests that involve evaluation of your blood, that can detect the chronic inflammatory process decades before disease is likely to strike, are provided here.

Inflammation Markers

What are the methods for detecting inflammation (and stealth infection), preferably at its earliest stages? The body, through the immune system, triggers a range of chemical and biochemical reactions to the assaults upon our bodies. It is the markers of inflammation that help us diagnose and understand diseases. It is very clear that, **since chronic disease progresses for years to decades before showing clinical symptoms, and silent chronic inflammation parallels disease, these markers appear in the blood and elsewhere in the body long before clinical disease.**^s

Microbiologists estimate that only 10% of bacteria species that exist have been identified. This heightens the need to test for inflammation because finding an offending pathogen may be challenging.

In modern conventional medicine, tests cannot be ordered without a diagnosis because without a diagnosis, insurance will not cover tests. Prevention is still a concept in medicine, especially in American. And in some states, an individual cannot order their own blood tests to evaluate their own health under any circumstances. A signed doctors order is required! That presents a significant problem when it comes to measuring chronic low-grade (silent) inflammation, as most of us with this affliction have no symptoms upon which to create a diagnosis. However, there are ways to have these tests done in the United States. Be aware of new laws that are likely to be promoted in the future that further reduce the rights of individuals to access their own well being with or without the help of (and payment to) a physician.

There is no single biological process, as part of the immune response, which triggers inflammation that is definitive for complex chronic diseases of aging. However, evaluating the results of many tests, with emphasis on those of the blood, help us paint a more comprehensive diagnostic picture and provide clues for treatments even in the apparently well. This is the basis of our chronic disease temperature™.

Blood Tests:

This section covers the tests that will help you determine your risk for chronic disease. Some of these tests are routine, while others are seldom ordered. But all of them contribute to an understanding of your current and future chronic disease risk. You will find out from subsequent

^s "Clinical" disease means when the disease finally emerges by showing signs and symptoms.

chapters, new interpretation of a few of the “gold standard” tests are in order when evaluating their predictive power on your good long-term health.

We are defining “**new normal**” values for some old tests – to help you better define and protect your health. Also, some of these tests are considered “non-specific,” but disease, by the way is also non-specific. Humans define categories. We confront this “non-specific” argument all the time.

Consider this simple example. C-reactive protein is elevated in the case of trauma – for example it a stub my toe. In a couple of days, the value settles back down to baseline. It is also elevated slightly, but chronically, in someone with vascular inflammation. Vascular inflammation is connected with hundreds, if not thousands of so-called diseases. This means, elevated C-reactive protein is non-specific. Wouldn't you like to know if a marker, tied to hundreds of diseases is elevated in your body? Of course, the drug companies have not develop a neat little drug to lower C-reactive protein. Now you know why this is NOT a common test – while cholesterol, for example, is.

In the case of C-reactive protein and other markers that go up with an “acute” event, like trauma, it is important to obtain more than one value over a period of weeks or months. This eliminates the confusion in diagnosing a one-time event or a chronic, persistent, underlying problem. If the marker is up well beyond it's “acute phase” behavior, it implies a chronic conditions. Later in this chapter we present the life cycle of many of these markers when there is no chronic underlying condition.

Homocysteine. This is a metabolic by-product of methionine metabolism. Progressively elevated blood levels of homocysteine are a documented risk marker for cardiovascular events and Alzheimer's disease. Curiously, the standard-of-care continues to raise the upper limit of normal for homocysteine. It used to be around 12.5 and now it is 15. Also interesting, the upper limit for cholesterol continues to go down. Homocysteine is a much better predictor of your future health compared to cholesterol but cholesterol has a simple drug treatment. And that treatment happened to be the biggest selling drug category of all time. What do you conclude from this?

C-Reactive Protein (hsCRP or CRP). This is one of a number of acute phase reactant proteins that increases in response to inflammatory stimuli. We refer to the CRP value as a measure of your chronic vascular (vessel) inflammation. No one parameter, like CRP, is accurate at assessing you chronic disease burden, but CRP is one of the most useful. In large epidemiologic studies, elevated levels of CRP have been shown to be a strong indicator of heart and circulatory diseases.

Complete Blood Count with Differential (CBC). Parameters obtained in this test tell a lot about immune system activity by measuring the levels of your health-defending while blood cells. The most useful data obtained from the CBC with differential includes:

- **White blood cell (WBC, leukocyte) count.** White blood cells are part of your immune system. White blood cells protect the body against infection. If an infection develops, white blood cells attack and destroy the bacteria, virus, or other organism. White blood cells are bigger than red blood cells but fewer in number. When a person has a bacterial infection, the number of white cells rises very quickly. The number of white blood cells is sometimes used to find an infection or to see how the body is dealing with cancer treatment or to determine if an immune system disorder exists. We discussed new “healthy” ranges in detail in Chapter 5.
- **Neutrophil granulocytes.** These are generally referred to as either neutrophils or polymorphonuclear neutrophils (or PMNs), and are subdivided into segmented neutrophils (or segs) and banded neutrophils (or bands). Neutrophils are the most abundant type of white blood cells in mammals and form an essential part of the innate immune system. Neutrophils are recruited to the site of injury within minutes following trauma and are the

hallmark of acute inflammation. These cells also protect the body against infection by destroying bacteria, thus are also a hallmark for chronic inflammation.

- **Eosinophil granulocytes.** These are usually called eosinophils or, less commonly, acidophils and are white blood cells that are responsible for combating multicellular parasites and certain infections. They also control mechanisms associated with allergy and asthma which are often tied to fungal infections.
- **Lymphocytes and Natural Killer (NK) Cells.** NK cells are a part of innate immune system and play a major role in defending the body from both tumors and virally infected cells. We are learning the virus are the cause of many cancer cases, so appreciating you lymphocyte activity is extremely important. NK cells distinguish infected cells and tumors from normal and uninfected cells by recognizing changes of a surface. NK cells are activated in response to a family of cytokines called interferons. Activated NK cells release cytotoxic (cell-killing) granules that then destroy the altered cells. They are named "natural killer cells" because of the initial notion that they do not require prior activation in order to kill cells.
- **Basophils.** They appear in many specific kinds of inflammatory reactions, particularly those that cause allergic symptoms. Basophils contain anticoagulant heparin, which prevents blood from clotting too quickly. They also contain the vasodilator histamine, which promotes blood flow to tissues. They can be found in unusually high numbers at sites of infection, e.g., by ticks. Like eosinophils, basophils play a role in both parasitic infections and allergies.
- **Monocytes.** Monocytes are a type of white blood cell that fights off bacteria, viruses and fungi. Monocytes are the biggest type of white blood cell in the immune system. Originally formed in the bone marrow, they are released into our blood and tissues. When certain germs enter the body, they quickly rush to the site for attack. Monocytes have the ability to change into another cell form called macrophages before facing the germs. They can actually consume harmful bacteria, fungi and viruses. Then enzymes in the monocyte's body kill and break down the germs into pieces. Monocytes help other white blood cells identify the type of germs that have invaded our body. After consuming the germs, the monocytes take parts of those germs, called antigens, and mount them outside their body like flags. Other white blood cells see the antigens and make antibodies designed to kill those specific types of germs. This is called "adaptive immunity."

Vitamin D. This extremely important hormone promotes calcium absorption in the gut and maintains adequate serum calcium and phosphate concentrations to enable normal mineralization of bone. It is also needed for bone growth and bone remodeling by osteoblasts and osteoclasts. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. Vitamin D sufficiency prevents rickets in children and osteomalacia in adults. Vitamin D also helps protect older adults from osteoporosis. Vitamin D works in concert with Vitamin K2 in the directing of calcium out of our vessels (where calcium is harmful) and into our bones. Vitamin D has other roles in the body, including modulation of cell growth, neuromuscular and immune function, and reduction of inflammation.

Vitamin D is a critical part of our immune system. It collects and is stored in our fat tissue. Like soldiers in their barracks, Vitamin D is always on the ready to protect us from "insults" like infection. When the immune system detects infection, like the soldiers who respond and grab their weapons, Vitamin D converts to the "activated" form. This activated form is now known to be antibiotic. The first hint of this "antibiotic" activity was noted over 150 years ago when people who took cod liver oil – that contains natural Vitamins D and A – were somewhat protected from the scourge of tuberculosis.

Omega 3 levels. Omega-3 fats are a small group of molecules technically known as fatty acids. The key clinical omega-3 fats are EPA and DHA, which are found largely in cold water fish. It is well established in current literature that a higher blood level of these important fats may help to reduce the risk of Alzheimer's disease, heart disease, and stroke. Neurons in our brains are formed with omega 3 fatty acids as part of their cell membrane. This is where electrical signals pass. Having too many omega 6 fatty acids or simply insufficient omega 3 fatty acids in your system can alter the electrical behavior of your brain.

Blood Glucose. Glucose is a type of sugar that the body uses for energy. An abnormal glucose level in your blood may be a sign of diabetes. Hemoglobin A1c is a more dependable way to determine your average blood glucose level. The red blood cells that circulate in the body live for about three months before they die. When sugar sticks to these cells, it gives us an idea of how much sugar has been around for the preceding three months.

Insulin. Abnormal fasting insulin, especially when combined with other risk factors, identifies patients at significantly higher risk for diabetes, heart, and circulatory diseases. Insulin is the most studied of all molecules in our bodies. Insulin rises before glucose or A1C in pre-diabetics and is thus a better biomarker for early detection of metabolic disorders.

Tumor necrosis factor alpha (TNF- α). TNF- α is a growth factor for immune cells and osteoclasts, the cells that break down bone. It has well known pro-inflammatory functions and may be elevated in chronic infections, certain cancers and Hepatitis C. TNF- α is another important marker of inflammation and elevated levels should be used for diagnostic purposes and a reason to dig deeper and find a cause for its elevation. TNF- α is not a direct treatment target despite what the drug companies are creating. Do NOT take one of their new TNF- α drugs. Instead ask your doctor why your TNF- α is elevated and treat that instead. This will help create a healthier you.

Fibrinogen. This is a plasma glycoprotein that can be transformed into a clot in response to injury. The combination of elevated fibrinogen with other cardiovascular risk factors such as CRP signals substantially increased disease potential. As with elevated tumor necrosis factor alpha, this does not imply that fibrinogen is a therapeutic target.

PUFA 6/3 Ratio. This is the ratio of polyunsaturated fatty acids, specifically Omega-6 fatty acids to Omega-3 fatty acids. High ratios (>5) are associated with chronic silent inflammation and compromised immunity. Our bodies need omega 6 fatty acids. In fact, they need more omega 6s compared to omega 3s, by a factor of about 3-to-1. Omega 6 fatty acids help cells grow, for example. However, in our modern agricultural society where most foods are derived from soy, safflower, sunflower and corn feed stocks, we are overloaded with omega 6 fatty acids. Toxicologists know that "the dose makes the poison." That means anything can be toxic – it is just a matter of dose.

Interleukin-6 (IL-6). Elevated IL-6 may occur in different conditions including chronic infections, autoimmune disorders, certain cancers and Alzheimer's disease. IL 6 tracks with CRP.

Ceramides. "Serum ceramides increase the risk of Alzheimer's disease," according to a Mayo Clinic group.³⁰ They may not increase the risk on their own, but their presence at a high level surely is an indicator of increased risk. "Compared to the lowest tertile, the middle and highest tertiles of ceramide were associated with a 10-fold and 7.6-fold increased risk of AD respectively." Ceramides is an expensive test and there are other predictive tests of high value and lower cost. However, this test makes a value contribution to future Alzheimer's risk.

Sex Hormones:

- **Testosterone.** It is a hormone made by your body and is responsible for the normal growth and development of the male sex organs and for maintenance of other sexual characteristics. In men, testosterone is produced in the testes, the reproductive glands that also produce sperm. The amount of testosterone produced by the testes is regulated by the hypothalamus and the pituitary gland. Testosterone deficiency can also lead to a number of disturbing symptoms, including loss of stamina and lean muscle mass, reduced libido, anxiety, depression, and cognitive decline.
- **Estrogen.** Estrogen is probably the most widely known and discussed of all hormones. The term "estrogen" actually refers to any of a group of chemically similar hormones; estrogenic hormones are sometimes mistakenly referred to as exclusively female hormones when in fact both men and women produce them. Estrogens act on the central nervous system (CNS) both through genomic mechanisms, modulating synthesis, release and metabolism of neurotransmitters, neuropeptides and neurosteroids, and through non-genomic mechanisms, influencing electrical excitability, synaptic function and morphological features. Therefore, estrogen's neuroactive effects are multifaceted and encompass a system that ranges from the chemical to the genomic mechanisms, protecting against a wide range of neurotoxic insults.
- **Other hormones.** Pregnenolone, testosterone, estrogen, cortisol, and DHEA, are members of a family of natural hormones that are essential for human survival. Scientists have discovered that pregnenolone also can be manufactured in the brain from cholesterol instead of being transported through the blood-brain barrier from other parts of the body. This supports recent findings showing that pregnenolone is involved in a variety of brain-related functions such as memory, concentration, and mood.³¹

Apolipoprotein E (apoE). This is an inherited trait. ApoE genotype predicts lipid abnormalities and responsiveness to different dietary fat intake. The e4 version of the APOE gene indicates an individual with increased risk for developing Alzheimer's and macular degeneration. However, we offer a unique view on this. We actually believe the e4 version is actually protective of your health to some degree. The typical profile of an e4 carrier with Alzheimer's is someone who has lived beyond the median age of life expectancy.

Magnesium. Magnesium plays many vital roles in preventing heart disease, controlling blood pressure, and maintaining healthy cholesterol levels. This test is placed low on the priority list because serum levels probably do not accurately portray the true balance of magnesium. Are you taking magnesium supplements? There is almost no downside to taking excesses of this mineral. If you have constipation, take magnesium rather than some artificial compound.

Adiponectin. This is a protein hormone that modulates a number of metabolic processes, including glucose regulation and fatty acid catabolism. Adiponectin is exclusively secreted from adipose tissue into the bloodstream and is very abundant in plasma relative to many hormones. "Adiponectin is an adipocytokine released by the adipose tissue and has multiple roles in the immune system and in the metabolic syndromes such as cardiovascular disease, Type 2 diabetes, obesity and also in the neurodegenerative disorders including Alzheimer's disease. Adiponectin regulates the sensitivity of insulin, fatty acid catabolism, glucose homeostasis and anti-inflammatory system through various mechanisms."³²

Cholesterol (total)/HDL ratio. Many studies have sought to show the benefit of high HDL levels and the results remain mixed. However, the ratio of total cholesterol to HDL is physiologically important. A ratio of <4 is preferred. However, it is also clear that we are

actually healthier and live longer the higher our cholesterol is, in most instances. This is discussed in detail later in this book.

Calcium. Women beware! Although this is an important mineral in the body, abnormal calcium levels in the blood may be a sign of kidney problems, bone disease, thyroid disease, cancer, malnutrition, or another disorder. Excess calcium is connected with hardening of the arteries and dementia. The “calcium hypothesis of dementia” is an emerging theory on one of the potential root causes of accelerated vascular and brain aging.³³ Again, the dose makes the poison. Our recommendation is to NEVER supplement with calcium. We get enough in our diet. Instead, supplement with magnesium, Vitamin D, and Vitamin K2, to make sure that the calcium you do intake through food goes to your bones and not into your vessels where it causes significant long-term harm.

β2 microglobulin. This substance is a measure of the activity of the acquired immune system and can provide information about infection and inflammation.

Urinary Albumin. Studies have shown that elevated levels of urinary albumin in people with diabetes or hypertension are associated with increased risk of developing cardiovascular disease.

Kidney Tests. Blood tests for kidney function measure levels of blood urea nitrogen (BUN) and creatinine. Both of these are waste products that the kidneys filter out of the body. Abnormal BUN and creatinine levels may be signs of a kidney disease or other disorders.

Myeloperoxidase (MPO). Recent studies have reported an association between myeloperoxidase levels and the severity of coronary artery disease. It has been suggested that myeloperoxidase plays a significant role in the development of the atherosclerotic lesion and rendering plaques unstable. “Alzheimer’s patients showed significantly increased plasma levels of MPO, which could be an important molecular link between atherosclerosis and AD.”

³⁴

NT-proBNP. This is a progressive heart health risk marker with powerful independent prognostic value for detection of clinical and subclinical cardiac dysfunction.³⁵ Elevated levels indicate the presence of ongoing myocardial stress and potentially an underlying cardiac disorder.

Lp-PLA2. It is a marker for vascular-specific inflammation and also plays a causal role in the vascular inflammatory process, leading to the formation of vulnerable, rupture-prone plaque. Elevated levels have been shown to be powerful predictors of ischemic stroke and heart attack risk.³⁶

Lp(a). Lp(a) is an inherited abnormal protein attached to LDL. Lp(a) increases coagulation and triples cardiovascular disease risk. Lp(a) is also implicated in brain diseases. “It is suggested that increased Lp(a) serum concentrations, by increasing the risk for cerebrovascular disease, may have a role in determining clinical Alzheimer’s.”³⁷

ESR or SED rate. SED rate is a nonspecific test that measures how fast red blood cell platelets settle and is used to detect chronic inflammation associated with infections, autoimmune disorders, and cancer. Healthy blood cells hold a negative charge. SED rate is a way to estimate the relative charge on the cell platelets. Fast sedimentation implies low (poor) charge on the blood cells and is associated with higher levels of inflammation and early mortality.

F2-Isoprostanes (F2-IsoPs). They are the ‘gold-standard’ for quantifying oxidative stress. Increased free radical-mediated injury to brain is proposed to be an integral component of

several neurodegenerative diseases. F2-Isoprostanes derived from arachidonic acid (omega-6 fatty acid), are especially useful as biomarkers of lipid peroxidation.³⁸

Ferritin. Checking your iron levels is done through a simple blood test called a serum ferritin test. The study of iron in the human brain is particularly important in the context of Alzheimer's disease. Iron is both essential for healthy brain function and is implicated as a factor in neurodegeneration. The chemical form of the iron is particularly critical, as this affects its toxicity and disrupted iron metabolism is linked to regional iron accumulation and pathological hallmarks, such as senile plaques and neurofibrillary tangles.³⁹ Men should (almost) never supplement with iron.

Haptoglobin. This is a marker for inflammation and is known to protect against reactive oxygen species (free radicals). It also aids in wound repair by stimulating growth of new blood vessels.⁴⁰ More recently, haptoglobin has shown prognostic significance in patients found to have ovarian cancer.⁴¹

Serum amyloid A (SAA). The level of this protein increases in the blood in response to various forms of assaults on our bodies. Concentrations may increase by 1000-fold during inflammation. It is potentially involved in several chronic inflammatory diseases by way of amyloidosis.⁴² Amyloidosis frequently affects the heart, kidneys, liver, spleen, nervous system and digestive tract. Severe amyloidosis can lead to life-threatening organ failure.

Transferrin. The blood transferrin level is tested for diverse reasons: to determine the cause of anemia, to examine iron metabolism and to determine the iron-carrying capacity of the blood. Low transferrin can impair hemoglobin production and so lead to anemia. Low transferrin can be due to poor production of transferrin by the liver (where it's made) or excessive loss of transferrin through the kidneys into the urine. Many conditions including infection and malignancy can depress transferrin levels.

Uric Acid. Uric acid is a risk factor of cardiovascular disease, as well as being a major natural antioxidant, prohibiting the occurrence of cellular damage. According to some research, "Notwithstanding the associated increased risk of cardiovascular disease, higher levels of uric acid are associated with a decreased risk of dementia and better cognitive function later in life."⁴³ However, other research suggests that the correlation does not exist.⁴⁴ Uric acid remains an important test that should be performed routinely to measure health and health trends. It is a key marker for systemic hypoxia (lack of oxygen). Athletes often have high uric acid after exercise as do mountaineers.

Vitamin B6. Low circulating Vitamin B6 is highly correlated to markers of inflammation that contribute to Alzheimer's disease.⁴⁵ This marker, taken together with other inflammation markers, help strengthen the case for inflammation and associated conditions, when all are pointing at an increase in inflammatory body burden.

Many markers of inflammation are elevated for acute (sudden) conditions, like trauma, but are also elevated for chronic conditions. These markers tend to be very high in acute conditions but often are just barely above "normal" in chronic diseases. Figure 3.1 below shows the behavior of some of these markers of inflammation in the blood after an acute event, like trauma. Notice that C-reactive protein goes down quite rapidly after the acute event. If your CRP is elevated day one, month one, and year one, it is elevated due to a chronic condition, not a one-time event.

Many markers of inflammation are elevated for acute (sudden) conditions, like trauma. These same markers tend to be very high in acute conditions but often are **just barely above “normal” in chronic diseases.**

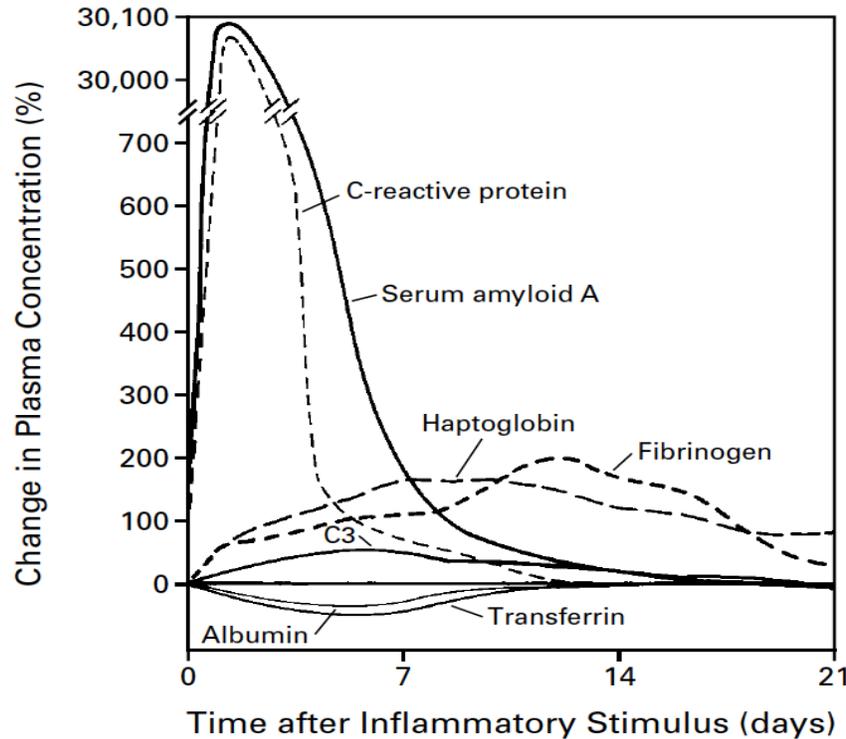


Figure 3.1. Changes in inflammatory markers with time after an acute event.⁴⁶

Quarterbacks, we have just listed over 2-dozen tests, most of which involve drawing blood, and few will be reimbursed by insurance. Indeed, having these tests done raises the usual issues of insurance reimbursement, doctors catching up with emerging data, interpretations, and interventions based on the results. The biggest hurdle you face is that the best use of these tests is on the apparent “well person.” Insurance companies will not pay for most, if any, of these tests for prevention, but this is exactly where they provide the most value.

We have not listed these tests in any particular order because every test provides useful information. The more tests you can obtain the better.

Inflammation is a Treasure

An appreciation for the necessity of inflammation to protect our health is slowly emerging among researcher, but not so with clinicians. However, even the most astute researchers are still somewhat trapped in the dogma that inflammation can backfire and cause harm. There are scant few who recognize that our most serious diseases start through some event or events that suppress or degrade our immune system followed by growth of opportunistic pathogens or action by toxins - and increase in inflammation.

Here are a couple of examples of medical researchers on the right track.

Case 1, ALS: *"Inflammation: The good, the bad and the therapeutic."*⁴⁷ The Immune Disease Institute of Harvard Medical School writes about a biochemistry student who took up the study of ALS (Lou Gehrig's disease) because a close friend was diagnosed with the disease. Ten percent of ALS cases are inherited; for the rest, the insult that unleashes the disease is unknown within the standard-of-care.

The Harvard graduate student, Chiu, upon studying ALS found that inflammation was implicated in the disease even in the earliest medical studies. According to the Harvard Medical School article on the story behind Chiu's research, "They began with a very basic question: could targeting inflammation be a new route to therapy for ALS? The answer turns out to be a definitive yes – but not in the way they expected."

They began their research assuming inflammation was detrimental to health and exacerbated the disease. This was based on a plethora of studies using animal model for disease and inflammation. As a general rule, in these studies on inflammation, the disease implanted in animals is not a good surrogate for human disease and the "apparent" disease almost always rectifies with anti-inflammatory therapy. However, when the same study is done in human with real multifaceted disease, the patients always get worse if the study continues long enough. Isn't this adequate evidence to tell you (and researchers) that inflammation is not the cause? Yet you will find thousands of research papers across all types of inflammatory diseases that profess inflammation is the therapeutic target – they are wrong.

Here is a significant finding from the Chiu research: "First, a certain kind of T-cell from the immune system began accumulating in the spinal cord, and to a lesser extent, the brain, as the disease worsened. This was odd because ALS is considered a "sterile disease," one that does not involve viruses or bacteria, which T-cells are normally brought in to fight. What's more, T-cells normally don't cross the formidable barrier that lies between the body and the brain/spinal cord. More bizarre still, just after the T-cells began appearing, a group of brain cells called microglia activated and started changing to resemble specialized immune cells known as dendritic cells."[†]

According to the researchers, "The microglia were acting like immune sensors." They were surveying the tissue as an immune cell would roam in the blood circulation in search of a virus or bacterium. But there was no microbe. What were these activated immune-like cells doing?"

Here the Harvard researcher states "there was no microbe." Was there really no microbe or were there tests inadequate to detect any of the myriad of potential infectious species emerging as exacerbators of so many chronic diseases?

Regardless of our beliefs, the Harvard team is making headway in what is truly a universal lack of understanding of the role of chronic inflammation. Mr. Chiu's research advisor, Dr. Carroll said, "This went against the grain. **The newest thinking at the time was that inflammation is actually causing injury in the central nervous system. But in this case, inflammation is protective.**"

Another interesting quote from the article is from Chiu. "I now suspect that ALS is initiated by some still unknown agent or event." What do you think this "unknown agent" might be? If it is not infection, trauma, or some other well-known cause of inflammation, then hiding in the ALS patients

[†] Dendritic cells, normally found at the body's interface with the outside world -- in the nose and lungs, for example -- absorb foreign agents and present them to other cells in the immune system for possible targeting.

is a discovery worthy of a Nobel Prize. We suspect that, if they dig deep enough, they will find a perpetrating pathogen. ^u

Quarterbacks: Stop dousing people with ice buckets and ask your doctor to test for inflammation and stealth infectious species for any one you know diagnosed with ALS. There is hope for this disease if medicine is willing to carry out a proper diagnosis that does not stop at a final diagnosis of “ALS,” which really just defines symptoms.

Case 2, Diabetes and Obesity: Harriet Hall, writing for Science-Based Medicine, wrote on our favorite topic, *“Inflammation: Both Friend and Foe.”* ⁴⁸ In her article, she reduced a very complicated concept into something understandable by the layperson. ⁴⁹ She points out what most people believe, that being - inflammation is associated with many chronic diseases. “Inflammation has been implicated in a number of chronic diseases, including diabetes, Parkinson’s, rheumatoid arthritis, allergies, atherosclerosis, and even cancer. Inflammation has been demonized, and is usually thought of as a bad thing.”

The study researchers that Ms. Hall writes about have this to say regarding inflammation. “Two proteins activated by inflammation are crucial to maintaining normal blood sugar levels in obese and diabetic mice. This could be the beginning of a new paradigm. This finding is completely contrary to the general dogma in the diabetes field that low-grade inflammation in obesity causes insulin resistance and type 2 diabetes. For 20 years, this inflammation has been seen as detrimental, whereas it is actually beneficial.”

Yes, this study involved mice, not humans. However, this result is very uncommon in animal studies and completely supports the infection/inflammation postulate.

Ms. Hall provides a very profound concluding remark that all clinicians and researchers must heed as they attempt to put forth their “mono” theories. “It is simplistic to talk of “inflammation” as a single phenomenon, since it is a complex response involving many different physiological processes, from vasodilation to neutrophil infiltration, from the complement system to cytokines. And its relationship to health is even more complex. **The human organism is a mesh of interrelated networks, and it could be hazardous to meddle with one element without understanding how our intervention might affect other parts of the system.**”

Case 3, Strength: It’s a bit ironic that a muscle man website has more accurate information on inflammation compared to Yale, Harvard, Stanford, and the Mayo Clinic. If you think this comment is an exaggeration, compare and contrast this muscle man website ⁵⁰ with that of the Mayo Clinic. ⁵¹ Here is an excerpt from the T Nation (The Intelligent & Relentless Pursuit of Muscle) website. It is both hilarious and informative.

“Like a Fat Man Trying to Step Into a Pup Tent”

“Get this straight.

Without inflammation, wounds wouldn't heal... ever. The common cold would persist for years. That chance sore would fester and thrive for years. Even the muscle you strive to strengthen and build might never get bigger or stronger if inflammation didn't exist or, as is the current trend, was completely wiped out by inadvisable pharmaceutical interventions.

Let's assume that, like Freddie Krueger, my hand came through this computer screen and scratched your cheek with my razored glove.

^u Dr. Trempe has seen macular degeneration and Alzheimer’s patients with complex comorbidities including ALS. A common thread between most of these patients is low-grade chronic infection by one of the many *Richettsia* infectious species.

Opportunistic microbes would attack the exposed tissue within seconds, and cells under direct attack would respond by "calling 911," which, in this case, equates to flinging out an ammonia-like substance called histamine.

A lot of this fluid splashes uselessly onto other cells that are under similar attack, but some of it manages to slosh onto some of the ultra-miniaturized blood vessels that permeate the area.

The tiniest amount of histamine acts like a cattle prod to these vessels. Almost immediately, they swell and double in size and in doing so create holes or gaps in the cellular tissue.

These gaps allow a special protein-loaded fluid, always on hand in the bloodstream, to come flooding in. This fluid attacks the invading microbes and smothers them dead."

Admittedly, our muscle-head friends are not any better at understanding chronic inflammation compared to the pundits. But they do know that, if you want to build muscle and strength, treating your body with NSAIDs is counterproductive. You need inflammation to grow and recover.

Exercise is an inflammatory process. If you stop inflammation with NSAIDS you lose some benefits of exercise

There is no question that many inflammatory diseases are painful. Prednisone and NSAIDs quell inflammation and reduce pain. They are only managing symptoms, however, and in doing so suppress the immune system. If you compare two patients, one on prednisone and another on a treatment against the root-cause of the inflammatory disorder, at month 1, the prednisone patient would be more comfortable. When the comparison is extended out to a year or more, the patient treated for the cause of the disease will be better in every way compared to prednisone patient. Further, the prednisone patient will likely be worse compared to a third patient who received no treatment. When you suppress your immune system (aka inflammation) there will be consequences.

The "ugly" period that follows many effective treatments is not well appreciated. By analogy, consider a flower bed. You have to rip it up or cut back old growth before new beautiful blossoms bloom. In construction, a familiar phase is, "you gotta make it ugly before you make it pretty." Often the same is true for bona fide treatments. The body must work hard to overcome disease – it's a war. There are consequences of battle, but your goal is to win, not to surrender and submit. Don't fight inflammation – find the cause and treat it.

In chronic infectious inflammatory diseases, treatments that go after the infection may take months or even a year or more to result in a "cure" or control. The reason for this is actually simple and understandable. Your body is constantly replacing old cells with new ones at the rate of millions per second. By the time you finish reading this sentence, 50 million of your cells will have died and been replaced by others. Some are lost through 'wear and tear', some just reach the end of their life, and others deliberately self-destruct. The life cycle of every cell is carefully controlled, and varies throughout our bodies. The time for every single cell of a specific type in our body to change completely is given in Table 3.2.

Cell / Tissue Type	Turnover (complete replacement) Time
Stomach	2-9 days
Cervix	6 days
Lungs alveoli	8 days
Platelets	10 days
Trachea	1-2 months

Red blood cells	4 months
Liver hepatocyte cells	0.5 – 1 year
Fat cells	8 years
Bone / skeleton	10% each year

Table 3.2. Time to complete replacement of tissue, by type of tissue.

Everyone, particular Americans, want a quick fix. Our physiology doesn't necessarily repair itself instantly. However, in the long-term it is much better to repair our bodies at the root compared to masking a symptom. A piece of advice we enjoy giving to senior is "NEVER GIVE UP." The cells and tissue of older people are replaced too – just like in your grandchildren! "Never give up" means, keep exercising, eat well, get sleep and rest, and generally treat your body with respect. When you do this, your "health span" and lifespan will be substantial.

Many patients experience what is called a Herxheimer's reaction when treated for infection of the type we describe in this chapter. And the extent of this "reaction" depends upon their health of the individual and infectious burden. Herxheimer's involves flu-like symptoms that may persist for up to a month. The symptoms are a result of a good treatment killing and exposing otherwise stealth pathogens to the immune system. When the immune system is "turned on" to these bugs, it suddenly mounts the type of attack typical of flu with fever. It is an ugly experience for the patient but often a necessary part of a cure for serious disease. Dr. Trempe has been known to respond as follows when a patient calls him and complains about feeling lousy: "Good new Mr./Mrs. Doe, this means the treatment is working. Hang in there, it will subside shortly and you will be better – for life."

Differences in Immunity

No two immune systems are the same. Sure everyone produces white blood cells and has both innate and adaptive immunity. But the strength and breadth of that immunity varies widely. As a simple example, some people never get the common cold, others are over it in an instance, still others suffer through 7 days of misery, while susceptible seniors may lapse into pneumonia and die. These variations are an indicator of the strength of one aspect of each person's immune system.

Think of your immune system like a muscle. A muscle that is well nourished and well trained is strong. A muscle that is poorly cared for and seldom used is weak. The same is true for our immunity. Here is a simple example:

A strongman and a weakling lift a 10 pound weight repetitively. The strongman continues with this exercise with vigor while the weakling soon fatigues and his/her muscle starts burning and lapses into tremor. That burn is inflammation. The person with a weak immune system develops inflammation in the face of a minor health issue, while, to the "strongman" immune system, the insult is hardly noticed.

The strongman worked hard to build that strong muscle. We all have to work hard to build and maintain our immune system. The simplest way is to follow what the mid-Victorian poor of England did. Excessive stress, poor diet that lacks vitamins, minerals and low micronutrient density, environmental toxicity, not drinking enough clean water, lack of sleep, and lack of exercise all contribute to poor immunity and susceptibility to diseases of infection.

Is infection causing the diseases of modern society? We spent most of this chapter explaining that the cause is NOT inflammation, but its not infection either. It's our weak or weakened immune systems. Inflammation and infection are only symptoms, albeit often "treatable" symptoms.

This entire discussion on immunity, inflammation, and infection started (and ended – but we didn't listen) in 19th Century France. Dr. Claude Bernard argued that our internal environment dictated

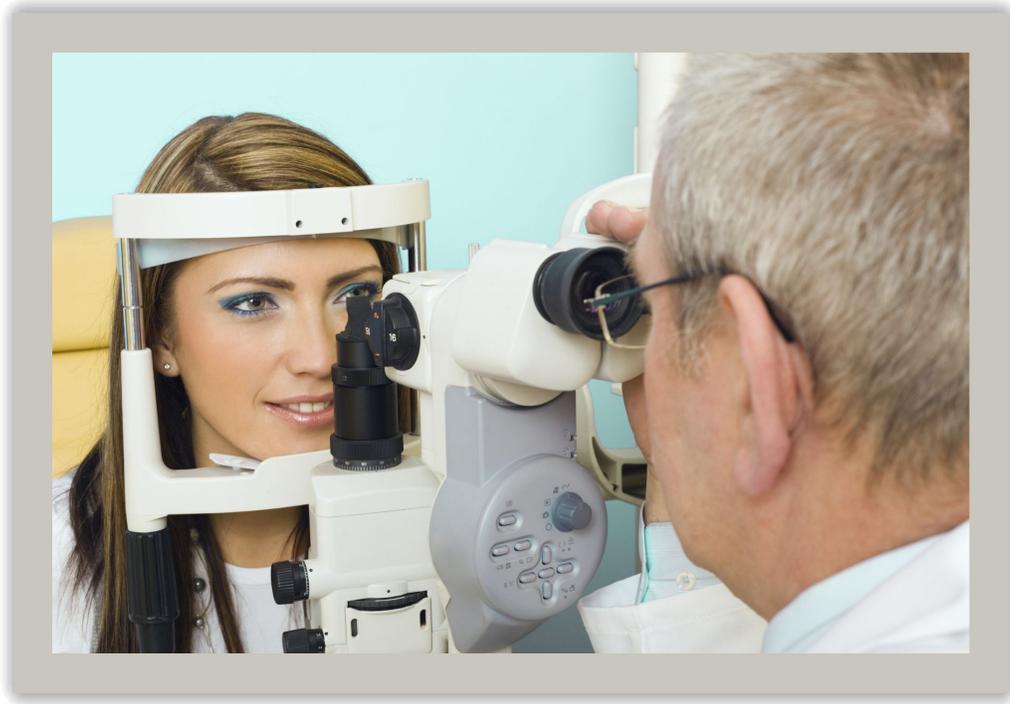
our health. Dr. Louis Pasteur argued that germs were the cause of disease (he was an author of the “Germ Theory” of disease. On his deathbed Louis Pasteur reportedly said:

“Bernard was right The seed is nothing, the soil is everything.”

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Chapter 4

Eyes – Your Ultimate Health Quarterback

The eye is the only place a doctor can “see” disease real-time, non-invasively, and at low cost.

Here is what the experts say about the eye as a window to your health:

“The eyes truly are unique real estate,” says Andrew Iwach, MD, associate clinical professor of ophthalmology at the University of California San Francisco and executive director of the Glaucoma Center of San Francisco. **“They’re the only place in the body where you can see a bare nerve, a bare artery, and a bare vein without doing any cutting. And the disease processes we see occurring in the eye are probably occurring in the rest of the body.”**¹

“Ever-increasing specialization is made necessary and inevitable by the information explosion of our times. It is, under these circumstances, easy to lose sight of the underlying interconnectedness of things. This same information explosion has, somewhat paradoxically, also enabled us to see a more fundamental unity within the diversity. **We find that medical problems that may seem different or independent when viewed at a superficial level are actually manifestations of a common underlying pathophysiologic mechanism acting simultaneously at different sites throughout the body.**”²

- Daniel H. Gold in “The Eye in Systemic Disease”

Clayton Christensen, the author of “The Innovators Dilemma”³ wrote an article about 10 years ago in the Harvard Business Review titled, “*Will Disruptive Innovations Cure Health Care?*”⁴ His fundamental lesson is that disruptive innovation takes complex ideas and makes them available to

regular folks. Examples he cites are: the computer mainframes and punch card evolving to the laptop (or iPad); or George Eastman's inventions making amateur photography widespread.

In the context of medicine, disruptive innovation brings technology to low-level healthcare workers who are then able to create a sophisticated diagnosis that leads to proper treatments. Nurses, medical assistants, technicians, and physicians assistants meet this requirement. Technology should be bringing elegant yet simple methods to the clinic. What has happened instead is that specialization has grown stronger in medicine, and the diagnosis is layers upon layers away from the patient, the treating doctor, and their staff. This model does not work; it hampers innovation, and allows specialists to sit in an "ivory tower" without adequate accountability to patient outcomes.

There is disruption on the horizon and you can use it today, to help you Quarterback Your Own Health. Whence does this new innovation come?

It comes through the eye.

"There are many systemic diseases we see in the eye," said Dr. Roy Chuck, chair of the department of ophthalmology and visual sciences at Albert Einstein College of Medicine and Montefiore Medical Center in New York City.⁵

"The eye is quite literally a "real window" to the rest of the body," according to Dr. Noel Bairey Merz, director of the Women's Heart Center at Cedars Sinai Heart Institute in Los Angeles. "The vitreous fluid is clear and we can look through the opening in the iris and see the blood vessels quite easily," she said. "They taught us in medical school to look with the ophthalmoscope as part of the general exam. Sadly, it's not done by most practitioners and they have lost the skill set."⁶

"Diagnosing illness through the eye, is nothing new," according to Dr. Marco Zarbin, chief of ophthalmology at the University of Medicine, Dentistry, New Jersey. "It happens all the time," he said, "from rare conditions to diseases like multiple sclerosis, leukemia, and brain tumors." "If you look at your brain, two-thirds of it is dedicated to some aspect of vision," said Zarbin. "It's a big deal."^v

The retina is actually a piece of the brain that has grown into the eye and processes neural signals when it detects light say University of Pennsylvania researchers.⁷ Ganglion cells carry information from the retina to the higher brain centers. Other nerve cells within the retina perform the first stages of analysis of the visual world. The axons of the retinal ganglion cells, with the support of other types of cells, form the optic nerve and carry these signals to the brain.⁸

Sick Eye in a Sick Body

The Eye tells us about aging and, most importantly, our rate of aging, according to a study sponsored by the National Institutes of Health (NIH) and other organizations from around the world. The NIH sponsored a formal trial on eye diseases in the 1990s. That trial was called the AREDS, short for the Age-Related Eye Disease Study. The goal of the Age-Related Eye Disease Study was to learn about macular degeneration and cataract, two leading causes of vision loss in older adults. The study looked at how these two diseases progress and what their causes may be.

The AREDS study involved 11 medical centers with more than 4,700 people enrolled across the country. The study was supported by the National Eye Institute, part of the Federal government's National Institutes of Health. An unexpected result came out of AREDS. Certain eye diseases are predictors of premature or early death (mortality). In other words, what this study revealed is that a rapidly aging eye occurs in a rapidly (accelerated) aging body.

^v Insert Dr. Trempe's diagnosis for colon cancer using the eye.

Eye diseases are not isolated from the rest of the body.
They serve as biomarkers for whole body disease.

During follow-up of 6.5 years, 11 percent in the AREDS study with eye conditions died. Note that this rate of death is more than 10 times higher compared to breast cancer. Has anyone sponsored a cataract or macular degeneration walk for these deadly diseases? Participants who had advanced age-related macular degeneration (AMD) compared with those who had few, if any, drusen (a precursor to AMD), had increased mortality, and advanced AMD was associated with excessive cardiovascular deaths compared to people without advanced AMD. Is it possible that Mr. Russert (the famous “Meet the Press” host) had AMD but no doctor knew the connection between this presumed “eye only” disease and heart disease?

In addition to AMD, people with deteriorating vision (loss of visual acuity) died sooner compared to those people with perfect vision. The cause of death was often cardiovascular in nature.

Your Eyes are Your Health “Quarterback”!
They can tell if you have undiagnosed
cardiovascular disease and Alzheimer’s!

Authors of one part of the AREDS studies stated: “Nuclear opacity and cataract surgery were associated with increased all-cause mortality and **cancer deaths.**” The authors concluded that, “the decreased survival of AREDS participants with AMD and cataract suggests **these conditions may reflect systemic processes rather than only localized disease.**”⁹

Why isn’t this information reaching the clinic and the public?

Figure 4.1 below shows the Age-Related Eye Disease Study data illustrating the high mortality associated with eye diseases.

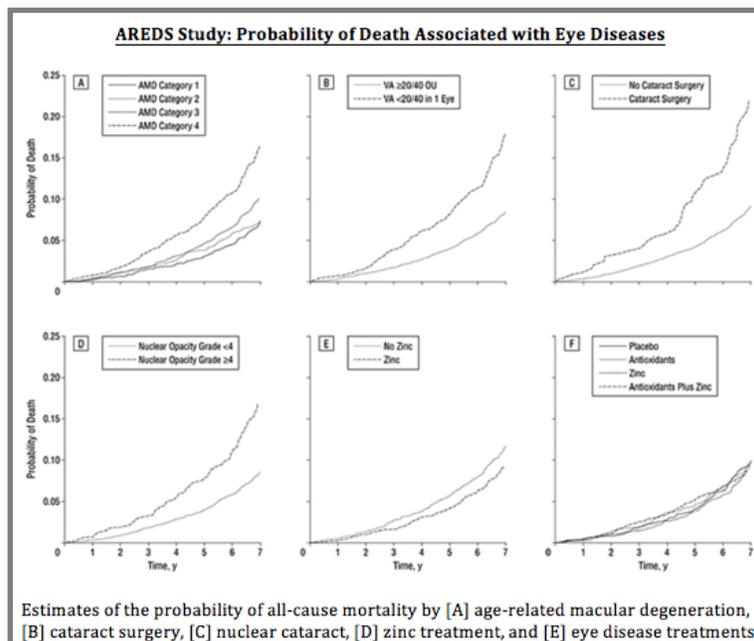


Figure 4.1. Age-Related Eye Disease Study (AREDS) data.

The higher the curve above the baseline of zero, the higher the death rate associated with the eye condition.

Eye Disease and Early Death

We now know that the eye is a predictor of cardiovascular disease. It is also a strong predictor of Alzheimer’s disease.^w Several other studies corroborate the eye/disease connection discovered in the AREDS study:

The Priverno Eye Study. This was a population-based cohort study of incidence of blindness, low vision, and survival. Lens opacities are associated with a higher risk of death. The purpose of this study was to further investigate the relationships between different types of lens opacity and patient survival. The analysis of the Priverno data confirms an association between lower survival and cataracts, particularly those confined to the lens nucleus and those that had already prompted surgery. An example research article is titled, “Association between lens opacities and mortality in the Priverno Eye Study.”¹⁰

The Barbados Eye Study. The purpose of this study was to determine incidence and risk factors for each main cause of visual loss in an African-Caribbean population. Incidence of visual impairment was high and significantly affected quality of life and was a marker of early cardiovascular death. Age-related cataract and open angle glaucoma caused ~ 75% of blindness, indicating the need for early detection and treatment. The connection between metabolic and cardiovascular disease and ocular indications and diseases is strong. An example of a research paper that resulted from the Barbados Eye Study is, “Lens opacities and mortality: The Barbados Eye Studies.”¹¹

The Blue Mountain Eye Study. This was the first large population-based assessment of visual impairment and common eye diseases of a representative older Australian community sample. The findings demonstrate the connection between eye and systemic diseases. In particular, cardiovascular risk factors were prominent for eye diseases including: Cataract, macular degeneration, Glaucoma, and retinopathy. An example of a research paper that resulted from the Blue Mountain Eye Study is, “Open-angle glaucoma and cardiovascular mortality: the Blue Mountains Eye Study.”¹²

The Beijing Eye Study. The Beijing Eye Study is a population-based study that included 4439 subjects who were initially examined in 2001 through blood tests and ocular assessment. The data suggest that glaucoma, particularly angle-closure glaucoma, may be associated with an increased rate of mortality in adult Chinese in Greater Beijing. An example of a research paper that resulted from the Beijing Eye Study is, “Mortality and ocular diseases: the Beijing Eye Study.”¹³

The Beaver Dam Eye Study. This study is funded by the National Eye Institute, one of the 20 National Institutes of Health. The purpose of the Study is to collect information on the prevalence and incidence of age-related cataract, macular degeneration and diabetic retinopathy, which are all common eye diseases causing loss of vision in an aging population. The study was designed to discover (or detect) causes of these conditions. The study also has examined other aging problems, such as decline in overall health and quality of life and development of kidney and heart disease. The Study revealed that after controlling for age

^w Lewis, Thomas J., Trempe, Clement L. “The End of Alzheimer’s? A Differential Diagnosis Toward a Cure.”

and sex - nuclear sclerotic cataract severity, cataract surgery, and visual impairment are risk indicators for poorer survival (unexpected early mortality from vascular complications).¹⁴

The Rotterdam Eye study. This study started in 1990 in a suburb of Rotterdam, among 10,994, men and women aged 55 and over. Major risk factors that were found for macular degeneration included atherosclerosis (cardiovascular disease). Retinal venular (microvessel) diameters play a role in predicting cardiovascular disorders. Dilated retinal venules at baseline were predictive for stroke, cerebral infarction, dementia, white brain matter lesions, impaired glucose tolerance, diabetes mellitus and mortality. Inflammation is part of these diseases. An example of a research paper that resulted from the Rotterdam Eye Study is, "Is there a direct association between age-related eye diseases and mortality?: The Rotterdam Study."¹⁵ This paper concluded with this statement, "**Both ARM and cataract are predictors of shorter survival because they have risk factors that also affect mortality.**"

This is just the tip-of-the-iceberg on the emerging and growing connection between the eye and our overall health. The Beaver Dam Eye Study results were published over 20 years ago. Why doesn't the public know about this information and why aren't doctors telling patients about risks? We have already explained how medicine is highly siloed. If a doctor finds something that is outside of their specialty, it generally goes unreported and untreated.

In addition, medical researchers are reluctant to share their information other than through publications that do not always present all the data. I called Drs. Klein, who did much of the work in the Beaver Dam Study. This study was sponsored and paid for by our government. I asked them for the "raw data." They basically refused to send me the data unless I was involved in a funded clinical trial. This type of protectionism will NOT help us treat patients.

The Eye and Brain

The eye is part of brain. The eye is an outcropping and extension of the brain.

Your Eyes are Part of Your Brain.

Most compelling and important connections between the eye and the brain are largely ignored. Definitive proof for the eye/brain connection is as close as Harvard University Press that published, "*The Retina, An Approachable Part of the Brain*," written by John E. Dowling.¹⁶ According to the Harvard University Press overview:¹⁷

"Dowling draws on twenty-five years of new research to produce an interdisciplinary synthesis focused on how retinal function contributes to our understanding of brain mechanisms."

"The retina is a part of the brain pushed out into the eye during development. It retains many characteristics of other brain regions and hence has yielded significant insights on brain mechanisms."

Dr. Dowling is no rookie trying to make a name for himself. He is the Gordon and Llura Gund Professor of Neurosciences at Harvard University, and Professor of Ophthalmology (Neuroscience) at Harvard Medical School. He is a member of the National Academy of Sciences, The American Philosophical Society, and The American Academy of Arts and Sciences, he also has won The Helen Keller Prize for Vision Research, the Paul Kayser International Eye Research Award of the International Society for Eye Research, and the Glenn A. Fry Medal in Physiological Optics.

Eye pathologies, the physiological changes in the eye, often occur in concert with Alzheimer's disease (AD) and other neurodegenerative afflictions. These changes are not just coincidence or

“comorbid” occurrences. It turns out that many of these eye changes are due to the same disease processes that occur in Alzheimer’s disease. In layman’s terms – the eye diseases and the brain diseases are the SAME diseases. More importantly, since the eye is so easily accessed compared to any other complex body tissue, the eye provides the means to diagnose and study Alzheimer’s disease long before it shows clinical symptoms in a person. The eye is also useful for measuring and monitoring someone who does have AD.

Formations visible in the lens of the eye portend Alzheimer’s disease based on a Harvard Medical School study published in 2003.¹⁸ Harvard performed detailed research to determine the connection between the lens of the eye and the brain, and the presence of beta amyloid protein, the hallmark (biomarker) in tissues of both. Some of the key findings include:

- The Alzheimer’s protein is found outside the brain, and in particular is found in the eye.
- The amount of beta amyloid (Alzheimer’s protein) found in the brain matched the amount found in the lens of the eye.

The eye, being transparent, affords examination of the retina by means of direct or indirect methods. Direct methods are as simple as using a microscope to look deep into the eye at the finest visible structures. More sophisticated methods, like optical coherence tomography, provide even greater detail. This technique is 20 times more precise compared to MRI and about 50 times less costly. That makes OCT 1000 times better than an MRI for Alzheimer’s.

The retinal nerve fiber layer (RNFL), the connection between the retina and the visual cortex of the brain, can also be seen with microscopy and very accurately measured using imaging. The thickness of the RNFL, which contains the axons of the retinal ganglion cells, can be objectively measured with non-invasive imaging techniques. The health of these cells tells us about the health of neurons in the brain.

Both the retina and the brain areas that are responsible for cognitive functioning originate from the same embryonic forward part of the brain (the prosencephalon). The premise of retinal involvement in cognitive functioning is supported by studies describing an increased prevalence of glaucoma in patients with Alzheimer’s disease. Other supportive evidence comes from postmortem tissue studies demonstrating retinal nerve cell loss in patients with AD, and from studies in living patients that have a reduced number of retinal ganglion cells and associated thinner RNFL thickness when they have AD. These studies make a compelling case for the connection between the processes occurring in the retinal nerve fiber layer and the brain of people with neurodegenerative conditions like Alzheimer’s disease.¹⁹

The retina and areas of the brain share embryonic origins.
What happens in the eye also happens in the brain.

Inflammation: Why the Eye?

The eye is a transparent piece of tissue. Using a microscope and other means, doctors can look into the eye and observe tissue to assess their relative level of health or disease. The lens is a powerful magnifying glass easing the observation of tissue structures in the back of the eye. Assuming that Alzheimer’s disease and eye diseases like glaucoma and macular degeneration are very similar diseases (or even the same disease), which one starts first? The eye, due to its easy access, allows observation of the disease, thus even if the diseases start at the same time, the eye provides the earliest indications of disease genesis.

In addition to its easy access, it appears that the eye may be more susceptible to inflammatory diseases compared to other tissue. This being the case, **the transparency and susceptibility of the eye make it “the holy grail” for detecting chronic degenerative processes that damage tissue.**

J. Wayne Streilein, formerly of the Schepens Eye Research Institute, part of the Harvard Medical School was the world expert on inflammation and the eye. In a lengthy article in the Karger Gazette, Dr. Streilein stated: ²⁰

“Not surprisingly, inflammation, if it occurs within the eye, is a profound threat to vision. In an inflamed eye, light transmission through the visual axis can be impeded and diffracted by leukocytes and plasma proteins, and the visual axis itself can be distorted, causing the focused light image to fall away from the photoreceptor outer segments. **Thus, the dilemma! Inflammation is one of the most important pathways by which immune mechanisms protect a tissue against pathogens. It is this dilemma – the need for immune protection, and the vulnerability to the consequences of inflammation – that lies at the heart of immune privilege in the eye.**”

“Through adaptation, evolution has devised a special form of immune protection (we call it immune privilege) that enables the eye to resist the vast majority of pathogens by using processes largely devoid of inflammation, thereby avoiding loss of vision. **We should remember that adaptations of this type represent biologic compromises, and in the case of ocular immune privilege, the compromise renders the eye vulnerable to those organisms whose pathogenicity and virulence can only be eliminated with the aid of overt inflammation.**”

Thus the eye is both assessable for observation, and for (some? all? many?) chronic diseases of inflammation, it has apparent vulnerability such that these diseases may start in the eye before other tissue.

The Eye – Your Health “Quarterback”

Studying your eye health will help you Quarterback your own health. The eye is the best tissue for testing of existing and latent chronic disease because:

- ✓ Your eye is easily accessed and studied, and
- ✓ Your eye lacks full immune protection. ²¹

Also, many systemic (system-wide) chronic diseases show signs and symptoms in the eye. ² What action should you take? Find an optometrist who specializes in eye pathology (most focus on refraction and the prescription of eye glasses). Ask for and demand the following tests: ^x

- Glaucoma,
- Macular degeneration,
- Cataract (nuclear and cortical), and
- Detailed retinal evaluation including retinal nerve fiber layer health (volume and thickness).
- Dry eye
- Any other eye disease that your eye doctor suggests is due to inflammation.

The instruments that your eye doctor should use include:

- Slit lamp microscope

^x You may have to pay cash rather than rely on your insurance. If you think health is expensive, you should compare it to illness!

- Fundus camera
- Optical coherence tomography

Be forewarned that optometrists (and ophthalmologists) seldom, if ever, interpret eye data in the context of whole body chronic diseases. If you cannot get an interpretation, you might have to resort to reading the AREDS or other studies. Obviously, a better answer is to find a doctor that understands these tests and what to do next. Doctors affiliated with RealHealth Clinics are the only ones qualified at this time. And, if you do have a diagnosis like cataract or glaucoma, obtain blood tests like those described in Chapter 3.

Here is a quick review of the major biomarkers in the eyes that indicate or predict chronic disease. The characteristics of these eye biomarkers vary from person-to-person but there are standardized classifications for the progression of disease available in the literature.

Cataracts

Cataract surgery is the most common surgery on the planet. This surgery is performed on nuclear cataracts. Nuclear cataracts interfere with vision more so than other forms of cataracts, thus they are the most frequently removed. Table 4.1 below breaks down cataract surgery statistics in the U.S. It is interesting that the “success rate” for cataract surgery is listed at 98%. If the doctor advising and performing the surgery did not tell the patient that he/she is at increased risk for cardiovascular disease, do you consider the surgery a success? We consider it a failure. That is, a failure to warn the patient of a brewing and DEADLY health condition.

Cataract Statistics	
Number of Americans age 40 and older who are affected by Cataracts	20.5 million
Percent of Americans age 80 and older who have Cataracts	50 %
Annual amount spent by the federal government to treat cataracts through Medicare	\$3.4 billion
Cataract Surgery Statistics	
Average cost of cataract surgery per eye	\$3,279
Number of Americans who have cataract surgery each year	3,000,000
Success rate of cataract surgery	98 %
Percent of patients had no severe postoperative complications	99.5 %

Table 4.1. Cataract surgery statistics.

To learn about classification of cataracts that are related to cardiovascular risk, check out the article titled, “*The Lens Opacity Classification System III.*”²² Figure 4.2 below gives the basic grading scale for cataract.

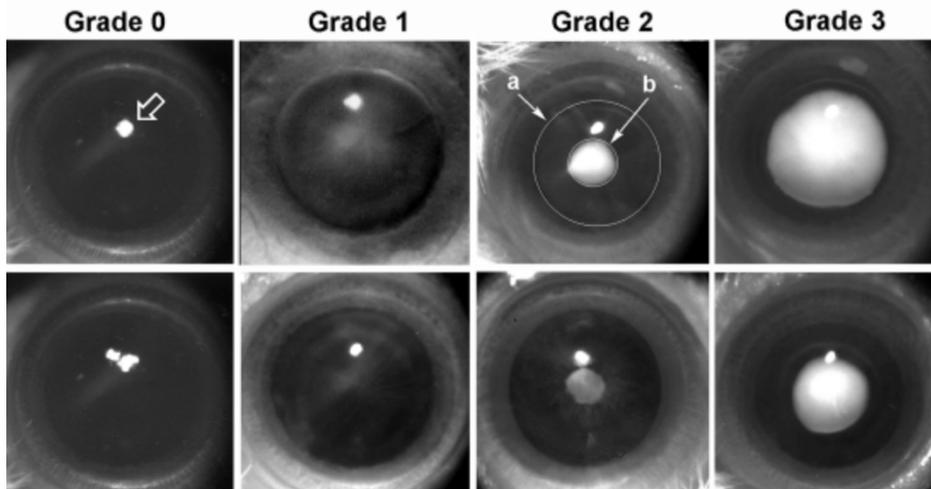
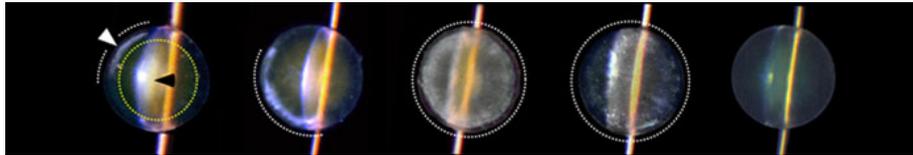


Figure 4.2: Classification of nuclear cataracts from grade 1 – 4.

Cortical cataracts are associated with Alzheimer’s disease. These cataracts are well described by a group at Harvard Medical School.²³ Cortical (Supranuclear) cataracts are “opacities” in what should otherwise be a clear lens. They occur at the periphery (edge) of the lens while the more common nuclear cataracts appear in the center of the lens. Figure 4.3 below shows the Alzheimer’s cataracts. The white line is a “slit” beam of light that illuminates the cataracts, similar to a ray of sunlight that exposes dust in an otherwise dark room. The white arrow shows the cortical cataract formations



and the black arrow points to the nuclear cataract formation.

Figure 4.3. “Alzheimer’s” cortical cataracts in the lens of the eye.

Macular Degeneration

Macular degeneration (ARMD or AMD – for age-related macular degeneration) is a slowly progressing disease. The earliest stages of the disease is called “dry” AMD and is not treated, only observed in the standard-of-care. This is true even though dry AMD is a predictor of increased risk of death according to the AREDS and many other studies. Also dry AMD often progresses to the “wet” form while also preceding Alzheimer’s disease in a statistically significant manner. Here is a reference to a classification and grading system for macular degeneration and a figure of the stages of AMD.²⁴

Dry macular degeneration is a biomarker for cardiovascular disease.

However, in the standard-of-care, this disease is only observed – not treated - and the patient is not informed of the risk.

Approximately 10% of 50 year old males have drusen in the retina of their eye. Heart disease “mysteriously” takes the lives of many 50 year old males. The AREDS study suggests that these two are related. Eye doctors can see drusen inexpensively and non-invasively. Doesn’t it make sense to get this, and other, eye evaluations sooner rather than later? Of course, if you are found “positive” for an eye pathology, you will also need a blood test and a good doctor who can identify root causes of this condition. Your conventional doctor, who treats symptoms, will not have the slightest clue as to the meaning of these tests even though the information is well published by our National Institutes of Health and other prominent sources.

Figure 4.4 below shows the progression of macular degeneration from a healthy eye on the left to “wet” (bleeding) disease on the right. The light (yellow) “dots” are formations called Drusen. Drusen contain the beta-amyloid protein affiliated with Alzheimer’s disease.



Figure 4.4. Progression of macular degeneration.

The prevailing treatment for macular disease compound the problem – and that problem is increased mortality from the disease AND the treatment – Lucentis, Avastin, and other “mab” eye injectable.

There are so many things wrong with Lucentis and Avastin that its hard to find a place to start. First and foremost, it does not just “treat” eye diseases. The prevailing approach for the administration of Lucentis is through eye injections. However, the eye is full of blood vessels and the drug enters the blood stream quickly distributing throughout the body. There are severe consequence to this drug from a whole body perspective even though it is administered through the eye.

Dr. Trempe responded to a *New England Journal of Medicine* article promoting the use of Lucentis for macular degeneration.²⁵ The technical name for Lucentis is Ranibizumab. This drug slows or stops the growth of new vessels in the back of the eye leading to slight improvements in vision – but only for a while. The downside is it stops the growth of new vessels in the rest of the body, some of which save lives when an existing vessel closes or becomes occluded from disease. Lucentis patients spend more time yo-yoing into emergency rooms, and some die sooner compared to those not treated. Here is Dr. Trempe’s response:

“To the Editor:

In their Clinical Therapeutics article on the use of ranibizumab for neovascular age-related macular degeneration (AMD), Folk and Stone (Oct. 21 issue)²⁶ do not mention the significant risk of death from cardiovascular disease among such patients. In the Age-Related Eye Disease Study (ClinicalTrials.gov number, NCT00000145), during a median follow-up of 6.5 years, 534 of 4753 participants (11.2%) died.²⁷ Furthermore, development of disease in the other eye is common.

In the Minimally Classic/Occlud Trial of the Anti-VEGF Antibody Ranibizumab in the Treatment of Neovascular Age-Related Macular Degeneration (NCT00056836) and Anti-VEGF Antibody for the Treatment of Predominantly Classic Choroidal Neovascularization in Age-Related Macular Degeneration (NCT00061594) trials, in the entire treatment group, the same destructive wet type of AMD developed in the other eye on average within 1 year in 22% of the patients and within 2 years in 33% of the patients.²⁸

The risk factors associated with AMD and cardiovascular disease are the same.^{29,30} Treatment to control those risk factors should start early, when drusen are first detected. The goals of treatment should be the following: first, to decrease the rate of death from cardiovascular disease; second, to prevent the disease from affecting the good eye; and, finally, to treat the eye involved with advanced disease. Giving repeated intraocular injections to control the disease when it is far advanced is only part of the treatment.”

The real question is: should intraocular injections be any part of the treatment? The answer to this question is possibly no, but only after the patient is informed of risk and benefit. The impression is that anti-VEGF treatment greatly improves vision, when in fact vision only improves marginally – and not at all when measured at 5 years of treatment. And risks of anti-VEGF treatments are seldom discussed with the patient. The following is a chart showing **significant risk of “adverse events” associated with continued and prolonged use of the anti-VEGF drugs Avastin and Lucentis.**

Lucentis and Avastin treatment is injuring and killing patients. This is taken from an article titled, “*Treatment of Exudative AMD: Data from the CATT and IVAN Trials.*”³¹ In the context of Figure 4.5 below, serious adverse events are “**mostly hospitalizations.**” The text of the article indicates that the types of “events” landing you in the hospital are heart attack and stroke. Is the eye then isolated from the rest of the body? Maybe those blood vessels that the artificial anti-VEGF treatment destroys or blocks are actually there to help and protect you.

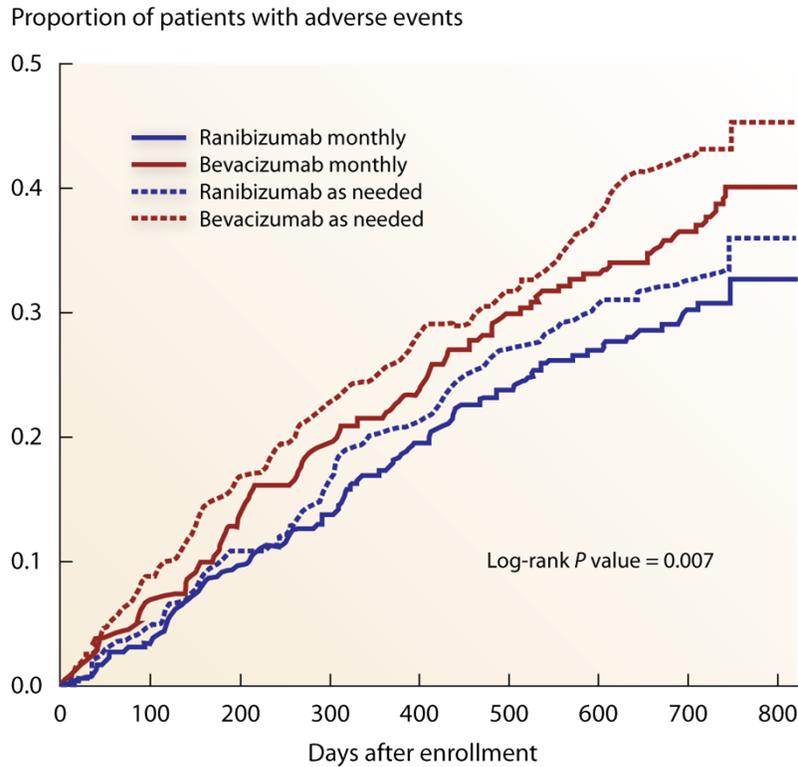


Figure 4.5. Adverse hospitalization events after treatment with Avastin or Lucentis.

Macular degeneration, the main target of Lucentis, is a cardiovascular disease. The vessels in the retina (back of the eye) are sufficiently deteriorated that blood oozes from them. Do you think this is happening just in the eye? It surely is not but the eye provides an elegant window to watch cardiovascular disease real-time. Cardiovascular disease is an inflammatory disease due to immune system dysfunction and is, at least in part, exacerbated by opportunistic pathogens. Our prescription is to stop Lucentis and measure and treat inflammation and its causes. Your eyes will most likely get better and you will live a longer and healthy life compared to those on Lucentis.

Retinal Nerve Fiber Layer

There is a clear diagnostic connection between the loss in thickness of the retinal nerve fiber layer (RNFL) and neurodegenerative diseases like glaucoma and Alzheimer’s disease. Dr. Gordon Plant reviewed this connection in an article titled, “*Retinal Nerve Fiber Layer Thinning in Alzheimer’s Disease.*”³² Over 1000 medical articles that tie together Alzheimer’s and the retinal nerve fiber layer can be found in PubMed, the governmental source of medical research. Figure 4.6 shows the difference in the retinal nerve in healthy and diseased cases.

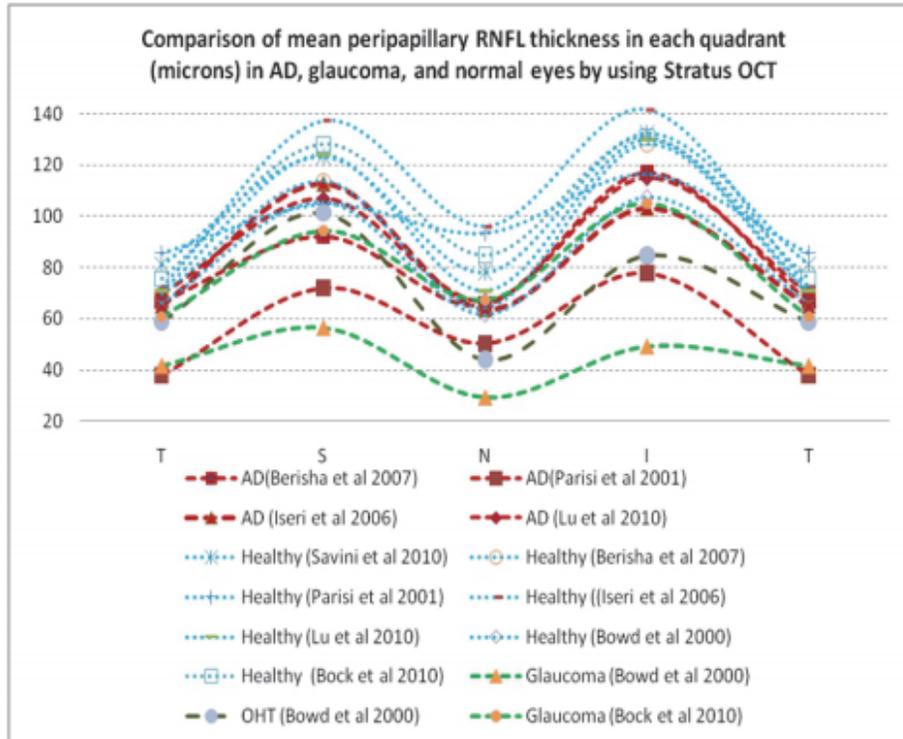


Figure 4.6. Retinal nerve fiber layer thinning with disease. Note that the thickness of this nervous system tissue declines with the two neurodegenerative diseases, glaucoma and Alzheimer's disease. 32

It is unlikely we will ever know when disease “officially” starts. It is known that people who died young accidentally (in their 20s) showed the earliest markers for diseases like Alzheimer's when autopsied. Thus our true goal is to determine when we can first observe disease. Hopefully detection can be pushed to as early a point in disease genesis as possible. The advantage of the eye is it can be investigated in great detail, inexpensively, and non-invasively. This is the utopia of chronic disease diagnostics and, more importantly – early detection and diagnosis. People with AMD or RNFL thinning will likely progress to Alzheimer's but often do not have any cognitive loss symptoms when they receive an initial eye diagnosis for nervous tissue loss. These people CAN be helped BEFORE they have symptoms of disease.

Dry Eye

Dry eye is a condition of altered tear composition that results from a diseased or dysfunctional lacrimal functional unit. Evidence suggests that inflammation causes structural alterations and/or functional paralysis of the tear-secreting glands. Changes in tear composition resulting from lacrimal dysfunction, increased evaporation and/or poor clearance have pro-inflammatory effects on the ocular surface. This inflammation is responsible in part for the irritation symptoms, ocular surface tissue disease, and altered corneal tissue barrier function in dry eye.

Today dry eye is being treated as an “eye-only” disease like all the other eye diseases mentioned in this section. Inflammation may have a pain-initiating impact on certain tissue, but it is never isolated to a single organ. It is all connected. Dry eye may be the earliest obvious sign of systemic inflammation as signaled to us by inflammation in the eye.

Our Eyes Reside in a Connected Body

Us humans have but one circulatory system, one nervous system, and one lymphatic system. These systems service our eyes along with EVERY OTHER TISSUE IN OUR BODY. When our eyes get sick, do you think we are perfectly healthy every where else? The true answer is NO we are sick in our whole body too! But you may not be aware of your systemic (whole body illness) until you suddenly get sick or die.

In 2006, European researchers published a review article titled, “*A Sick Eye in a Sick Body? Systemic Findings in Patients with Primary Open-angle Glaucoma.*”³³ Prior to this publication, few in the medical community recognized glaucoma, a significant neurological disease, to be a systemic disease. The assumption was that the disease was isolated to the eye. Now there is recognition that glaucoma is actually a precursor to Alzheimer’s disease. It is the same type of disease, but it shows up in the nervous system in the eye often before symptoms of brain degradation appear. This time lag may be due to the extraordinary “reserve” of the brain compared to the nervous system of the eye.

Despite our recognition of the association between glaucoma and a sick body, no measures have been made to utilize this information for the benefit of patients. If anything, due to the 10-minute office visit and the marketing behind the drug Lucentis, eye-only philosophies and treatments are expanding. The abstract of the “*A Sick Eye in a Sick Body*” is replicated here:

“Despite intense research, the pathogenesis of primary open-angle glaucoma (POAG) is still not completely understood. There is ample evidence for a pathophysiological role of elevated intraocular pressure; however, several systemic factors may influence onset and progression of the disease. Systemic peculiarities found in POAG include alterations of the cardiovascular system, autonomic nervous system, immune system, as well as endocrinological, psychological, and sleep disturbances. An association between POAG and other neurodegenerative diseases, such as Alzheimer disease and Parkinson’s disease, has also been described. Furthermore, the diagnosis of glaucoma can affect the patient’s quality of life. By highlighting the systemic alterations found in POAG, this review attempts to bring glaucoma into a broader medical context.”

The authors go on to say that their findings suggest that glaucoma is not just a process involving the visual system, but more likely the manifestation of a more generalized systemic dysfunction. “Glaucoma is a multifactorial disease, and a complex cascade of events and interactions between interocular pressure, vascular, immunological, and various other systemic factors that must be postulated to explain the development of glaucomatous damage.” Interestingly, AD is also viewed as a multifactorial disease. Is it possible that some of these “factors” overlap?

In our first book, “The End of Alzheimer’s,” we explain that Alzheimer’s is not a “brain-only” disease. In fact, Alzheimer’s is a sick brain in a sick body. Further, we show how the medical research community understands that Alzheimer’s is actually a vascular (heart-related) disease. Thus our sick eye and sick brain in a sick body is actually a sick circulatory system. And circulatory (heart) diseases continue to be the number one killer.³⁴

All the eye conditions discussed here are tissue biomarkers for systemic disease – most of which are tied to circulatory diseases and, even broader, to inflammation, thus immune system activity or dysfunction. These eye conditions are a clue that you should delve broader and deeper into your body for clues as to why you have an illness – even if your doctors presume your condition is just isolated to your eyes.. Treating the eye-only is a serious missed opportunity that may catch up to you later in life as other diseases of aging and inflammation “suddenly” develop.

Eye tests - they are all about Quarterbacking your own health.

Chapter 4 References

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Chapter 5



Your Blood Tells The Truth

The best way to Quarterback your own health is to determine your disease risk as early as possible. That, of course, is best measured by checking for immune system activation through measures of inflammation. Which tests provide earliest disease detection? The eye is very good for spotting the very earliest progression of disease in tissue. But to determine if something is brewing at its earliest stages, nothing beats your blood. Here is a quick comparison of eye and blood tests:

- **Blood Tests:** When we are sick, our immune system reacts almost immediately. The adaptive immune system is slower compared to the innate immune system, taking about 5 days to respond to new threats. In acute (immediate) disease, blood markers of immune activity relax back to normal levels once the illness passes. In chronic disease, immune system markers elevate and, although they may fluctuate, they tend to stay above normal baseline levels continuously.
- **Eye Tests:** The eye is a superb yet underappreciated biomarker for diseases of the whole body. Our bodies are robust and often overcome or control the progression of illness, particularly low-grade illnesses thus tissue is spared any lasting or symptomatic damage under these circumstances. When left unchecked, diseases can proliferate, leading to slow degradation of tissue. The eye is an early biomarker for a couple of reasons. First, it is transparent and disease development, at its earliest stages, may be seen by observing the eye with instruments. The lens at the front of the eye is a magnifying “glass” that helps doctors see disease markers developing in the back of the eye. Second, the eye appears to have “immune privilege” that, in some cases, may make eye tissue a window to early detection of diseases.

The eye is resistant to immune damage and slow progression of disease even when in a sick body. Visible damage of systemic diseases can be seen in the eye in patients with perfect visual acuity, hence this is a justification for a regular eye examination in order to detect changes that indicate a

beginning or ongoing systemic condition. But to determine disease causes and best treatments, blood testing is essential.

The blood holds the secrets to our health and disease. Tissue may be sick, but it is the blood that is the railway that shuttles our internal medical team to and from the diseased tissue. After all, most medicines are taken through the gut, lungs, or skin as a means to get the medical help into the bloodstream regardless of the location of the disease. Even medications injected into specific tissue, the eye for example, quickly circulate to the rest of the body.

If sickness is in progress, there ARE markers in the blood.

Blood Primer

Blood tests are commonly used and useful in disease prediction and diagnosis. Blood is made up of several different kinds of cells and other compounds, including various salts and certain proteins. The liquid portion of the blood is called plasma. When blood clots outside the body, the blood cells and some of the proteins become solid. The remaining liquid is called serum, which can be used in chemical tests and in tests to find out how the immune system fights diseases.

Blood cells, which can be seen under a microscope, make up about 40% of the blood's volume. Blood cells are divided into three main types:

- Red cells (erythrocytes). These make blood a red color. One drop of blood contains about five million red cells. A constant new supply of red blood cells is needed to replace old cells that break down. Hundreds of millions of red blood cells are made each day. Red cells contain a chemical called hemoglobin. This binds to oxygen and takes oxygen from the lungs to all parts of the body.
- White cells (leukocytes). There are different types of white cells which are called neutrophils (polymorphs), lymphocytes, eosinophils, monocytes, and basophils. They are part of the immune system. Their main role is to defend the body against infection and other forms of “insults” (things that attack our body and cause disease).



Like white knights slaying a dragon, white blood cells charge into battle at the sign of trouble. They patrol your body with a variety of weapons, including antibodies that will overpower the offending organism. Some of them prefer just to eat the bacteria.

- o Neutrophils engulf bacteria and destroy them with special chemicals.
- o Eosinophils consume foreign substances, particularly infectious parasites.
- o In the army of immune system responders, monocytes are the generals. Monocytes respond to inflammation signals and move quickly (approx. 8–12 hours) to sites of infection in the tissues and divide/differentiate into macrophages and dendritic cells to elicit an immune response that includes the consumption of foreign particles in the body.
- o Basophils help to intensify inflammation. Inflammation makes blood vessels leaky. This helps specialized white blood cells get to where they are needed.
- o Lymphocytes have a variety of different functions. They attack viruses and other pathogens (germs). They also make antibodies which help to destroy pathogens.
- Platelets. These are irregular, disc-shaped elements in the blood that assists in blood clotting. During normal blood clotting, the platelets clump together (aggregate). Although

platelets are often classed as blood cells, they are actually fragments of large bone marrow cells called megakaryocytes.

- Plasma is the liquid part of blood and makes up about 60% of the blood's volume. Plasma is mainly water and albumin. The albumin is there to keep it where it belongs, within the vessels. The albumin does this by creating osmotic pressure (it holds water like a sponge). Plasma also contains many different proteins and other chemicals such as hormones, antibodies, enzymes, glucose, fat particles, and salts.

Standard-of-Care Blood Tests

All blood tests have value for assessing health and illness. The issue with standard-of-care blood tests is the same tests are administered over and over again with almost apparent disregard for the age of the patient or the disease that patient has or may have. Today, chronic diseases are epidemic and these tests are doing little to help doctors predict or treat the chronic diseases of our age. It's time for an update (next chapter). However, you should have these standard blood tests as a starting, not an ending point. And you should know how to interpret these tests based on new science, so you can Quarterback your own health.

Your primary care doctor will administer the exact same tests for an Alzheimer's sufferer and an young athlete getting a health physical. No wonder when people get sick, we often don't know why.

Sodium: Healthy range: 135 to 145 mEq/L

Sodium is a member of the electrolyte family and this mineral helps your body balance water levels and helps with nerve impulses and muscle contractions. Irregularities in sodium levels may indicate dehydration; disorders of the adrenal glands; excessive intake of salt, corticosteroids, or pain-relieving medications; or problems with the liver or kidneys.

- Low number: Use of diuretics, diarrhea, adrenal insufficiency
- High number: Kidney dysfunction, dehydration, Cushing's syndrome

Today, many of us, including those with high blood pressure, are recommended to adopt a low sodium diet. Excess sodium is not the problem and lack of sodium creates severe health consequences. Balance of electrolytes (sodium in balance with potassium, for instance) is the problem modern society has with sodium. And sodium-restricted diets put us at risk for iodine deficiency which has severe health consequences. This will be covered in more detail later.

Potassium: Healthy range: 3.7 to 5.2 mEq/L

This mineral is essential for relaying nerve impulses, maintaining proper muscle functions, and regulating heartbeats. Diuretics, drugs that are often taken for high blood pressure, can cause low levels of potassium. ACE inhibitors can cause an increase in serum potassium and, when combined with drugs such as Bactrim can cause sudden death due to the lethal accumulation of potassium in the blood.¹

- Low number: Use of diuretics or corticosteroids (such as prednisone or cortisone), insufficient potassium intake.
- High number: Acute or chronic kidney failure, Addison's disease, diabetes, dehydration, drug interaction involving ACE inhibitors.

The RDA for potassium is higher compared to sodium. Sodium is prolific in processed foods will potassium is absent. Is anyone in America taking in more potassium than sodium? Could this be at the root of “essential hypertension” (elevated blood pressure of unknown cause)?

Chloride: Healthy range: 98 to 106 mEq/L

This mineral is often measured as part of an electrolyte panel. A high-salt diet and/or certain medications are often responsible for elevations in chloride. Excess chloride may indicate an overly acidic environment in the body. It also could be a red flag for dehydration, multiple myeloma, kidney disorders, or adrenal gland dysfunction.

- Low number: Emphysema, chronic lung diseases.
- High number: Dehydration, Cushing's syndrome, kidney disease.

CO₂ (aka: Total CO₂, Carbon Dioxide, Bicarbonate): Healthy range: 20 - 29 mmol/L

Carbon Dioxide is a gaseous waste product from metabolism. This test is done as part of the electrolyte panel to identify or monitor an electrolyte imbalance or acid-base (pH) imbalance. This test may be ordered if you are experiencing symptoms such as weakness, confusion, prolonged vomiting, or respiratory distress that could indicate an electrolyte imbalance, acidosis or alkalosis.

- Low number: Kidney disease, certain toxic exposures, hyperventilation, altitude sickness, or severe infection.
- High number: Lung diseases including COPD.

Anion Gap: Healthy range: 4 to 14 mEq/L

The anion gap is the difference between primary measured cations (sodium Na⁺ and potassium K⁺) and the primary measured anions (chloride Cl⁻ and bicarbonate HCO₃⁻) in serum. This test is most commonly performed in patients who present with altered mental status, unknown exposures, acute renal failure, and acute illnesses.

- Low number: Hypoalbuminemia (low blood proteins), plasma cell dyscrasia (imbalance in the blood), bromide intoxication.
- High number: Increase in lactic acid or ketoacids, or a sign of kidney failure, and more rarely may be caused by ingesting methanol or overdosing on aspirin.

Glucose: Healthy range: 70 to 99 mg/dL

Glucose is an instantaneous measure of sugar in the blood. Instantaneous elevated blood sugar is usually due to food or beverages ingested recently, your current stress levels, or certain medications. The fasting blood sugar test is done after at least 6 hours without food or drink other than water and gives a more accurate measure of your sustained blood glucose levels. An even better test is the hemoglobin A1c (HbA1c). The benefit of measuring A1c is that it gives a more reasonable view of what's happening over the course of time (3 months). While there are no guidelines to use A1c as a screening tool, it gives a physician a good idea that someone is diabetic if the value is elevated. It is commonly used as a standard tool to determine blood sugar control in patients known to have diabetes.

- Low number: Hypoglycemia, liver disease, adrenal insufficiency, excess insulin.
- High number: Hyperglycemia, certain types of diabetes, prediabetes, pancreatitis, hyperthyroidism.

BUN (blood urea nitrogen): Healthy range: 10 to 20 mg/dL

This is a measure of kidney and liver functions. High values may indicate a problem with kidney function. A number of medications and a diet high in protein can also raise BUN levels.

- Low number: Malnutrition.
- High number: Liver or kidney disease, heart failure, excess protein in the diet.

Creatinine: Healthy range: 0.5 to 1.1 mg/dL for women; 0.6 to 1.2 mg/dL for men (the elderly may be slightly higher)

The kidneys process this muscle activity waste product, so elevations could indicate a problem with kidney function.

- Low number: Low muscle mass, malnutrition
- High number: Chronic or temporary decrease in kidney function.

BUN/creatinine ratio: Healthy ratio of BUN to creatinine: 10:1 to 20:1 (men and older individuals may be a bit higher)

This test shows if kidneys are eliminating waste properly. High levels of creatinine, a by-product of muscle contractions, are excreted through the kidneys and, if elevated, suggest reduced kidney function.

eGFR (estimated glomerular filtration rate, cGFR (calculated glomerular filtration rate)):

The eGFR is used to screen for and detect early kidney damage and to monitor kidney status. It is performed by ordering a creatinine test and calculating the estimated glomerular filtration rate. The creatinine test is ordered frequently as part of a routine comprehensive metabolic panel (CMP) or basic metabolic panel (BMP), or along with a blood urea nitrogen (BUN) test whenever a health practitioner wants to evaluate the status of a patient's kidneys. It is ordered to monitor those with known chronic kidney disease (CKD) and those with conditions such as diabetes and hypertension that may lead to kidney damage.

This value may be determined (from the creatinine test) when any of the following symptoms are present: Swelling or puffiness, particularly around the eyes or in the face, wrists, abdomen, thighs, or ankles; Urine that is foamy, bloody, or coffee-colored; A decrease in the amount of urine; Problems urinating, such as a burning feeling or abnormal discharge during urination, or a change in the frequency of urination, especially at night; Mid-back pain (flank), below the ribs, near where the kidneys are located; High blood pressure (hypertension).

What the values mean:

Kidney Damage State	Description	Blood Tests	Urinalysis
1	Normal or minimal kidney damage with normal GFR	90+	Protein or albumin in urine are high, cells or casts seen in urine
2	Mild decrease in GFR	60-89	Protein or albumin in urine are high, cells or casts seen in urine
3	Moderate decrease in GFR	30-59	
4	Severe decrease in GFR	15-29	
5	Kidney failure	<15	

A GFR value of >60 is considered normal especially in older individuals. Also, be aware that creatinine does not increase until more than 50% of the kidney is destroyed. Remember that you

can donate one of your kidneys (usually to a family member) and still have a normal kidney function test (BUN and creatinine).

Total Protein: Healthy range: 6.3 – 7.9 g/dL

This test measures chains of amino acids essential for the growth and repair of cells.

- Low number: Malnutrition, liver or kidney disease.
- High number: Liver or kidney disease, dehydration, multiple myeloma.

Albumin: Healthy range: 3.9 – 5.0 g/dL

Albumin is a protein made by the liver that keeps water from leaking out of blood vessels by maintaining the proper osmotic pressure balance and that nourishes tissues and transports nutrients through the body.

- Low number: Liver or kidney disease, malnutrition.
- High number: Dehydration.

Bilirubin: Healthy range: 0.1 to 1.9 mg/dL

This provides information about liver and kidney functions, problems in bile ducts, and anemia. It is a double-edged sword. Bilirubin has strong health-protecting properties that can provide significant protection in certain conditions but can cause problems if in excessive amounts.

- Low number: Generally not a concern.
- High number: Liver disease, bile duct disorder, or red cell destruction.

Alkaline phosphatase (Alk Phos Total): Healthy range: 44 to 147 IU/L

This enzyme is involved in both liver and bone, so elevations may indicate problems with the liver or bone-related disease.

- Low number: Malnutrition
- High number: It is elevated in diseases with rapid turn over such as Paget's disease or certain cancers that spread to bone, bile duct obstruction, and liver cancer. It is normally elevated in growing children who are experiencing rapid bone growth.

ALT (Alanine aminotransferase): Healthy range: 8 – 37 IU/L

The ALT test looks at levels of the liver enzyme ALT. When all is well with your liver, your score on this test should be within range. Anything higher may indicate liver damage.

- Low number: Generally not a concern.
- High number: Certain toxins such as excess acetaminophen or alcohol, hepatitis. An elevated number is a very good indication of a fatty liver. This is a very common condition in the older population and should be investigated and properly treated. Triglycerides are often elevated before fatty liver disease occurs and statins do NOT lower triglycerides.

AST (aspartate aminotransferase): Healthy range: 10 to 34 IU/L

This enzyme is found in heart, muscle, and liver tissue, so elevations suggest problems may be occurring in one or more of those areas.

- Low number: Generally not a concern.
- High number: Excess acetaminophen, hepatitis, muscle injury.

- Normal number: Individuals with a fatty liver may still have a normal AST value.

Cholesterol/Fats: Healthy range: <200 mg/dL; ^y HDL >40 mg/dL; LDL <130 mg/dL; Triglycerides <150 mg/dL.

Cholesterol is not a fat. It is a hormone that is the “mother of all hormones.” It is the basic building block of all our hormones. It is the precursor to testosterone, estrogen, progesterone, and vitamin D, to name only a few.

Total Cholesterol: High cholesterol in the blood is a major risk factor (really a risk indicator more than a risk factor) for heart and blood vessel disease. ^z Cholesterol in itself is not bad, in fact, our bodies need plenty of cholesterol to function properly. However, when the level gets too high, vascular disease may be occurring (cholesterol is a marker, not a cause). Total cholesterol of less than 200, and an LDL Cholesterol of 100 or less is considered optimal by the National Heart, Lung, and Blood Institute. We discuss the truth about cholesterol, LDL, and HDL in the next chapter.

LDL Cholesterol is a misnomer. LDL is a protein that carries (transports) cholesterol in to tissues. LDL is considered “bad cholesterol” because cholesterol deposits are presumed to form in the arteries when LDL levels are high. ^{aa}

HDL cholesterol also is a misnomer. HDL is a protein that transports cholesterol away from tissue. HDL is called ‘good cholesterol’ as it is presumed to protect against heart disease by helping remove excess cholesterol deposited in the arteries. High levels seem to be associated with low incidence of coronary heart disease. However, 50% or more of people who experience a first heart attack did not have “high” cholesterol or suboptimal HDL levels.

Triglyceride is fat in the blood, which, if elevated, has been associated with heart disease, especially if over 500 mg. High triglycerides are also associated with pancreatitis. Triglyceride levels over 150 mg/dl may be associated with problems other than heart disease. Note that many people have been treated for high triglycerides with statin drugs. Statins DO NOT lower triglycerides. Triglycerides form as a result of continuous excess intakes of sugars and high glycemic foods. Lowering the intake of these foods and the associated inflammation and insulin resistance is the proper way to lower triglycerides.

Complete Blood Count (CBC)

The CBC typically has several parameters that are determined from an automated cell counter. These are the most relevant:

White Blood Count (WBC): Healthy range; 4,500 - 11,100 ^{bb} cells/mcL

White blood count is the number of white cells. High WBC is mainly a sign of infection. WBC is also increased in certain types of leukemia. Low white counts can be a sign of bone marrow diseases or

^y We do not subscribe to these numbers. These values are for the standard-of-care. Our “healthy range” is <350 mg/dL.

^z Most in medicine is wrong about cholesterol. This is covered in great detail in Chapter 5. However, very high cholesterol, particular at early ages (<50 years), is a biomarker for cardiovascular disease. The term “major risk factor” implies that cholesterol is the cause of the disease, which is abjectly incorrect. Cholesterol has strong antibiotic actions (it is a bactericide) killing bacteria on contact. When we carry a chronic infection our body calls cholesterol into action and as our immune system fails, our cholesterol plays a very important role to prevent us from dying.

^{aa} Cholesterol does not form deposits on the inside of blood vessels. It has been known since 1867 that LDL cholesterol and plaque formation occurs from the outside of the vessel and works its way in. We discuss this in detail in a later chapter.

^{bb} A white blood cell count of 11,000 or above does indeed infer risks. We reveal medical studies that indicate white blood cell counts above 6,800 significantly increase your risk of disease and death in a later chapter.

an enlarged spleen. Low WBC is also found in HIV infection in some cases. The vast majority of low WBC counts in our population is NOT HIV related.

When we starting writing this book, the upper limit for good health based on white blood cell counts was 10,000 – 10,500. Now it is 11,100. Are you now suddenly healthy if your white blood cell count is 10,000 whereas you were ill a couple of years ago? The is a **LEGAL** issue, not a **MEDICAL** issue. If you die suddenly but your white blood cell count was 11,100 or below – and your doctor did not do anything to prevent your death – he/she has no liability for your death. This is because you were “in range” according to the standard-of-care. You might have been “in range” but **YOUR DOCTOR KNEW** you were critically sick at a white blood cell count of 11,100. We exist within a very **SHAMEFUL** medical system.

Low number: Autoimmune illness, bone marrow failure, chemotherapy, viral infections.

High number: Infection, inflammation, cancer, leukemia, intense exercise, stress, corticosteroids.

Red Blood Cell Count (RBC): Healthy range: Male: 4.7 - 6.1 Mill/mcL; Female: 4.2 - 5.4 Mill/mcL

Red blood cells pick up oxygen from the blood and deliver it to tissues throughout the body

- Low number: Iron, vitamin B12, or folate deficiency; bone marrow damage.
- High number: Dehydration, renal problems, pulmonary or congenital heart disease.

Hemoglobin (Hgb): Healthy range: Male: 13.8 - 17.2 g/dL, Female: 12.1 - 15.1 g/dL

The hemoglobin is the amount of oxygen carrying protein contained within the red blood cells.

- Low number: Iron, vitamin B12, or folate deficiency; bone marrow damage.
- High number: Dehydration, renal problems, pulmonary or congenital heart disease.

Hematocrit (Hct): Healthy range: Male: 40.7% - 50.3%, Female: 36.1% - 44.3%

The hematocrit is the percentage of the blood volume occupied by red blood cells. In most labs the Hgb is actually measured, while the Hct is computed using the RBC measurement and the mean corpuscular volume (MCV) measurement. Thus purists prefer to use the Hgb measurement as more reliable.

- Low number: Iron, vitamin B12, or folate deficiency; bone marrow damage.
- High number: Dehydration, renal problems, pulmonary or congenital heart disease.

Mean Corpuscular Volume (MCV): Healthy range: 80 - 95 fL

MCV provides the average size of red blood cells. This helps diagnose a cause of an anemia. Low values suggest iron deficiency; high values suggest either deficiencies of B12 or Folate, ineffective production in the bone marrow, or recent blood loss with replacement by newer (and larger) cells from the bone marrow.

- Low number: Iron deficiency.
- High number: Vitamin B12 or folate deficiency, alcohol abuse.

Mean Corpuscular Hemoglobin (MCH): Healthy range: 27 - 31 pg

The amount of hemoglobin in red blood cells

- Low number: Iron deficiency
- High number: Vitamin B12 or folate deficiency

Platelet Count (PLT): 150 - 400 Thous/mcL

This is the number of cells that plug up holes in your blood vessels and prevent bleeding. High values can occur with bleeding, cigarette smoking or excess production by the bone marrow. Low values can occur from premature destruction states such as Immune Thrombocytopenia (ITP), acute blood loss, drug effects (such as heparin) , infections with sepsis, entrapment of platelets in an enlarged spleen, or bone marrow failure from diseases such as myelofibrosis or leukemia. Low platelets also can occur from clumping of the platelets in a lavender colored tube. You may need to repeat the test with a green top tube in that case.

- Low number: Viral infections, lupus, leukemia, chemotherapy, pernicious anemia (due to vitamin B12 deficiency).
- High number: Leukemia, myeloproliferative disorders (which cause blood cells to grow abnormally in bone marrow), inflammatory conditions.

The tests we just reviewed are the ones used to evaluate you most often, because all these tests have diagnostic/reimbursement codes. Each test certainly has value. The main emphasis of these tests is the health and behavior of your blood, kidneys, and liver.

We use some of these tests in determining your chronic disease burden and inflammation. They are part of our chronic disease temperature calculation. When we use these very same tests, are interpretation of “healthy” versus “sick” is often different compared to standard-of-care “normal” values. In subsequent chapters we present the research behind our interpretations and discuss many other tests that medical research indicates should be front-line testing for prevention and to determine where your reside on the health / disease continuum.

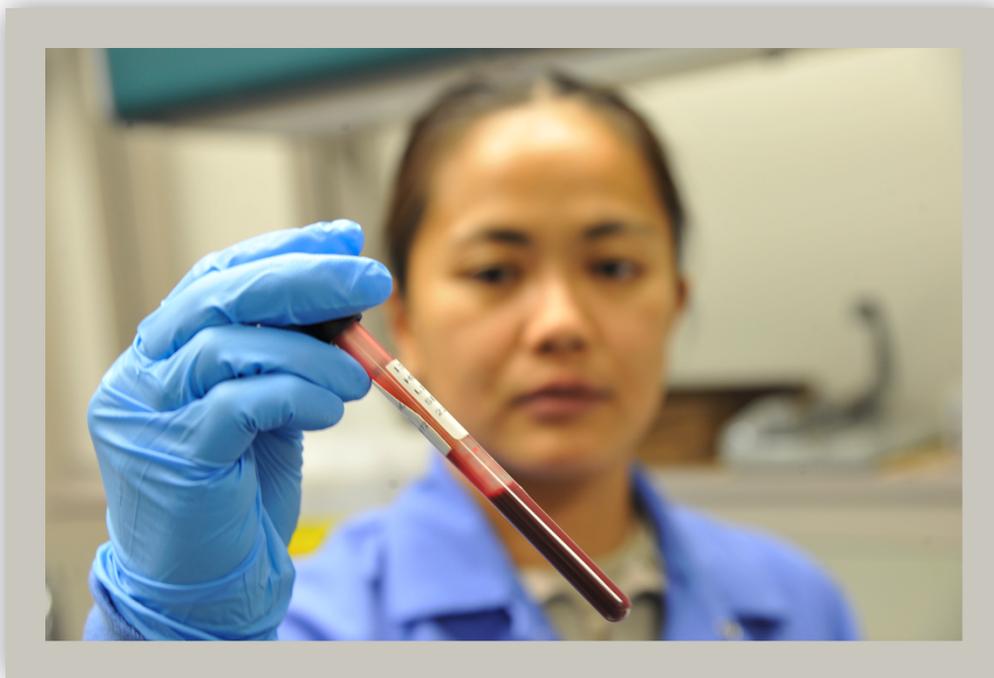
Proper blood testing helps us understand how healthy or sick you REALLY are – regardless of how well (or sick) you feel. This type of testing (to be described in subsequent chapters) helps us to predict and prevent sudden ill health, like a heart attack, for example.

The study of disease must not be separate from the study of health according to Claude Bernard. Dr. Bernard worked hard to break down the barriers between physiology and medicine, health and disease. That’s why he is the “father of experimental medicine.” Better said, Claude Bernard is the father of “scientific medicine.”

“There is only one science of life”

-Claude Bernard

That is what we mean by the health/disease continuum.



Chapter 6 Your Chronic Disease Temperature™

“If my blood tests are normal it does **not** mean I am healthy, it simply means that I’m not acutely sick.”

- P. James Seberger, MD, Ph.D.

We face a major health conundrum in America. Our healthcare costs are the highest per capita by far compared to other developed countries and yet our disease rates are high and longevity low compared to other developed nations. Here is a quote from an NBC News article: ¹

“Americans are below average on most measures of health — from obesity to infant mortality — when compared with other rich countries, and they’re falling behind on lifespan, too, according to the latest survey.”

The annual survey from the Organization for Economic Cooperation and Development (OECD) has been used for years to show that the U.S. spends far more than any other comparable country on health care, yet gets far less for its money — and the latest survey is no different. Americans are shorter, fatter, die younger, and don’t get particularly good treatment for many diseases, with the exception of strokes and cancer.”

Of course, NBC doesn’t realize that the U.S. medical system track record for cancer and stroke is also abysmally poor compared to other developed nations. But the publicity surrounding cancer makes it politically difficult to tell the truth.

Here is a quick snapshot of our grim healthcare statistics, based on OECD countries: ²

United States: Highest cost for healthcare per capita.

- Health expenditure per capita: \$10,345
- Expenditure as a pct. of GDP: 20% (the highest)
- Pct. obese: 28.6% (the highest, 35th)
- Life expectancy: 78.7 years (26th)
- Americans are getting shorter – the stature of which is becoming more like 3rd world people.

Americans are getting pills, not health.

Switzerland: Third highest cost per capita.

- Health expenditure per capita: \$6,080
- Expenditure as a pct. of GDP: 11.4% (4th highest)
- Pct. obese: 10.3% (3rd lowest)
- Life expectancy: 82.8 years (1st)

The Swiss are buying good health.

South Korea: Fifth LOWEST cost per capita.

- Health expenditure per capita: \$2,035
- Expenditure as a pct. of GDP: 7.1 (5th lowest)
- Pct. obese: 8% (lowest)
- Life expectancy: 81.1 years (15th)

The Koreans use prevention to protect health and curb costs. And they are moving up rapidly in all measures of health while not increasing spending because prevention is inexpensive and effective.

We assert that even the Koreans can improve. Western medicine has infiltrated even the most medically forward thinking nations. However, much of what we have learned, and present in this book, comes from abroad. The Japanese actual lead the way in properly addressing chronic disease at its root cause. America is at the back of the bus with its expensive symptoms-only drugs-for-life approach.

Medicine consists of two distinct parts: 1. Diagnosis: figuring out what is wrong with the patient, and 2. Treatment: deciding what to do for the patient, and then carrying out the plan. Far too many health care professionals and laypeople seem to feel that medical diagnosis isn't really all that complicated. We want the treatment—that is, we want our pills! (at least in the U.S.)

The 80/20 rule adequately describes the weight of effort healthcare should apply to diagnosis versus treatment. Diagnosis should be a minimum of 80% of the clinical effort. But even that is too little, considering the 8-minute doctor visit. A true root-cause diagnosis does NOT take 6 minutes (80% of 8 minutes). In today's 8-minute doctor visits, there is a "rush to judgment" expedient diagnosis. And then there is that dreaded ICD-10 codebook. Doctors can no longer be doctors. They have to be computer-like and quickly look at a patient, and even more quickly recall the one of 60,000 codes that apply to their diagnosis. Otherwise there is no payment for their services.

Medicine forces doctors to a "rush-to-judgment" diagnosis because the 8-minute office visit does not afford the time necessary to make a true root-cause diagnosis.

Many times, on behalf of Dr. Trempe, I'm asked about the treatment for Alzheimer's disease. My response is always the same. "Doctor, you are asking the wrong question. Ask what is the full and

proper diagnosis! You are a doctor and armed with a full, complete, and accurate diagnosis, you will know how to treat.”

Quarterbacks, you must ask for the diagnosis, and not the treatment. When you see your doctor, don’t ask about the treatment, but do question the thoroughness of the diagnosis. When you hear a diagnosis of “hypertension,” for example, ask why you have hypertension. Keep asking the “why” question until your doctor gives a plausible and adequate answer as to why you are sick. If your doctor doesn’t give you that courtesy, change doctors.

Elements of a Chronic Disease Root-Cause Diagnosis – Your Chronic Disease Temperature™

It’s time to roll up our sleeves and dig deep into what real health looks like, how to measure it, thus how to create or maintain it. Getting to the root-cause is a process, not the same simple set of tests performed on athletes and cancer sufferers. The following diagnostic elements are involved:

1. Evaluation of the activity of our immune system by measuring physiological markers (biomarkers).
2. Evaluation of the health of our tissue, by looking at pathology of tissue (biomarkers also).
3. Understanding of when disease actually starts by understanding the real level at which biomarkers start providing us with warnings about our health.
4. Deeper and broader assessment of physiology to answer the question “WHY.”

We use elements 1-3 to determine “Your Chronic Disease Temperature™.” The “best” chronic disease temperature to have is 98.6. Any value above that implies you have chronic disease or risk. We generate this single number as a simple way for you, and your doctor, to understand your chronic disease burden and risk. With this simple single measurement, you don’t have to pour through multiple pages of lab values. Instead, we amalgamate all the values into a single, simple-to-understand value.

What follows is meant to illustrate examples of what a proper process of diagnosis should or could be. It is not intended to be a comprehensive treatise on everything a doctor needs to do to properly diagnosis, thus treat, a patient. However, when you compare what we recommend compared to what is done in the standard-or-care, you should well appreciate why there is so much sickness, disease, and cost associated with our current healthcare model.

White Blood Cell Count (WBC)

We justified your need to Quarterback your own health, in the first chapter, with WBC as an example. We used 7,800 cells/milliliter as a WBC count of concern and explained that this number is considered “normal” by essentially every doctor in America. However, new data ^{cc} is showing that there is an even lower count that indicates you, personally, are at great (future) risk of becoming ill or dying from sudden or chronic heart disease. First, let’s review the “normal” ranges presented by the authorities, Table 6.1.

Source	WBC (cells / microliter) Normal Range
LabCorp	4,500 – 10,000
Mayo Clinic	3,500 – 10,500
WebMd	4,500 – 10,000
Quest Diagnostics	3,800 – 10,800
MedLinePlus	4,500 – 11,000

^{cc} This new data actually is NOT that new. It dates back at least a decade or more.

Table 6.1. Standard-of-Care ranges for “normal” white blood cell counts based on a legal definition of normal levels but not on safe levels.

LabCorp and Quest Diagnostics are the major testing labs in America. They provide your results to your doctor. Your doctor then tells you that, if you are below 10,800 (or 10,000 or 10,500), that you are normal and healthy. This number continues to rise. That is, the definition of when you cross into poor health keeps increasing. Some labs now say 11,000 cells per microliter is the upper limit of good health. But Dr. Seberger tells us (quote at beginning of chapter) that it really means you are not acutely sick. That is not good enough considering chronic diseases make up at least two thirds of healthcare costs and 80% of doctor visits.

WebMd and Mayo clinic are among the most visited websites by individuals, and doctors looking for reliable health information. We all trust Mayo Clinic. Their “normal” WBC level of 10,500 is particularly troubling because they should (and likely do) know better. But their upper value of 10,500 is accepted as part of the standard-of-care.

Heart attack is the #1 killer of women. The WBC value can warn women (and men) of their future risk of heart attack and death. Risk starts at 6,700, yet 11,000 is considered by many the threshold for risk.

Harvard University, by way of The Harvard Gazette, ^{dd} explains the appropriate upper value for WBC. Here is some excerpts from their March 17, 2005 article titled, *“Simple test predicts heart attack. White blood cells sound a new alarm.”* ³

“White blood cell levels are a good predictor of strokes, heart attacks, and fatal heart disease in older women, according to a nationwide study. White cell counts can be easily measured by inexpensive, widely available tests, raising the possibility of lowering the toll of heart disease fatalities, the leading cause of death among women in the United States.”

“For years, researchers have suspected a link between elevated white blood cell count and heart attack,” notes Dr. JoAnn Manson, one of the study leaders and Elizabeth F. Brigham Professor of Women's Health at Harvard Medical School. “The present study is the largest to test this association and provides the strongest evidence to date that WBC [white blood cell] count predicts the risk of heart attack.”

“As part of the federally supported Women's Health Initiative, investigators at medical centers all over the United States collected information on 72,242 postmenopausal women 50 to 79 years old. All were free of heart and blood vessel disease at the start of the study. During six years of follow-up, 1,626 heart disease deaths, heart attacks, and strokes occurred. Women with more than 6.7 billion white cells per liter of blood **(6,700) had more than double the risk of fatal heart disease** than women with 4.7 billion cells per liter or lower (4,700). A count of 6.7 is considered to be normal, so what is “normal” may have to be redefined.” ^{ee}

“Women with the highest counts (6,700, compared to the standard-of-care upper limited of 10,800) had a 40 percent higher risk of nonfatal heart attack, 46 percent higher risk of stroke, and a 50 percent greater risk of death from all causes.”

^{dd} The Harvard Gazette is the official news website of Harvard University, and highlights innovation and discovery in teaching, learning, and research.

^{ee} Note that 6.7 billion white cells per liter of blood (6,700) is NOT at the upper limit of the normal standard-of-care range – it is smack-dab in the middle of the range (3,500 – 10,500 is the range published by Mayo Clinic).

“Manson also believes that white blood cell counts apply to younger as well as older women.”
Shame on you Mayo Clinic (and the rest).

A count of 6700 is considered to be normal, so what is "normal" may have to be redefined.

- Harvard Medical School

The ACTUAL Upper Limit for WBC and Good Health.

Note, this article was published over a dozen years ago. Since then the “upper limit” for good health your doctor uses has gone UP, not DONE. And heart-related diseases continue to be our number one killer. WHY?

Here is the actual research on the WBC count that MUST alert all you health Quarterbacks of a need for immediate action to save and prolong your life. It comes from an article titled, “*Leukocyte count in vascular risk prediction.*”⁴ A leukocyte is another term for white blood cell. This editorial article is based on the fine work of Margolis and colleagues from Harvard Medical School and seven other major health centers.⁵ Here is a summary of the article:

“The major finding of the study was that leukocyte (WBC) count in the top quarter of the population distribution ($>6.71 \times 10^9$ cells/L) was associated with an approximate **50% increase in the risk of myocardial infarction (heart attack), stroke, total vascular disease, and total mortality**, independent of other risk factors. The risk of **coronary death was higher, estimated as a 230% increase**”

“The association was similar even among women who did not self-report presence of major cardiovascular risk factors. Findings are consistent with those of other studies of leukocyte (WBC) count and vascular events.”⁶

What is most interesting about this result is that known risk factors did not impact the predictive power of WBC. Therefore if you “watch your numbers” like cholesterol for example, it has no impact on your health if you do not manage your elevated WBC count.^{ff}

Be forewarned, that doctors practicing the standard-of-care will disregard this information or suggest that there are insufficient studies to support the finding. But the statistics on this study show the data is definitive:

“Margolis and colleagues from the Women’s Health Initiative (WHI) Research Group report that a higher leukocyte (WBC) count is associated with an **increased risk of cardiovascular events and mortality among 66,261 women at 40 (medical) centers** followed in the WHI Observational Study.”

This result of $>6,700$ is based on evaluation of over 66,000 women. It is a study with a massive amount of data. Studies involving 1000 or more are considered quite large. There is no disputing the data from a study of this magnitude.

^{ff} A logical question is: What causes WBC to go up (over 6,700 for example). This is the subject of an entire book, and we are purposely not presenting treatment information here. We are focusing on risks. However, do a Google search for white blood cell and you will often get this as a definition: “White blood cells (WBCs), also called leukocytes or leucocytes, are the cells of the immune system that are involved in defending the body against both infectious disease and foreign invaders.” We believe (know) that cardiovascular disease is tied to inflammation and infection, not cholesterol. Dig deep into the medical literature and you will likely come to the same conclusion. But you will have to wade, eye-deep in research falsely justifying the cholesterol theory.

Here are some more studies that ties WBC counts well within the “normal” range with substantially increased risk of early death and disease.

The National Institute on Aging, National Institutes of Health weighed in on white blood cell counts. A team from the NIH and Italy produced a study titled, “*White Blood Cell Count and Mortality in the Baltimore Longitudinal Study of Aging.*” ⁷ They start off their paper with a strong statement about the value of WBC count:

“White blood cell (WBC) count is a marker of systemic inflammation, and elevated WBC count is associated with all-cause mortality ⁸ as well as cancer, ⁹ cerebrovascular. ¹⁰ and cardiovascular ¹¹ mortality. The WBC count is an independent risk factor for cardiovascular and cerebrovascular events.” ¹²

The National Institutes of Health conclude:

“Participants with baseline WBC <3,500 cells/mm³ and WBC >6,000 cells/mm³ had higher mortality than those with 3,500 to 6,000 WBC/mm³.”

“Participants who died had higher WBC than those who survived, and the difference was statistically significant within 5 years before death.”

This very important study teaches us a few of things:

1. WBC < 3,500 is a prognosticator of early and unnecessary mortality. This value is consistent with the lower WBC counts published by Mayo Clinic and Quest Diagnostic. Lowered white blood cell counts are often associated with viral infections that suppress the immune system.
2. WBC > 6,000 is a prognosticator of early and unnecessary mortality.
3. The WBC is elevated (at least) 5 years before death, thus it is a strong diagnostic predictor of your future longevity.

A comparison between this “not-so-new” ⁸⁸ data and authoritative sources is in order, Table 6.2.

Source	WBC (cells / milliliter) Normal Range
Mayo Clinic	3,500 – 10,500
“New” Information cc	3500 - 6,000

Table 6.2. New “normal” for white blood cell counts reflecting actual safe levels.

That means all those people and patients who rely on their doctors, the major clinical laboratories, and the authoritative medical establishment, who have a WBC >6,000 but less than 10,500 are at much greater risk to die or suffer from severe cardiovascular disease in the future. What percentage of the U.S. population do you surmise is between 6,000 and 10,500? Our guess is a lot. How can we be so sure? Death from cardiovascular diseases is the #1 killer of Americans and, in the case of people like Tim Russett, medicine claims to be baffled.

New Normal Values for White Blood Cell Counts:
4,000 – 6,000
Any value outside this range requires actions to keep you healthy.

⁸⁸ The not-so-new data is from 2004 and has been reproduced many times.

WBC and Coronary Heart Disease (CHD)

A study from the Centers for Disease Control and Prevention (CDC), evaluated 8,355 participants from 1999-2002 for emerging risk factors that could contribute to higher cardiovascular disease risk. The results of the study showed that **an elevated WBC count (>7,000)** was associated with a 49% increase in the likelihood of a person being in the highest coronary heart disease risk category. The research supporting this data is presented in a publication titled, *“Distribution of lifestyle and emerging risk factors by 10-year risk for coronary heart disease.”*¹³ **Note that the authors from the CDC consider >7,000 elevated.**

Elevated WBC count in the elderly predicts survival. According to a Swedish group by way of a research article titled, *“White Blood Cell Count in Elderly Is Clinically Useful in Predicting Long-Term Survival.”*¹⁴ More than 425 swedes 75 years old participated in the study. The average WBC count for men and women in the study was **6,300 and 5,700** respectively. **There was a 16% increase in mortality for men and 28% increase in mortality for women for every 1,000 increase in WBC count.** The authors conclude, “The WBC count deserves attention as a potentially clinically useful predictor of survival in the 75-year-olds, especially among women.”

We agree that WBC deserves to be part of your risk assessment. But since your doctors do not take notice until your level reaches 10,000+ (for women that means at risk of death that is 343% higher compared to those with the value 5,700 from the Swedish study) you must Quarterback your own health.

Is WBC count important to know when we are young or is it just a consideration for the elderly? A broad group of U.S. researchers answered this question. The paper they compiled is titled, *“White blood cell count in young adulthood and coronary artery calcification in early middle age: coronary artery risk development in young adults (CARDIA) study.”*¹⁵ Here are some highlights:

“White blood cell (WBC) count is associated with incident coronary heart disease (CHD). Data are sparse regarding its association in young adults with future coronary artery calcification (CAC).”

- The study involved over 3000 young people (18 to 30 years old) and followed them for 15 years with a follow-up in an additional 5 years.
- Baseline total WBC counts in young adults was associated prospectively (looking into the future) with coronary artery calcification presence 20 years later after adjusting for age, sex, and race. That is, elevated levels of WBC in the young correlated with development of disease in middle age.
- “Our results suggest the possible early involvement of WBC, particularly eosinophils,^{hh} in the early stages of atherosclerosis.”

It appears that WBC count is a predictor of future disease for very young adults. Is it ever too early to Quarterback your own health?

Elevated WBC counts in your twenties is correlated with disease development in middle age.

WBC and Atrial Fibrillation:

^{hh} Eosinophils are white blood cells and one of the immune system components responsible for combating multicellular parasites and certain infections. Apparently chronic infections that start in our youth can persist and cause clinical disease 20 years later.

The Framingham Heart Study is the most respected study on cardiovascular disease in modern history. A paper titled, “*White Blood Cell Count and Risk of Incident Atrial Fibrillation (From the Framingham Heart Study)*” contributes to the discourse on the risks of slightly elevated WBC counts.¹⁶ According to the author, “Several studies have reported that inflammatory markers are associated with atrial fibrillation (AF). The white blood cell (WBC) count is a widely available and broadly used marker of systemic inflammation. Our sample consisted of 936 participants with an average age of 76. The white blood cell count (WBC) was 5,600 to 7,800. An increased WBC count (within that range of 5,600 to 7,800) was significantly associated with incident AF.”

“In conclusion, in our community-based sample, an increased WBC count was associated with incident AF (atrial fibrillation) during 5 years of follow-up. Our findings provide additional evidence for the relation between systemic inflammation and AF.”

This study on WBC and atrial fibrillation shows that a count well within normal range has a significant association with this disease. The data does not suggest that a value of 5,600 is now considered abnormal and dangerous, however a value of 7,800 surely is.

WBC and Cancer:

A Japanese team examined the association between white blood cell (WBC) count and the development of gastric cancer by following 2,558 people over the age of 40, for 19 years.¹⁷ The people were grouped according to WBC status as follows:

< 4,500; 4,500 – 5,200; 5,300 – 6,300; > 6,300

Age adjusted and sex adjusted incidence of gastric **cancer increased linearly with higher WBC level**. The risk of gastric cancer is 2.22-fold higher in the highest WBC count group (>6,300) when compared to the lowest group. Further, the risk for gastric cancer was even higher in the upper WBC group when the patients tested positive for H. pylori infection.ⁱⁱ

Conclusions:

There are thousands of medical research articles that discuss the topic of white blood cell count, death, and disease. A PubMed search of “leukocyte” and “mortality” brings up 239,000 distinct journal citations. The most important conclusion to draw from this section is that WBC count is very easy and inexpensive to obtain and it provides significant information about your current and future health.

The numbers that modern medicine assigns to “normal” (interpreted as “healthy” ranges), especially on the upper end are DEAD wrong.^{jj} What is the “high” WBC count of concern? The research we cite here show that health is not defined by some arbitrary cut-off number. That is, you are not healthy at a value of 6699 but unhealthy at 6701. **WBC counts show a continuum of health. This is real world.**

Do NOT worry about your numbers. Instead, worry about the causes of the numbers by finding a doctor who will dig deeper and broader into your physiology and health. To do this, you will probably have to leave the standard-of-care and the payer system if you want to achieve real health.

ⁱⁱ H-pylori bacterium is a known carcinogen of the digestive tract. When the immune system detects H-pylori, it responds in several ways including the “recruitment” of white blood cells. Thus WBC counts are higher DUE TO the infection. This is not a book on treatment but, the odds are in your favor that if your H-pylori infection is properly treated, your WBC count will go down, and with it your risk of gastric cancer.

^{jj} The upper “normal” values determine your risk for very immediate and sudden death from sepsis. The values are not designed to help you understand your future chronic disease risk. Understanding your long-term risks, thus prevention of illness and death in the future, is in your own hands.

Your numbers will then find the right value for you and not some arbitrarily defined number that a bunch of officials decide is appropriate for reimbursable treatment.

Do not expect the published upper range of normal for WBC to change to reflect new views of its health predictive value. In fact, the trend is just the opposite. The WBC normal range has actually expanded over the past several decades. And WBC is not the only expanded range. Normal uric acid used to be defined as 5.8 or below. At that level uric acid is soluble in your tissue. Above that value it forms painful crystals in your joints. So why is the new “normal” value 9? ^{kk} This is beyond comprehension. Your only option is to personally understand the implications of “so-called” normal values and then Quarterback your own health real normal values.

Finally, what causes elevated WBC and how can you be treated to reduce your risk of sudden or early disease or death? The following is taken from the previous chapter. “White blood count is the number of white cells. High WBC can be a sign of infection.”

Red Blood Cell Distribution Width (RDW)

Doctors view red blood cell distribution width (RDW) as a measure of anemia. However, that is only a small part of its meaning. This measurement, often ignored in the standard of care, is a profound measurement of your current health risk and future health prognosis.

A complete blood cell count with differential includes the RDW data. However, many labs are not publishing this data because doctors don’t want it included on the reports. Thus the RDW becomes one less thing to explain. It is disappearing on the major medical websites like Mayo and WebMD too.

The following information about RDW is from answers.webmd.com (yes it was on WebMD, but not up front with the other blood count information – it’s fading away.....): ¹⁸

“RDW stands for the red blood cell distribution width. This is a standard reported measure on a complete blood count (CBC) lab test. It measures the variability in red blood cell size.

In the normal state, red blood cells are continually being produced and removed from the blood at a steady rate. The young, immature red blood cells are larger than mature red blood cells. There are predictable proportions of large and small red blood cells, which can be plotted on a graph as the normal values.

In certain forms of anemia, the RDW may be higher than normal because there are more immature or abnormal red blood cells skewing the statistical range of values.

The RDW result is nonspecific. If a doctor suspects an unusual form of anemia, there are more sophisticated tests that can make the diagnosis.”

WebMD used what we call “the kiss of death” term for RDW – “nonspecific.” Nonspecific in standard-of-care lingo means doctors do not have a drug specifically made to treat this diagnosis. So the drug companies and doctors want it gone. They prefer expedient diagnoses like cholesterol so they can quickly prescribe a pill and send you on your way (to poor health).

Nonspecific, however, is what disease is. Governments, societies, and actuaries come up with categories of disease. But as you saw from the last chapter, we have only 5 types of white blood cells defending our health – yet there are tens of thousands of named diseases. Who is right, ICD-10 or our bodies?

^{kk} Knee replacement surgery is more lucrative compared to proper uric acid management. Also, elevated uric acid is a good predictor of future cardiovascular diseases as shown in the Framingham Heart Study.

Also, according to medical authorities, RDW is (another) piece of information about potential anemia. Again, the pundits are DEAD wrong. RDW, in actuality, provides much more information than anemia about your current and future health. This test needs to come back for those interested in Quarterbacking their own health. Further, you Quarterbacks will need to perform your own diagnosis, beyond that of anemia.

Indeed, red blood cell distribution width is re-emerging as an indicator of a variety of chronic diseases with cardiovascular diseases leading the list, at least among medical researchers. A PubMed search that includes the term “red blood cell distribution width,” in the “title only” yielded 349 articles. Many of the articles discuss the association between RDW and disease. About 42% of the articles tied abnormal RDW and cardiovascular diseases and 15% associated abnormal RDW with early mortality. Table 6.3 shows that this test is specific for cardiovascular disease risk and that, when RDW is abnormal, many diseases may crop up in a person. This table further illustrates the connectivity of diseases and shows that the WebMD statement that this is a test for anemia is WAY OFF BASE.

Disease or Indication	% Articles
Mortality (all cause)	14.90%
Cardiovascular Diseases	
Cardiovascular disease (non-specific)	14.90%
Heart Failure	7.21%
Heart attack	4.81%
Acute coronary artery syndrome	4.33%
Stroke	3.85%
Thrombocytopenia	2.88%
Hypertension	2.40%
Atrial fibrillation	0.96%
Carotid artery atherosclerosis	0.48%
Total – Cardiovascular Diseases	41.82%
Anemia	11.54%
Metabolic syndrome	3.85%
Inflammation	3.37%
Iron deficiency	3.37%
Kidney function	2.40%
Liver disease	1.92%
Rheumatoid arthritis	0.96%
Cancer	0.96%
Acute infection	0.96%
TSH – thyroid function	0.96%
Sepsis	0.96%
Poor functional status	0.96%
Brain injury / head trauma	0.96%
COPD	0.96%
Dyspnea (shortness of breath)	0.96%
Blood (hematologic disease)	0.48%
Microcytosis	0.48%
Capillary velocity	0.48%

Disease or Indication	% Articles
Tuberculosis	0.48%
Hematuria (blood in urine)	0.48%
Hepatitis B	0.48%
Bone marrow stimulation	0.48%
Membrane integrity	0.48%
Lupus erythematosus	0.48%
HIV	0.48%
Vitamin B12 deficiency	0.48%
Obstructive sleep apnea	0.48%
Crohn’s disease	0.48%
Ulcerative colitis	0.48%
Smoking	0.48%
Lung cancer	0.48%
Acute appendicitis	0.48%

Table 6.3. Abnormal red blood cell distribution width and disease.

RDW is a measure of heart disease and mortality! Pay close attention to your values and any changes towards or out of normal ranges. Also note that RDW ranges are not presented in the previous chapter. The reason is that the source for the complete blood count used to create that list did NOT contain this very important parameter. RDW is disappearing from the medical diagnostic landscape.

Shame on you – whomever is making this decision – namely The American Medical Association.

WebMD indicates that “In certain forms of anemia, the RDW may be higher than normal because there are more immature or abnormal red blood cells skewing the statistical range of values.” But there is another side to this story that WebMD and almost all other authorities miss. Figure 6.1a shows how red blood cells look normally. They are round and disc shaped. Now observe Figure 6.1b closely. This is an image of red blood cells travelling through a capillary. They must squeeze through the capillary because the diameter of the capillary is smaller than the blood cell.

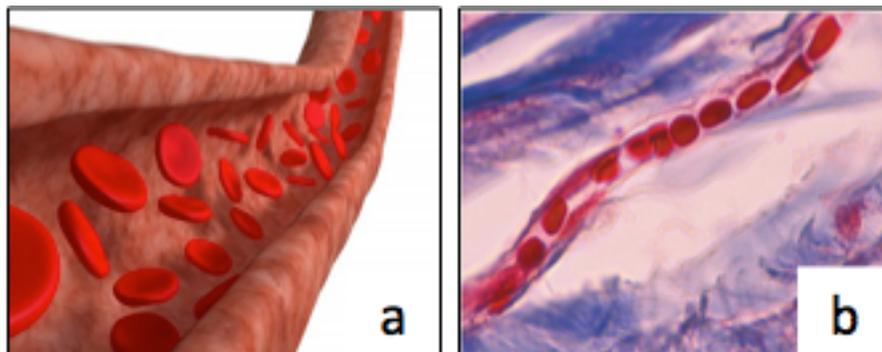


Figure 6.1. Red blood cells: a. Normal shape, b. Deformed in a capillary.

Now consider what happens as we develop vascular disease. Figure 6.2 shows a normal and diseased vessel. Picture in your mind how deformed red blood cells become when they must squeeze through a capillary that is diseased and loaded with plaque. As these cells continuously go through these unhealthy vessels, they become increasingly damaged and this is reflected in “swelling” of these blood cells and an increased blood cell width. Perhaps now it is more clear why

the vital measurement – red blood cell distribution width – is so highly correlated with cardiovascular disease and early mortality.

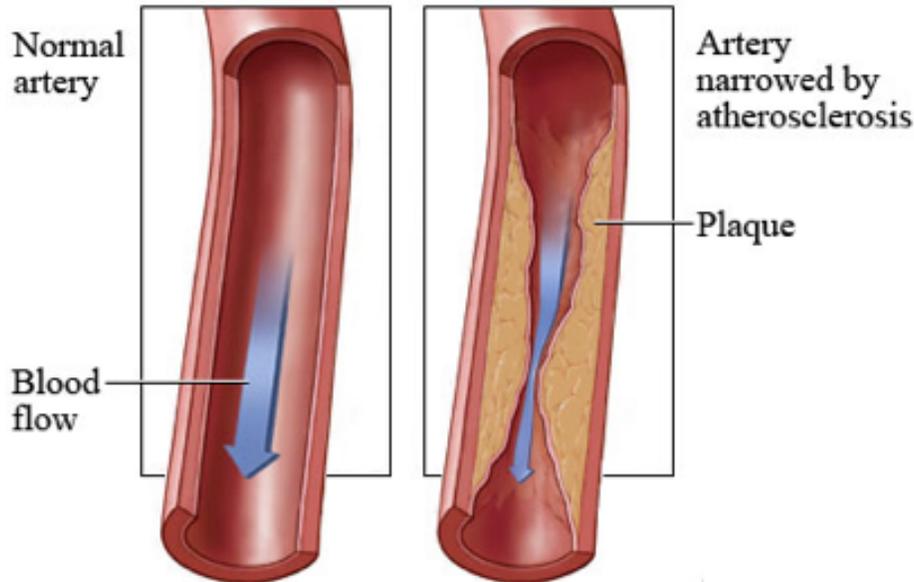


Figure 6.2. Healthy and diseased blood vessel.

RDW is an (early) indicator of atherosclerosis – which is inflammation and plaque formation in our vessels.

Medscape provides a normal range for RDW that is reproduced here: ¹⁹

“The reference range for RDW is as follows:”

- RDW-SD 39-46 fL ²⁰
- RDW-CV 11.6-14.6% in adult ²¹

Medscape continues by including the caveat: “Reference ranges may vary depending on the individual laboratory and patient's age.” Indeed, variations make sense based on age. But the variation of reference (normal) ranges between laboratories – without reference to age - is befuddling.

Medscape does a very thorough job describing the adverse effects of abnormal RDW. They report up to 21 medical conditions associated with elevated RDW. However, Medscape does NOT mention cardiovascular diseases or early mortality – that are the most highly linked to abnormal RDW among medical researchers. The authors of Medscape need to read their journals and not rely on inaccurate “sources” of standard-of-care information.

RDW – Mortality Link

There is abundant published research on the connection between abnormal red blood cell distribution width and mortality. Here is a summary from a couple of key published studies:

A Harvard Medical School and Harvard School of Public Health team published, "*Red blood cell distribution width and mortality risk in a community-based prospective cohort.*" ²² Their conclusion is simple (sort of):

“Higher RDW was associated with increased mortality risk in this large, community-based sample, an association not specific to CVD. Study of anisocytosis ^{ll} may therefore yield novel pathophysiological insights, and measurement of RDW **may** contribute to risk assessment.”

They also state:

“..the highest quintile of RDW, compared with the lowest, was significantly associated with **134% increased risk of CV mortality** after multivariable adjustment” and

“..the highest quintile of RDW, compared with the lowest, was significantly associated with an **88% increased risk of death due to cancer.**”

Abnormal red blood cell distribution width is an (early) indicator of cardiovascular disease, cancer, and early death.

It is both interesting and unusual to see one biomarker, in this case RDW, associated with both cancer AND cardiovascular disease. This type of clear correlation hints at the possibility that the causes of these two diseases may overlap. We know this is heresy in the halls of cardiology and oncology, however – even though it’s true.

Red blood cells do not form into “abnormal” sizes without a reason. ^{mmm} What could the cause(s) of this abnormality be? Well, both cancer and cardiovascular diseases are chronic diseases. And we started this book by saying inflammation is at (or, more correctly, close to) the root of all chronic diseases. It should be of no surprise that the Harvard team found “a possible role for inflammation.” Here is what Harvard had to say:

“We hypothesized that the association of RDW with mortality risk may be due to underlying inflammation, as inflammation is increasingly appreciated to contribute to the pathogenesis of chronic disease. Our data support an association of anisocytosis with inflammation, and suggest that the association of RDW with mortality risk may in part be due to an affect of inflammation on both anisocytosis and risk. We did not find that the association of RDW with mortality risk is entirely dependent upon inflammation, as the risk associated with RDW was not significantly diminished in participants with a low CRP level compared with those with a high CRP level.”

The Harvard group is making a slight misinterpretation on their measurement of inflammation. Measuring CRP is a very good way to measure inflammation, but it is not the only way. CRP is really a measure of vascular inflammation specifically. White blood cell counts and a variety of other parameters should be included in a complete evaluation of inflammation.

Three important lessons are learned from this elegant study:

1. Abnormal RDW is a strong predictor of future serious deadly chronic disease.
2. Inflammation is connected with chronic disease and with abnormal RDW.
3. The correlation in 2. above is not absolute thus, no single test, either CRP or RDW are definitively predictive as stand-alone tests.

^{ll} Anisocytosis mean heterogeneity of (various sizes of) red blood cells.

^{mmm} RBC and the hemoglobin molecule are formed at an extraordinary rate (one trillion hemoglobin molecules per second). Every red blood cell in our bodies is replaced every 3 months because they become damaged from continuous circulation and being squeezed through capillaries. If the bone marrow is not healthy, the red blood cells may be produced in different sizes.

Notice that the Harvard team said this (RDW) may contribute to risk assessment. What do they want, a 10000000% increase before they say “should?” What they really (truly) mean is RDW must be considered when Quarterbacking your own health. Please go to your doctor and demand the test (or results since their lab has the data from the complete blood count test). Help us create “pull through” marketing. If enough educated people ask for appropriate tests, maybe healthcare will do the right thing by our children, if not us.

Harvard Medical School does not hold exclusive knowledge on the RDW / disease and death connection. What follows is a short list of research titles on this topic and includes their affiliations:

“Red cell distribution width as a novel prognostic marker in heart failure: data from the CHARM Program and the Duke Databank.”²³ Duke Clinical Research Institute, Durham, North Carolina; London School of Hygiene and Tropical Medicine, London, United Kingdom; University of Glasgow, Glasgow, United Kingdom; Brigham and Women’s Hospital, Boston, Massachusetts; McMaster University, Hamilton, Ontario, Canada; AstraZeneca LP, Wilmington, Delaware.

“Relation Between Red Blood Cell Distribution Width and Cardiovascular Event Rate in People With Coronary Disease.”²⁴ Department of Medicine, Division of Nephrology, University of Alberta, Alberta, Edmonton, Canada; Harvard School of Public Health, Boston, Mass; London Health Sciences Center, London, UK; University of Texas School of Public Health, Austin; and Brigham and Women’s Hospital, Boston, Mass.

“Red cell distribution width and mortality in predominantly African-American population with decompensated heart failure.”²⁵ Detroit Medical Center/Wayne State University, Detroit, MI.

“Red blood cell distribution width and the risk of cardiovascular morbidity and all-cause mortality: a population-based study.”²⁶ Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, Medical division, Maccabi Healthcare Services, Tel Aviv, Israel.

“Red Blood Cell Distribution Width and Risk of Cardiovascular Events and Mortality in a Community Cohort in Taiwan.”²⁷ Prof. Yuan-Teh Lee, Department of Internal Medicine, National Taiwan University Hospital, 7 Chung Shan South Road, Taipei 100, Taiwan.

“Increased Red Blood Cell Distribution Width Associates with Cancer Stage and Prognosis in Patients with Lung Cancer.” Respiratory Center, Shinko Hospital, Kobe-city, Hyogo, Japan.

“Red cell distribution width: an inexpensive and powerful prognostic marker in heart failure.”²⁸ Department of Cardiology, Division of Cardiovascular and Respiratory Studies, Postgraduate Medical Institute, Castle Hill Hospital, Kingston-upon-Hull, East Yorkshire, UK.

Red cell distribution width is part of our chronic disease temperature™. Here are the ranges of RDW that we consider important, starting with “normal” or no risk and escalating to values of high concern: < 12.5% (normal); 12.5 – 13.0; >13.0 – 13.5; >13.5 – 14.3; >14.3

Quarterbacks, this last title tells a lot. The test is inexpensive and yet a very powerful prognosticator for your current and, more importantly, future health. Ask your doctor for a “CBC with diff,” and shock him/her by requesting your RDW data.

Glucose

Elevated glucose may be your #1 health concern simply due to the sheer number of people impacted by diabetes, the disease that often follows this marker.^{mn} Those with type II diabetes are at much higher risk for cardiovascular disease, cancer, and a myriad of other afflictions. What is a common thread in all these diseases? Inflammation.^{oo} Our biggest concern about elevated blood sugar, beyond the diseases it may cause, is its improper management within the standard-of care. And that management is the direct treatment to lower sugar levels in the blood while completely ignoring the root inflammatory causes of the disease in the first place.

“Prediabetes” is potentially the largest healthcare epidemic facing Americans. In prediabetes, your blood sugar (glucose) is chronically elevated, but the ravages associated with this condition have not progressed to clinical (diagnosable) diabetes. Jane Brody discusses the breadth of prediabetes in a New York Times article with some excerpts provided here.²⁹

“Over 79 million Americans over the age of 20 have prediabetes. Up to 70 percent of them will go on to develop diabetes, but **90 percent don’t even know they are at risk**. In fact, as many as 28 percent of adults with full-blown diabetes don’t know they have it, according to Edward W. Gregg, a senior epidemiologist at the Centers for Disease Control and Prevention.”

“Among its serious complications are heart disease, stroke, kidney damage, nerve damage, eye disease (which can lead to blindness), foot damage (which can lead to amputations) and hearing loss. The condition even has been linked to dementia, including Alzheimer’s disease.”

We know diabetes is a major health risk but are you aware that prediabetes is not just a risk for future diabetes but is a serious health risk unto itself? The National Institute of Diabetes and Digestive and Kidney Diseases explored this possibility in a paper titled, “*The Prevention or Delay of Type 2 Diabetes*.”³⁰ Here is their conclusion including supporting references dating back to 1998.

“There is also growing evidence that at glucose levels above normal but below the threshold diagnostic for diabetes, there is a substantially increased risk of cardiovascular disease (CVD) and death.”^{31,32,33,34,35}

Slightly elevated glucose is tied to heart disease, Alzheimer’s, pre-diabetes, diabetes, and premature death.

America is not the leader in prediabetes. Adam Minter of the Washington Post writes,³⁶ “China is now home to a quarter of the world’s diabetes sufferers. That amounts to more than 100 million people — nearly 12 percent of the population. **More than 600 million Chinese suffer from prediabetes**. And the country’s healthcare system, already struggling to provide affordable access to hundreds of millions of uninsured rural residents, isn’t anywhere near ready to care for tens of millions of chronic disease sufferers.”

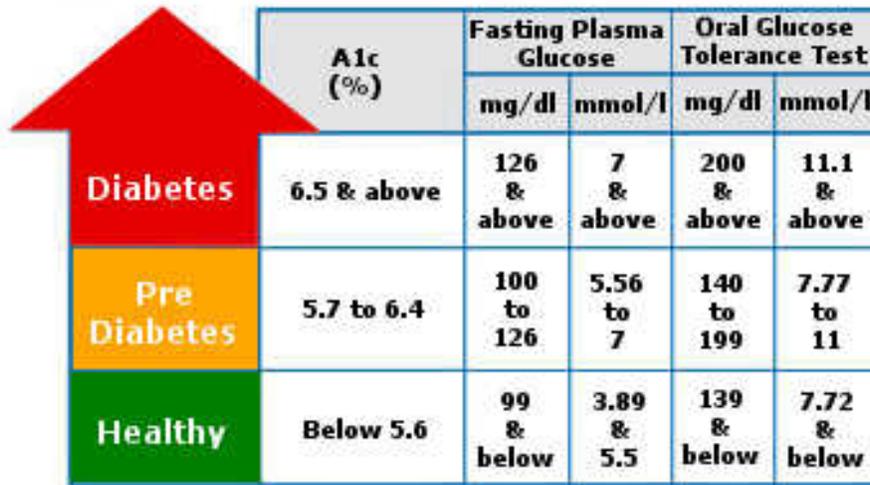
“Normal” Glucose Levels:

A normal glucose (sugar) level is currently considered to be less than 100 mg/dL when fasting and less than 140 mg/dL two hours after eating. But in most healthy people, sugar levels are even lower. During the day, blood glucose levels tend to be at their lowest just before meals. For most people without diabetes, blood sugar levels before meals hover around 70 to 80 mg/dL. In some, 60 is normal; in others it is 90.

^{mn} Note that fasting serum insulin elevates months or years before glucose elevates, thus is a better early marker of a metabolic disorder like diabetes.

^{oo} Even though we state this as a common thread, the authorities on diabetes will disagree. However, since we have an epidemic, it is clear that the current theories and approaches are failing.

There are several ways to screen for blood sugar. There is the fasting plasma glucose (FPG) test, oral glucose tolerance test (OGTT), and glycated hemoglobin A1c test. The (Hb)A1c test measures your average blood glucose for the past 2 to 3 months. The advantages of being diagnosed this way are that you don't have to fast.³⁷ Also, since it provides an average over time (of sorts), as a single value, it is more reliable. Obtaining more than a single value, over a period of weeks or months, will provide a better overview of your health compared to a single data point.



	A1c (%)	Fasting Plasma Glucose		Oral Glucose Tolerance Test	
		mg/dl	mmol/l	mg/dl	mmol/l
Diabetes	6.5 & above	126 & above	7 & above	200 & above	11.1 & above
Pre Diabetes	5.7 to 6.4	100 to 126	5.56 to 7	140 to 199	7.77 to 11
Healthy	Below 5.6	99 & below	3.89 & 5.5	139 & below	7.72 & below

Figure 6.3. The standard-of-care limits for measuring blood sugar.³⁸

Glucose Levels of Concern

Dr. David Perlmutter, board-certified neurologist, fellow of the American College of Nutrition, and best-selling author is very concerned about glucose levels below that which concerns most doctors. In his book, “Grain Brain,”³⁹ he reveals that **an organ severely impacted by barely elevated blood sugar is the brain.** According to research reviewed by Perlmutter, elevation in blood sugar correlates with the rate of brain atrophy, specifically hippocampal atrophy, and cognitive decline. Modest blood glucose levels, over a long period of time, may be a significant cause of Alzheimer’s disease. He states,

“Slight elevation in the A1c test infers a process that increases inflammation and dramatically increases production of free radicals and oxidative stress. Even subtle elevations of sugar, which is a dietary lifestyle choice, are related to risk for brain degeneration.”

Dr. Perlmutter obtains some of his information from the highly prestigious New England Journal of Medicine.⁴⁰ The NEJM authors suggest that higher glucose levels may be a risk factor for dementia, even among persons without diabetes. A glucose level of 115 mg/dl increases dementia risk compared to 100 mg/dl.

The apparent sensitivity of the brain towards glucose levels is not surprising. After all, although the brain accounts for only 2-3% of the mass of our body, it uses 20% of all the oxygen we breathe. The brain requires 1000% more energy compared to average tissue in our bodies. Glucose is a major source of energy. On the surface it appears that excess glucose sounds good as there is more energy being carried in the blood to support the brain’s energy needs. Unfortunately, excess glucose in the blood does not mean it is available for the body to use. Chronic excess glucose in the blood is usually a sign of insulin resistance that is a measure of the body’s decreased ability to transport glucose into cells where it is metabolized and used for energy.

Insulin Resistance

Insulin is a hormone produced by the pancreas, which is central to regulating carbohydrate and fat metabolism in the body. Insulin causes cells in the liver, muscle, and fat tissue to take up glucose from the blood, storing it as glycogen in the liver and muscle.

Insulin stops the use of fat as an energy source by inhibiting the release of glucagon. Insulin is produced within the body in a constant proportion to remove excess glucose from the blood, which otherwise would be toxic. This excess glucose, although toxic, is sorely needed by the brain in metabolic syndrome diseases like diabetes. When blood glucose levels fall below a certain level, the body begins to use stored sugar as an energy.

I know the concept of too much sugar or too much energy may seem foreign at first but our bodies operate best within tight, well defined ranges. Consider that our atmosphere contains about 21% oxygen. At higher levels, we become sick because of excess free radical. When we fly in an airplane, air pressure and oxygen levels are kept within a “comfortable” range to avoid altitude sickness. Water in our bodies also must be maintained within a tight range. Athletes lose 10% of their performance with just a 5% drop in fluid levels in their bodies. And this is just a short-term effect. Chronic dehydration is a serious debilitating condition.

Over long periods of time, our bodies will adapt to changes. We become able to survive in a state of dehydration without dying, and we can endure high altitudes, again, without dying. But, within a human lifetime, we do not make the kind of physiological adaptations that allow us to thrive, we just survive. The same holds true of energy. Our bodies were NOT designed to receive large quantities of energy constantly. When they do, our bodies adapt by taking that “available” energy and converting it to “stored” energy (fat). When we do this day-after-day, our bodies change the way it manages influx of calories. In essences, it converts into a “storage” rather than a “usage” mode. This new adaptation, called insulin resistance, tends to make us fatter, and less efficient at using the energy we take in by the way of food – particularly sugars.

Insulin resistance normally refers to reduced glucose-lowering effects of insulin. When control of glucose levels fails, type 2 diabetes may result. Patients with type 2 diabetes are often insulin resistant and, because of such resistance, more insulin is secreted. This is the body’s adaptation.

Enhancing brain insulin signaling by means of intranasal insulin administration enhances temperature regulation and glucose levels in response to food intake. This suggests that central nervous (brain) insulin contributes to the control of whole-body energy regulation. In layman’s terms, this means that the control center for insulin is the brain. And since the brain has a much higher metabolism compared to most tissue in our bodies, it is highly impacted. **Dysregulation of insulin activity can impact the whole body because of the impact on the brain.**

Inflammation is now implicated in causing insulin resistance. A scholar.google.com search of “insulin” and “inflammation” yields 1,080,000 hits. Using our cost calculator, ^{PP} this translates to \$540,000,000,000 in research spent investigating this and related concepts. A 2008 UC San Diego review titled, “*Inflammation and Insulin Resistance*” is just one of many papers with the exact same title.⁴¹ The abstract of that paper is provided below:

“Obesity-induced chronic inflammation is a key component in the pathogenesis of insulin resistance and the Metabolic syndrome. In this review, we focus on the interconnection between obesity, inflammation and insulin resistance... While the initiating factors of this

^{PP} We estimate that each research publication costs at least \$500,000 to produce considering research time, overhead, and manuscript preparation.

inflammatory response remain to be fully determined, chronic inflammation in these tissues could cause localized insulin resistance.”

They have it backwards. The first sentence in the quote above should more appropriately state that chronic inflammation a key component in insulin resistance and eventual obesity. We have inflammation first, then we have obesity, for example. This connection between inflammation and insulin resistance (thus diabetes, obesity, and other metabolic diseases) fits with our original thesis that chronic inflammation is associated with the cause of most (all?) of the chronic diseases we suffer. If this hypothesis is wrong and glucose or insulin are the disease, then strategies to control them, not inflammation, should help people with these disorders. Let’s see how that has worked out.

Tight Control of Glucose

The conventional wisdom is that “poorly controlled” glucose (high glucose levels) must be lowered. This could be a deadly recommendation. We agree that high glucose levels, triggered by insulin resistance, by way of inflammation, is a severe medical problem. However, high glucose is the symptom. The choice of management can have serious health consequences.

Within the standard-of-care, “controlled” diabetes generally implies keeping blood glucose levels below 170 mg/dL. The ACCORD (Action to Control Cardiovascular Risk in Diabetes) clearly shows that diabetics on “intensive” glucose control ⁹⁹ have very high death rates compared to those not so well controlled.

“In February 2008, the glycemic control study of ACCORD was halted on the recommendation of the study’s data safety monitoring board due to the finding of an **increased rate of mortality in the intensive arm compared with the standard arm.**” ⁴²

Treatment to LOWER glucose (Intensive control of glucose) – to “normal levels” kills diabetics faster compared to modest or no control.
But most diabetics are being “intensively controlled.”

Why are there excess deaths associated with tight glucose control? The brain, tells the story. Its high energy demands are imperative for survival. Under intensive glucose control, there is less glucose available as an energy supply. And diabetics are insulin resistant, meaning their bodies cannot use available glucose efficiently, this is a perfect storm AGAINST the brain. Because the brain is so highly metabolic, it needs NO control of glucose levels to obtain the energy it requires to function and regulate your overall health. Your brain should be left in charge of your glucose levels, not some drug.

The ACCORD MIND study looked at the impact of glucose control on cognitive function. University of Edinburgh researchers wanted to know why type 2 diabetes patients are at significant risk of cognitive decline. ⁴³ They suspected hypoglycemia, most likely caused by insulin administration as a “candidate risk factor.” ⁴⁴ They concluded, “The relationship between cognitive impairment and hypoglycemia appeared complex, with severe hypoglycemia associated with both poorer initial cognitive ability and accelerated cognitive decline.”

The various medical websites provided very different information on a “hypoglycemia” search. The Mayo Clinic boldly states, “hypoglycemia is most common among people who take insulin, but it can

⁹⁹ Intensive glucose control implies the patient’s glucose level is lowered to normal or near normal levels. That is, levels of glucose normal to a non-diabetic.

also occur if you are taking oral diabetes medications. The American Diabetes Association did NOT make any reference to the connection between taking insulin and hypoglycemia. **Why?** Do they have your best health interests in mind? A search of “ACCORD” on their site brings you to a page titled, “Mixed Results From ACCORD.” Deeply imbedded in the article is how tight control of blood sugar increases mortality.

Here is our request to medicine: Stop controlling glucose levels in the diabetics and causing too many of them to die prematurely while destroying their brains! Find the cause of insulin resistance and treat it. Decreasing blood glucose with drugs and insulin in type 2 diabetes treats the symptoms, not the cause of the disease.

The American Diabetes Association quotes some studies that refute the ACCORD study findings. However, they are spending far too much time defending a failed approach – but a money-making approach. Elevated glucose is not the disease and insulin is not the cure.

Treating Diabetes and Prediabetes

The best treatment for diseases of excess sugar, which are within your control, is to adopt an anti-inflammatory lifestyle. Sugar is an inflammation-causing substance. Elimination of sugar and high glycemic foods is the first step to preventing and reversing type II diabetes. But there are other inflammation-causing foods and lifestyle factors that will augment reduction in sugars.

What is an anti-inflammation strategy?

Anti-inflammation is a strategy to BUILD immune health so when it acts on our behalf, it does so decisively and then quickly settles back down to normal levels.

Anti-inflammation is a strategy to create an internal balance that enables your body to reestablish a proper physiology. One outcome is suppression of the growth of otherwise opportunistic pathogens that contribute to chronic inflammation.

Anti-inflammation is NOT a strategy to suppress inflammation (with NSAIDs, antioxidants, and other immune system depressants). This may be a strategy to quell short-term inflammation that causes pain but it is inappropriate for the management of chronic inflammation.

In practice, anti-inflammation is achieved through consistent exercise and a diet rich in whole foods that provide high phyto-, micro-, and macronutrient content with emphasis on obtaining a desirable Omega-6 to Omega-3 ratio (somewhere between 5 to 1 and 2 to 1) as a good starting point. It also involves stress management, getting off prescription drugs, and actively returning your body, mind, and spirit to good health.

Be careful not to confuse the terms antioxidant and anti-inflammation. They are not the same. In fact, they may be diametrically in opposition. The innate immune system is in part an oxidative process, with white blood cells as our first line of defense. They identify and kill invaders with peroxide – a highly oxidizing substance. Oxidative stress is frequently cited as a cause of inflammatory diseases, but this is likely from downstream effects of the inflammatory process, and is not primary.

David Sinclair from Harvard Medical School was a founder of Sirtris Pharmaceuticals, the science of which was based on the super antioxidant resveratrol. After the sale of Sirtris, Sinclair stated during an NPR interview, “Antioxidants have shown disappointing results in the area of anti-aging medicine.” Proceed with caution and act on the behalf of the health of your immune system. Obtain your antioxidants from healthy foods, not supplements. And make your health-creating focus anti-inflammation.

In the event that your diabetic condition cannot be quickly improved with lifestyle changes, medications may be required, at least for the short term. There are so many drug options. Which one is right for you is somewhat individual, but generally, one of the oldest drugs continues to prove itself as the best. A Johns Hopkins School of Medicine study concludes: ⁴⁵

“Evidence supports metformin as a first-line agent to treat type 2 diabetes. Most 2-drug combinations similarly reduce hemoglobin A1c levels, but some increased risk for hypoglycemia and other adverse events.”

More rational for the use of metformin, a proven and very low-cost medication for diabetes is given in a New York Times article titled, *“For Those With Diabetes, Older Drugs Are Often Best.”* ⁴⁶ However, unnatural, patented, for-profit drugs from the pharmaceutical companies should always be a LAST resort, not a first resort.

Metformin, Diabetes, and Cancer

Metformin reduces cancer rates in diabetics. Actually it is so effective that cancer rates in diabetics (who have unusually high cancer rates compared to non-diabetics) on metformin are lower compared to the general population. Here is an abstract titled, *“Metformin in cancer.”* ⁴⁷

“Epidemiological research has established a **link between the widely used insulin-lowering drug metformin and a decrease in cancer incidence.** Previous studies have shown that metformin inhibits growth of cancer cell lines, and, now, a new study by Kevin Struhl and colleagues ⁴⁸ suggests that **metformin inhibits the inflammatory response required for cancer cell transformation.**”

Is it metformin or anti-inflammation in general that works to inhibit cancer cell growth? And do you find it very interesting that cancer is another of many chronic diseases tied to inflammation? The answer is that general anti-inflammation is the reason for the reduced cancer. Diabetics are “inflamed” and, to a lesser extent, so to is the “general population.” Anything you can do to lower your inflammation burden – at the root ^{rr} – will lower your chronic disease risk.

Quarterbacks

Quarterbacks everywhere must find doctors who are willing to dig deeper and find root causes of elevated glucose. Inflammation will be a significant part of their findings. And simple measures like diet (low sugar, high fat, high micronutrient density), and exercise (meaningful and consistent) are the simple keys that you can implement. However, for severe and progressive diabetes and metabolic disorders, treatments addressing the root causes, once clearly identified, may be in order.

Vitamin D

“The Miracle Vitamin,” by Paula Dranov, states, “new evidence shows that getting enough vitamin D may be the most important thing you can do for your health.” ⁴⁹ This is a true statement and the preferred way to get vitamin D is through sun exposure and by taking cod liver oil. Cod liver oil contains the key fat-soluble vitamins A, and D. Most importantly, this natural source contains all the variations (isomers) of the vitamins. Quarterbacks need to avoid synthetic vitamins and seek food sources because real, not bottled, vitamins are often more complex than a single, simple molecule supplied by CVS.

^{rr} Again, lowering inflammation with a direct anti-inflammatory is the wrong approach and usually makes the patient worse over time. Prednisone, NSAIDs, and other direct “hammer and nail” methods to lower inflammation is the WRONG approach.

Many of us are vitamin D deficient. The Harvard School of Public Health states, “Worldwide, an estimated 1 billion people have inadequate levels of vitamin D in their blood, and deficiencies can be found in all ethnicities and age groups. Indeed, in industrialized countries, doctors are even seeing the resurgence of rickets, the bone-weakening disease that had been largely eradicated through vitamin D fortification.”⁵⁰ These figures are **severe underestimates of the actual number of people deficient** because the threshold for deficiency is too low to protect people from serious disease – as you will see in this section.

The impacts of vitamin D deficiency are many and serious. The previous section was on insulin resistance. The effects of vitamin D deficiency, either acting in concert or alone, serve to increase insulin resistance.⁵¹ This is just the tip of the iceberg when it comes to vitamin D.

The health benefits of adequate vitamin D are prominently highlighted in the New York Well blog. Key recent headlines in the publication concerning vitamin D include:

- Low Vitamin D Levels Linked to Disease in Two Big Studies.⁵²
- What Do You Lack? Probably Vitamin D.⁵³
- Low Vitamin D Tied to Premature Death.⁵⁴
- Vitamin D May Lower Cholesterol.⁵⁵
- Low Vitamin D Tied to a Pregnancy Risk.⁵⁶
- Low Vitamin D Tied to Aging Problems.⁵⁷

Insufficient vitamin D impacts our health from pre-birth to death.

The term “vitamin” is a misnomer for vitamin D. It is really a hormone. The word “vitamin” means something our body needs that it can’t make, so must be obtained from food. “D hormone” (vitamin D) is instead, an essential substance that we make in our skin from sun exposure. It is a hormone like progesterone, estrogen, or testosterone. Using the proper word “hormone” gives us a clue that it affects multiple parts of our body and that it is essential to every cell in the body.

Vitamin D has a significant effect on the activity of 229 genes (at latest count). “Vitamin D status is potentially one of the most powerful selective pressures on the genome in relatively recent times.”⁵⁸ As with magnesium, the action of vitamin D is the envy of the drug companies. Very few, if any synthetic drugs, positively impact so many genes.

Serum vitamin D levels do not indicate the amount of vitamin D stored in body tissues. Vitamin D, although not synthesized by sunlight in the winter in the northern hemisphere, is available to the body by storage in fat throughout the year, assuming adequate exposure to sunlight during summer months. Thus, it is very important to continually obtain vitamin D either through the sun or through supplementation, regardless of your immediate vitamin D serum (blood) levels.

Vitamin D is naturally present in very few foods. In nature its only true source is through exposure to the sun. It promotes the first stage of calcium absorption for bone health and also is involved in bone growth. Other roles for vitamin D include involvement in cell growth, neuromuscular and immune function, and reduction of inflammation. The National Institutes of Health produced the following table, Table 6.3, of vitamin D levels found in foods:

Food	IUs
Cod liver oil, 1 tablespoon	1,360
Swordfish, cooked, 3 ounces	566
Salmon (sockeye), cooked, 3 ounces	447

Food	IUs
Tuna fish, canned in water, drained, 3 ounces	154
Orange juice fortified with vitamin D, 1 cup	137
Milk, vitamin D-fortified, 1 cup	120
Yogurt, fortified, 6 ounces	80
Sardines, canned in oil, drained, 2 sardines	46
Liver, beef, cooked, 3 ounces	42
Egg, 1 large (vitamin D is found in yolk)	41
Cheese, Swiss, 1 ounce	6

Table 6.4. Vitamin D levels found in foods.

God’s Antibiotic

Vitamin D was (inadvertently ^{ss})used to treat tuberculosis in the pre-antibiotic era. It is truly God’s antibiotic. A review of a historical study from 1848 reveals that cod liver oil was an effective treatment for tuberculosis. ⁵⁹ In the study, carried out by physicians at the Hospital for Consumption, Chelsea (now the Royal Brompton Hospital), 542 patients with consumption (tuberculosis) received standard treatment with cod liver oil. These patients were compared with 535 'control' patients who received standard treatment alone (without cod liver oil).

TB was stabilized in 18% of the patients given cod liver oil, compared with only 6% of those in the control group – a 3-fold improvement. Deterioration or death occurred in 33% of patients given standard treatment alone, but in only 19% of those given cod liver oil, a reduction of 45%.

The steady fall in tuberculosis deaths in the late 19th and early 20th centuries is often attributed to better living conditions. While a reduction in overcrowded living might have reduced transmission, improved nutrition was probably as important. It could well be that the widespread use of cod liver oil encouraged by doctors played a significant part.

Cod liver oil is a rich source of Vitamin D, which we now know is important in fighting infections, as well as preventing conditions such as rickets, which was the reason children were given the vitamin D rich food. A role for vitamin D in combating tuberculosis gives a rational basis for sunshine therapy, which was widely practiced for patients in sanatoriums before chemotherapy became available, as vitamin D is synthesized in the skin when exposed to the sun. Patients were put out on their beds to lie in the sun in summer and winter, and many were sent to Switzerland and other sunny countries for treatment.

Despite the overwhelming evidence that vitamin D saved untold human suffering, man endeavors to find alternative reasons. However, most clinical trials scientists devise are flawed. Why? Our bodies are far too complicated and integrated to be impacted by a single substances both beneficial or antagonistic. Our bodies are a symphony. It is very difficult to reproduce Beethoven’s fifth with a trombone!

Researchers from Creighton University’s Osteoporosis Research Center explain why some studies on substances known to create health appear to prove otherwise. As and example, consider their research paper, *“Why Randomized Controlled Trials of Calcium and Vitamin D Sometimes Fail.”* ⁶⁰ They indicate that major studies on nutrition often give misleading and particularly false-negative results. Here is an excerpt:

^{ss} The rationale for sanatoria was that before antibiotic treatments existed, a regimen of rest, sunlight, and good nutrition offered the best chance that the sufferer’s immune system would “wall off” pockets of pulmonary tuberculosis (TB) infection. Indeed good nutrition helped. But at high elevation, patients were able to produce therapeutic amounts of vitamin D.

“Indirectly we have shown also that research questions concerning nutrient efficacy in humans are intrinsically hard to address... It is inescapable that conclusions drawn from null-effect studies (no positive effect from the nutrient) that contain significant biological flaws reveal essentially nothing about nutrient efficacy.”

Despite the odds against positive outcomes for studies on single nutrients combating disease, vitamin D, although not a symphony of health creation, may be a string quartet. In a trial to replicate the efficacy of vitamin D toward treating tuberculosis, researchers found that four doses of 2-5mg vitamin D3 significantly hasten sputum culture conversion ^{tt} in participants with a certain genotype. ^{61,62} In simplified terms, this means that vitamin D is effective against TB.

Vitamin D and Disease

Dr. Johanna Parker and colleagues from the UK revealed, through a monumentally large patient study review, including 6130 references and 28 clinical studies including 99,745 participants, that high ^{uu} levels of serum vitamin D were associated with the following: ⁶³

- 43% reduction in cardio metabolic disorders,
- 33% reduction in cardiovascular diseases,
- 55 % reduction in type 2 diabetes, and
- 51% reduction in metabolic syndrome

“Interventions targeting a positive modification of vitamin D deficiency in adult and elderly populations could substantially contribute to halting the current epidemics of cardio metabolic disorders,” according to Dr. Parker. In other words, take vitamin D supplements. More importantly, take cod liver oil, because it contains fish oil and ALL the variants of vitamin D and vitamin A. Your synthetic supplement does not. It is very rare for one simple thing – taking vitamin D – to be so impactful towards our overall health.

Vitamin D is actually a hormone that it is essential to every cell in the body

Good health and preventing premature mortality needs to be the concern of all Quarterbacks. Sufficient vitamin D provides protection against premature death. This point is driven home by research that estimates the reduction in mortality rates for six geopolitical regions of the world. Simply by doubling your vitamin D level, you will enjoy 2 more years of healthy living.

Under the assumption that serum vitamin D levels increase from 54 to 110 nmol/l (22 to 44 ng/ml), the estimated increase in life expectancy is 2 years. ⁶⁴ Dr. Grant from Sunlight, Nutrition, and Health Research Center, San Francisco, the study author concludes, **“Increasing serum vitamin D levels is the most cost-effective way to reduce global mortality rates, as the cost of vitamin D is very low and there are few adverse effects from oral intake and/or frequent moderate UVB (sun) irradiance with sufficient body surface area exposed.”**

Two Men with Opinions on Vitamin D

Oliver Gillie is from the Health Research Forum, London, U.K. He makes a strong case for the need to increase your vitamin D status. Dr. Gillie believes that professionals and politicians need to be

^{tt} Conversion of sputum mycobacterial cultures from positive growth to negative growth of Mycobacterium tuberculosis in patients with pulmonary tuberculosis (TB) is considered the most important interim indicator of the efficacy of anti-TB pharmacologic treatment. Vitamin D alone, “treats” TB in certain patients.

^{uu} High is subjective, it simply means the highest 25% of the individuals tested. It is likely lower compared to what we consider high – or more appropriate, optimal, that being 60 – 100 ng/mL.

apprised of the negative health consequences of low vitamin D status on our health. We believe that Quarterbacks know what to do for your own good health. Here are portions of the abstract from Dr. Gillie's paper titled, *"The Scots' Paradox: Can Sun Exposure, or Lack of it, Explain Major Paradoxes in Epidemiology?"*⁶⁵

"It is suggested that different degrees of vitamin D insufficiency in populations can explain important differences in the health of nations and resolve health paradoxes. The analysis also shows that vitamin D insufficiency is a consequence of industrialization and, like other consequences of industrial growth, such as water and air pollution, needs to be corrected by public health measures. Direct intervention with use of supplements and fortification of foods with vitamin D can be expected to provide considerable health gains, but progress will be slow until there is greater recognition of the vitamin D health crisis by the public, professionals and politicians. Health professionals need to be trained and motivated to encourage use of supplements, particularly by pregnant and nursing mothers, and infants. New advice and new fashions are needed to encourage maximum exposure of skin to summer sun without burning."

Michael Holick is arguably the foremost expert on all aspects of vitamin D. His pedigree cannot be questioned. Simple proof is that he was thrown out of the American Dermatological Society in 2005. Such actions always means there is a threat to the establishment. Dr. Holick writes prolifically on the topic of vitamin D. One informative paper is titled, *"Sunlight and Vitamin D, A global perspective on health."*⁶⁶

"Vitamin D is the sunshine vitamin that has been produced on this earth for more than 500 million years. Sun induced vitamin D synthesis is greatly influenced by season, time of day, latitude, altitude, air pollution, skin pigmentation, sunscreen use, passing through glass and plastic, and aging. Vitamin D is metabolized sequentially in the liver and kidneys into 25-hydroxyvitamin D which is a major circulating form and 1,25-dihydroxyvitamin D which is the biologically active form respectively. Most cells and organs in the body have a vitamin D receptor and many cells and organs are able to produce 1,25-dihydroxyvitamin D. As a result 1,25-dihydroxyvitamin D (the active form) influences a large number of biologic pathways which may help explain association studies relating vitamin D deficiency and increased risk for many chronic diseases including autoimmune diseases, some cancers, cardiovascular disease, infectious disease, schizophrenia and type 2 diabetes. A three-part strategy of increasing food fortification programs with vitamin D, sensible sun exposure recommendations and encouraging ingestion of a vitamin D supplement when needed should be implemented to prevent global vitamin D deficiency and its negative health consequences."

Dr. Holick provides user friendly insights into the importance of vitamin D supplementation, sun exposure, and toxicity in an interview by Andrew W. Saul that Quarterbacks should read.⁶⁷

The Right Vitamin D Level

What do you feel is more important, the number for your daily intake of vitamin D or the number for the level of vitamin D in you body? Your vitamin D status is clearly the most important but most medical sites focus on intake, not levels. The National Institutes of Health (NIH) and the Institute of Medicine publishes a fact sheet that provides Recommended Dietary Allowances (RDAs) for Vitamin D.⁶⁸ We purposely do not reproduce their values because new science clearly shows they are inadequate. The NIH, on their website state, "Practically all people are sufficient at levels ≥ 50 nmol/L (≥ 20 ng/mL); the committee stated that 50 nmol/L is the serum 25(OH)D level that covers the needs of 97.5% of the population. Serum concentrations >125 nmol/L (>50 ng/mL) are associated with potential adverse effects."⁶⁹

Notice the term “potential.” Either there are adverse effects noted or there are not. This is a very flimsy stand by the Feds because it is abjectly incorrect. The adverse effects number is completely wrong unless there is an underlying disease that is activating vitamin D. There is no dependable data that >50 ng/mL is harmful. Michael Holick determined through his, and the research of others, that there are no adverse effects of vitamin D up to 140 ng/ml (350 nmol/L), a level almost impossible to achieve through supplementation and not possible to obtain through sun exposure. This information is provided in his informative book titled, “*The Vitamin D Solution*”⁷⁰

The stated “sufficient” values by the NIH are woefully inadequate as mounting evidence from credible studies indicate. The numbers they present only take into consideration skeletal diseases but abjectly exclude the broader health benefits of higher vitamin D status.

If you are worried about the epidemic of chronic diseases, not just a hip fracture, then you need to consider a new optimal vitamin D level. An Australian and New Zealand group made the effort to review the vitamin D literature in 2013 looking back through time.⁷¹ What they found is the minimum effective serum vitamin D levels are lower for skeletal disease, e.g., rickets (25 nmol/L), osteoporosis and fractures (50 nmol/L), than for severe diseases according to the following estimates:

- Premature mortality (75 nmol/L),
- Depression (75 nmol/L),
- Diabetes (80 nmol/L),
- Cardiovascular disease (80 nmol/L),
- Respiratory infections (95 nmol/L), and
- Cancer (100 nmol/L).

Should you strive for a level of 50 nmol/L as guided by the NIH? Maybe it is better to err on the high side and you will reduce a myriad of chronic diseases including cancer. Why is there a variation? The diseases are different for one thing, and vitamin D metabolism is tissue dependent, so the serum levels of vitamin D signifying deficiency or sufficiency are disease dependent.

The scientific, not the governmental, consensus is that oral intake should be 1000-5000 IU/day vitamin D with a goal of 30-40 ng/ml (75-100 nmol/L).^{72, 73} What should you do? Maximize your vitamin D level to (at least) 100 nmol/L (40 ng/mL). We recommend a level of 60 ng/mL.

Table 6.5 provides a rule-of-thumb for how vitamin D daily intake may translate to vitamin D levels in your blood.⁷⁴

IU/day	Likely Level, ng/mL
1000	20
2200	30
3600	40
5300	50
7400	60
10100	70

Table 6.5. Potential association between vitamin D (25-hydroxy vitamin D) intake and vitamin D blood levels.

Some people take doses of vitamin D shown in the table above but do not achieve the corresponding blood level. This may be a sign that your body is “activating” the vitamin D to an unusually high degree in the process of protecting you against disease. The activated form of vitamin D, and its measurement, is arguably the most important part of understanding vitamin D as it relates to your health.

Activated Vitamin D

Understanding how your body handles vitamin D is crucial to appreciating the “numbers” you get from blood tests. We use the term “vitamin D” loosely as it is not one chemical but many according to Harvard Medical School.⁷⁵ The first step in the natural process of obtaining vitamin D from the sun is the production of vitamin D3 from cholesterol (do you have sufficient cholesterol in your body?). In the liver, a chemical reaction occurs that produces 25-hydroxyvitamin D, or 25(OH)D.^{vv} This is the substance that doctors measure to diagnose vitamin D status.^{ww}

Although 25(OH)D is used for diagnosis, it does not function in a meaningful way until it travels to the kidney. There it undergoes more transformations to become 1,25 dihydroxyvitamin D. Scientists know this active form of the vitamin as 1,25(OH)₂D, or calcitriol. Quarterbacks need to know three things about calcitriol, or what is best referred to as activated vitamin D:

1. It is formed in response to need. Our bodies do make activated vitamin D normally, but when we have certain illnesses, more is produced.
2. High levels of activated vitamin D sometime indicate the body’s response to disease. A more common cause is calcium dysregulation. Either way, it is a diagnostic of a medical problem.
3. Doctors seldom measure the activated vitamin D but it is probably more important to know compared to “normal” serum vitamin D. Get both tests when possible.

Think of vitamin D (the 25-hydroxy vitamin D or “normal” vitamin D) as your army waiting for combat in their barracks. When your body needs help fighting disease, the vitamin D “soldiers” come out of the barracks at grab their weapons. These “armed” soldiers are the activated form of vitamin D. Importantly, activation of 25-hydroxy vitamin D to the 1,25-dihydroxyvitamin D occurs in inflamed tissue.

The activated form of vitamin D is working in concert with our immune system to deal with inflammation at its source. This “activation” process is often the reason ingested vitamin D supplements appear not to raise the serum vitamin D levels in patients. In this capacity, a measurement of blood vitamin D levels, for those under supplementation, may reveal a disease process in progress. Those patients with low vitamin D levels, but who have “adequate” intakes of the substance should be tested for the activated (1,25-dihydroxy) form of vitamin D.

According to labtestonline.org: “When calcium is high or a person has a disease that might produce excess amounts of vitamin D, such as sarcoidosis or some forms of lymphoma (**because immune cells may make 1,25-dihydroxyvitamin D**), 1,25-dihydroxyvitamin D (calcitriol, activated vitamin D) usually is ordered.”

Quest Diagnostics publishes reference ranges for 1,25-dihydroxyvitamin D (calcitriol), Table 6.6.

1 – 9 Years	31 – 87 pg/mL
10 – 13 Years	30 – 83 pg/mL
14 – 17 Years	19 – 83 pg/mL
Adult	18 – 72 pg/mL

Table 6.6. Activated vitamin D reference ranges from Quest Diagnostics – Standard-of-care.

Activated Vitamin D – Advanced Studies

^{vv} We use the term “vitamin D” for 25-hydroxyvitamin D, or 25(OH)D, not vitamin D2, or vitamin D3 for simplicity because the former is what is measured in you blood.

^{ww} Vitamin D2 is the synthetic form and is almost identical to vitamin D3.

This brief section is for you zealots who want to know the who/what/where of vitamin D metabolism and function. Here we have included the highlights from a paper titled, “*Vitamin D in Health and Disease.*”⁷⁶

“When bound to the vitamin D receptor and a variety of other helper proteins, calcitriol seems to be just the right key to open up the locked stores of DNA information, allowing the cell to transcribe the plans and produce the proteins needed for tissue-specific responses (protection and repair). The helper proteins that are a part of this complex determine the region of the DNA that will be transcribed. Without vitamin D, the ability of the cell to respond adequately to pathologic and physiologic signals is impaired. For example, the ductal epithelium of the breast requires vitamin D to mount an adequate response to cyclic variation in estrogen and progesterone.⁷⁷ Also, macrophages use vitamin D to enable the synthesis of the bactericidal peptides needed to deal with bacterial invaders.⁷⁸ In addition, most of the epithelial structures in the body, which turn over relatively rapidly, use vitamin D to signal the transcription of proteins that regulate cell differentiation, cell proliferation, and apoptosis.⁷⁹

This explains how vitamin D protects against tuberculosis.

A key take-home point from the article is that the interplay of the various forms of vitamin D and your body are complex. Activated vitamin D levels can play a significant role in diagnosis AND treatment. Vitamin D (D3 is best) is a critical and much needed supplement.

Alzheimer’s and Vitamin D

Alzheimer’s disease may be positively impacted by the activated form of vitamin D. A Canadian group carried out long-term treatment of mice with activated vitamin D and it reduced beta amyloid plaque formation of both the soluble and insoluble type. Of particular importance, the amyloid reduction occurred in the hippocampus region of the brain. This led to improvement in conditioned fear memory. The data suggest that the vitamin D receptor and treatment with vitamin D or its activated form is important therapeutically for the prevention and treatment of Alzheimer’s disease.⁸⁰

Cancer and Vitamin D

A PubMed database search yields 63 observational studies on vitamin D status in relation to cancer risk, including 30 on colon, 13 on breast, 26 on prostate, and 7 on ovarian cancer, and several that assessed the association of vitamin D receptor genotype with cancer risk. The majority of studies found a protective relationship between sufficient vitamin D status and lower risk of cancer. The evidence suggests that efforts to improve vitamin D status, for example by vitamin D supplementation, could reduce cancer incidence and mortality at low cost, with few or no adverse effects.⁸¹

Vitamin D and Inflammation

Researchers at National Jewish Health discovered specific molecular and signaling events by which vitamin D inhibits inflammation. In their experiments, they showed that low levels of Vitamin D, comparable to levels found in millions of people, failed to inhibit the inflammatory cascade, while levels considered adequate did inhibit inflammatory signaling. They reported their results in *The Journal of Immunology.*⁸²

“This study goes beyond previous associations of vitamin D with various health outcomes. It outlines a clear chain of cellular events, from the binding of DNA, through a specific signaling pathway, to the reduction of proteins known to trigger inflammation,” said lead author Elena Goleva, assistant professor of pediatrics at National Jewish Health. “Patients with chronic

inflammatory diseases, such as asthma, arthritis and prostate cancer, who are vitamin D deficient, may benefit from vitamin D supplementation to get their serum vitamin D levels above 30 nanograms/milliliter."

Since we profess that inflammation is the key to the major chronic diseases, it makes sense that vitamin D has a role in controlling the inflammatory response, since adequate levels reduce the incidence of these diseases. The study on inflammation show us that a level of 30 ng/mL may be adequate for halting (some) inflammation, but it is not optimal based on diseases like cancer. Enjoy sensible and frequent exposure to sun and strive for 60 ng/mL.

Quarterback, be heartened that vitamin D testing is one of the most frequently ordered test. However, some insurance companies are demanding doctors state a "medical necessity" to have this test obtained. If you are stonewalled by the healthcare system, consider ordering your own vitamin D blood test through an organization like www.LEF.org as they offer blood testing as part of their product offering.

Cholesterol

In this section we almost use the terms "cholesterol" and "statins," the drugs created to reduce cholesterol, interchangeably. Rarely in recent medical writings are the two terms not found together. However, Quarterbacks need to know that cholesterol is vital to life and artificially lowering levels found naturally in our physiology is **NEVER** appropriate. Cholesterol will achieve the "right" level in your body when you treat the cause(s) of disease. Thus we argue vehemently against the methods currently in vogue.

The management of cardiovascular disease, through the lowering of cholesterol, is the single-minded approach of contemporary medicine. Cholesterol is considered an infidel within our bodies. Is it true? In other words, is elevated cholesterol a root cause of the disease or is it more of a sign or symptom. And, most importantly, what is the new science on the level of cholesterol in our body that is healthy?

In 2007, nearly 1 million Americans died of cardiovascular disease accounting for 34% of all deaths and it continues to be either the largest or second largest medical cause of death, competing with all types of cancer. There has been a decrease in deaths since a peak in 1968 and the decrease is attributable to many factors but is closely tied to the surgeon general report on smoking in 1964.

A variety of drugs that do well to manage, but not cure the disease are available since about three decades ago. One is statins for lowering cholesterol, but beta blockers, ACE inhibitors, and Angiotensin Receptor Blockers (ARB) also have impact on the symptoms of cardiovascular disease. None of these drugs treat the true causes of the disease. And this is intentional as the drug companies make much more money by treating symptoms (see Chapter 1). We show in this section that **all medical advancement, procedures, and treatments, have had a miniscule impact on cardiovascular mortality.**

Medical advancement has had minimal impact on heart disease compared to smoking cessation.
--

The cholesterol fighting miracle drugs were introduced in the 1980s. Cholesterol offered a great culprit for disease and provided an easy, one step, and one parameter, diagnostic and treatment for cardiovascular disease. Since then this class of drug is second only to penicillin with regard to its pervasiveness into medicine. Some might use the term "impact" over "pervasiveness," but that might mislead you into believing this class of drug is highly effective.

In 25 years \$300 billion has been spent on statin prescriptions to treat those at “high” cardiovascular disease risk. Now anyone with the slightest elevation in cholesterol gets the prescription sheet handed to him or her regardless of their health. Also, statins are starting to be recommended for non-cardiovascular diseases. Statins are clearly a wonder drug, right? They are remarkable at reducing cholesterol levels, but what about disease and death?

Is Lowering Cholesterol a Cure?

A picture is worth a thousand words. Let’s examine how well modern medicine, and its use of statins, or better said, cholesterol lowering drugs, have performed to protect us from cardiovascular diseases. First let’s establish a baseline for what a cure looks like.

Baseline Disease 1: Pellagra is a vitamin deficiency disease most commonly caused by a chronic lack of niacin (vitamin B3) in the diet. Thus the cause is well known and so is the treatment. Pellagra is a deadly disease and Figure 6.4 presents a death rate trend curve that shows what a true root-cause cure can do to mortality rates.⁸³

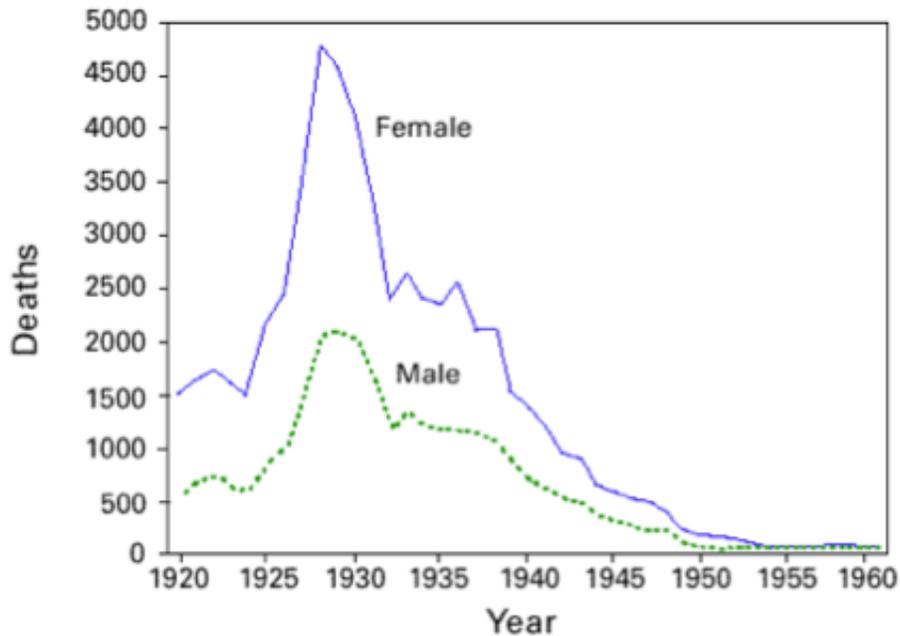


Figure 6.4. Number of reported pellagra deaths in the United States, 1920-1960.⁸⁴

Note that death rates fall precipitously to nearly zero. This is what a medical cure looks like.

Baseline Disease 2: Tuberculosis, or TB (short for tubercle bacillus) is a common, and in many cases lethal, infectious disease caused by various strains of mycobacteria, usually *Mycobacterium tuberculosis*. Tuberculosis typically attacks the lungs, but can also affect other parts of the body.

The TB death rate curve, Figure 6.6, shows the power of knowing the cause of the disease and treating it. However, there is apparently some complacency or lack of understanding about TB as it is making a slight comeback in the 21st century.⁸⁵

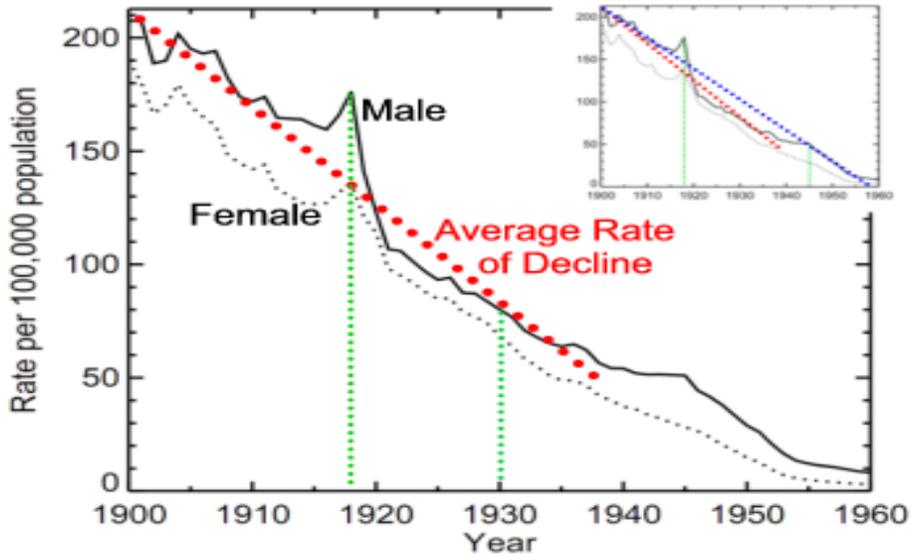


Figure 6.5. Tuberculosis death rate per 100,000 population, 1900-1960.

Baseline Disease 3: Typhoid fever, also known simply as typhoid, is a common worldwide bacterial disease transmitted by the ingestion of food or water contaminated with the feces of an infected person that contain the bacterium. It is treated (cured) with antibiotics, Figure 6.6).⁸⁶

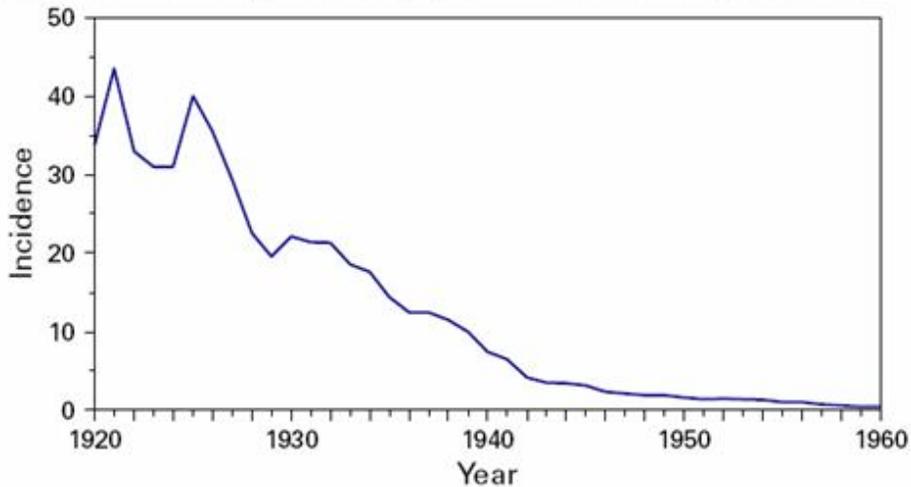


Figure 6.6. Incidence of typhoid fever per 100,000 population – U.S., 1920-1960.

Let’s look at the cardiovascular disease mortality curve and compare it to our three baseline diseases that have a cure. Also, compare the cardiovascular disease mortality curve to the smoking trend curve. Keep in mind that statin therapy to “cure” cardiovascular disease began in the 1980s, as did beta blockers, ACE and ARBs. Over 30 million Americans are on statin drugs today (Figure 6.7a,^{87,88} Figure 6.7b⁸⁹)

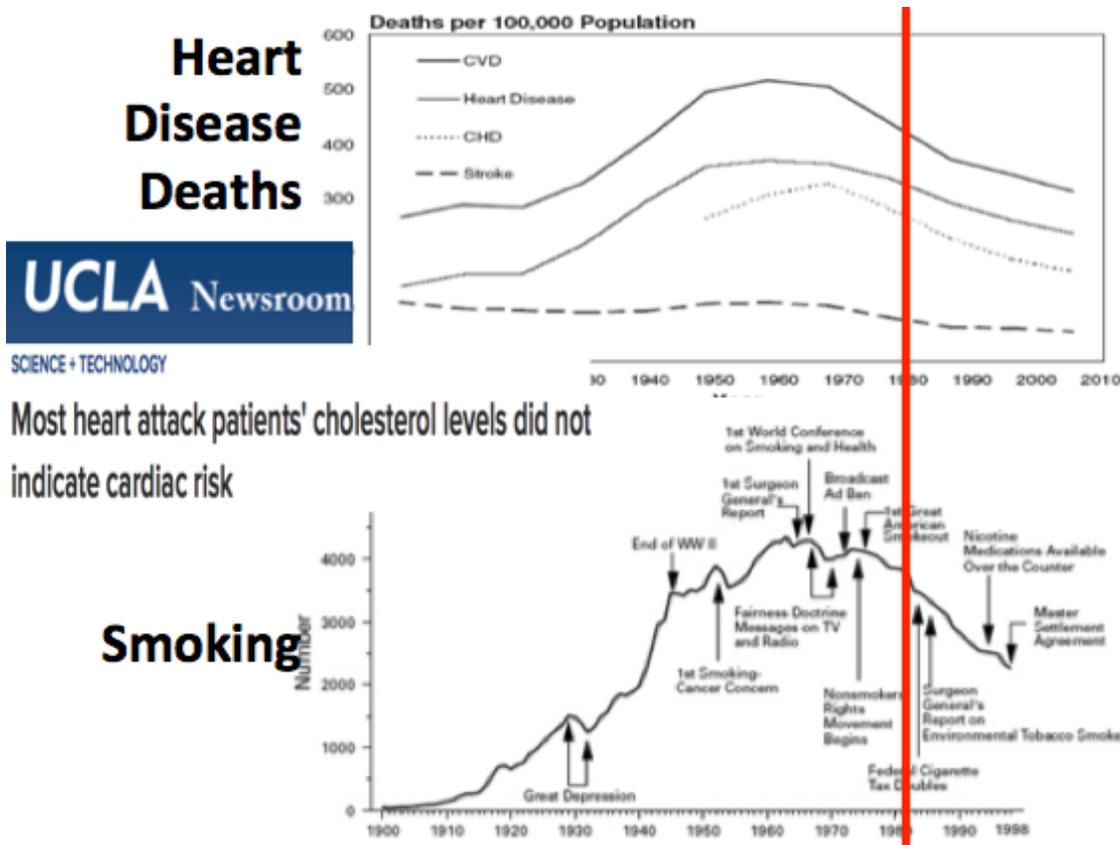


Figure 6.7a (top curve). Death rates for cardiovascular diseases by year, U.S. according to the Centers for Disease Control.

Figure 6.7b (bottom curve). Annual per capita cigarette consumption and major smoking and health events, U.S., 1900 – 1998.

Hmmm. Yes, there is a reduction in cardiovascular disease deaths but it appears to correlate with smoking trends starting around 1965. The vertical red line show the year statin drugs were introduced - 1980. By 1990, ten years after their introduction, about 10,000,000 Americans were on statin drugs. If these drugs prevent up to 50% of heart attacks and reduce cardiovascular mortality, why is there an upward bend in the mortality curves?. What do you conclude about statins and the cholesterol revolution to cure us from heart disease? You are right, don't smoke and DO NOT TAKE STATINS – THEY ARE USELESS.

Statistical data shows these drugs do reduce cardiovascular mortality, in middle-aged males with severe disease, but only slightly. However, all cause mortality is not reduced. Do statins therefore address the root cause of heart disease? Some doctors and other health professionals were so convinced about the value of statin, that there were actually proposals to put this drug in our drinking water.⁹⁰

These graphs illustrate the shortcomings of statin drugs. What are some experts saying 30 years into the cholesterol diagnosis and statin treatment? As mentioned in Chapter 1, Proto Magazine is an internal publication for health care professionals that are part of the Harvard Medical School healthcare network. In 2011, a feature article was published called, "Questioning Statins." The byline was "WHAT STATINS MIGHT DO FOR YOU: Lower cholesterol // Reduce risk of cardiovascular disease // Cause muscle pain and fatigue; Fail to significantly prolong your life." Other gems in this publication include "Statins don't seem to confer the ultimate health benefit – longer life. So is

lowering cholesterol as important was everyone has been led to believe?” – Harvard Medical School.

Harvard dropped the bombshell in their Proto magazine but it remains completely ignored even at Harvard hospitals. Also stated in the Harvard magazine, “Why did statins appear to protect the hearts of people who didn’t have high cholesterol? It could be that they not only lower cholesterol but also reduce inflammation.” If you read between the lines, it appears that **Harvard Medical School is saying that cholesterol is not the cause of cardiovascular disease but inflammation is.** We can also infer that statins are anti-inflammatory, but, based on their results against cardiovascular disease, they are very poor at the job and have too many side effects.

Lowering Cholesterol does NOT reduce heart disease but lowering inflammation does.

- Harvard Medical School

Is there a message we could learn from the cholesterol approach and statin use? The statement about inflammation in the Proto publication basically says that \$300 billion was spent on the diagnosis of cholesterol followed by statin therapy, but for the wrong reason. Cholesterol is the wrong diagnosis! We have spent 30 years chasing one cause of cardiovascular disease. It failed and we are still stuck with this being the number one killer and number one cause of disability in our society.

Hopefully these graphs got your attention. Cholesterol has a significant and beneficial role in our bodies. What Quarterbacks need to know is a true optimal range for your cholesterol for maintaining good health today and, especially into your senior years.

Cholesterol and its Guidelines

Cholesterol is often called a waxy fat-like substance. This presents a negative connotation. Who wants an ugly wax build-up in our bodies? Take out the Pledge and wipe it away! Cholesterol is indeed a lipid or fat. The human brain is nearly 60% fat.⁹¹ Not surprising, the brain contains an inordinate amount of cholesterol, that being about 25% of all the cholesterol in the body while being only 2-3% of the body’s mass. Clearly the cholesterol lipid is important for the brain lipids.

Cholesterol moves through the bloodstream by means of lipoproteins that are proteins with “lipo” or fat content. An LDL particle is a microscopic formation consisting of an outer rim of lipoprotein surrounding a cholesterol center. LDL is called low-density lipoprotein because LDL particles tend to be less dense than other kinds of cholesterol-transporting particles. LDL shuttles cholesterol away from the liver, where it is produced, to where it is needed. HDL is structurally similar to LDL but is more dense. It shuttles cholesterol from the body back to the liver for reprocessing or removal after it is used.

Triglycerides are a type of fat (lipid) found in your blood. When you eat, your body converts any calories it doesn’t need to use right away into triglycerides. The triglycerides are stored in your fat cells. Later, hormones release triglycerides for energy between meals. If you regularly eat more calories than you burn, particularly “easy” calories like carbohydrates and simple sugars, particularly fructose, you may have high triglycerides (hypertriglyceridemia).

The Mayo Clinic presents, “*Cholesterol levels: What numbers should you aim for?*” on their website.⁹² These values certainly match the convention wisdom and are shown in Table 6.7. Remember, these are standard-of-care values and not those that we consider important for your present and long-term good health.

Total cholesterol

mg/dL	mmol/L	
<200	<5.2	Desirable
200-239	5.2-6.2	Borderline high risk
>=240	>6.2	High risk

LDL cholesterol

mg/dL	mmol/L	
< 70	<1.8	Ideal / high risk
<100	<2.6	Ideal / Heart disease
100-129	2.6-3.3	Near ideal
130-159	3.4-4.1	Borderline high
160-189	4.1-4.9	High
>=190	>4.9	Very high

HDL cholesterol

mg/dL	mmol/L	
< 40 (men)	< 1 (men)	Poor
<50 (women)	<1.3 (women)	Poor
40-49 (men)	1-1.3 (men)	Better
50-59 (women)	1.3-1.5 (women)	Better
>=60	>= 1.6	Best

Triglycerides

mg/dL	mmol/L	
<150	<1.7	Desirable
150-199	1.7-2.2	Borderline high
200-499	2.3-5.6	High
>=500	>=5.6	Very high

Table 6.6: “Cholesterol” levels according to the standard-of-care. (Note, these values do NOT protect your health.)

We will review what the REAL cholesterol, lipoprotein, and triglyceride levels should be for good health after some more explanation on health misconceptions and the health benefits of these substances.

How Many Lives do Statins (or the lowering of cholesterol levels) Save (answer: zero)

We have already established that statins, and the lowering of cholesterol does not save a single life. Let’s now understand how we get just the opposite message from the media and our doctors.

Medicine speaks in terms of relative, not absolute statistics. Stats.org tell us relative risk tells us nothing about the actual risk.⁹³ As an example, if your relative risk increases by 100% and there are 5 cases in 10,000 before the risk, yes there will now be 10 cases, but that is out of 10,000 or a 0.1% added absolute risk, not 100% as advertised through relative risk calculations.

In the major statin study on risk, simvastatin (Zocor) was used to treat 10,269 patients over 5 years for a total of 51,345 patient year equivalents of treatment. There were 1328 deaths in the treated group and 1507 in the untreated group. The change by relative statistics, from the untreated, to the treated group is 12%.^{xx} Headlines state that statin therapy will reduce your chance of death by 12% but they never state that this is “relative.” Is this number meaningful to you? The answer is “NO” because using absolute statistics, which are meaningful to your longevity, **the actual risk reduction is 0.33%**. How does this work? It takes 51,345 years of treatment to prevent 169 deaths.

Look at the charts on cardiovascular mortality presented earlier. If statins reduced death rates by 12% each year, then cardiovascular death rates in the U.S. would be practically zero today, considering statin use started in 1980. However the curves on the charts do not lie and death rates continue to decline slightly in strong correlation to smoking rates.

There is a sad side to the cholesterol studies and use of statins to prevent cardiovascular disease. The cold, hard facts are that **half of the people who die from cardiovascular disease do NOT have elevated cholesterol**. These people are not included in the study. What is medicine doing for those people? They are not diagnosed and treated because they do not have high cholesterol so when they die it is a “mystery.”

Less than half the people who die from a heart attack had high cholesterol. What is their treatment?

Half the people who get sick from cardiovascular disease are IGNORED in the statin/cholesterol health model.

Statin do reduce **cardiovascular mortality** by 0.33% (emphasis on the words “cardiovascular mortality”) however key questions arise:

1. Are the reduction is cardiovascular deaths due to cholesterol reduction?
2. What are the side-effects of the treatment – in other words, the risk-to-benefit?
3. What impact does statin therapy have on overall, all-cause deaths, not just cardiovascular deaths?

Statins, Cholesterol, and Cardiovascular Deaths

There is no question that statin drugs lower cholesterol levels. Is this the mechanism for the slight (0.33%) reduction in cardiovascular deaths? The suggestion that cholesterol lowering is not what reduces disease or death is an argument that cannot be won today for a couple of reasons.

- First, medicine and the general public have tunnel vision regarding cholesterol.
- Second, there is insufficient published data^{yy} suggesting an alternative mechanism for the action of statins.

However, we have had private communications with researchers from both Pfizer and Warner-Lambert (developers of statins) that another property of statins may be at the root of their (minimal) affect.

^{xx} $\frac{1507-1328}{1507} \times 100 = 12\%$

^{yy} There is plenty of unpublished private data. The drug companies are NOT required to file or publish all their findings. Most of the non-cholesterol lowering data on statins remain unpublished.

There is a dirty little (ginormous) secret about statins that is beginning to leak into the mainstream. Harvard, through Protomag, acknowledged that statins have anti-inflammatory properties and this might be why they have a minor affect against cardiovascular disease. What causes inflammation in the first place? Many things cause inflammation but one of the very few things that cause **chronic inflammation**, the type associated with cardiovascular disease, is **infection**. What is the dirty little secret?

Stains are Antibiotics! ^{zz}

Most of us are antibiotic phobic. We will tolerate a 10 day treatment for Lyme disease or acute infection. However, **would you take antibiotics for life? If you take statin drugs, you are doing just that.**

Patients taking a statin drug are taking an antibiotic
– sometimes for life!

Here are some recent research titles that add credibility to the idea that statins are (and work because they are) antibiotics that reduce infection and inflammation.

- “Studies on the antibacterial effects of statins-in vitro and in vivo.” ⁹⁴
- “Antimicrobial action of Atorvastatin and Rosuvastatin.” ⁹⁵
- “Antibacterial activity of statins: a comparative study of Atorvastatin, Simvastatin, and Rosuvastatin.” ⁹⁶
- “Antimicrobial Effect and Immunomodulation of Atorvastatin.” ⁹⁷
- “Nontraditional Anti-Infectious Agents in Hemodialysis.” ⁹⁸
- “Effect of statin therapy on mortality from infection and sepsis: a meta-analysis of randomized and observational studies.” ⁹⁹
- “View of statins as antimicrobials in cardiovascular risk modification.” ¹⁰⁰
- “Antimicrobial Effect and Immunomodulation of Atorvastatin.” ¹⁰¹
- “Unexpected antimicrobial effect of statins.” ¹⁰²

It is interesting that the term “antibiotic” is not in any of these titles. Thus these researchers are “softening the blow” to the statin industry. Another interpretation is that the statin/drug industry is powerful enough to squelch that term in any publications, or even deny publication of the paper! Yes, this happens. However, anti-infectious, antibacterial, and antimicrobials are all antibiotics.

Are the reduction is cardiovascular deaths due to cholesterol reduction or their anti-inflammatory / antibiotic actions? David R. Nalin, ¹⁰³ a “Science Hero” weighs in on statins. He authored, “*Comment on: Unexpected antimicrobial effect of statins.*” ¹⁰⁴ He astutely pointed out that statins may have antibiotic effect against Chlamydia pneumoniae and that testing should be done. Chlamydia organisms are well documented to be in the plaques of cardiovascular disease (and Alzheimer’s). He concludes with “**the demonstrated benefits of certain statins in reducing progression of atheromatous (heart) disease may partly relate to their antimicrobial efficacy against**

^{zz} There is nothing wrong with antibiotics if you have a disease that warrants their use and you want to get well. The benefits far outweigh risk for this class of drug, generally. Cardiovascular disease appears to be just such a disease. Take a probiotic and otherwise support gut health during the treatment and the harmful effects of the antibiotics can be further reduced

chlamydial organisms ... in addition to their immunomodulatory and anti-inflammatory properties.”

Our problem with Dr. Nalin’s suggestion is there are known and better drugs and drug combinations for battling chlamydias without the profound side effects attributable to statins. **We need to stop our romance with statins and ask doctors to choose the right drugs for the properly diagnosed disease.**

Quarterbacks interested in delving into the science and medicine behind Dr. Nalin’s suggestion about infection and cardiovascular may consider reading a detailed paper by the pioneer of the homocysteine theory of cardiovascular disease, Dr. Kilmer McCully. ^{aaa} We do discuss this connection more fully in a subsequent chapter.

Cholesterol Lowering Does NOT reduce Cardiovascular Disease

Many statin drugs are now “off patent.” That means these drugs can be manufactured by generic drug companies and offered at a lower cost compared to when they were protected under patent laws. Subsequently, the drug industry developed a whole new set of drugs to lower cholesterol. If you need more proof that what is to follow – that cholesterol lowering is wrong, then all I can do is pray for you. Here is an excerpt from the New York Times Health section: ¹⁰⁵ The article is titled, “Dashing Hopes, Study Shows a Cholesterol Drug Had No Effect on Heart Health.”

“It is a drug that reduces levels of LDL cholesterol, the dangerous kind, as much as statins do. And it more than doubles levels of HDL cholesterol, the good kind, which is linked to protection from heart disease. As a result, heart experts had high hopes for it as an alternative for the many patients who cannot or will not take statins.”

“But these specialists were stunned by the results of a study of 12,000 patients, announced on Sunday at the American College of Cardiology’s annual meeting: There was no benefit from taking the drug, evacetrapib. The drug’s maker, Eli Lilly, stopped the study in October, citing futility, but it was not until Sunday’s meeting that cardiologists first saw the data behind that decision.”

“Participants taking the drug saw their LDL levels fall to an average of 55 milligrams per deciliter from 84. Their HDL levels rose to an average of 104 milligram per deciliter from 46. Yet 256 participants had heart attacks, compared with 255 patients in the group who were taking a placebo. Ninety-two patients taking the drug had a stroke, compared with 95 in the placebo group. And 434 people taking the drug died from cardiovascular disease, such as a heart attack or a stroke, compared with 444 participants who were taking a placebo.”

“We had an agent that seemed to do all the right things,’ said Dr. Stephen J. Nicholls, the study’s principal investigator and the deputy director of the South Australian Health and Medical Research Institute in Adelaide. **“It’s the most mind-boggling question. How can a drug that lowers something that is associated with benefit not show any benefit?”** he said, referring to the 37 percent drop in LDL levels with the drug.”

I almost feel sorry for Dr. Nicholls. He has been duped by the drug industry and literally wasted most of his career chasing windmills. ^{bbb} But he could have and should have known better. Cholesterol lowering drugs that were on the market before statins also failed to impart any patient

^{aaa} Ravnskov, Uffe, and Kilmer S. McCully. “Vulnerable plaque formation from obstruction of vasa vasorum by homocysteinylated and oxidized lipoprotein aggregates complexed with microbial remnants and LDL autoantibodies.” *Annals of Clinical & Laboratory Science* 39.1 (2009): 3-16.

^{bbb} “It is easier to be fooled than to be convinced you have been fooled” – Mark Twain

benefit. Cholesterol IS associated heart disease but it is not a cause. In fact, as you read further, you will find out that cholesterol is actually in our bodies to PROTECT us from disease.

The FDA is completely complicit in this cholesterol fraud. They no longer require that drug companies prove that some of their new drugs improve human health. They only have to show that their drug changes a “surrogate endpoint.” In this case, the surrogate endpoint is the lower of cholesterol or the raising of HDL. How have we gotten so far from creating health when our government, charged with protecting human health, can approve a synthetic substance, without even obtaining proof that it works? Of course, the answer is the drug companies provide funding to the FDA.

Statins (or the lowering of cholesterol levels) Causes Disease

For whom are statins and cholesterol lowering strategies intended? The main studies on the impact of cholesterol lowering drugs was on middle-aged men with severe cardiovascular disease and very high (>300) cholesterol levels.

Mark Hyman, is an American physician, scholar, and New York Times bestselling author. He is the founder and medical director of the UltraWellness Center and head of Functional Medicine at the Cleveland Clinic. In a Huffington Post column titled, “*Why Women Should Stop Their Cholesterol-Lowering Medication,*” he writes:

“If you are a post-menopausal woman with high cholesterol, your doctor will almost certainly recommend cholesterol-lowering medication or statins. And it just might kill you. A new study in the Archives of Internal Medicine found that statins increase the risk of getting diabetes by 71 percent in post-menopausal women.¹⁰⁶ Since diabetes is a major cause of heart disease (an premature death for a myriad of reasons), this study calls into question current recommendations and guidelines from most professional medical associations and physicians. The recommendation for women to take statins to prevent heart attacks (called primary prevention) may do more harm than good.”

The 2013 guidelines of the American College of Cardiology and the American Heart Association (ACC–AHA) for the treatment of cholesterol WRONGLY expand the indications for statin therapy for the prevention of cardiovascular disease. The *New England Journal of Medicine* reports, “**The new ACC–AHA guidelines for the management of cholesterol would increase the number of adults who would be eligible for statin therapy by 12.8 million, with the increase seen mostly among older adults without cardiovascular disease.**”¹⁰⁷ The people who should avoid statins, according to new research, is exactly who will be prescribed statins, according to new guidelines, as you will see. This is a money grab only.

As long-term data on the use of cholesterol lowering medications is rolling in there are more and more reported cases with memory and cognition loss. A 2012 New York Times article had the title, “*A Heart Helper May Come at a Price for the Brain: Statins use causes problems with the brain.*”¹⁰⁸

The article outlined cases where people with heart attacks and other cardiovascular problems were prescribed statins, soon begin experiencing memory problems. One statin patient reported that thinking and remembering became so laborious that he could not even recall his three-digit telephone extension or computer password at work and that his brain felt like mush. His doctor suggested a “drug vacation,” and when he stopped taking the statin for six weeks, the problems disappeared. Then he tried a different statin at a high dose, but the cognitive difficulties returned. His doctor has since lowered his dose by more than half, and while the memory lapses have not disappeared, he has learned to cope.

The Food and Drug Administration, at long last, acknowledges what many patients and doctors have believed for a long time: statin drugs carry a risk of cognitive side effects. The agency also warned users about diabetes risk and muscle pain.

Let's look at some recent articles in the top news journals on statins and their side effects:

A New Women's Issue: Statins: ¹⁰⁹

The article points to statins causing a range of diseases while providing little to no benefit in women. Among the diseases are muscle pain, liver and kidney damage, memory loss and confusion, autoimmune disease and, most prominently, diabetes. We further learn that **doctors are under pressure to prescribe statins because cholesterol readings are increasingly used as a quality indicator to rate physicians and health plans.** Dr. Barbara Roberts of Brown University says, "Women can reduce their heart risk by watching their weight, exercising and following a diet rich in fish, fruits and vegetables, nuts and olive oil — and, if they've never had heart trouble, forgetting statins."

Guidelines May Double Statin Use: ¹¹⁰

According to Dr. Steven Nissen, chief of cardiovascular medicine at the Cleveland Clinic, "the report confirmed concerns that the new guidelines don't target the right patients for treatment."

Don't Give More Patients Statins: ¹¹¹

Dr. John D. Abramson of Harvard Medical School, one of the authors of this referenced NY Times article states, "This (giving more people statins) may sound like good news for patients, and it would be — if statins actually offered meaningful protection from our No. 1 killer, heart disease; if they helped people live longer or better; and if they had minimal adverse side effects. However, none of these are the case. **About 140 people need to be treated with statins in order to prevent a single heart attack or stroke, without any overall reduction in death or serious illness.**"

Controversy Over Statins for Older Patients: ¹¹²

Dr. Hosam Kamel, an Arkansas geriatrician who is vice chair of AMDA's ^{ccc} clinical practice committee, said that there is scarce scientific evidence supporting the use of statins by 70- or 80-year-olds without pre-existing cardiovascular disease. There is evidence of harm linked to statin use in seniors, he added, including muscle aches, liver toxicity, and gastrointestinal distress; growing evidence of impaired memory and a heightened risk of diabetes; and some evidence of an increased risk of cancer.

Statins Tied to Cataract Risk: ¹¹³

In one of the largest studies ever done on the subject, researchers have found that taking statins, the widely used cholesterol-lowering drugs, is associated with an increased risk for cataracts.

Can Cholesterol Drugs Undo Exercise Benefits?: ¹¹⁴

An important new study suggests that statins, the cholesterol-lowering medications that are the most prescribed drugs in the world, may block some of the fitness benefits of exercise, one of the surest ways to improve health.

FDA Warns on Statin Drugs: ¹¹⁵

^{ccc} AMDA is a professional group representing physicians working in nursing homes.

The Food and Drug Administration warned that patients taking cholesterol-fighting statins face a small increase in the risk of higher blood-sugar levels and of being diagnosed with diabetes, raising concerns about one of the country's most widely prescribed groups of drugs.

Do Statins Make You Stupid?: ¹¹⁶

The Wall Street Journal Health Journal columnist Melinda Beck revisited questions about whether statin drugs have cognitive side effects that leave users, particularly women, with muddled thinking and forgetfulness. “This drug makes women stupid,” Dr. Orli Etingin, vice chairman of medicine at New York-Presbyterian Hospital, declared at a recent luncheon, according to the Journal.

Impact of Cholesterol on Mortality

The major research focus on heart disease, cholesterol, and cholesterol lowering drugs was on middle-aged men with severe cardiovascular disease. Limited life-saving benefits of statins do not translate to women and apparently have the opposite impact on the elderly and younger people with serious diseases. ¹¹⁷

The journal article from 1998 titled, “Association Between Serum Total Cholesterol and HIV Infection in a High-Risk Cohort of Young Men,” discusses the dangers of statin prescriptions. ¹¹⁸ The authors state, “Low serum total cholesterol (TC) is associated with a variety of nonatherosclerotic (heart) diseases, but the association of TC with infectious disease has been little studied. In this study, we examined the relationship between serum TC and HIV infection in members of a large health maintenance organization in Northern California.” They found that the **men in the study, under the age of 50, had a significantly higher rate of infection if their total cholesterol was <160**. They also found a similar excess risk of AIDS and AIDS-related death. These findings suggest that low serum total cholesterol levels should be considered a marker of increased risk of HIV infection in men already at heightened risk of HIV infection. **Thus cholesterol is apparently protective to our bodies against virus and other infectious species.**

The paragraph above indicates that cholesterol is protective against virus and other infectious species. It's hard to fund research in favor of cholesterol, and it's even harder to fund research that shows cholesterol for what it is, a hormone that protects our bodies – one mechanism of which is antibiotic. However, a paper titled, “Cholesterol as a treatment for pneumococcal keratitis,” does just that. Here is their simple summary:

“Topical cholesterol is an effective treatment for *S. pneumoniae* keratitis. Cholesterol not only inhibits pneumolysin, it is also bactericidal.”

Breaking News: Cholesterol acts like an antibiotic in our bodies –
protecting us from infection.

A study titled, “*Lowering cholesterol concentrations and mortality: a quantitative review of primary prevention trials*” also shows the connection between low cholesterol and higher likelihood of early death. ¹¹⁹ The study authors concluded, “The association between reduction of cholesterol concentrations and deaths not related to illness warrants further investigation. Additionally, the failure of cholesterol lowering to affect overall survival justifies a more cautious appraisal of the probable benefits of reducing cholesterol concentrations in the general population.” It's important to note that this paper was published more than 20 years ago.

In 2012, a Norwegian and Iceland team studied the connection between cholesterol and early mortality. “Is the use of cholesterol in mortality risk algorithms in clinical guidelines valid? Ten years prospective data from the Norwegian HUNT 2 study.” ¹²⁰ The research sought to “document

the strength and validity of total cholesterol as a risk factor for mortality in a well-defined, general Norwegian population without known CVD at baseline.” The authors concluded: “Our study provides an updated epidemiological indication of **possible errors in the CVD risk algorithms** of many clinical guidelines. If our findings are generalizable, clinical and public health recommendations regarding the ‘dangers’ of cholesterol should be revised. **This is especially true for women, for whom moderately elevated cholesterol (by current standards) ^{ddd} may prove to be not only harmless but even beneficial.**”

If you are a woman on statin, you should consider obtaining and reading this paper. Over 15 studies have suggested an inverse relationship between total cholesterol and mortality. That is, people with higher cholesterol have lower overall mortality. Some studies have shown an inverse or a U-shaped association between cholesterol and death from causes other than cardiovascular diseases, such as cancer and Alzheimer’s disease. The phrase “U-shaped association” indicates that higher mortality (or incidences) can be observed both in individuals with low and very high levels of cholesterol compared with individuals with levels in between. It is important to note that a high cholesterol level, at the far end of the U shape, is 350 or more. **A level of approximately 250 is ideal in this context whereas the standard-of-care wants all of us to be below 190.** The Norwegian and Iceland team continues:

“Our results contradict the guidelines’ well-established demarcation line (190) between ‘good’ and ‘too high’ levels of cholesterol. They also contradict the popularized idea of a positive, linear relationship between cholesterol and fatal disease. Guideline-based advice regarding CVD prevention may thus be outdated and misleading, particularly regarding many women who have cholesterol levels in the range of 190-270 and are currently encouraged to “take better care of their health” through the use of statins.”

Older people with low cholesterol (the level your doctor is trying to get you to) are 275% more likely to die compared to those with high (250 – 350) cholesterol.

Over 15 studies have suggested an inverse relationship between total cholesterol and mortality

“Know your numbers” (a concept pertaining to medical risk factor levels, including cholesterol) is currently considered part of responsible citizenship, as well as an essential element of preventive medical care. Many individuals who otherwise consider themselves healthy, struggle conscientiously to push their cholesterol under the presumed danger limit coached by health personnel, personal trainers and caring family members.

Indeed high cholesterol levels are positively correlated with longevity, especially in the elderly. A paper titled, "*Total cholesterol and risk of mortality in the oldest old*" affirms this statement.¹²¹ Let’s put this data into manageable terms for those of you focused on a long and healthy life, in other words, becoming the oldest of the old. Table 6.7 shows how mortality rates GO DOWN as cholesterol levels GO UP.

^{ddd} Interestingly, what is considered as moderately elevated cholesterol today was considered normal about 40 years ago.

All-Cause Mortality Rates and Relative Risks according to Total Cholesterol (Ages >70 years old):

Total cholesterol mg/dL	Mortality Rate per 100 person-years	Relative Risk of Death
<160	11	1.52: 52% <i>increase</i>
161-199	7	1.00
200-240	5	0.77: 23% <i>decrease</i>
>240	4	0.69: 39% decrease

Table 6.7. Increase in longevity with an increase in cholesterol levels.

Older people with the lower level of cholesterol have a 275% higher risk of mortality compared to those in the highest total cholesterol group.

How does this compare with the cholesterol guidelines? Table 6.8 is a chart from earlier in this section:

Total cholesterol		
mg/dL	mmol/L	
<200	<5.2	Desirable
200-239	5.2-6.2	Borderline high risk
>=240	>6.2	High risk

Table 6.8. Standard-of-care FALSE risk based on cholesterol levels.

For those of you in your golden years, we present to you a new definition for total cholesterol:

High risk – based on your current doctor’s standards for high cholesterol - really means a high risk for a long healthy life!

What does this mean to you? First, it does not mean you can treat yourself poorly and expect a long healthy life. You must eat right, exercise, and avoid the obvious bad habits. What it does mean is that your body will self-regulate to protect you. We are learning that cholesterol affords protection against some causes of inflammation that is an inevitable part of aging. Follow the suggestions of Dr. Barbara Roberts of Brown University that we presented above but repeat here because it is basic to your good health.

“Women (and men too) can reduce their heart risk by watching their weight, exercising and following a diet rich in fish, fruits and vegetables, nuts and olive oil — and, if they’ve never had heart trouble, forgetting statins.”

We like to make the following edit to Dr. Roberts’ statement – just **never take statins**. When you follow healthy suggestions like these, your cholesterol levels will find the right levels within your body for your own good health.

Cholesterol and Alzheimer’s Disease

Stephanie Seneff is a Senior Research Scientist at the MIT Computer Science and Artificial Intelligence Laboratory. In recent years, Dr. Seneff has focused her research interests back towards biology, where she started her career. She is concentrating mainly on the relationship between nutrition and health. Dr. Seneff offers a significant advantage over many researchers who

pontificate on statin, health, and disease. MIT does NOT have a medical school thus is not subject to the normal influences of medicine and the pharmaceutical industry.

Dr. Seneff wrote an article titled, “*Why Low-Fat Diets and Statins May Cause Alzheimer’s.*”¹²² The highlights of the article are:

- Insufficient fat and cholesterol in the brain play a critical role in the (Alzheimer’s) disease process.
- Alzheimer’s patients have only 1/6th of the concentration of free fatty acids (from healthy fats) in the cerebrospinal fluid compared to individuals without Alzheimer’s.
- Cholesterol plays a critical role both in nerve transport in the synapse^{eee} and in maintaining the health of the myelin sheath coating nerve fibers.
- Both a low-fat diet and statin drug treatment increase susceptibility to Alzheimer’s.

Dr. Seneff is not alone in piecing together a connection between lipids (fats) and Alzheimer’s. The paper, “*Decreased serum lipids in patients with probable Alzheimer’s disease,*” and several others indicate that low cholesterol levels and Alzheimer’s may go hand-in-hand.¹²³ They investigated the cholesterol/Alzheimer’s link in 30 probable Alzheimer patients and 30 matched controls. “Subjects with probable AD had significantly lower serum triglycerides compared to the control group.” The researchers reported a negative correlation between triglycerides and MMSE (cognitive impairment test) values in both the Alzheimer’s group and the control group. Translated, elevated triglycerides were associated with better memory function.

To understand the flaw associated with statin use for the lowering of cholesterol, and its connection with Alzheimer’s disease, basic brain physiology must be understood. Cholesterol plays a central role in the brain’s metabolism: the fact that the brain accounts for only 2-3% of the body mass and brain cholesterol represents 25% of the total body cholesterol speaks for itself. Overall, the brain is the organ with the highest content of cholesterol in the body. It is clear that fats are important for brain health, and cholesterol is a health-creating fat.

Cholesterol - Final Comments

Indeed very high cholesterol, >300, in mid life is cause for alarm, but the cholesterol is not to blame. Those with high cholesterol before they are elderly are ill and need to be properly diagnosed and treated. Then their cholesterol will come down to levels appropriate for their physiology. Older people have inflammation – it is just a fact of life and aging. The high cholesterol is there to protect you against some of the inevitable ravages of aging.

Quarterbacks, if your cholesterol is way out of whack, find a doctor who will delve into the root cause of your disease and treat that (again, not with direct cholesterol-lowering strategies). We bet that your cholesterol levels will come down on its own with proper treatment strategies that do not target cholesterol lowering.

Finally, manage diet, exercise, and lifestyle to raise your HDL. The value you achieve is unique for you. Do not fret about your “numbers” if you are doing the right things.

Blood Pressure

How do we treat blood pressure today in the standard-of-care? As for most of the other chronic diseases, treatment is through management of symptoms. If blood pressure is high, find a drug that

^{eee} In the nervous system, a synapse is a structure that permits a neuron (or nerve cell) to pass an electrical or chemical signal to another cell

will lower it and worry about root causes some time later – like NEVER. How can you be sure this is true? Medicines that deliver a cure do not have to be given for life.

Here are the major blood pressure drug types and how they work.

- Diuretics help the kidneys get rid of excess salt and water. They are the mainstays of anti-hypertensive therapy and are often the first drug selected for most people with hypertension.
- Beta-blockers work by blocking the effects of the hormone epinephrine, also known as adrenaline. When you take beta blockers, the heart beats more slowly and with less force, thereby reducing blood pressure.
- ACE inhibitors are medications that slow (inhibit) the activity of the enzyme ACE, which decreases the production of angiotensin II. As a result, the blood vessels enlarge or dilate, and blood pressure is reduced.
- ARBs, also known as angiotensin II receptor antagonists, are similar to ACE inhibitors in their ability to widen blood vessels and lower blood pressure.
- Calcium channel blockers prevent calcium from entering cells of the heart and blood vessel walls, resulting in lower blood pressure. Calcium channel blockers, also called calcium antagonists, relax and widen blood vessels by affecting the muscle cells in the arterial walls.
- Vasodilators help open blood vessels by relaxing muscles in the blood vessel walls.
- Alpha blockers help widen small blood vessels. They are generally not used as first-line drugs for high blood pressure, but are prescribed if other drugs do not work or as add-on medication.

Do any of these modes of action sound like they are treating a root cause of hypertension? For example, are calcium entering cells of the heart a disease or a symptom of a disease? The only one that sounds like a root-cause treatment is the diuretics. But is excess salt the symptoms or the cause. All these medications come with a myriad of side effects.¹²⁴ If they are truly working in harmony with our bodies why are there so many side-effects? And why do we need to take them for life? A cure should get us off the meds quickly (oops – there goes those quarterly earnings).

Inflammation

Let's search for a root-cause of hypertension. A good place to start is with inflammation that many and we believe is tied to the causes of all our chronic diseases. One way to determine if inflammation is a cause or symptom is to test the hypothesis. There are studies on the effects of nonsteroidal anti-inflammatory drugs and blood pressure dating back to 1993.¹²⁵ A more recent title concludes, "Given the current literature, it appears that NSAIDs increase blood pressure in patients with controlled-hypertension, but the quantity of this increase is variable. If possible, patients who have hypertension should avoid taking NSAIDs."¹²⁶

Why is inflammation so often the villain? There could be a couple of reasons. First, there is likely some collateral damage caused by the inflammatory cascade. This cascade is the immune system response aimed at protecting us but low-grade chronic inflammation does impact healthy tissue. Second, the alternative (cause) of inflammation is often elusive and even more detested. It is most commonly traced to infection. Indeed, infection is not a popular diagnosis today, but an accurate diagnosis is surely preferable to treatment of symptoms.

"itis" at the end of a word means inflammation. Ask your doctor to find causes but not "treat" inflammation.

The National Heart, Lung and Blood Institute describes inflammation of vessels, also known as vasculitis. “Inflammation” refers to the body’s response to injury, including injury to the blood vessels. If a blood vessel is inflamed, it can narrow or close off. This limits or prevents blood flow through the vessel, one consequence being increased blood pressure. Yet NSAIDs – supposedly anti-inflammatory lead to a rise in blood pressure. They very clearly do not treat the cause of the inflammatory cascade.

Recall our discussion on red blood cell distribution width in a previous chapter. The red blood cells “swell” when vessels constrict. This constriction and subsequent swelling is part of the inflammatory cascade and surely contributes to elevated blood pressure.

A Harvard Medical School team from Brigham and Women’s Hospital in Boston appreciate that inflammation and blood pressure are intimately connected.¹²⁷ The Harvard team concludes:

“These data suggest that increased blood pressure may be a stimulus for inflammation and that this is a possible mechanism underlying the well-established role of hypertension as a risk factor for atherosclerotic disease.”

They are suggesting disease happens like this: 1. Blood pressure goes up; 2. Inflammation occurs; and 3. Heart disease is a consequence of 1 by way of 2. This appears inconsistent with the mechanism of vasculitis where inflammation causes the vessels to narrow. Inflammation usually is associated with swelling. Chronic inflammation, in the case of chronic disease, logically may cause tissue to slowly swell, or swell slightly – as illustrated by the red blood cell width test. We believe that the proper order for the disease process is:

1. Inflammation occurs,
2. Blood pressure goes up,
3. Heart disease risk increases due to the factors that cause inflammation.

A PubMed search of “inflammation” and “blood pressure” or “hypertension” yields over one million records. One is titled, “*The Immunological Basis of Hypertension.*” The conclusion of the research is, “**Persisting, low-grade inflammation** in the kidneys, arteries, and central nervous system may lead to impaired pressure natriuresis, an increase in sympathetic activity, and vascular endothelial dysfunction that **may be the cause of chronic elevation of blood pressure in essential hypertension.**”

We do not intend to indicate that inflammation is the only cause of elevated blood pressure. However, Dr. Trempe has repeatedly “normalized” patient’s blood pressure by treating for chronic inflammation. One very successful approach he uses, particularly in the elderly, is proper treatment of periodontal diseases. This includes any combination of: more frequent dental hygiene visits; removal of infected or marginal teeth; removal of implants; and systemic antimicrobial treatment of the bacteria responsible for the disease.

The association between hypertension and periodontitis is beginning to enjoy more irrefutable scientific evidence. A 2014 paper titled, “*Association between Hypertension and Periodontitis: Possible Mechanisms,*” concludes,¹²⁸ “**Periodontitis, a chronic low-grade inflammation of gingival tissue, has been linked to endothelial dysfunction, with blood pressure elevation and increased mortality risk in hypertensive patients.** Inflammatory biomarkers are increased in hypertensive patients with periodontitis. Over the years, substantial research has been performed to evaluate the involvement of periodontitis in the initiation and progression of hypertension. Many cross-sectional studies documented an association between hypertension and periodontitis.”

Most of medicine marginalizes the oral health and cardiovascular disease connection. It may be partly because cardiologists are reticent to send their patients to dentists for treatment. A fantastic,

but aging, report on the association between oral health and disease is by Scientific America titled, “*Oral and Whole Body Health.*”¹²⁹ This is a “**must read**” for all Quarterbacks.

Blood Pressure Accepted Levels

Blood pressure is normally recorded as two numbers included systolic and diastolic values. Blood pressure is given as the ratio of these two values:

135
85 mm Hg

Read as “135 over 85 millimeters of mercury”

Systolic: The top number, which is also the higher of the two numbers, measures the pressure in the arteries while the heart beats.

Diastolic: The bottom number, which is the smaller of the two numbers, is a measure of the pressure in the arteries between heartbeats.

Table 6.9 reflects blood pressure categories defined by the American Heart Association.¹³⁰

Blood Pressure Category	Systolic mm Hg (upper #)		Diastolic mm Hg (lower #)
Normal	less than 120	and	less than 80
Prehypertension	120 – 139	or	80 – 89
High Blood Pressure (Hypertension) Stage 1	140 – 159	or	90 – 99
High Blood Pressure (Hypertension) Stage 2	160 or higher	or	100 or higher
Hypertensive Crisis (Emergency care needed)	Higher than 180	or	Higher than 110

Table 6.9. Blood pressure guidelines by the American Heart Association.

Alarming is the lack of attention to low blood pressure readings. The American Heart Association does state: “Your doctor should evaluate unusually low blood pressure reading.” They go on to say,

“Within certain limits, the lower your blood pressure reading is, the better. There is no specific number at which day-to-day blood pressure is considered too low, as long as no symptoms of trouble are present.”

This statement is reasonable for hearts that are kept alive by artificial means outside of a human body – that is a heart this is disconnected from the rest of our body. However, since our hearts are intimately connected with our entire bodies, it is worth considering the consequences of both low and high blood pressure from a whole body perspective. Their expert statement is only appropriate for very healthy young adults and is deadly for those with disease (inflammation). And we must also consider the impacts of aging on blood pressure. It turns out the seniors should not subscribe to the recommendation of the AHA.

Is <120 mmHg Optimal?

The Wall Street Journal summarized a major health study in their article titled, “*In Treatment, There Can Be Too Much of a Good Thing.*”¹³¹ The original article, by a team from UCLA and Kaiser Permanente is titled, “*Impact of Achieved Blood Pressures on Mortality Risk and End-Stage Renal Disease Among a Large, Diverse Hypertension Population.*” Be very aware that the conclusions drawn in the study are based on people (patients) who are treated for elevated blood pressure. Upon treatment their blood pressure “normalized” to values lower compared to those with elevated blood pressure but without treatment. Here are the results from the study:

Patients who achieved (through treatment) blood-pressure levels in the range of 130-139 systolic and 60-79 diastolic had the lowest risks for death and kidney failure. Those whose blood pressure remained higher, or between 140 and 149 systolic, were 44% more likely than the low-risk group to die or develop kidney failure. But when blood pressure dropped into the 120-129 systolic range, patients were 12% more likely to die or suffer kidney failure than the low-risk group. **And when blood pressure levels fell to 110-119 systolic, patients were at an 81% increased risk of dying.**

People on blood pressure medication who achieve a blood pressure of 110-119 through treatment are at a MUCH HIGHER risk of death or disease.

However, this is EXACTLY what your doctor is trying to achieve.

Thus: (please fill in the blanks) Your doctor is K _ _ _ ing you.

Note: If a person naturally has a blood pressure of <120, or achieves that reading through healthy lifestyle modifications – not a hammer-and-nail drug approach, they are quite healthy. However, if a person with high blood pressure is treated with drugs to achieve this so-called “normal” level, and the underlying disease is not considered – for example renal disease - their likelihood of disease worsening and death increases dramatically.

The study researchers conclude, “Both higher and lower treated BP compared with 130 to 139 mm Hg systolic and 60 to 79 mm Hg diastolic ranges had worsened outcomes. **Our study adds to the growing uncertainty about BP treatment targets.**”

The results are piling in on the consequences of the excessive regulation of blood pressure. Do you see the similarity between blood pressure and glucose? Tight control, with specific drugs, of these critical physiological parameters to levels that are normal in very healthy people is deadly in those who are ill.

Could there be a reason why the body elevates blood pressure? Could it be similar to why the body elevates glucose? Recall that the brain, our CPU, regulates glucose and, with insulin resistance (inflammation), less sugar gets to the brain. Thus the brain signals for an increase in sugar and insulin to bring its energy supply up to adequate levels. What supplies the sugar to the brain? Indeed, the energy travels to the brain via the blood. In the presence of inflammation, the pipes (vessels) supplying the fuel (sugars and oxygen) are obstructed. The brain orders an increase in blood pressure to ensure an adequate supply of fuel. When medicine overrides the activity of the brain, the consequences are obvious.

In our senior citizens, the negative consequences of blood pressure lowering are even more impactful. Blood vessels in seniors are more occluded and stiffer through many processes associated with aging including chronic low-grade inflammation and vessel calcification (hardening of the arteries). These processes are happening in all vessels including those in the brain.

One of the many consequences of artificially lowered blood pressure in seniors is dizzy spells and fainting that leads to increased risk of falls. Falls are often the final straw that places senior in nursing care and dramatically impacts their quality of life. Dr. Mary Tinetti of Yale-New Haven Hospital is concerned that patients are trading off the benefit of lowered blood pressure in terms of reduced stroke risk for the increased risk of serious fall injuries.¹³² We feel this compromise is unnecessary when elevated blood pressure is properly treated at the cause and not simply with drugs designed to just lower the pressure.

It appears that a scant few in modern medicine are beginning to realize that seniors require different recommendations compared to young and middle-aged adults. A report from a national committee to evaluate guidelines for the management of high blood pressure recently published their finding.¹³³ Their assessment concluded:

“There is strong evidence to support treating hypertensive persons aged **60 years or older to a BP goal of less than 150/90 mm Hg** and hypertensive persons 30 through 59 years of age to a diastolic goal of less than 90 mm Hg; however, there is insufficient evidence in hypertensive persons younger than 60 years for a systolic goal, or in those younger than 30 years for a diastolic goal, so the panel recommends a BP of less than 140/90 mm Hg for those groups based on expert opinion.”

Here are the new recommendations from the study that your doctor should closely follow:

Recommendation 1: In the general population aged ≥ 60 years, initiate pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥ 150 mm Hg or diastolic blood pressure (DBP) ≥ 90 mm Hg and treat to a goal SBP < 150 mm Hg and goal DBP < 90 mm Hg. (Strong Recommendation – Grade A)

Recommendation 2: In the general population < 60 years, initiate pharmacologic treatment to lower BP at DBP ≥ 90 mm Hg and treat to a goal DBP < 90 mm Hg. (For ages 30-59 years, Strong Recommendation – Grade A).

There are 9 recommendations in all, many of which include drugs to “manage” hypertension.

Quarterbacks, you need to find doctors who appreciate these recommended ranges and who are also willing to do testing for inflammation and its causes. When you treat causes rather than “manage” your numbers, your brain naturally takes care of your numbers for you. We generally believe the blood pressure medications for continual and perpetual control of blood pressure levels are harmful. Instead, when a person is properly diagnosed and treated blood pressure seeks its appropriate level and the patient thrives.

In insidious aspect of blood pressure medications is that, once you are on them, you are probably on them for life. Does any doctor have this conversation with their patient? “Mr. Jones, I’m going to take you off your blood pressure meds for a month prior to your next visit and then retest you. If it is in the normal range, then I can take you off your hypertension meds.”

This NEVER happens.

Instead, the conversation goes something like this. “Hi Mr. Jones, I see your blood pressure is nicely controlled (translated, “I’m slowly K _ _ _ ing you.”) Keep taking your hypertension meds – it’s working.

How did this all happen in the first place? That is, how did you get on those meds. This article from the New York Times titled, “Blood Pressure, a Reading With a Habit of Straying,” helps us gain clarity.¹³⁴ The author states,

“Measuring blood pressure seems so straightforward. Stick your arm in a cuff for a few seconds, and there they are: two simple numbers, all the information you need to know whether you are in a healthy range or high enough that you should be taking one of the many cheap generic drugs that can bring down your blood pressure.”

“But the reality is more confusing, as I discovered recently when I tested mine.”

“It turns out that blood pressure can jump around a lot — as much as 40 points in one day in my case — which raises the question of which reading to trust.”

God forbid, your blood pressure was on the daily high side during your “white coat” encounter. You will then be diagnosed with “Essential Hypertension” (elevated blood pressure of unknown cause) and be placed on those killer drugs for life.

In Appendix 4 we compare a contract how a standard-of-care doctor and a RealHealth doctor accesses and manages hypertension.

High Blood Pressure and the Brain

Many credible medical doctors and researchers are convinced that hypertension damages blood vessels. That is, they believe it is the elevated blood pressure itself that causes the damage. A UC Davis team is also convinced it is the blood pressure that is damaging, not the cause of the elevated blood pressure.¹³⁵ The authors did not postulate a mechanism for the damage. However, they noted that high blood pressure causes arteries to stiffen, thus making the blood flowing to the brain pulse more strongly. These findings do not quite jibe with vascular inflammation (vasculitis).

Dr. Jack C. de la Torre is a doctor who committed his research life to the understanding of the connection between cardiovascular diseases and dementias. In a paper titled, “*Cardiovascular Risk Factors Promote Brain Hypoperfusion Leading to Cognitive Decline and Dementia*,” He discusses several associations between cardiovascular symptoms and cognitive decline. He (correctly) states that the observable cause of dementias, as related to cardiovascular disorders, is brain hypoperfusion (insufficient blood to the brain). Here is a list of causes:

1. ApoE4,
2. atrial fibrillation,
3. thrombotic events (blood clots),
4. hypertension,
5. hypotension,
6. heart failure,
7. high serum markers of inflammation,
8. coronary artery disease,
9. low cardiac index (low output from heart, due to congestive heart failure, for example), and
10. valvular pathology (disease of any one of the four heart valves).

A search on any one of these conditions reveals that inflammation is common to all these “symptoms.”

Japanese researchers shed light on the nexus between inflammation, hypertension, and the brain.¹³⁶ Their introduction includes the following ideas, “EH (essential hypertension, normal hypertension) is reported to be strongly associated with increased sympathetic nerve activity (centered in the brain).^{137,138,139} EH is also known to exhibit increased plasma levels of inflammatory markers such as C-reactive protein, tumor necrosis factor- α (TNF α), interleukin (IL)-6, and intercellular adhesion molecule-1 (all of which can be detected in a blood test).^{140,141} We postulated that one of the mechanisms underlying the onset of EH is abnormal inflammatory responses in the cardiovascular center (of the brain) and accumulating evidence obtained using experimental animal models of hypertension supports this hypothesis.”^{142,143,144,145}

Inflammation in the brain, and in the rest of the body, is a significant trigger of high blood pressure.

The point is that the markers of inflammation are in the blood, thus the whole body. The Japanese indicate that it is the inflammation in the brain that causes the sympathetic nervous system to escalate blood pressure. We agree with that hypothesis and suggest that, since inflammation is

everywhere, the genesis of the blood pressure symptom is in the blood vessels (vasculitis) that infiltrate the entire body, including the brain.

Quarterbacks: The best advice we can offer for your good health is to view elevated blood pressure as an inflammatory disorder. Implement strategies to reduce inflammation by treating its cause and not through NSAID or other direct anti-inflammation drugs. Your brain will sympathetically control your blood pressure after treatment. Always strive to maintain and correct your blood pressure through lifestyle choices, including taking care of your teeth. If you must use drugs, please look into the side effects and also, strongly consider your whole body, not just your blood pressure.

Chapter 6 References

Chapter 7

Chronic Diseases of Inflammation

Today....



But it does NOT have to be that way for you. Cardiovascular disease is one of many diseases of inflammation. To protect yourself from sudden death or disability you must find a doctor who will test for inflammation. If your doctor wants to screen for cholesterol and put you on a blood pressure med, you are at the wrong place – and you still have a high probability of having a heart attack at any time. The best news is, if you get help protecting your heart, the rest of your body will be protected as well, assuming your doctor measured and corrected for the causes of inflammation.

Chronic inflammation is surprisingly a relatively new concept. Unrecognized low-grade (chronic) inflammation was identified in the early 1990s.¹ Its widespread presence in many chronic diseases² led to the suggestion that many, if not all, such diseases may have inflammation at its root.³ An estimated 80 percent of visits to doctor's offices are for issues relating to chronic disease. Approximately 70% of diseases and deaths now result from chronic conditions according to the CDC.⁴

The issue with chronic inflammation is that immune system (inflammation) markers rise a small amount (2- to 6-fold) compared to several hundred fold for acute inflammation.⁵ Many doctors who even bother to measure inflammation do not consider a small rise significant. Thus chronic disease goes largely undiagnosed until symptoms suddenly erupt. This is reactive, not proactive medicine. And the consequences for you are dire, because you have now had a severe health event or even died.

Diseases Associated with Chronic Inflammation

The list of diseases that have inflammation at the core is extensive. In Chapter 3 we provided evidence that, in chronic diseases, chronic inflammation and chronic infection are intimately intertwined. However, we also made the point that an understanding of infection in chronic disease is NOT part of mainstream medicine. However, the chart below (Table 7.1) certainly proves that medical research knows about the connection.

Chronic inflammation is sometimes hard to detect even though it can significantly impact your long-term health.

This chart is compiled based upon a scholar.google.com search. ^{fff} Column 1 shows the disease subject of the search, the data of which is shown in that row. Column 2 represents the number of records associated with the search term “inflammation” coupled to the disease in the appropriate row. Here the search terms may appear anywhere in the reference. Column 4 represents the same search as in column 2 except the two search terms appear in the title of the scholarly literature. Columns 3 and 5 are repeats of columns 2 and 4 except “infection” replaces “inflammation.”

Disease	Inflammation and “disease” in document	Infection and “disease” in document	Inflammation and “disease” in title	Infection and “disease” in title
Cardiovascular	2,030,000	2,040,000	1,320	581
Cancer	2,360,000	2,610,000	2,700	4,780
Diabetes	1,810,000	2,030,000	1,440	1,460
Alzheimer’s	178,000	143,000	81	11
Autoimmune	873,000	806,000	795	890
MS	389,000	352,000	289	330
Arthritis	1,640,000	1,670,000	2,050	1,610
Fibromyalgia	28,000	27,100	13	40
Ulcers	222,000	589,000	96	1,600
Asthma	1,090,000	1,060,000	3,130	897
Osteoporosis	96,400	116,000	71	37
Macular degeneration	68,500	38,900	84	18
Glaucoma	68,600	57,800	48	62

Table 7.1. Relationship between chronic disease, inflammation, and infection.

Here are a couple of things that pop right out of this chart.

1. Inflammation and infection are clearly connected to these diseases, at least in the world of medical research.
2. The values for “infection” and “inflammation” both in the text of the articles and in the title are amazingly almost identical. This simple method of sampling the world of medical research shows when inflammation is tied to chronic disease, so too is infection.

^{fff} Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research.

What follows are examples illustrating the connection between the major chronic diseases, inflammation, and infection. Clearly the depth and breadth of the connection warrants an entire book for each disease. We are not doing that here, thus we have chosen to document the link between periodontal infection, inflammation, and disease as an example of the profound connection between all three. There are many other types and sources of pathogens that are able to slowly proliferate in our bodies and lead to low-grade inflammation and disease. Periodontal infection is representative of many of the chronic disease causing entities, is easily identified, and treatable. We have chosen periodontal infection for the following reasons:

1. According to Dr. Bruce Paster of the Forsyth Institute, everyone over the age of 55 has some level of periodontal disease (infection).⁸⁸⁸
2. Periodontal infection is a disease root-cause over which we all have some degree of control.

Once you appreciate the connection between disease, inflammation, and infection, determining your individual risk based on diagnostic testing becomes straightforward. In the case of periodontal infection, the treatment is staring you in the face after every meal! In Chapter 9 we explore prevention measures that all Quarterbacks can implement to preserve your good health into old age (beyond oral hygiene).

Oral infection (periodontal disease) may be the single most preventable cause of and/or contributor to chronic disease.

Oral Hygiene and Disease

Since the beginning of recorded time people have struggled to maintain adequate oral health. As far back as A.D. 250, Kemetic Egyptians used myrrh and other antiseptic herbs to treat infected gums. The Nubians that dwelt in the Nile River valley two centuries later drank beer as a palliative for unhealthy teeth; it may have worked well, as it was brewed from grain contaminated with the same bacteria that produces tetracycline.^{hhh}

Lengthening teeth and receding gums have historically been considered a consequence of surviving into adulthood. In his 1852 novel, *“The History of Henry Esmond, Esq.”* William Thackeray used the expression “long in the tooth” to describe a middle-aged person. The few teeth that didn’t decay usually loosened with the passing years, as the tissues supporting them were eroded by periodontal disease. Those teeth ultimately fell out.

Our ancestors, for the most part, did not live quite as long as we do today.ⁱⁱⁱ Do you think it is coincidence that many of these forbearers had both poor oral hygiene and short lives? Today we “control” periodontal disease but we don’t stop it. And, because we live longer, the infection associated with the disease is able to slowly (chronically) impact our health. According to the American Dental Association, the disease affects about 80 percent of Americans over age 65. There is a strong statistical correlation between periodontal disease and the range of chronic diseases tied to it that we discuss here.

Dr. Charles Mayo and “Focal” Infection ⁶

⁸⁸⁸ Senior Member of the Staff and Chair, Department of Microbiology. Director, Human Microbe Identification Microarray Core. Professor in Oral Medicine, Infection, and Immunity, Harvard School of Dental Medicine

^{hhh} Tetracycline is a class of antibiotic known to be effective against many periodontal bacteria.

ⁱⁱⁱ Our ancestors did live long lives, despite what we have been told. However, childhood mortality was quite high until modern times. When early childhood death is included in longevity statistics, then the “average” life expectancy plummets to 40 – 50 years. However, consider that John Adams lived until 90 and Ben Franklin lived until 84.

Dr. Charles Mayo, founder of the famous Mayo Clinic, believed in the “focal infection” theory of disease, something so archaic that today almost no one has heard of it. The theory basically states that an oral infection can influence the health of the entire body. Addressing the Chicago Dental Society in 1913 Mayo said, “The next great step in preventative medicine must come from the dentists.”



The following is an excerpt from the Samaritan Ministries. ⁷ “Mayo appointed Dr. Edward C. Rosenhow to head a team of researchers dedicated to focal infection theory. From 1902 to 1958, Rosenhow conducted experiments and published more than 300 papers, 38 of which appeared in the Journal of the American Medical Association. During the same period, - A. Price, founder of the research institute of the National Dental Association, published his findings indicating that dental and oral infections were often the primary cause of disease.”

“These two medical pioneers established a simple but profound fact. If you pull an infected tooth, the patient will often recover from disease—serious disease, from chronic fatigue to cancer, from dermatitis to diabetes, from hemorrhoids to heart disease. Drs. Rosenhow and Price theorized that disease often originated from infections in the mouth that entered the bloodstream and eventually caused major problems in some part of the body. The evidence they amassed and published is staggering, yet the next great step Dr. Mayo hoped for did not come, and their work is largely forgotten today.”

“The experiments performed by Price and Rosenhow are impressive. Not only did Price pull any infected tooth, but after many years of experience he came to believe that all root-canalled teeth harbor infection and so they also should be pulled. He took root-canalled teeth that he extracted and sewed them under the skin of a rabbit. The rabbit invariably died from the same disease that had plagued the person. If the patients had kidney trouble, the rabbits developed kidney problems; if eye trouble, the rabbits’ eyes became affected; heart trouble, rheumatism, stomach ulcers, bladder infections, ovarian diseases, phlebitis, osteomyelitis, whatever the disease, the rabbits promptly became similarly affected. Dr. Price claimed he never found an exception to this rule.”

Systemic Diseases Caused by Oral Infection

A brilliant tell-all research paper titled, “*Systemic Diseases Caused by Oral Infection*,” provides both perspective and insights into cause and effect (mechanisms) of disease. ⁸

“It has become increasingly clear that the oral cavity can act as the site of origin for dissemination of pathogenic organisms to distant body sites, especially in immune-compromised hosts such as patients suffering from malignancies, diabetes, or rheumatoid arthritis or having corticosteroid or other immunosuppressive treatment. A number of epidemiological studies have suggested that oral infection, especially marginal and apical periodontitis, may be a risk factor for systemic diseases.”

“Bacteremia (the presence of bacteria in the blood) was observed in 100% of the patients after dental extraction, in 70% after dental scaling, in 55% after third-molar surgery, in 20% after endodontic treatment, and in 55% after bilateral tonsillectomy. All root-canals contained anaerobic bacteria”

“Another study involving 735 children undergoing treatment for extensive dental decay found that 9% of the children had detectable bacteremia before the start of dental treatment.”

Would you like to guess which children are susceptible to diabetes and obesity? If you guessed the 9% with oral infection, you are probably correct. These are inflammatory conditions either

triggered or exacerbated by infection, in this case from the oral cavity. The authors of “*Systemic Diseases Caused by Oral Infection*,” continue:

“In a recent review article, ⁹ Page proposed that periodontitis may affect the host’s susceptibility to systemic disease in three ways: by shared risk factors, by sub gingival biofilms acting as reservoirs of gram-negative bacteria, and through the periodontium acting as a reservoir of inflammatory mediators.”

Cardiovascular Diseases (CVD)

Inflammation is an integral part of atherosclerosis (heart and vessel diseases). Circulating inflammatory cytokines ⁱⁱⁱ are predictive of peripheral arterial disease, heart failure, atrial fibrillation, stroke, and coronary heart disease, to name just those associated with cardiovascular diseases. ^{10,11}

Chronic oral infection with the periodontal disease pathogen, *Porphyromonas gingivalis* (*P. gingivalis*), not only causes local inflammation of the gums leading to tooth loss but also is associated with an increased risk of atherosclerosis. A revealing study shows how pathogens evade the immune system to induce inflammation beyond the oral cavity. ¹² The researchers conclude,

“*P. gingivalis* modifies its lipid A structure (that part of the microbe cell membrane the immune system can detect) in order to evade host defenses and establish chronic infection leading to persistent systemic low-grade inflammation.” They go on to state “uniquely among gram-negative pathogens, *P. gingivalis* evasion of (TLR4-mediated) host immunity results in progression of inflammation at a site that is distant from local infection by gaining access to the vasculature.”

This bit of nifty research helps us understand why inflammation is low in chronic diseases. The modern doctor categorically ignores this low level of inflammation. He or she just views it as a “high baseline” level of no real concern when, in actuality, you are heading for a collision course with a chronic disease.

Timothy Nicholls and colleagues at the University of North Carolina state, “Inflammation plays a central role in atherogenesis (cardiovascular diseases). Human observational studies and experimental animal models continue to implicate periodontal infection as a systemic exposure that may perpetuate these inflammatory events in vessels.” ¹³

David Paquette, colleague of Nicholls writes, “Cardiovascular disease (CVD) and periodontitis are common chronic conditions, and the former remains a major contributor to human mortality. Recent attention has focused on a potential link between periodontal disease and CVD. Observational studies consistently indicate that people with destructive periodontitis may be 1.3 to 2 times more likely to have CVD.” ¹⁴

“It is our central hypothesis that periodontal diseases, which are chronic Gram-negative infections, represent a previously unrecognized risk factor for atherosclerosis and thromboembolic events.” ¹⁵ According to the UNC researchers of this study, men with poor oral health have a 1.9 times higher likelihood for fatal heart disease and 2.8 times higher likelihood of stroke. This last study was reported in 1996. Does your primary care doctor or internist ask you about your oral health?

WebMD brought the periodontal disease / heart health connection center stage. “If you're worried about heart disease, you can easily spend thousands of dollars each year trying to prevent it, paying

ⁱⁱⁱ Cytokines are any of a number of substances, such as interferon, interleukin, and growth factors that are secreted by certain cells of the immune system and have an effect on other cells.

hand over fist for prescription medicines, shelves of healthy cookbooks, fitness machines for your home, and a gym membership.



Or maybe not. A number of recent studies suggest that you may already have a cheap and powerful weapon against heart attacks, strokes, and other heart disease conditions. It costs less than \$2 and is sitting on your bathroom counter. It is none other than the humble toothbrush.”¹⁶

Cancer

Several studies have established links between chronic low-level inflammation and many types of cancer, including lymphoma, prostate, ovarian, pancreatic, colorectal and lung.¹⁷ There are several mechanisms by which inflammation may contribute to carcinogenesis, including alterations in gene expression, DNA mutation, epigenetic alterations, promotion of tumor vascularization, and the expression of pro-inflammatory cytokines that have roles in cancer cell proliferation.¹⁸

A Ph.D. awardee wrote his 446 page thesis on “*Periodontal disease and cancer: Chronic inflammation - the oral-systemic link.*”¹⁹ Among many gems in this thesis the author wrote, “Periodontal disease may enhance the risk of being diagnosed with total cancer risk in postmenopausal women; this finding persisted when restricting to never smokers. This risk appears to be higher for certain anatomic sites, particularly those in close proximity to the oral cavity such as the esophagus and upper gastrointestinal regions...”²⁰

Pancreatic cancer is one of the most deadly of all cancers. Both Brown University and Harvard Medical School researchers are proving that poor oral hygiene and periodontal disease dramatically increases the risk of this cancer. According to Dr. Dominique Michaud of Brown University, “Inflammation plays a key role in pancreatic carcinogenesis, but it is unclear what causes local inflammation, other than pancreatitis. Epidemiological data suggest that *Helicobacter pylori* may be a risk factor for pancreatic cancer, and more recently, data suggest that periodontal disease, and *P. gingivalis*, a pathogen from periodontal disease, may also play a role in pancreatic carcinogenesis.”

Michaud continues, “Individuals with periodontal disease have elevated markers of systemic inflammation, and oral bacteria can disseminate into the blood, stomach, heart and even reach the brain. These infections may contribute to the progression of pancreatic cancer by acting jointly with other pancreatic cancer risk factors that impact the inflammation and immune response, such as smoking and obesity... The complex interplay between bacteria, host immune response and environmental factors has been examined closely in relation to gastric cancer, but new research suggests bacteria may be playing a role in other gastrointestinal cancers.”²¹

Proper oral hygiene is one way to reduce your risk of deadly pancreatic cancer.

Men with periodontal disease had a 63% higher risk of developing pancreatic cancer compared to those reporting no periodontal disease.

- Harvard Medical School

The Harvard and Brown University results showed that, after adjusting for age, smoking, diabetes, body mass index and a number of other factors, men with periodontal disease had a 63% higher risk of developing pancreatic cancer compared to those reporting no periodontal disease. Most convincing was that “never-smokers” had a two-fold increase in risk of pancreatic cancer.

Diabetes

An ongoing debate in the medical literature considers the cart and the horse. Does periodontal disease predispose a person to diabetes or visa versa? Most research points to diabetes promoting periodontal disease. However some articles make conclusions pointing in the other direction. Dr. Anthony Iacopion from Marquette University School of Dentistry states, “It may also be possible for chronic periodontitis to induce diabetes.”²²

Dr. Janet Southerland, Dean at Meharry Medical College School of Dentistry clarifies this debate in a most elegant way. “The interrelationships between diabetes and periodontal disease provide an example of systemic disease predisposing to oral infection, and once that infection is established, the oral infection exacerbates the progression of systemic disease.” Thus the steps to both periodontal disease and diabetes (or other chronic diseases for that matter) look something like this.

Step 1. Our immune system deteriorates (immunosenescence) due usually to factors within our control like diet, exercise, and smoking status. Age is, of course, a factor as well.

Step 2. Disease slowly develops through a variety of mechanism. One disease is metabolic syndrome leading to insulin resistance and diabetes. Another is periodontal disease, the bacteria of which opportunistically grows and causes or perpetuates the disease.

Step 3. Low-grade inflammation becomes apparent as our now weakened immune system must work harder to keep us well. (Remember, inflammation is an indicator that lets us know our immune system is very active.

Step 4. Both (all) diseases exacerbate and perpetuate each other.

There is no debate about the linkage between periodontal health, diabetes, and early mortality. The medical literature is loaded with citations on the connection. There are 1,160 journal articles with “periodontal” and “diabetes” in the title of the article and the number balloons to 55,800 when searching the body of articles for those two keywords.

Macular Degeneration

Age-related macular degeneration (AMD) is a leading cause of blindness in aging individuals. The prevalence of late forms of AMD in developed countries is approximately 1.6% (over the age of 55 years), rising to more than 13% in those aged over 85 years. Recent studies have highlighted the essential role of immune processes (inflammation) in the development, progression, and treatment of AMD. An evaluation of 11 population-based studies encompassing over 41,000 patients demonstrated a clear association between elevated serum CRP levels (> 3 mg/L) and the incidence of late onset AMD.²³ The risk of AMD in these high-CRP patients was increased over 2-fold compared with patients with CRP levels < 1 mg/L. Vascular inflammation, as measured by way of CRP, is thus a marker of AMD risk.

Note that the study discussed a CRP value of > 3 mg/L as showing a clear association between cause and effect. Also note that they compared this higher CRP value with a value of < 1 mg/L. What is happening between a value of 1 and 3? This is what we refer to as the “dead zone.” In this 1-3 range for CRP, your doctor considers you fine. But it is clear from this research study that there is clear risk in that range. Any value for CRP above 1 mg/L MUST be a call to action. At this level, the causes of inflammation have not destroyed your tissue yet. This is the time to get properly diagnosed and treated. We have said this before for other markers of health and disease. If your doctor disregards a value for CRP of >1 mg/L (if they even do this test), then find yourself another doctor – quickly.

Ronald Klein, MD is a leader in the study of the causes of age-related eye diseases. In his research paper, “*Inflammation, Complement Factor H, and Age-Related Macular Degeneration: The Multi-*

Ethnic Study of Atherosclerosis,” he highlights the connection between oral health and periodontal disease.

Presently there is a paucity of research on the periodontal/macular disease connection. However, in our own clinic, under the watchful eye of Dr. Trempe, we have determined that most, if not all, of our macular degeneration sufferers have inflammation as noted through blood biomarkers. And many patients have some level or deteriorating oral health. Just as in the case of diabetes, periodontal disease is an exacerbator of other inflammatory diseases. Macular degeneration is one such disease and really should be classified as a cardiovascular disease. Why? Based on the AREDS study described in Chapter 4, people with macular degeneration die sooner than their healthy counterparts and the cause is mostly cardiovascular in nature.

Glaucoma

Glaucoma is a group of diseases that can result in vision loss and blindness. It is a chronic neurodegenerative disease that affects the retinal ganglion cells (RGCs) in the neural retina and their axons in the optic nerve. The National Eye Institute admits that there is no cure for the disease and hardly anything available in the standard-of-care slows its progress. Our recommendation to Quarterbacks is to prevent, slow, and reverse the progression of the disease by managing inflammation.

Dr. Konstantin Astafurov of the State University of New York at Brooklyn points out that “Clinical observations in glaucoma patients, led us to hypothesize that chronic subclinical inflammatory processes such as that caused by microbiota colonizing humans may exacerbate neurodegeneration in glaucoma.”²⁴ He further states, “Our results indicate that peripheral **(non-eye related) bacterial activity and/or products are potential contributing factors to glaucoma** though microglial^{kkk} activation (immune system of the nervous system) in the affected tissues. In addition, we demonstrate that **oral bacterial load in patients who have glaucoma is significantly higher than that of subjects without the disease**. This suggests that patients with glaucoma may be exposed to higher levels of bacterial products which over time can potentially be a factor exacerbating the severity and/or progression of the disease.”²⁵

The mechanism proposed for glaucoma is identical to that also proposed for diabetes. They are both diseases of inflammation so the connection is not mysterious. What is a bit mysterious is why does the inflammation and infection gravitate to the eye in some instances and the heart in other instances. We actually believe it is all about timing. Older, sicker patients have all the conditions at the same time, for the most part. So disease may express in one tissue first but may eventually wind up in all tissue. This is sometimes referred to as death! Louis Pasteur’s “Germ Theory” of disease lives on.

Chronic Kidney Disease (CKD)

Inflammation and infection seem to be important causes of morbidity (disease) and mortality (death) in chronic kidney disease patients. Subclinical infections have been proposed as an important cause of inflammatory syndrome.²⁶ Subclinical infection means a chronic condition. Subclinical infection can go unnoticed for months or years if not properly diagnosed through a blood test that starts by looking for activation of your immune system.

^{kkk} Microglia are a type of glial cell that are the resident macrophages of the brain and spinal cord, and thus act as the first and main form of active immune defense in the central nervous system (CNS).

“The doctor who doesn’t know what he/she is looking for won’t know it when he/she finds it.”

- Claude Bernard, the Father of Scientific Medicine

Is your doctor looking for subclinical inflammation and infection to help you prevent or cure a chronic condition?

“Periodontal disease and its severe consequence, edentulism (tooth loss), were independently associated with chronic kidney disease after adjusting for other traditional and nontraditional risk factors. This model^{III} could contribute to identifying individuals at risk of chronic kidney disease and reduce its burden.”²⁷

Blood is examined for infection, particularly subclinical infection, by testing for antibodies that your body produces in the presence of infection. Elevated IgG or IgM (antibody markers) to periodontal pathogens is significantly associated with impaired kidney function, independent of traditional risk factors.²⁸ In other words, chronic subclinical infection, including periodontal infection, is a cause of kidney disease.

Osteoporosis

How many osteoporosis sufferers go untreated except for calcium supplements (bad over the counter medication) and Fosamax (a bad drug), both of which cause broader health issues? Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses like bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist or spine.

Inflammatory cytokines (TNF- α , IL-1 β , IL-6) are involved in normal bone metabolism. Osteoclasts, the cells that break down (resorb) bone tissue, are a type of macrophage and can be stimulated by pro-inflammatory factors. **Systemic elevations in pro-inflammatory cytokines push bone metabolism towards resorption, and have been observed to induce bone loss in persons with periodontal disease,** pancreatitis, inflammatory bowel disease, and rheumatoid arthritis.²⁹ An increase in the levels of inflammatory cytokines is also a mechanism by which menopause stimulates bone loss.

“There is increasing evidence that osteoporosis, and the underlying loss of bone mass characteristic of this disease, is associated with periodontal disease and tooth loss. Periodontitis has long been defined as an infection-mediated destruction of the alveolar bone and soft tissue attachment to the tooth, responsible for most tooth loss in adult populations. Current evidence including several prospective studies supports an association of osteoporosis with the onset and progression of periodontal disease in humans.”³⁰

Is it really surprising that periodontal bacteria that live on tissue and bone in the mouth can destroy bone in other parts of the body?

Autoimmune Diseases

The incidence of autoimmune disease has tripled in the last few decades. 24 million Americans are now affected. In fact, it affects more women than heart disease and breast cancer combined. There is a presumption that autoimmune diseases are conditions where the body's immune system

^{III} “This model” refers to the simple concept of your doctor asking you about and otherwise checking on your oral health. This is not a “model” for disease control and management, it should be part of every single medical checkup.

attacks its own tissues rather than a foreign molecule like bacteria. This happens when something confuses the immune system.

Stealth infections, the kind that cause most of the chronic diseases we face, are one of the causes of so-called autoimmune disease. In this case, the immune system is NOT attacking healthy tissue. Instead, it is going after pathogens that are unknown and undiagnosed. In this hypothesis, it is the stealth infection that is contributing to the condition and not the immune system acting against itself. Considering the general overall rise in chronic diseases associated with inflammation and infection, this certainly is a more plausible explanation. If you do not buy in to this theory you will need to explain why are bodies are suddenly and epidemically trying to destroy us. ^{mmm}

A team from India delved into the causes of autoimmune disease in their paper titled, “*Autoimmune responses in periodontal diseases.*” ³¹ They state, “Periodontal diseases are characterized by localized infections and inflammatory conditions and directly affect teeth supporting structures which are the major cause of tooth loss. Several studies have demonstrated the involvement of autoimmune responses in periodontal disease. Bacteria in the dental plaque induce antibody formation. The present review describes the involvement of autoimmune responses in periodontal diseases.” ³²

Rheumatoid Arthritis

This disease has a severely overlooked link to inflammation and infection in the standard-of-care. Anti-inflammatory medications are a Band-Aid approach that likely worsens the disease over time. G. Rutger Persson is a Ph.D. and dentist from the University of Washington. He writes, ³³

“An association between oral disease/periodontitis and rheumatoid arthritis (RA) has been considered since the early 1820s. The early treatment was tooth eradication. RA is considered as an autoimmune disease whereas periodontitis has an infectious etiology (basis or cause) with a complex inflammatory response. Both diseases are chronic and may present with bursts of disease activity. *P. gingivalis* is a common pathogen (bacteria) in periodontal infection. *P. gingivalis* has also been identified in synovial fluid (fluid in the joints).”

“Tumor necrosis factor- α , a proinflammatory cytokine, regulates a cascade of inflammatory events in both rheumatoid arthritis and periodontitis. Periodontal infection (*P. gingivalis*) carries a unique risk for development of autoimmune antibodies associated with rheumatoid arthritis. Patients with RA usually have either lost many teeth or have severe periodontitis.”

RA is considered an autoimmune disease so discussions about RA contribute to our understanding of the nature of autoimmunity. In a complex paper by a UK and Swedish team, the connection between autoimmunity, inflammation, and infection is somewhat revealed. They indicate that RA is a “true” autoimmune disease with association to pathogens (bacteria). Four proteins are implicated in the immune response of the joint and are presumed at the root of autoimmunity. However, *P. gingivalis* is “the only bacterium identified that expresses” those very autoimmune proteins. ³⁴ Is the cause of RA truly autoimmunity or is it the body’s effort to fight the infection, with some collateral damage? The other possibility is that we just do not completely understand how pathogens act on (against) tissue to create disease and this unknown mechanism is fundamental to the presumption of autoimmunity.

Rheumatoid Arthritis is a poster child illness for NSAID and steroid treatment. Surgery may also be an option. Heaven forbid a doctor suggest that you spend a few extra bucks seeing a dentist more

^{mmm} Poor gut health also contributes to autoimmune disease. Here, too, the reason is well understood. A gut without good bacteria and strong acid does not digest food properly allowing substances (proteins) to pass into our blood stream. These proteins are foreigners and are attacked by our immune system. There are books written on this subject.

frequently, pull bad teeth, or remove root canals and dental implants. That is not in the standard-of-care. But masking the rampant inflammation is easily done in the 8 minute doctor visit.

A PubMed search yields over 20,000 research articles that contain both terms “periodontal” and “arthritis.” This represents a strong statistical connection and over \$1 billion in research. One paper is titled, “*Periodontal Disease and Rheumatoid Arthritis A Systematic Review.*”³⁵ The findings are unequivocal albeit somewhat understated by the Australian authors.

“Nineteen studies met our inclusion criteria. Good evidence was found to support an association between these conditions (periodontal disease and rheumatoid arthritis) with regard to tooth loss, clinical attachment levels, and erythrocyte sedimentation rates. **Some evidence for a positive outcome of periodontal treatment on the clinical features of rheumatoid arthritis was noted.** These results provide moderate evidence based on biochemical markers and stronger evidence with regard to clinical parameters that common risk factors or common pathologic processes may be responsible for an association between rheumatoid arthritis and periodontal disease. Further studies are required to fully explore both the biochemical processes and clinical relationships between these 2 chronic inflammatory conditions.”

Quarterbacks: Is it time for more research or is it time to investigate rheumatoid arthritis sufferers for oral cavity disease and treat aggressively?

Depression

The brain is not immune to inflammation and its causes. A host of studies suggests that chronic inflammation in the brain may be an underlying cause of problems so widespread; we've come to think of them as normal, like anxiety, fatigue, depression, and pain. Toxoplasmosis infection may be the biggest contributor to depression, violence, and other antisocial behaviors.³⁶

There is an association between elevated IL-6 and CRP in depressed patients, which has been observed in many population studies.³⁷ Debates rage whether inflammation leads to stress and depression or vice versa. And there is data supporting both hypotheses. However, we hold to belief that the same processes that drive chronic disease impact many psychological syndromes. Thus inflammation, and its antecedences (infection) come before the clinical disease.

Women on long-term sick leave for depression had more severe periodontitis and higher concentrations of interleukin-6 in gingival crevicular fluid than healthy controls. An alteration of the immune system in these patients might be interpreted as reflecting the consequences of long-term stress exposure and might contribute to worse periodontal conditions in these particular patients.³⁸ This explanation works as inflammation predisposes one to stress and stress increases inflammation in a viscous cycle. Naturally, under these circumstances, periodontal disease can manifest. The brain can suffer from both the inflammation and infection and upset the homeostasis native to the brain, leading to depression and other mood-related disorders.

Young people are certainly not excluded from both depression and gum disease. A paper titled, “Effect of Susceptibility to Depression on Periodontal Health Indicators Among University Students” is a tell-all about infection and depression.³⁹ In their article they show a significant association between the susceptibility to depression and the plaque index and gingival index. A significant relationship was also observed between the susceptibility to depression and some oral hygiene habits like brushing teeth, regular dental visits and frequency of brushing. Both the gingival index and regular dental visits had a significant positive correlation with the susceptibility to depression.

Alzheimer's Disease

A long-held belief was that the brain is immune privileged. In the context of disease, it means that antigenic (immune system stimulating) components cannot cross the blood/brain barrier and disrupt brain function. We now realize that the brain is quite susceptible to inflammatory disease and microglial (brain immune system) activation is a common response to anything from concussion to Alzheimer's.

The history of the Alzheimer's / periodontal disease connection is long and undeniable. A team from New York University reviewed the connection. The article is titled, "*Inflammation and Alzheimer's disease: Possible role of periodontal diseases.*"⁴⁰ The abstract of the paper explains the thesis and conclusion with superb adequacy:

"The molecular and cellular mechanisms responsible for the etiology and pathogenesis of Alzheimer's disease (AD) have not been defined; however, inflammation within the brain is thought to play a pivotal role. Studies suggest that peripheral infection/inflammationⁿⁿⁿ might affect the inflammatory state of the central nervous system. Chronic periodontitis is a prevalent peripheral infection that is associated with gram-negative anaerobic bacteria and the elevation of serum inflammatory markers including C-reactive protein."

"Recently, chronic periodontitis has been associated with several systemic diseases including AD. In this article we review the pathogenesis of chronic periodontitis and the role of inflammation in AD. In addition, we propose several potential mechanisms through which chronic periodontitis can possibly contribute to the clinical onset and progression of AD. Because chronic periodontitis is a treatable infection, it might be a readily modifiable risk factor for Alzheimer's."

The lesson learned is that infection can cause a myriad of diseases. What is not discussed is that some infections respond to treatments better compared to others. Periodontal infection, for the most part, is treatable. However, prevention is always preferable to treatment. The concept of prevention being preferable to treatment is part of the medical Hippocratic Oath. Not all infectious materials that could lead to or facilitate Alzheimer's disease are presented in this book. McCully points out that over 50 bacteria (at least) are associated with cardiovascular diseases. The same number is likely tied to AD. Q-fever is a bacterium that is particularly difficult to treat. Thus, **AD exacerbated by Q-fever may not respond to treatment, whereas AD linked to periodontal infection may respond reasonably well.**

In a follow-on study prompted by the 2008 review cited above, the NYU team looked at both periodontal infection and tooth loss.⁴¹ They showed a clear connection between infection, tooth loss, and decay in cognitive function. A key finding was **subjects with periodontal inflammation were nine times more likely to test in the lower range of the DST (cognitive test) compared to subjects with little or no periodontal inflammation.**

A recent study at the University of Florida analyzed brain samples from 10 people with Alzheimer's and 10 people without the brain disease and found gum disease-related bacteria in the brain samples from four of the 10 Alzheimer's patients.⁴² No such bacteria were found in the brain samples from people without Alzheimer's. This is interesting evidence that there is no one single set of causes for Alzheimer's, at least when it comes to infection.

Cognitive Decline

Several studies have linked chronic low-level inflammation in older adults to cognitive decline and dementia, including vascular dementia and Alzheimer's disease.⁴³ Periodontitis, no surprise, is also

ⁿⁿⁿ Peripheral, in this context, means inflammation and infection not originating or exclusively found in the brain.

associated with cognitive impairment among older adults. This is the conclusion of a large study known as NHANES-III.^{000, 44} The results and conclusions of the study are summarized here:

“Individuals with the highest P gingivalis IgG (antibodies for periodontal bacteria) were more likely to have poor delayed verbal recall and impaired subtraction than those with the lowest. After adjusting for socioeconomic and vascular variables, these relationships remained robust for the highest P gingivalis IgG group.”

“Conclusion: A serological marker (antibodies) of periodontitis is associated with impaired delayed memory and calculation.”

Multiple Sclerosis

Do we have ways to assess risks for multiple sclerosis in the standard-of-care? No. Do we have effective treatments for multiple sclerosis? No. Are there any doctors who think outside the box when it comes to multiple sclerosis? Yes, but sadly too few. One of them is a coauthor of this book. The other is David Wheldon, MD of England. Dr. Wheldon makes a strong case that Chlamydia Pneumoniae, a stealth yet a common intracellular bacterium, is one bacterium at the root of MS. The scope of this chapter is on the periodontal/disease link however; seldom if ever does one pathogen proliferate without others following along. Those interested in MS are invited to read Dr. Wheldon’s comprehensive yet intelligible work published on the Internet.⁴⁵

We are frustrated with modern medicine’s denial of relatively simple cause and effect relationships in disease. MS may be the poster child for this ostrich approach. Dr. William Craelius wrote about oral hygiene and multiple sclerosis way back in 1978. His pedigree is nothing to scoff at either, Stanford University. We know medicine is in denial because only 79 more recent research paper refers to Craelius’ work. What follows are key excerpts from his paper titled, “*Comparative epidemiology of multiple sclerosis and dental caries.*”⁴⁶

“The geographical distribution and other epidemiological characteristics of multiple sclerosis (MS) are compared with those of dental caries. The rates of death due to MS in Australian States are linearly related to the numbers of decayed, missing, and filled (DMF) teeth found in individuals from those states.”

“In the United States of America, a strong positive correlation also exists between MS death rates and dental caries indices.”

“The prevalence of MS in 45 countries or areas correlates well with the frequencies of DMF teeth among children of school age in those locations.”

“The prevalence of MS also correlates well with the percentage of edentulous (lacking teeth) individuals in certain countries.”

“It is also suggested that MS and dental caries may share certain etiological (causational) factors, two of which may be dietary excess of certain unhealthy fats, and vitamin D deficiency.”

Quarterbacks: See your dentist four times each year, floss, brush to avoid MS. Also, as inferred by Dr. Craelius, make sure you have adequate vitamin D.

Amyotrophic Lateral Sclerosis (ALS or Lou Gehrig’s Disease)

⁰⁰⁰ The Third National Health and Nutrition Examination Survey (NHANES-III) was a cross sectional nationwide health survey of the USA, performed between 1988 and 1994 by the National Center for Health Statistics. NHANES-III enrolled 33,994 persons aged 2 months and older using a stratified multistage probability sampling design.

Back in the time of Charles Mayo, some 100 years ago, doctors revealed avenues by which the central nervous system is reached by infections which “may often be remote” from the central nervous system.⁴⁷ The oral cavity is an example.

In this book we do not delve into misdiagnosis but it pervasive. Dr. Trempe examined a patient with presumed ALS. She was in her early 70s and came to Boston from Virginia to enter into an ALS clinical trial at Mass General. By happenstance she visited Dr. Trempe during her stay in Boston. He, having seen many neurodegenerative disease patients, was suspicious of the diagnosis. He inquired about her oral health. He asked this question because he knows most older people have oral health issues and the oral cavity is connected to the central nervous system and the spinal fluid through the roots of our teeth.

When the spinal fluid is contaminated with oral bacteria, it can impact the bones of the spine the same way it undermines the bones comprising the roots of our teeth. Further, the bacteria can penetrate into our discs causing them to become inflamed and weak. The result of this process is that we loose height and experience back pain as we age.

Dr. Trempe’s hunch was correct. The patient explained a 20+ year history of poor oral health including root canals, teeth extractions, and tissue grafts. Unfortunately for the patient, his diagnosis was not sexy enough and she and her daughter left his office, apparently to continue with the clinical trial. Two years later she died.

Action Item for Quarterbacks

Quarterbacks, please allow a couple of researchers from Italy who wrote, “*Oral inflammatory process and general health*,” to guide your path.⁴⁸

“Oral inflammatory lesions have been shown unequivocally to contribute to elevated systemic inflammatory responses. In some research **intensive periodontal therapy showed a significant reduction of lymphocyte formula (white blood cells), of CRP levels, of interleukin-6 (IL-6) and of LDL cholesterol after two months.**

Consider these two options for protecting your heart, brain, body, and energy:

1. Take statins or some other drug that treats symptoms, for the rest of your life, and suffer adverse side effects – all to prevent one heart attack for every two hundred and fifty people treated for life (with no reduction in mortality and plenty of side effects). OR.
2. Aggressively take care of your oral hygiene and have many of your disease risk measures will come down in a scant 2 months.

Chapter 7 References

Chapter 8



Health Risks of Top Selling Drugs

Prescription drugs constitute the major approach of allopathic (regular) medicine. A diagnosis is first performed by your doctor to create a diagnostic code. From the code sprouts a list of authorized and approved prescriptions. This overly simplistic “hammer and nail” approach allows doctors to see you in 8 minutes, send you on your way, and be except from any liability if you suffer harm. Thus medicine is all about the “approved” prescribed medicine.

In this chapter, we take a close look at the CONSEQUENCES of taking some of the top selling pharmaceuticals. All these drugs treat symptoms - ONLY. This chapter explores the downside of taking symptom-treating drugs when compared to the health you could be experiencing if the root cause of your symptoms are diagnosed and treated.

The side –effects of these drugs have much less impact on your health and well being compared to NOT treating the condition at the ROOT-Cause.

As you read through the sections below, being thinking of the concept of
“opportunity cost.”

Opportunity cost in finance is based on making a poor versus a great investment with your limited funds. The opportunity cost loss is the difference between what you could have made compared to what you did make. In finance, these differences are usually small, 2% versus 8% for example. But in medicine, the health “opportunity cost” of a bad medical approach compared to a good approach could destroy the quality of your life.

In this chapter we:

- List the drug by class and sales volume.

- Briefly describe the drug class and their action.
- List the labeled warning and dangers of the drugs
- Provide case studies of actual life-changing harm these drugs have done to people just like you.
- Mention some of the most severe consequences of taking these drugs that are NOT found on the label.
- Provide a proper solution to your condition that DOES NOT require you to take these drugs.

The FDA does regulate the warnings found on drug labels. But also be aware that the FDA does not require the manufacturer to present ALL their data. They can “cherry pick.” These warnings are for what the DO report – not for what they DO NOT report. Therefore, after the section of the reported harms of these drugs, we present case studies of real people like you – and the harms they experienced. Consider this quote from the Washington Post,

“Over a decade, controversies over blockbuster drugs such as Vioxx, Avandia and Celebrex erupted amid charges that the companies had shaped their research to obscure the dangerous side effects.”

This comes from an article titled, “As drug industry’s influence over research grows, so does the potential for bias.”¹ This is an article ALL quarterbacks must read. Now you know why we are presenting REAL case studies, not just what you read on the label.

Mood Altering Drugs

Abilify (1),^{PPP} Cymbalta (8), Seroquel XR (39), Lunesta (60), Vyvanse (28): Intended for one or more of schizophrenia, bipolar disorder, depression, ADHD, and sleep disorders.

We recommend you read Dr. Kelley’s article titled, “I’ve lost so much!”: How Abilify became the best-selling drug in America.²

<http://www.drkelley.info/2015/04/02/ive-lost-so-much-how-abilify-became-the-best-selling-drug-in-america/>

Dr. Kelley correctly indicates that these drugs – referred to as “antipsychotics,” exert their “benefit” by a side-effect only. That is, they cause a general dulling of the patient’s mental faculties, thus “reducing” the symptom.

Label Warnings and Dangers (in italics):

You should check with your doctor immediately if any of these side effects occur when taking aripiprazole:

More common: Difficulty with speaking drooling loss of balance control muscle trembling, jerking, or stiffness restlessness shuffling walk stiffness of the limbs twisting movements of the body uncontrolled movements, especially of the face, neck, and back

Less common: Blurred vision dizziness headache inability to move the eyes increased blinking or spasms of the eyelid nervousness pounding in the ears slow or fast heartbeat sticking out the tongue trouble with breathing or swallowing unusual facial expressions

Rare: Convulsions fast heartbeat high fever high or low blood pressure increased sweating lip smacking or puckering loss of bladder control muscle spasm or jerking of all extremities puffing of the

^{PPP} The number in parenthesis after each drug is their ranking by sales dollar in 2013.

cheeks rapid or worm-like movements of the tongue severe muscle stiffness sudden loss of consciousness tiredness uncontrolled chewing movements uncontrolled movements of the arms and legs unusually pale skin

Incidence not known: Hives or welts, itching, or skin rash itching, puffiness, or swelling of the eyelids or around the eyes, face, lips, or tongue large, hive-like swelling on the face, eyelids, lips, tongue, throat, hands, legs, feet, or sex organs redness of the skin tightness in the chest unusual tiredness or weakness.

If any of the following symptoms of overdose occur while taking aripiprazole, get emergency help immediately:

Symptoms of overdose: Bigger, dilated, or enlarged pupils (black part of the eye) diarrhea fast, pounding, or irregular heartbeat or pulse increased sensitivity of the eyes to light lack or loss of strength nausea sleepiness or unusual drowsiness vomiting.

More common: Acid or sour stomach anxiety belching blurred vision difficulty having a bowel movement (stool) dry mouth fear fever headache heartburn hyperventilation inability to sit still indigestion irritability lightheadedness need to keep moving nervousness rash runny nose shaking sleeplessness sore throat stomach discomfort, upset, or pain trouble sleeping unable to sleep weight gain

Less common: Accidental injury bloating or swelling of the face, arms, hands, lower legs, or feet body aches or pain congestion coughing difficulty with moving dryness or soreness of throat hoarseness increased appetite increased salivation joint pain muscle aching or cramping muscle pains or stiffness rapid weight gain sneezing stuffy nose swollen joints tender, swollen glands in the neck tingling of the hands or feet tremor unusual weight gain or loss voice changes.

Do you really want to take a drug with 2 pages of warnings? Is it quite clear to you that this is a toxic synthetic substance?

Most Severe Consequences of Taking These Drugs:

Alzheimer's, Parkinson's disease, other neurodegenerative diseases, suicide.

Case Studies:

Case Study 1: "I fell numerous times, and once fell into the bad time, and hit my head on the tiles. I had hand tremors I had muscle weakness in my hands and legs. I could not button a shirt. I could not open a can of soda pop or any type of paper package. I had to use a walker in the house. When I went to the doctor I had to use a wheelchair. I could not write legible. I could not drive. I had to take physical therapy for two months. I had to have an aid to cook for me, and also bathe me. I had to have a nurse check me out on a weekly basis. It then caused me to have Parkinsonism. My neurologist said it was caused by Abilify. I could not walk in a normal gait, because it affected my gait. I feel that this as a very dangerous drug and needs to be removed from the market."

Case Study 2: "Abilify ruined my life by costing me the girl of my dreams since 5th grade. She has been on Effexor since her 1st husband. We met back up and it was absolutely fairy tail. We went to the doctor because she had had a few bouts with just crying for no reason. Doctor said he was going to put her on Abilify. I goggled it and read some things and said that I was 100% against it. I was ignored. On day 4 I asked her to stop taking it. She did not. I watched the changes daily after that. Finally after 6 weeks, I proved she should not be taking it so she stopped. By this time, Abilify had taken the kindest, sweetest most gentle soul I'd ever seen and turned her into a mean, spiteful, hurtful demon. Crushed, I lost my \$100000/yr. job and still haven't recovered. I just want "my Holly" back."

Case Study 3: “I was on a Abilify from 2007 to 2009 started at 1/2 mg to 20mg a day in conjunction with several other medications. I experienced severe weight gain from 165lbs to 350+ pounds, I now suffer from debilitating life affecting seizures on a daily basis causing the loss of several jobs thus resulting in me becoming homeless. I have been wanting somebody to answer to their actions that have ruined my life. I also do know that Abilify manufacturers have been known to pay doctors kickbacks and vacations which would explain why my psychiatrist was able to go on some very nice trips she told me about.”

What is missing in this list of dangerous side effects is that the drug is just treating symptoms. **The true cause of your mood disorder is still in your body – untreated.** Fortunately for you, the drug companies and your neurologist are more than happy to keep your symptoms in check for life – with a pill or two each day. Are you?

There is a better way. And that is to test you thoroughly, for the causes of mood disorders. Sure, your brain is a bit imbalanced, but the problem starts in your whole body, and unless addressed in that manner, you will continue to be on Abilify – and feel lousy – for life.

A Proper Solution:

There is simply too much research asserting that brain inflammation is tied to antisocial mood diseases like schizophrenia, bipolar disorder, depression and other psychiatric disorders, to ignore. A well known but overlooked cause of these disorders is brain infection and a key pathogen is Toxoplasmosis. However, as we discussed in an early chapter regarding this bacterium is that many of us have it but few are impacted by it. The true cause of these diseases is a faltering immune system.

Here’s the side effect from these drugs that’s no making the drug label. People with low-grade neuroinflammation that leads to mood and depression symptoms, are the same people who are more likely to develop Alzheimer’s and other neurodegenerative diseases later in life. This is a side effect that is NOT being measured in a 2-year clinical trial.

Do you still want to take these drugs, or work with a doctor to address and treat the cause?

The Director of the National Institute of Mental Health is certainly a credible authority on mental health issues. In his “Director’s Blog”³ Director Tom Insel, MD writes:

“Hints that some mental illness may be linked to infectious agents and/or autoimmune processes date back to at least the early 20th Century. In the 21st Century, the field of microbiomics, which is mapping the microbial environment of the human organism, may transform the way we think about human physical and mental development.¹ It is already clear that 90% of “our DNA” is microbial, not human. “We” are, in fact, “super-organisms” made up of thousands of species, many of which are being identified for the first time. And there are persistent individual differences in our microbial ecology established early in life.”

“Insights from microbiomics have proven important for understanding obesity² and Type 1 diabetes,³ but microbiomics has not yet been a focus for research on mental illness. Yet, there are many clues linking microbiology and mental disorders, such as epidemiologic evidence of increased risk for schizophrenia associated with prenatal exposure to influenza.”

An article in ScienceDaily is titled, “*Toxoplasmosis Parasite May Trigger Schizophrenia and Bipolar Disorders.*”⁴ The authors state, “Scientists have discovered how the toxoplasmosis parasite may trigger the development of schizophrenia and other bipolar disorders. They have shown that the parasite may play a role in the development of these disorders by affecting the production of dopamine -- the chemical that relays messages in the brain controlling aspects of movement, cognition and behavior.”⁵

People who have mood disorder that are not treated at the root-cause are more likely to get Alzheimer's later in life.

In a web article titled, "*Fish Oil May Reduce Risk of Schizophrenia*," the authors quote research published in the *Journal of the American Medical Association* and *Archives of General Psychiatry*. Here are the introductory words from the article. "A new study has found that fish oil capsules may help individuals at high-risk for schizophrenia from developing psychosis associated with the disorder."

If you are affected by any of the many psychiatric disorders, do not let yourself fall into the viscous cycle of taking the many neuropsychiatric drugs. Follow the testing ideas for inflammation and infection presented here to look for root causes. Also, alter your diet to make up for vitamins and minerals that are generally deficient in people of our modern society. These include vitamin D, magnesium, and omega-3 fatty acids – all of which reduce brain inflammation and calm the brain. These supplements will very positively impact your mood and will enable many to stop these silly drugs. Also look for other means to support your mind, body, and soul. You will likely be able to drop your drugs if you can overcome their addictive properties.

We wrote a blog on Robin Williams after his suicide titled, "What Was the Cause(s) Underlying the Suicide of Robin Williams?"⁶ We do NOT have a diagnosis on Mr. Williams so this blog is speculative. However, we also believe it is educational, thus it is reproduced here.

What Was the Cause(s) Underlying the Suicide of Robin Williams?

The surprising new findings behind the suicide of Robin Williams has created a current media frenzy. But what might be behind the story?

Naturally, news like this brings fear to us. How could this happen? Couldn't he be helped? Could this happen to ME? The purpose of this essay is to shed some light on the diseases that were afflicting Robin Williams, and create a broader understanding of what it is, how it happens, and how you can keep it from happening to you.

First let's look at Mr. Williams history based on some of these breaking headline stories.

- Working backwards he had:
- Lewy Body Dementia – according to autopsy
- Parkinson's disease by diagnosis due to stiffness, slumping gait, and confusion
- Lifetime of struggles with addiction but "clean" for his last 8 years
- Chronic depression and paranoia "returned"

It is our experience with these cases, that all neurological conditions are linked to inflammation and, more specifically neuroinflammation – or simply inflammation in the brain. When our team diagnoses a patient for memory deficit or other neurodegenerative disorders, they do not perform neuropsychiatric tests (for example, repeat a series of numbers, letters, or words and/or look at some simple drawings and then draw them from memory) to attempt to differentiate between dementia, Alzheimer's, Parkinson's or any of the other brain-robbing disorders. These test are not used as a diagnostic tool in our clinics because it is quite clear that these "brain" diseases all have systemic (rest of the body) roots and causes. Testing the brain by repeating numbers does not help them make treatment decisions.

Inflammation and neuroinflammation may connect all of the disorders experienced by Robin Williams

Let's look at the connection between all the disorders reported for Robin Williams and inflammation. My goal is to put information into your hands, that will not make the headlines for political reasons. Information is power, and I encourage you to do research of your own, rather than take any one providers word for it. Anyone reading this can do a search of PubMed or scholar.google and find the same associations I'm presenting here:

Lewy body dementia: A search of Lewy body dementia and inflammation yields 21,600 articles. One article is titled, "Common Inflammatory Mechanisms in Lewy Body Disease and Alzheimer Disease." This is pretty self-explanatory. We can measure both Alzheimer's and Lewy body dementia by looking at inflammation in our bodies. Importantly, the markers of inflammation are found in our blood. What is happening in the blood is impacting the brain so we start with the blood - and it provides valuable answers.

Parkinson's Disease: A search of inflammation and Parkinson's returns 73,400 research articles. One is titled, "Inflammation and neurodegeneration in Parkinson's disease." Where is the inflammation found? Yup - in your blood.

Lifetime Struggles with Addiction: It has been documented that key markers of inflammation, found in the peripheral blood, is induced by repeated cocaine administration. A significant finding is that depression and addiction often occur together, and that stress often leads to relapse into drug abuse."

Stress induces inflammation too and can contribute to dementias if it continues long-term.

Chronic depression: Cytokines are measurable substances secreted by certain cells of the immune system in response to inflammation - they are what we call blood-borne markers of inflammation. A scholar.google search provides us with a mere 434,000 articles to read. Here is a good one, "Cytokines sing the blues: inflammation and the pathogenesis (cause) of depression."

With some knowledge in hand, understanding why these disease happens becomes much clearer. But it requires a new view on the brain - that it does not exist in isolation from the rest of the body.

Inflammation the scape goat

When something goes wrong, we often look for a scapegoat. All too often, in medicine, inflammation is that scapegoat. The medical term for "inflammation of the...", is "itis." That's why so many disorders end in "itis" meaning "inflammation." But inflammation is the protective action of our immune system. Sure inflammation may cause so-called collateral damage - but there is ALWAYS an underlying cause for that inflammation. It is NEVER appropriate to just treat inflammation without digging deeper to find causes - and focus on treating them.

According to the CDC (US Government Center for Disease Control): "Toxoplasmosis (toxo) is considered to be a leading cause of death attributed to foodborne illness in the United States. More than 60 million men, women, and children in the U.S. carry the Toxoplasma parasite, but very few have symptoms because the immune system usually keeps the parasite from causing illness." Learn more directly from the CDC site:

<http://www.cdc.gov/parasites/toxoplasmosis/>

Toxoplasmosis infection - The Link to brain disorders

The CDC says that many people carry the toxo disease but do not have symptoms because of their immune systems are strong. If a person has many diseases, this is a sign of a weakened immune system. Healthy people with strong immune systems seldom have much inflammation. The CDC also states that it is a foodborne illness and raw meat is a source. Kobe beef or other raw meats could be a source of the toxo bug.

Going back to the Robin Williams case, I am suggesting he suffered from a chronically weakened immune system. If he indeed was infected with toxoplasmosis, it only occurred because of his weakened state. And, if toxo was present, most likely a number of other "opportunistic" organisms also infected him at low levels. These bugs ultimately caused his array of neurological issues.

Chronic Inflammation - Different than Inflammation from a Wound or Trauma

Chronic inflammation, the sign of a weakened immune system, is seldom investigated in medicine. Here, markers of inflammation are elevated, but only slightly. In acute inflammation - after a wound or trauma - these markers may be 100 or 1000 times higher than normal. It is somewhat understandable that a doctor, if they even measured for inflammation, may say that you have a little inflammation but it is "not too bad." And, as a rule, is not treated. But, over time, it may be very "bad" if it is persistent, leading to very serious chronic diseases that inflict our society, including Lewy body dementia and Parkinson's.

Here is just a small sampling of the vast evidence that points to Toxoplasmosis infection in people with neurological condition.

Paranoia: "Toxoplasma Gondii Brain Parasite Infection From Cats Linked To Schizophrenia, Suicide" from the Huffington Post (http://www.huffingtonpost.com/2012/07/05/toxoplasma-gondii-brain-parasite-suicide-cats_n_1651523.html)

Depression: "Toxoplasma's Dark Side: The Link Between Parasite and Suicide" from Scientific American (<http://blogs.scientificamerican.com/science-sushi/toxoplasmas-dark-side-the-link-between-parasite-and-suicide/>)

Addiction: Beyond the association. Toxoplasma gondii in schizophrenia, bipolar disorder, and addiction: systematic review and meta-analysis. From Johns Hopkins School of Medicine (<http://www.ncbi.nlm.nih.gov/pubmed/25877655>)

Parkinson's: "Toxoplasmosis: It's all in your head" from The Economist (<http://www.economist.com/blogs/babbage/2012/03/toxoplasmosis>)

Lewy body dementia: "Toxoplasmosis can also contribute to a dementia syndrome." From the British Journal of Psychiatry (<http://apt.rcpsych.org/content/15/5/364>)

Do doctors look for Toxoplasmosis? According to the CDC this seldom happens.

So, what can you do?

The obvious answer is first, take care of your immune system health with good nutrition, supplements, peace, exercise, water, minerals, sleep, and avoid addiction, to mention just a few good practices. But that doesn't tell you if all this good stuff is working for you.

Next, you need to be checked for inflammation in your body, annually. This will be a challenge because health insurance does not cover "well" checkups for inflammation and associated chronic diseases. You have to be quite sick before your doctor can look here if he/she will at

all. For an evaluation of inflammation if you are what I call "apparently well," you will likely have to visit a functional or integrative doctor and pay privately.

Functional, integrative and concierge doctors are not restricted by the payer system to order tests and treat you well. Thus, they have more experience with "non-covered" diagnoses and treatments. Ask one of these practitioners to measure your inflammation and they will know to measure C-reactive protein, homocysteine, neutrophils, ESR, and other well-established inflammation biomarkers. Good doctors also understand to look beyond inflammation for sources - like Toxoplasmosis.

Understand that inflammation, at any level is a red flag. If it is persistent, you must take action to find the cause(s) before you become ill. Hopefully you now have the knowledge to obtain appropriate tests so you and your loved ones can avoid what I consider the unnecessary tragedy so often associated with neurological diseases.

Acid Neutralizers

Nexium (2), Dexilant (56), Prilosec (98): Treatment for heartburn and acid reflux.

These drugs are prescribed to overcome stomach acid. However, in most cases, stomach acid is NOT EVEN MEASURED. Indeed, reflux can toss some stomach acid into your esophagus creating discomfort. But that does not prove you have too much stomach acid. Read on to find out that just the opposite is most often the case.

Label Warnings and Dangers (in italics):

Major Side Effects: If any of the following side effects occur while taking esomeprazole, check with your doctor immediately:

Incidence not known: Blistering, peeling, or loosening of the skin bloating chills constipation cough darkened urine difficulty with swallowing dizziness drowsiness fast heartbeat fever indigestion joint or muscle pain loss of appetite mood or mental changes muscle spasms (tetany) or twitching nausea pains in the stomach, side, or abdomen, possibly radiating to the back puffiness or swelling of the eyelids or around the eyes, face, lips, or tongue red skin lesions, often with a purple center red, irritated eyes seizures skin rash, hives, itching sore throat sores, ulcers, or white spots in the mouth or on the lips tightness in the chest trembling unusual tiredness or weakness vomiting yellow eyes or skin.

Minor Side Effects

Some esomeprazole side effects may not need any medical attention. As your body gets used to the medicine these side effects may disappear. Your health care professional may be able to help you prevent or reduce these side effects, but do check with them if any of the following side effects continue, or if you are concerned about them:

More common: Bad, unusual, or unpleasant (after) taste change in taste.

Less common: Sleepiness or unusual drowsiness.

Rare: Acne back pain:

Incidence not known: Agitation dry mouth excess air or gas in the stomach or intestines full feeling hair loss or thinning of the hair muscular weakness passing gas seeing, hearing, or feeling things that are not there swelling of the breasts or breast soreness in both females and males swelling or inflammation of the mouth swollen joints.

Do you see autoimmune disease in this list? Let's see.... Nope. But that is the number one result from these evil drugs. This is how it happens. You have acid reflux. Your doctor does NOT measure the acid in your stomach but presumes it is too low (it isn't- read below). You are given a drug that

is designed to be prescribed for 2 weeks and it further reduces the acid in your stomach. You eat food and, because of low stomach acid, the foods are incompletely digested. Protein from food, that make it through the digestion process because of the low acid, make it into your blood and your body. With adequate stomach acid, this proteins are “digested” to amino acids. Your immune system detects these “foreign” proteins and mounts a response. We call this response autoimmunity. You go back to your doctor and he/she doesn’t know why you have an autoimmunity – but they give you more drugs.

Autoimmunity is a condition when your immune system attacks you. This probably does happen in some rare instances. But the facts are, doctors accuse you immune system of attacking your body when they really are not digging deeply enough to find out what your miraculous body is really attacking itself. In some instances, your immune system is attacking foreign proteins that should not be there if they were properly digested.

Most Severe Consequences of Taking These Drugs:

Convulsions, Parkinson’s disease, Alzheimer’s disease, Autoimmune disease.

Case Study:

Male, 205 pounds, BOD: 12/05/1979 (note: wife is in healthcare).

History of GERD 10+ years. Pain began as slight to moderate and was put on Nexium daily (2006). Would take fairly regularly. Transitioned over to omeprazole as this became OTC/generic equivalent available. Progression of GERD has worsened in past 3 years.

2006: Diagnosed with sleep apnea, 50% compliant with CPAP

2015:

Severe itching and rash like hives presented all over body. Itching in hands, behind ears, and rash more significant in sensitive skin areas (behind elbows, knees, ankles). Severe pain in chest and radiated down arm/back.

Overnight vomiting, each evening typically between 1a-3a.

Headaches daily and began to worsen over time.

Original diagnosis was fairly inconclusive but given treatment for shellfish or other allergic reaction, from local Urgent Care. Was given stepped antibiotic pack (Medrol Dosepak) and responded well with allergic reaction subsiding.

Followed up with PCP after rash started to reappear and other symptoms as listed above did not improve. Epipen was recommended to house in case severe reaction reappeared- did not fill. Other medications provided: Cetirizine; Hydroxyzine; Flonase; Medrol pak

2016:

Met with allergist, who recommended a mix of medications that included antihistamines and PPI’s to monitor changes in rash, GERD and vomiting. No diagnosis that visit as it was an initial consult, and the following dosage of medications were recommended, in addition to GI Consult, Upper GI and Bravo test and multiple lab tests. Initial medication list Montelukast- 10mg 1X daily; Fexofenadine- 180mg 2X daily; Loratadine- 10mg 2X daily; Flonase- 2 sprays each nostril 1X daily; Omeprazole- 2X daily; Ranitidine- 150mg 2X daily; Pantoprazole- 40mg 1X daily; Hydroxyzine as needed

No information provided on when/how to ingest medications.

Rash and headaches persist. PCP visit with all labs performed. Out of range items: Alkaline Phosphatase (37L) with a reference range of 40-115 U/L. Additional note on C-Reactive Protein:

“Please be advised that patients taking Carboxypenicillins may exhibit falsely decreased C-Reactive Protein levels due to analytical interference in this assay.

Rash and headaches persist. Followed up with allergist, no additional diagnosis but updated medication listing, in addition to clarification on timing of when to ingest medications (am/pm and/or as needed). Additional labs requested. Montelukast- 10mg 1X daily; Fexofenadine- 180mg 2X daily; Cetirizine- 10mg 2X daily; Doxepin- 25mg 1X daily (can go up to 3 tablets total, but not ever taken more than 1); Ompeprazole- 2X daily; Ranitidine- 150mg 2X daily; Pantoprazole- 40mg 1X daily

Additionally, takes: B12 Vitamin and Vitamin D- 1X daily

Lab results revealed: Slight allergy to crab, shrimp and cockroaches.

Consult with GI, ordered test for upper GI and Bravo capsule study. Both scheduled and SPC agreed to adhere to all medications until final determination of upper, biopsy, and bravo could be performed.

Procedure date, medications ceased 5 days prior per pre-procedure paperwork. Severe heartburn returned when medications ceased.

Results for biopsies and upper endoscopy. All “unremarkable”. Bravo results not returned yet.

Impressions: Medium-sized hiatus hernia

Recommendations:

Return to GI office, Surgery consult scheduled to discuss Nissen Fundoplication.

Final pathologic diagnosis:

A: Small bowel, random biopsy:

Duodenal mucosa with focal foveolar metaplasia.

No evidence of celiac disease.

B. Stomach, antrum, random biopsy:

Gastric body and antral-type mucosa with mild reactive changes.

No Helicobacter pylori-like organisms identified.

C. Distal esophagus, biopsy:

Fragments of benign squamous epithelium.

Negative for intestinal metaplasia, dysplasia, or malignancy.

D. Proximal and mild esophagus, random biopsy:

Fragments of benign squamous epithelium.

Negative for eosinophilic esophagitis.

Here, the medical community took a perfectly healthy, in fact VERY healthy, 25 year old, and with one simple misdiagnosis – high stomach acid – **ruined his life and that of his family**. Do you see the many autoimmune conditions created by the loss of stomach acid? You know who made out well – the healthcare system. That took a perfectly healthy person with absolutely no need of medical care and proceeded to make over \$200,000.

Your Doctor Can See You Now!

All of this could have been avoided with a little more knowledge, science, and attention to detail. Here are the facts.

A Proper Solution:

Treatment with the anti-heartburn drugs known as proton pump inhibitors (PPIs) for eight weeks **induces acid-related symptoms like heartburn, acid regurgitation** and dyspepsia once treatment is withdrawn in healthy individuals, according to a new study.⁷ Meanwhile, studies show that up to 33 percent of people taking PPIs continue to refill their prescriptions without an apparent need for them. Could it be that many of these people continue to refill their prescriptions because they have severe withdrawal symptoms each time they run out? This is a vicious cycle, one that can easily lead to dependency on these drugs.

According to Dr. John Wright, “There is much confusion among medical professionals regarding the treatment of acid reflux, however, most conventional treatment is based on the supposition that reflux occurs because of an excess of stomach acid, rather than a deficit. Most physicians never check the actual acid secretion of the stomach, testing instead esophageal pH. However, this does not provide detailed information about the degree of acid secretion in the stomach, only confirms that acid has indeed refluxed into the esophagus.”

Dr. Wright continues with the following information. “The lack of sufficient stomach acid is a key player in many diseases thought to originate with age. Stomach acid is key to the proper breakdown of nutrients and proteins found in food. The lack of minerals and amino acids due to poor stomach function can lead to fatigue, hair loss, osteoporosis, and many other maladies. The importance of being able to break down protein becomes more and more central to maintaining excellent health during the aging process. To address nutrient deficiencies, many patients are given supplements, or elaborate customized diets; however if they are not able to properly digest these, the intended benefits may not manifest. Stomach acid also sterilizes food and drink that we ingest, diminishing the likelihood of organisms surviving in the digestive tract.”⁸

We agree with Dr. Wright because an acid reflux remedy that your grandmother used, that still works, is taking (drinking) apple cider vinegar. This is an acid and supports stomach acid. When this doesn't solve your heartburn problem, then you need to dig deeper. A likely suspect is the pathogen *Helicobacter Pylori*, subject of the 2005 Nobel Prize in Medicine. Warren and Marshall, the Prize recipients, proved that H-Pylori is a root cause of stomach ulcers. Since their early work, many other researchers have shown how this infectious species is linked to a wide variety of stomach disorders including cancer.

There are 20,000 review articles on H-Pylori discussing topics from acid reflux to Alzheimer's disease. Here is one of many germane to acid reflux that the proton pump inhibitor drugs do not address titled, “Effect of *Helicobacter pylori* treatment on gastroesophageal reflux disease (GERD): meta-analysis of randomized controlled trials.”⁹

Look upon acid reflux as a potential warning sign of more serious disease. Do not suppress symptoms. Instead, investigate the causes and treat them. You will likely eliminate far more than stomach discomfort. And you will not become dependent upon a drug that is most likely not treating the cause of your medical problem.

We published a blog on acid blocker and Alzheimer's.¹⁰ Here is that blog.

“This blockbuster drug has side effects from fractures to Alzheimer's. Find out why.” **Little Purple Poison!**

Our Microbiome and Immunity

A recent trend in the understanding of our long term health is the health of our gut – our Microbiome. 90% of our immunity stems from our gut. It is a delicate balance between beneficial and harmful microorganism, pH, absorption and diffusion of nutrients, and mechanical digestive action.

Dr. Robynne Chutkan, author of “The Microbiome Solution” refers to a couple of terms – “dysbiosis” and “rewilding.” Dysbiosis is the process of upsetting the delicate balance in our gut through the foods we eat, the beverages we drink, and the medicines we take. “Rewilding” is the process of reintroducing what we, and our stomachs, evolved to thrive upon.

The Problem with Stomach Acid Reduction:

In a NY Times article, “Ask Well: Taking Heartburn Drugs Long-Term,” the author points to warnings on proton pump inhibitors like Nexium, Prilosec, and Prevacid. Well states,

“Over the past five years, the federal Food and Drug Administration has issued numerous warnings about proton pump inhibitors, saying that long-term use, defined as a year or more, increases the risk of hip, wrist and spine fractures (though studies have found an increase in bone fractures with use over shorter periods). Long-term use can also lead to low levels of magnesium in the blood, which can precipitate seizures, arrhythmias and muscle spasms, according to the F.D.A. The deficiency cannot always be corrected with supplements, and patients who take other drugs like digoxin or diuretics, which can also cause low magnesium levels, should avoid proton pump inhibitors.

The use of these inhibitors for any period of time is also associated with an increase of intestinal infections and a higher risk of *Clostridium difficile*-associated diarrhea, a potentially life-threatening disease. An F.D.A. advisory warns patients who use these drugs to contact their health care providers immediately if they develop persistent diarrhea that does not improve.

Several studies have also reported that proton pump inhibitors increase the risk for pneumonia in hospital patients; a similar increase was not seen among patients taking a different type of acid-reflux drug called a histamine-2 receptor blocker (a drug like Pepcid or Zantac), Dr. Herzig said.

Long-term P.P.I. use may reduce the absorption of other important nutrients, vitamins and minerals besides magnesium, such as calcium, iron and vitamin B12, and has been linked with anemia. P.P.I.s can also interact with other medications, and the F.D.A. has warned heart attack and stroke patients that the P.P.I. omeprazole (Prilosec) weakens the effectiveness of the anticlotting agent clopidogrel (Plavix).”

Infection, not treated by Nexium, may be the cause of your reflux.

An acid reflux remedy that your grandmother used, that still works, is taking (drinking) apple cider vinegar and/or by eating pickles and other acid-containing fermented foods. This natural acid supports stomach acid and creates an environmental for our healthy bacteria to thrive. A rule of thumb is to take a tablespoon of apple cider vinegar, or equivalent, twice daily until your problem resolves. Then maintain a maintenance dose of 1 tablespoon every other day. When this doesn't solve your heartburn problem, then you need to dig deeper. But this doesn't mean “take your purple pill.” When you do dig deeper, a likely suspect is the pathogen *Helicobacter Pylori*, subject of the 2005 Nobel Prize in Medicine. Warren and Marshall, the Prize recipients, proved that H-Pylori is a root cause of stomach ulcers. Since their early work, many other researchers have shown how this often harmful infectious species is linked to a wide variety of stomach disorders including cancer.

There are 20,000 review articles on H-Pylori discussing topics from acid reflux to Alzheimer's disease. Here is one of many germane to acid reflux that the proton pump inhibitor drugs do not address, titled, "Effect of Helicobacter pylori treatment on gastroesophageal reflux disease (GERD): meta-analysis of randomized controlled trials." In this case acid reflux is caused by the bug and the proton-pump inhibitor drugs does not treat the bug. H-pylori actually tries to neutralize stomach acid to better thrive. That's why one diagnostic test for H-pylori is an ammonia breath test. H-pylori produces ammonia to neutralize stomach acid. Nexium and these other drugs help H-pylori thrive by reducing stomach acid.

Ask your doctor to answer the question "why," and not just "what."

Look upon acid reflux as a potential warning sign of more serious disease. Do not suppress symptoms. This hammer/nail approach the drug companies use is failing to improve our health. Instead, you need to work with a doctor who is willing to answer the question WHY? When you investigate the causes and treat them, you will likely eliminate far more than stomach discomfort. And you will not become dependent upon a drug that is most likely not treating the cause of your medical problem.

Let's recap:

1. The FDA states the long-term use of Nexium and other proton pump inhibitors causes serious side effects, some of which may be fatal.
2. Nexium and related drugs disrupt balance in the gut and vital minerals are not properly absorbed.
3. Even short-term use of these drugs can cause dependency.
4. Doctors often misinterpret acid reflux because they seldom measure stomach acid.
5. Doctors often prescribe these drugs without digging deeper into causes. H-pylori is a cause of reflux that is NOT treated with Nexium – and it has severe health consequences if not treated.

Arthritis Treatments

Humira (3), Enbrel (6), Remicade (7), Rituxan (12), Stelara (47), Orencia (55): These drugs are mainly for the treatment of arthritis, ankylosing spondylitis, Crohn's disease, or similar problems.

Biologics ⁹⁹⁹ like Humira suppress your immune system causing increases in tuberculosis, infections, and cancers. The Humira literature warns against the possible side effect of "new or worsening" psoriasis, a condition it is supposed to treat. Yes direct anti-inflammation treatments relieve symptoms, but anti-inflammation treatments do not provide a long-term solution, irrespective of their side effects. Suppressing your immune system is NEVER a good thing.

Label Warnings and Dangers (in italics):

Common side effects of Humira include: upper respiratory tract infection, skin rash, injection site reaction, headache, sinusitis, antibody development, and pain at injection site. Other side effects include: urinary tract infection, abdominal pain, and flu-like symptoms. See below for a comprehensive list of adverse effects

Major Side Effects You should check with your doctor immediately if any of these side effects occur when taking adalimumab:

⁹⁹⁹ Never EVER NEVER ever take a drug, the name of which ends in "mab." NEVER!

More common: Abdominal or stomach fullness body aches or pain cough or hoarseness ear congestion gas with abdominal or stomach pain lightheadedness loss of voice lower back or side pain muscle aches and pains nasal congestion pain or tenderness around the eyes or cheekbones rapid and sometimes shallow breathing shivering sunken eyes thirst trouble sleeping warmth on the skin wrinkled skin

Less common: A sore on the skin of the breast that does not heal abdominal or stomach pain abnormal vaginal bleeding or discharge agitation arm, back, or jaw pain black, tarry stools bleeding from the gums or nose blindness bloating or swelling of the face, arms, hands, lower legs, or feet blood in the stool or change in bowel habits bloody or cloudy urine blurred vision broken bones change in size, shape, or color of an existing mole change in skin color chest pain chest tightness or heaviness chills clear or bloody discharge from the nipple cold hands and feet confusion constipation cough coughing or spitting up blood decreased urination decreased vision depression difficult or frequent urination difficulty with breathing difficulty, burning, or painful urination dimpling of the breast skin dizziness drowsiness eye pain fainting fast, slow, or irregular heartbeat fever forgetfulness frequent urge to urinate general feeling of illness hair loss hallucinations headache increased thirst inverted nipple irregular breathing irregular pulse irritability itching or rash light colored stools loss of appetite lump in the breast or under your arm lump or swelling in the abdomen or stomach mole that leaks fluid or bleeds muscle cramps or spasms nausea new mole night sweats no blood pressure or pulse noisy breathing numbness or tingling in your arms, legs, or face pain, redness, or swelling in the arms or legs without any injury present pale skin persistent non-healing sore on your skin pink growth puffiness or swelling of the eyelids or around the eyes, face, lips, or tongue raised, firm, or bright red patch redness or swelling of the breast seizures sharp back pain just below your ribs shiny bump on your skin slurred speech or problems with swallowing sneezing sore throat sores, ulcers, or white spots on the lips or mouth spitting up blood stiff neck stopping of the heart sudden high fever or low grade fever for months sweating swelling of the face, fingers, feet, or lower legs swollen glands swollen neck veins tightness in the chest tiredness trouble breathing with activity trouble thinking unconsciousness unexplained bruising or bleeding unpleasant breath odor unusual tiredness or weakness unusual weight gain or loss visual disturbances vomiting of blood or material that looks like coffee grounds yellow skin or eyes

Incidence not known: Blistering, peeling, or loosening of the skin diarrhea joint or muscle pain pinpoint red spots on the skin red skin lesions, often with a purple center red, irritated eyes red, scaling, or crusted skin unusual bleeding or bruising

Minor Side Effects.

Some of the side effects that can occur with adalimumab may not need medical attention. As your body adjusts to the medicine during treatment these side effects may go away. Your health care professional may also be able to tell you about ways to reduce or prevent some of these side effects. If any of the following side effects continue, are bothersome or if you have any questions about them, check with your health care professional:

More common: Bladder pain bleeding burning coldness discoloration of the skin feeling of pressure general feeling of discomfort or illness hives lumps numbness pounding in the ears redness scarring soreness stinging swelling tenderness tingling ulceration warmth.

Less common: Abnormal healing decrease in height difficulty with moving difficulty with swallowing difficulty with walking dry mouth heartburn indigestion loss of hearing loss of strength or energy menstrual changes muscle or joint stiffness, tightness, or rigidity muscle pain or weakness pain in the back, ribs, arms, or legs shakiness in the legs, arms, hands, and feet sores stomach pain, fullness, or discomfort swelling or redness in the joints weakness.

Phew – that is a nasty list. And all this is COMPLETELY AVOIDABLE. See what suppressing your immune system can do.

Most Severe Consequences of Taking These Drugs:

Severe persistent pain, autoimmunity, death.

Case Studies:

Case Study 1: My brother has a Crohn's disease, doctors started with him HUMIRA for two months, after one month Palmoplantar pustulosis psoriasis appeared on his body and start spreading inside his ears, all his hands and feet, between legs, his back and head. Now he can't walk because of his feet, he has a strong pain and he is yelling from pain, HUMIRA destroyed his life and our life as a family. HUMIRA destroyed us!! We thought that it will provide him a quality of life but it does not. We had a very bad luck in side effect. Doctors says now that my brother has to live with the new disease!! It is so hard on us really.

Case Study 2: A lawsuit has been filed alleging Humira side effects caused permanent damage to a patient who took Humira medication for Crohn's disease. The Humira lawsuit claims Abbott Laboratories knew about the risks associated with its medication, but did not adequately warn patients about that risk. This lawsuit is separate from another lawsuit alleging patients faced cancer risk from using the medication.

This most recent lawsuit was filed by a woman who took Humira to treat Crohn's disease, according to Bloomberg BusinessWeek (04/26/11). The lawsuit alleges that the patient was treated at the Mayo Clinic for nerve damage in her feet; the doctors who treated the patient said the nerve damage was most likely caused by the use of Humira. The plaintiff alleges that Abbott knew Humira had a risk of peripheral neuropathy but still marketed the medication to patients with Crohn's disease.

Case Study 3: I'm glad I found this place. It looks like there is a lot of knowledgeable people here that are floating in the same boat as me.

I was diagnosed with Crohn's in March 2006, and had a long unsuccessful trial with lots of drugs, including Pentasa, Prednisone, 6MP, Immuran, Methotrexate, Entocort, and Cipro. Humira was accepted for treatment of Crohn's by the FDA in February of 2007, and my doctor placed me on this medicine within a month. After an extremely tough year of bloody poop, hospitals, drugs, and blood tests, this breakthrough medicine gave me new hope.

I was literally on top of the world from March 2007 to August 2009. Life was great, the Crohn's was in complete remission, and the only issues I had were the occasional loose stool or nausea. I was going to school full-time, getting awesome grades, and maintaining a healthy eating and exercise regimen.

It seems that my days living the high life were limited, and the wonder drug began to show its ugly side. Beginning in Fall 2009, I battled what seemed to be a simple runny nose. Like most people who take their health for granted when things are good, I thought nothing of it. Things took a dramatic downward spiral right around Thanksgiving 2009, when I was slammed with a terrible fever.

Fast forward to today, December 2010. Ever since the end of last year I have been battling constant tinnitus, ear and eye pressure, stuffy nose, chills alternating with hot flashes, and extreme unpredictable fatigue. These symptoms have made me skip semesters at school and have to take several days off work throughout the past year. The only possible cause that lead to these symptoms is the immune-suppressing properties of Humira.

Here is the list of doctors I've been to, along with their opinions of the matter:

- 1) Primary Care - Suspects sinusitis, treats with antibiotics. Slight improvement, but symptoms return one week after finishing antibiotics.
- 2) Gastro - Refuses to admit any correlation with the Humira and insists that I do not skip a dose. Refers me to an infectious disease doctor.
- 3) Infectious Disease - Admits to have seen plenty of Humira patients with viral sinus infections. Believes that the use of antibiotics will be counterproductive and the only way to resolve my symptoms is to stop the Humira.
- 4) ENT (Ear, Nose and Throat) - Suspects sinusitis and sends me for allergy testing. Allergy testing shows numerous allergies to pollen, grass, dogs, and cats. Orders a CT scan on sinuses, which I am getting done on December 22.

As you can see, a potential piece of the puzzle was found with my allergy test. Unfortunately, popping a Cytex only offers me relief in one dimension, while I'm still left with most symptoms, including the debilitating fatigue. To give you some perspective on how exactly I feel on a daily basis, think back to the last time you caught the flu. You know the day after, when you're feeling better, with no temperature, but something is still not right? That's exactly how I feel every day.

A Proper Solution:

In Chapter 7 we discussed the connection between rheumatoid arthritis, inflammation, and infection. We state, "A scholar.google search yields over 20,000 research articles that contain both terms "periodontal" and "arthritis." This represents a strong connection and over \$1 billion in research. One paper is titled, "Periodontal Disease and Rheumatoid Arthritis A Systematic Review. "The findings are unequivocal albeit somewhat understated by the Australian authors."

Avoid anti-inflammation treatments for arthritis. This "solution" reflects a lack of knowledge or interest by your doctor to determine causes. Ask your doctor to perform a broad and deep assessment for inflammation and its causes. Treatments for the causes of inflammation will improve your overall prognosis and health. And, as usual, incorporate an anti-inflammation nutritional and lifestyle approach.

Amy Myers, MD discusses five causes of rheumatoid arthritis, all of which are treatable – but not by suppressing your own body's defense mechanism. Here are here top five causes: ¹¹

"If you suspect that you have an RA, the most important steps to stopping and reversing your disease are to identify and then to treat the underlying cause. Conventional doctors only treat the symptoms of autoimmune diseases; they don't look to find the root cause.

1. Gluten: Gluten is a huge problem for most people these days because we hybridized it, modified it, and it's in everything! Worst of all, it can wreak havoc on your gut and set you up for a leaky gut. Once the gut is leaky, gluten can get into your bloodstream and confuse your immune system. Since the building blocks of gluten share a similar molecular structure with building blocks of many other tissues in your body, the immune system can get confused and accidentally attack your joints and other organs. This process is called molecular mimicry.

2. Leaky gut: In order to absorb nutrients, the gut is somewhat permeable to very small molecules. Many things including, gluten, infections, medications and stress can damage the gut, allowing toxins, microbes and undigested food particles – among other things – directly into your bloodstream. Leaky gut is the gateway for these infections, toxins and foods – like gluten – to cause systemic inflammation that leads to autoimmunity. You must heal your gut before you can heal yourself.

3. Mercury: Mercury is a heavy metal that is capable of altering or damaging the cells of various bodily tissues. When cells are damaged, your immune system can mistake them as foreign invaders and begin attacking its own organs. Studies show that individuals with higher mercury exposures have an increased risk of getting an autoimmune disease.

4. Mycotoxins: I have discovered that many of my patients with autoimmune disease are actually living or working in environments that have toxic mold. Toxic molds produce mycotoxins, which are volatile organic compounds (VOC) and can be toxic to genetically susceptible people.

5. Infections: Recent studies have shown a strong correlation between an overgrowth of gut bacteria and the onset of rheumatoid arthritis. While it has not yet been proven as the sole cause of rheumatoid arthritis, it is certainly suspected that the gut bacteria, *Prevotella copri* and *Proteus mirabilis*, play a significant role in the onset of rheumatoid and psoriatic arthritis. Gut bacteria, like *P. copri* and *P. mirabilis*, can cause leaky gut, which is a frequent cause of immune dysfunction and inflammation in the body.

In addition to bacteria, the Epstein-Barr virus is also believed to be a potential trigger of rheumatoid arthritis. Often times, the antibodies seeking out this virus mistakenly attack joint tissue, through a process called molecular mimicry. This allows fluid and immune complexes to build up in the joints, causing pain and inflammation.”

Cholesterol Lowering Drugs

Crestor (4), Zeta (29), Lipitor (formerly #1): Crestor and Lipitor belong to a group of drugs called HMG CoA reductase inhibitors, or "statins." They reduce levels of "bad" cholesterol (low-density lipoprotein, or LDL) and triglycerides in the blood, while increasing levels of "good" cholesterol (high-density lipoprotein, or HDL).

According to the Zetia website, “Adding ZETIA to a statin is proven to help reduce cholesterol more than a statin alone. Unlike some statins, ZETIA has not been shown to prevent heart disease or heart attacks.”¹²

We have discussed the cons of statins and cholesterol lowering therapy in detail in Chapter 6. The highlight is you live longer with higher levels of cholesterol. This substance is an important part of our immune systems. As we age and experience immunosenescence (natural deterioration of our immune system with age), we need elevated cholesterol to protect us from infection and disease.

Label Warnings and Dangers (in italics):

The most common side effects of Lipitor are: diarrhea, arthralgia, and nasopharyngitis. Other side effects include: urinary tract infection, insomnia, myalgia, musculoskeletal pain, nausea, muscle spasm, and limb pain. See below for a comprehensive list of adverse effects.

Cough, difficulty with swallowing, dizziness, fast heartbeat, fever, hives, itching, muscle cramps, pain, stiffness, swelling, or weakness, puffiness or swelling of the eyelids or around the eyes, face, lips, or tongue, skin rash, tightness in the chest, unusual tiredness or weakness, wheezing.

Incidence not known: Blistering, peeling, or loosening of the skin, chills, dark-colored urine, diarrhea, joint pain, large, hive-like swelling on the face, eyelids, lips, tongue, throat, hands, legs, feet, or sex organs, red skin lesions, often with a purple center sore, red, irritated eyes, sore throat, sores, ulcers, or white spots in the mouth or on the lips.

Minor Side Effects: Some of the side effects that can occur with atorvastatin may not need medical attention. As your body adjusts to the medicine during treatment these side effects may go away. Your health care professional may also be able to tell you about ways to reduce or prevent some of these

side effects. If any of the following side effects continue, are bothersome or if you have any questions about them, check with your health care professional:

More common: Headache, hoarseness, lower back or side pain, pain or tenderness around the eyes and cheekbones, painful or difficult urination, stuffy or runny nose, Less common: Abdominal or stomach pain, back pain, belching or excessive gas, constipation, general feeling of discomfort or illness, heartburn, indigestion, or stomach discomfort, lack or loss of strength, loss of appetite, nausea, shivering, sweating, trouble sleeping, vomiting, Incidence not known: Appetite increased, black, tarry stools, bloody nose, bloody or cloudy urine, blurred vision, continuing ringing or buzzing or other unexplained noise in the ears, difficult, burning, or painful urination, difficulty seeing at night, excessive muscle tone or tension, fruit-like breath odor, groin or scrotum pain, inability to have or keep an erection, increased body movements, increased sensitivity of the eyes to light, increased sensitivity to touch or pain, increased thirst, increased urination, loss of bladder control, loss of sexual ability, drive, or desire, menstrual bleeding occurring earlier or lasting longer than usual, mental depression, nervousness, nightmares, pale skin, paranoia, pinpoint red spots on the skin, slurred speech, swollen or tender lymph glands in the neck, armpit, or groin, unable to move or feel face, unusual bleeding or bruising, weight loss.

Most Severe Consequences of Taking These Drugs:

Alzheimer's, dementia, muscle atrophy, cancer.

Case Studies:

Case Study 1: Statins have ruined my life for over 15 years now. One medical condition after another and now I have not one but 2 cancers I am fighting. First breathing problems, hospitalized, then stabbing pains (nerve damage I was told)I had the test, I have nerve damage, 8 different braces on legs arms,& wrists, type 2 diabetes, major stomach problems, hair falling out, cataracts, skin growths, couldn't walk, memory problems to mention a few medical problems.

They are finding Statins do nothing for a women. I believe years later we will see all the cancer and other major problems from them, they weren't tested long enough before thrown at us. Eat right and exercise is the best way. I will never touch a Statin again, they have ruined my life. I was healthy before statins, now my life is ruined, if I have a life for very long. My oncologist looked at my lab work from years ago, my WBC and Lymph's went up after Lipitor, we both believe Statins caused my CLL cancer and my breast cancer. Someone mentioned only a few get the side effects, do you want to chance that, once you have the side-effects they don't always go away, cancer down the road, the choice is yours? Just as many people have heart attacks or strokes on statins, do you want to chance that. You never know if you will be that person, I was told no can't be the Lipitor, you need it, you will have a heart attack. Well 15+ years later I have no signs of any heart problems still, what a bunch on nonsense, but I have nerve damage, 2 cancers, type 2 diabetic, hurt so bad I can't stand the pain, cataracts, short winded still.....to mention a few once again. Don't fall into it, it isn't worth it.

Case Study 2: True Story: How Statins (Zocor) Ruined a Man's Life:

The following interview is from 63-year old New Zealander Andy Whyman, who has been living through his own statin-induced nightmare.

Andy was placed on a daily dose of 10mg Zocor and experienced debilitating muscle pain and weakness. Despite the fact that this is an extremely common side effect of statin use, none of the doctors he consulted would even entertain the thought that his problems could be caused by statins.

In fact, after he complained of his symptoms, the doctors concluded that they were caused by his heart problems and increased his simvastatin dose to 40mg!

Andy did his own research and realized that it was indeed the statin that had caused his problems. After years of suffering, Andy eventually won a compensation case, but is still far from full recovery.

For the full story, go to: <http://www.yourmedicaldetective.com/public/377.cfm>

A Proper Solution:

Cardiovascular diseases are not diseases of excess cholesterol. Abnormally elevated cholesterol is a marker of disease. The abstract to a review article titled, "*Chronic Inflammatory Diseases and Cardiovascular Risk: A Systematic Review*,"¹³ tells the story.

"Despite recent advancements in the treatment of coronary artery disease (CAD), it remains the number one cause of death in the world. While traditional risk factors partially account for the development of CAD, other novel risk factors have recently been implicated. Specifically, chronic inflammation has been postulated to play a role in the development and propagation of this disease. The purpose of this systematic review is to examine the available evidence to determine if patients with chronic inflammatory diseases have higher rates of cardiovascular disease. A MEDLINE search was conducted for articles published between 1980-2009. We focused on studies that assessed hard cardiovascular endpoints in subjects with chronic inflammatory conditions such as systemic lupus erythematosus, rheumatoid arthritis, ankylosing spondylitis, psoriatic arthritis, polymyositis/dermatomyositis, and inflammatory bowel disease. Although largely based on small studies, our review indicates that patients with chronic inflammatory conditions are likely at elevated risk for the development of CAD."

Our prescription is to get off your statin and cholesterol lowering medication immediately. If you have chronic inflammation, as ascertained by testing, find the cause and treat it. A good doctor has the know-how to do the proper testing. Also, adopt an immune system boosting lifestyle including diet and exercise. See Chapter 6 for our detailed discussion on cholesterol and statins.

Drugs that Relieve Asthma Symptoms

Advair Diskus (5), Spiriva Handihaler (13), Symbicort (31), Flovent HFA (48): These medications are for the treatment of asthma.

Asthma causes the airways of the lungs to swell and narrow, leading to wheezing, shortness of breath, chest tightness, and coughing. Asthma therapies aim to reduce this inflammation and improve airway function. Conventional treatment modalities can effectively treat asthma in many cases; but for those with chronic, severe asthma, long-term use of glucocorticoids is linked to detrimental side effects like bone fractures and adrenal dysfunction.¹⁴

Label Warnings and Dangers (in italics):

Common side effects of Advair Diskus include: upper respiratory tract infection, pneumonia, and headache. Other side effects include: dizziness, myalgia, and nausea. See below for a comprehensive list of adverse effects.

Major Side Effects: You should check with your doctor immediately if any of these side effects occur when taking fluticasone / salmeterol:

More common:, Black, tarry stools, blindness, blurred vision, burning, tingling, numbness, or pain in the hands, arms, feet, or legs, chills, cough, decreased vision, difficulty with breathing or swallowing, eye pain, fast heartbeat, fever, headache, hives or welts, large, hive-like swelling on the face, eyelids, lips, tongue, throat, hands, legs, feet, or sex organs, nausea or vomiting, noisy breathing, painful or

difficult urination, sensation of pins and needles, shortness of breath, skin itching, rash, or redness, sore throat, sores, ulcers, or white spots on the lips or in the mouth, stabbing pain in the arms or legs, swelling of the face, throat, or tongue, swollen glands, tearing, unusual bleeding or bruising, wheezing.

Incidence not known:, Abdominal or stomach pain, backache, bruising, darkening of the skin, decrease in height, diarrhea, difficulty with moving, dizziness, facial hair growth in females, fainting, fast, slow, pounding, or irregular heartbeat or pulse, flushed, dry skin, fractures, fruit-like breath odor, full or round face, neck, or trunk, heavy bleeding, increased hunger, increased thirst or urination, irritability, large, flat, blue, or purplish patches in the skin, loss of sexual desire or ability, menstrual irregularities, mental depression, muscle pain or stiffness, muscle wasting, pain in the back, ribs, arms, or legs, pain in the joints, sweating, troubled breathing, unexplained weight loss, unusual tiredness or weakness, weight gain.

If any of the following symptoms of overdose occur while taking fluticasone / salmeterol, get emergency help immediately:,

Symptoms of overdose:, Chest pain or tightness, confusion, convulsions (seizures), decreased urine output, dry mouth, faintness, or lightheadedness when getting up suddenly from a lying or sitting position, general feeling of discomfort or illness, high blood pressure, loss of appetite, mood changes, nervousness, numbness or tingling in the hands, feet, or lips, sudden sweating, tremors, trouble with sleeping.

Minor Side Effects, More common:, Body aches or pain, choking, congestion, dryness of the throat, high-pitched noise when breathing, hoarseness, runny nose, sneezing, trouble with swallowing, voice changes, Less common:, Cough-producing mucus, flu-like symptoms, irritation or inflammation of the eye, muscle pain, pain or tenderness around the eyes and cheekbones, sleep disorders, stuffy nose, white patches in the mouth or throat or on the tongue,

Most Severe Consequences of Taking These Drugs:

Increased risk of death from asthma problems

According to an article in the Huffington Post, ¹⁵ “Big Pharma has been accused of selling drugs that are so dangerous they cause death and drugs that cause the exact conditions they’re supposed to treat. The popular asthma drugs Symbicort, Advair Diskus, Serevent Diskus, Dulera and Foradil do both and actually warn on their labels that they cause an increased ‘risk of death from asthma problems.’”

“Big Pharma and the FDA have known for years that formoterol fumarate, found in Symbicort, Dulera and Foradil, and salmeterol, found in Advair Diskus and Serevent Diskus, can paradoxically cause asthma deaths, especially in children and African-Americans. In fact, the FDA has heightened the warnings on the labels several times and convened several hearings about the drugs’ safety and some doctors have called for their complete ban.”

Case Studies:

Case Study 1: 46 year old female: I have been on all three doses of Advair. I usually take 100/50 in winter/summer and 500/50 in spring/fall allergy season. It does help me breath, but the price that I have paid in side effects has been high with respect to quality of life. I am worried about developing cataracts and other problems because of long term use.

I experience hot flashes, irritability, inability to lose weight despite exercise, but worst of all, it has ruined my singing voice. I constantly have to clear my throat. My throat tightens when I try to sing, and my voice snaps, crackles, and pops. Asthma stole my ability to play the clarinet. Advair stole my ability to sing.

Case Study 2: 25 year old female: Caused viral infections leading to pneumonia, permanent lung damage -Contains Salmeterol which can cause viral infection and asthma related DEATH; admitted and recorded side effects.

I have had asthma my entire life, ranging from severe to moderate. Albuterol wasn't working alone, and after several dozen trips to the ER, I was prescribed Advair and Singular. A few weeks after starting these, I contracted a bronchial virus. Antibiotics did nothing to help. After the first 2 months, it had gotten so bad I ended up in the ER again. Chest X-rays showed my lungs were literally covered in spots of bacteria. I was diagnosed with pneumonia. Since then, I have tried almost every antibiotic available that doesn't make me vomit horribly, but nothing has helped.

Several doctors have told me there is nothing more I can do, the bacteria is too persistent because I went so long without treatment. The pneumonia eventually went away on its own, but nearly took my life, and left me with chronic bronchitis. It wasn't until just recently that I discovered both drugs contain Salmeterol. The company that created Salmeterol ADMITS that it "may cause viral infection and asthma related DEATH." They use the actual word 'death.' In fact, you will hear that exact statement listed in side effects. A medicine that has the ability to KILL YOU from taking normally, should not be on the market. Because of Advair and Singular, I have had chronic, almost constant bronchitis and sinus infections for nearly 10 years. I nearly died three times from pneumonia caused by this product. On top of all of that, my asthma has gotten worse. Way to go, GSK, you ruined my life.

A Proper Solution:

Many research papers link pathogens to asthma. Virus and the lung infection chlamydia pneumoniae is associated with asthma. ¹⁶ The authors of this reference state:

"Bacterial allergy" was once thought to be a mechanism linking respiratory bacterial infections and asthma symptoms. Currently, viral infections are widely acknowledged as precipitants of asthma exacerbations, and may be involved in the natural history of asthma."

"An emerging body of evidence suggests that the atypical bacteria Chlamydia pneumoniae (Cp) and Mycoplasma pneumoniae (Mp) are associated with asthma, although whether these associations are causal remains a matter of some debate."

If you have asthma, end the debate and have your doctor order tests for chronic inflammation, infection, and virus. If discovered, then your asthma condition may be able to be controlled and you will manage causes of other debilitating chronic diseases at the same time. Diseases of inflammation tend to be connected.

Another potential cause, or exacerbator of asthma includes environmental and food allergens that are wise to test for and avoid, depending upon the test results. You don't want to live in a bubble so our recommended strategy is to support immune system health and your symptoms and frequency of symptoms are likely to lessen.

Consistent with inflammation being key to asthma, the potent immune system boosting substance, vitamin D, plays a key role in reducing asthma severity. Here are excerpts from two of thousands of research articles.

"In asthma, reduced vitamin D levels are associated with impaired lung function, increased AHR, and reduced GC response, suggesting that supplementation of vitamin D levels in patients with asthma may improve multiple parameters of asthma severity and treatment response." ¹⁷

“Our results indicate that hypovitaminosis D is frequent in children with asthma living in a Mediterranean country. In those children, lower levels of vitamin D are associated with reduced asthma control.”¹⁸

Our advice is to make sure you have and use your inhaler as necessary but work to understand and treat your asthma condition and do not just rely on the symptom-treating medication.

Multiple Sclerosis Treatments

Copaxone (9), Tecfidera (35), Avonex (43), Gilenya (46): These drugs treat aspects of multiple sclerosis.

Copaxone, for example is “indicated for the treatment of patients with relapsing forms of multiple sclerosis.” We know that, in the standard-of-care, there is no cure or way to significantly slow the progress of MS. All these treatments are for symptoms, not for causes.

Label Warnings and Dangers (in italics):

Common side effects of Copaxone include: post-injection flare, anxiety, chest pain, palpitations, dyspnea, urticaria, lymphadenopathy, vasodilatation, flushing, erythema at injection site, itching at injection site, induration at injection site, pain at injection site, and inflammation at injection site. Other side effects include: eye disease, laryngospasm, facial edema, and chills. See below for a comprehensive list of adverse effects.

Major Side Effects, You should check with your doctor immediately if any of these side effects occur when taking glatiramer:

More common: Anxiety, bleeding, hard lump, hives or welts, itching, pain, redness, or swelling at the place of injection, chest pain, cough, excessive muscle tone, fast, irregular, pounding, or racing heartbeat or pulse, flushing, joint pain, lower back or side pain, neck pain, painful or difficult urination, skin rash, swelling or puffiness of the face, swollen lymph glands, swollen, painful, or tender lymph glands in the neck, armpit, or groin, troubled breathing.

Less common: Agitation, bloating or swelling, chills, confusion, difficulty with swallowing, feeling faint, dizzy, or lightheaded, fever, headache, severe and throbbing, itching of the vagina or outside genitals, muscle aches, pain, pain during sexual intercourse, purple spots under the skin, rapid weight gain, red streaks on the skin, shakiness in the legs, arms, hands, or feet, small lumps under the skin, spasm of the throat, strong urge to urinate, sweating, swelling of the fingers, arms, feet, or legs, swelling or puffiness of the face, thick, white curd-like vaginal discharge without odor or with mild odor, tightness in the chest, tingling of the hands or feet, trembling or shaking of the hands or feet, unusual weight gain or loss.

Rare, Back pain, blood in the urine, burning or stinging of the skin, continuous, uncontrolled back-and-forth or rolling eye movements, decreased sexual ability, diarrhea, difficulty with moving, ear pain, fast breathing, irritation of the mouth and tongue (thrush), loss of appetite, menstrual pain or changes, muscle pain, painful cold sores or blisters on the lips, nose, eyes, or genitals, sensation of motion, usually whirling, either of oneself or of one's surroundings, speech problems, vision problems

Minor Side Effects.

More common: Headache, increased sweating, lack or loss of strength, nausea, sore throat, stuffy or runny nose, unusual tiredness or weakness, vomiting.

Less common:, Double vision, seeing double, weight gain,

Most Severe Consequences of Taking These Drugs:

Death

Health agencies from multiple countries, including the U.S. Food and Drug Administration (FDA) and the European Medicines Agency, are investigating reports of 11 deaths in multiple sclerosis patients who took the drug Gilenya. Gilenya is the first oral drug approved by the FDA to reduce relapses and delay disability progression in patients with relapsing forms of MS. But even though it is a relative newcomer to the market, having been approved in the United States in September 2010, serious side effects have already emerged.

Case Studies

Case Study 1: I had been taking copaxone for a month and a half, every day, no probs then Tuesday evening I had a shot & wound up in A & E where I was admitted to New Cross Hospital, they let me go home on Thursday but needless to say I am no taking the copaxone anymore. It happened like this:

I was chatting to an American lady friend on Skype & I realized I hadn't had my shot for that day. This was around 9pm. I took the shot & immediately felt my chest start to tighten & my body react as though I'd been hit with horse tranquilizer. My breathing became erratic, I vomited several times & much to the shock of the person on Skype, I passed out for a few minutes.

On coming round I couldn't move properly or talk properly, it was all coming out slurred but eventually I managed to dial 112 & the ambulance team (who did a great job by the way) came & whisked me to hospital. The chap from the team said he was sure I was a gonner & he was pretty sure I'd had some sort of cardiac arrest though this was later ruled out while in hospital.

I'd injected in the torso so there was no way it could have gone into a vein. No one can explain why this would happen after having a clean run of injections for nearly two months.

Top & bottom line though, I'm not taking it again, not after that, no way & I am extremely reluctant to take further dmd's in light of what happened.

Case Study 2: That's right it hit me...the dreaded post injection reaction (of Copaxone).....you know the one where you can't breathe and you start sweating and immediately get the severe chills to follow! It scared the bejeezus out of me (more so the throat closing than anything) I obviously hit a vein, as I noticed the next day that I had severe bruising at the site (literally black and blue) It made me extremely nervous to do the next one but of course I did it.

Case Study 3: I just started Copaxone injections 2 weeks ago, and have been doing great except for a daily increase in body aches and new pains that weren't there before! This is not listed as a 'side effect' of the drug, nor have I seen anyone else mention having this problem. Now I have a very painful right knee (when walking or sitting), my back hurts almost all the time now, almost my whole body has been achy, and just today my right hand has become weak and my wrist hurts.

A Proper Solution:

In Chapter 7 we highlighted research by Dr. David Wheldon of England. If you have or are concerned about MS, we recommend that you review his site. He makes a convincing argument that the disease is, at least in part, caused by an intracellular infection. We know that it is really caused by immune system dysfunction, disruption, or decay followed by proliferation of opportunistic infection and resulting inflammation. Dr. Wheldon clearly understands this concept also as he gives a very detailed therapeutic prescription for treating MS with chronic intracellular infection. Part of his treatment approach includes many of the suggestion we have discussed for boosting your immune system health.

Diabetes Drugs

Lantus Solostar (11), Januvia (14), Lantus (16), Levemir (30), Novolog Flexpen (33), Novolog (34), Humalog (37), Victoza (42), Janumet (52), Humalog Kwikpen (54). All of these diabetes drugs aim to control blood sugar levels.

We have used the term “diabetes” over 130 times in this book. It is NOT a disease of sugar regulation, it is a disease of inflammation. Find the cause of the inflammation including nutritional deficiencies and excesses, immune system dysfunction, and infection. When you treat the root of type 2 diabetes, you will likely be able to wean yourself off of medication. And also make sure your doctor is not “tightly” controlling your glucose levels as this is a deadly. It happens all the and people die. But since your doctor is complying with the standard-of-care, no one is held accountable.

Label Warnings and Dangers (in italics):

You should check with your doctor immediately if any of these side effects occur when taking insulin glargine:

Major Side Effects, You should check with your doctor immediately if any of these side effects occur when taking insulin glargine.

More common: Anxiety, behavior change similar to being drunk, blurred vision, chills, cold sweats, coma, confusion, convulsions (seizures), cool, pale skin, difficulty with thinking, dizziness or lightheadedness, drowsiness, excessive hunger, fast heartbeat, headache, nausea, nervousness, nightmares, restless sleep, shakiness, slurred speech, tingling in the hands, feet, lips, or tongue, unconsciousness, unusual tiredness or weakness.

Less common or rare: Fast pulse, skin rash or itching over the entire body, sweating, trouble breathing, Incidence not known:, Bloating or swelling of the face, hands, lower legs, or feet, cough, decreased urine, difficulty swallowing, dry mouth, hives, increased thirst, irregular heartbeat, muscle pain or cramps, numbness or tingling in the hands, feet, or lips, puffiness or swelling of the eyelids or around the eyes, face, lips, or tongue, rapid weight gain, vomiting.

Minor Side Effects: More common: Fever, sore throat, stuffy or runny nose.

Less common or rare:, Depression of the skin at the injection site, itching, pain, redness, or swelling at the injection site, thickening of the skin at injection site, swollen joints.

Most Severe Consequences of Taking These Drugs:

Death

Interestingly, the “side effect” is not listed. Could it be that the drug companies, the FDA and your doctor are NOT AWARE of the ACCORD study? In Chapter 6, we covered the ACCORD study that provides the following conclusion:

Treatment to LOWER glucose (Intensive control of glucose) – to “normal levels” kills diabetics faster compared to modest or no control.
But most diabetics are being “intensively controlled.”

I suppose this is understandable, after all the ACCORD study was only conducted at 77 sites in North America. ACCORD is also known as the Action to Control Cardiovascular Risk in Diabetes trial. It had over 10,000 participants between the ages of 40 and 82 who were involved with the study for between two and seven years.

Just a little study run by the National Heart, Lung, and Blood Institute – no big deal.

In fact, the results of controlling glucose were so bad, they had to **stop the study because they were KILLING participants**. Here is a quote for the National Heart, Lung, and Blood Institute.

“In February, the NIH's National Heart, Lung, and Blood Institute (NHLBI) stopped the intensive blood sugar strategy after an average of 3.5 years of treatment, instead of the planned 5.6 years, due to safety concerns. The **intensive strategy group had a 22 percent higher risk of death – or 54 more deaths** -- compared to the standard group.”

If you are taking any of the drugs listed in this section (above) YOU ARE AT HIGHER RISK OF EARLY DEATH.

Shouldn't that be on the label? Oh, of course, this high death rate was not found by the drug companies during the approval process with the FDA, so it can be ignored. Or did the drug companies notice this little side effect and choose not to report it to the FDA because they are not required to report all their findings. Especially unimportant ones like DEATH that could keep their drug off the market – God Forbid.

Iatrogenic causes of death (those caused by your doctor – wittingly or unwittingly) will continue to be a leading cause of death in America until:

- You, the public, recognize that big business is against your health (reread Chapter 9 for a solution).
- You take substantial control of your own health.
- Doctors start doctoring again rather than being whores of the drug industry.

Case Studies:

Case Study 1: 43 year old male: Hello out there I've been a diabetic for 13 years now I am now 43. I probably was a diabetic for much longer than that but that's when I was officially diagnosed. I have had several other health problems in the past 6 years such as gallstones with pancreatitis a rare brain disease which was very similar to having a stroke and major back surgery! During this time I have been taking Lantus which I finally have realized has caused these other problems in my life!!! And I know you out there are wondering how in the hell did Lantus cause major back surgery? Well to make it as short as possible when I got life flighted for this rare brain disease the dr's tried on multiple attempts to give me a spinal tap which they never did succeed on and damaged my back. I had back problems before they poked me like a pin cushion, but I had mild to what I thought was normal back pain.

So the dr's thought I was trying to scam them and basically they didn't believe me and I got pushed out the door!!! The reason why I went into that is to explain just a fraction of what I've had to deal with so people will understand why I didn't notice right away that Lantus cause these problems. Now to jump up to the present. I am now no longer employed and I've lost everything and I couldn't figure out why I woke up everyday feeling terrible and when I mean terrible I mean terrible!!! Pain through out my body wishing I was dead desperate things that you can't really explain unless you experience it yourself!

When I started to feel better, after being of Lantus for a while, I looked at my blood sugar levels and they were crazy high so I start using the Lantus again and in just a few days I'm back to feeling like I'm going to die again! This I hate to say happens multiple times till I figure out its the Lantus that's causing this.”

Author's note about Lantis: “The new report looked at data from an insurance database of 127,000 German insulin-users and found that diabetics taking low doses of Lantus over a year and a half had

a 9% higher chance of developing cancer than people taking traditional human insulin treatments. When patients took higher doses of Lantus, the increased risk of being diagnosed with cancer jumped to 31% over those taking other insulin treatments.”¹⁹

According to a post-marketing study of sudden death among Januvia users, at least 12,389 individuals reported side effects after taking the drug. Among them, 138 people experienced sudden death. Shockingly, more than half of these patients died less than one month after initiating treatment with Januvia.

Case Study 2: If Marti hadn't researched Januvia after her husband died from pancreatic cancer, she too might also have suffered serious Januvia side effects. “When my doctor prescribed Januvia, I remembered that my husband Don had taken it and there was no way I was going to get Januvia cancer,” says Marti.

Both Marti and Don were diagnosed with Type 2 diabetes but Marti says they both had it under control. She doesn't remember exactly how long Don was on Januvia but his quality of life was pretty good; he was enjoying the “golden years.”

“After Don passed away, my blood sugar and pressure went crazy due to all the stress. I moved to another town and a new doctor prescribed me Januvia,” says Marti. “She obviously didn't know about life-threatening side effects such as Januvia cancer.

Case Study 3: Although Claudeth's father was diabetic, she believes that Januvia killed him. “It wasn't until after he died that we heard about its link to pancreatitis and Januvia pancreatic cancer. My dad was only 60 years old,” says Claudeth.

Dad was diagnosed with Type 2 diabetes in the early '90s but he had it under control with the meds he was taking,” says Claudeth. “But in 2011, the doctor switched his diabetes drug to Januvia and not long after he complained of stomach aches and bowel problems.” The doctor found an ulcer and chalked that up to the pain, which was getting more intense as time went on. But like most men, especially of that generation, Claudeth's father didn't think it was important enough to warrant further tests.

“The pain was so intense that we took Dad to the hospital a few times, but they never checked his pancreas,” Claudeth explains. “They just checked his blood and sent him home, but this last visit they found pancreatitis and said he had it for a while. All his other organs had stopped working and the pain was so intense that Dad went into shock.”

A Proper Solution:

Diabetes type 2 is arguably the most preventable and reversible of all the major chronic diseases. Chapter 9 on prevention has many tips that are useful to prevent and reverse diabetes. The chapter on oral infection provides an explanation to those of you who have and are doing all the right things but still cannot get your sugar in line naturally.

Infection play a significant role in diabetes. Intracellular infection can compete with mitochondria for fuel (the energy plant of your cell) and increase inflammation that contributes to insulin resistance. Unless these pathogens are identified and treated, all other measure will be relatively ineffective. This root-cause problem in diabetes also explains why the drug companies are able to keep you on your insulin for life – because insulin is not treating the pathogen.

A PubMed search for “diabetes” and “chlamydia pneumoniae” yield 15,000 research papers on the topic. Many of these discuss chlamydia's role in vascular disease that is prevalent in many diabetics. However, this raises the age-old question of “what came first.” What came first is poor immunity that led to the infection and then the diabetes and vascular disease. We guarantee that is the mechanism – regardless of what pundits say. One piece of evidence is the connection of type 1

diabetes to infection from the mother (or father). Here, the infection is delivered to a “host” (baby) with a developing immune system – thus high vulnerability. Did the baby have cardiovascular disease when it acquired the chlamydia infection? No.

During your efforts to find the cause of your type 2 diabetes and remove yourself from prescription drugs, it may be advisable to stay on a medication for a while. Here we are breaking our policy and recommending a prescription medication. If you are a type 2 diabetic, ask your doctor if metformin is appropriate for your treatment. He or she may have succumb to slick marketing by drug reps (there is one for every nine doctors) such that your doctor is prescribing a more expensive “on patent” drug.

Metformin is a drug that was first used in the early 1900s. It was approved for use in the United States in 1996 and has an admirable safety and efficacy record. Although not completely known, it does not appear to control sugar like the other diabetes drugs. Also, it has added benefits. Diabetics normally have more chronic diseases compared to non-diabetic age mates. However, diabetic patients on metformin are found to have fewer cancer compared to diabetes and, even more remarkably, when compared to the general population.²⁰

Here is another argument in favor of Metformin compared to the many new diabetes drugs. The following is an excerpt from MedPage Today.²¹

“In 1997, a group of experts convened by the American Diabetes Association changed the definition of type 2 diabetes, lowering the blood sugar threshold, and instantly as many as 1.9 million more Americans had the condition.

The same pattern played out in 2003, in an even bigger way, when the association changed the definition of a condition known as pre-diabetes and -- overnight -- 25 million more Americans were affected.

In the decade that followed, the diabetes industry boomed -- thanks in part to a 2008 declaration by two endocrinology groups that pre-diabetes could be treated with drugs if diet and exercise didn't lower blood sugar.

Last year, sales of diabetes drugs reached \$23 billion, according to the data from IMS Health, a drug market research firm. That was more than the combined revenue of the National Football League, Major League Baseball, and the National Basketball Association.

But from 2004 to 2013, none of the 30 new diabetes drugs that came on the market were proven to improve key outcomes, such as reducing heart attacks or strokes, blindness, or other complications of the disease, an investigation by MedPage Today and the Milwaukee Journal Sentinel found.”

These new drugs are effectively controlling sugar but not the disease, otherwise patients would experience positive outcomes.

This begs the question, why does metformin work well for diabetics AND reduce cancer? It turns out, the mechanism for action in diabetics is not “well understood.” However, a deeper dive reveals that Metformin has antibiotic properties. One paper discussing this “pleotropic” property of metformin is “Metformin as a potential combination therapy with existing front-line antibiotics for Tuberculosis.”²² It's not our intent to dig deeper into metformin here. However, you can see why this drug may be a better choice compared to the new, expensive, and deadly drugs you may currently be using.

Eye Injectable Drugs for Macular Degeneration

Lucentis (26), Avastin (17). Lucentis treats wet age-related macular degeneration, macular edema caused by a blocked blood vessel in the eye, and diabetic macular edema. Avastin has been used for this purpose too but is reported to have safety issue beyond those of Lucentis. Avastin is an angiogenesis inhibitor, as a drug that slows the growth of new blood vessels. Its main use is to treat cancer.

Label Warnings and Dangers (in italics):

In Summary: Common side effects of Lucentis include: cataract, increased intraocular pressure (also known as glaucoma), and intraocular inflammation. See below for a comprehensive list of adverse effects. Interestingly, the drug companies do NOT report, stroke, heart attack and death, even though these occur frequently based on their own studies.

More common: **Blindness**(isn't this what it is treating?), bloody eye, blurred vision or loss of vision, decreased vision or other changes in vision, disturbed color perception, dizziness, double vision, dry eye, eye pain, fainting, feeling of having something in the eye, halos around lights, headache, night blindness, over bright appearance of lights, pain or tenderness around the eyes and cheekbones, red, sore eyes, redness of the white part of the eyes or inside of the eyelids, redness, swelling, or itching of the eyelid, seeing flashes or sparks of light, seeing floating spots before the eyes, or a veil or curtain appearing across part of vision, sensitivity of the eye to light, tearing of the eyes, tunnel vision, watering of the eyes.^{rrr}

Less common:, Body aches or pain, chest pain, chills, cough, difficulty with breathing, dry mouth, fainting, fast, slow, or irregular heartbeat, general feeling of discomfort or illness, head congestion, hoarseness, loss of voice, or other voice changes, loss of consciousness, muscle aches and pains, nasal congestion, pain in the chest, groin, or legs, especially the calves, painful blisters on the trunk of the body, pale skin, runny nose, severe, sudden headache, shivering, slurred speech, sneezing, sore throat, sudden loss of coordination, sudden, severe weakness or numbness in the arm or leg, sudden, unexplained shortness of breath, sweating, tightness in the chest, trouble sleeping, unexplained weight loss, unusual tiredness or weakness.

Minor Side Effects: Back pain, difficulty having a bowel movement (stool), difficulty with moving, muscle stiffness, swelling or redness in the joints,

Most Severe Consequences of Taking These Drugs:

Significant Increase in Death

Eye injections are deadly. Yes, DEADLY. The drugs that are injected in the eye do NOT stay in the eye and can cause very serious adverse events – heart attack, stroke, and death.

Warning: There is only ONE study that is not funded by industry. All the other studies underplay the severity of the risk of eye injections. The study to read and understand is titled, “Ranibizumab and Bevacizumab for Treatment of Neovascular Age-related Macular Degeneration, Two-Year Results.”²³ Ranibizumab is better known as Lucentis and Bevacizumab is better known as Avastin.

40% (2 in 5) patients receiving Avastin had SERIOUS adverse events. 33% (1 in 3) patients on Lucentis had SERIOUS adverse events including stroke, heart attack, other bad vascular outcomes, and sudden death.

The final statistics look like this – in just 2 years. Usually adverse events from drugs take 5 years or more.

^{rrr} Notice the cleverness of only reporting eye adverse effects of Lucentis in this section. This is completely disingenuous. Sudden death should be the first side effect listed.

- Avastin: 34.5% increase in death, myocardial infarction (heart attack), and stroke.
- Lucentis: 28.4% increase in death, heart attack, and stroke.

300% increased risk for death was the results found in a study on Lucentis and Eylea when compared to sham (no treatment) and laser. 233% increase in stroke was noted in this study as well. ^{sss}

The bias on reporting is baffling. Here is an “exclusion” criteria for one review article on this topic:

“Of 1126 articles reviewed, 598 were removed as duplicate studies and 524, for lack of monthly treatment data for 2 years, leaving 4 studies for the meta-analysis that met the search criteria: 2 trials using monthly aflibercept and 2 using monthly ranibizumab, representing 1328 patients.”

What is in those 1122 other studies that were excluded? You can be sure that the four chosen presented the most positive spin on these drugs.

A 2014 paper titled, "Ranibizumab and risk of hospitalisation for ischaemic stroke and myocardial infarction in patients with age-related macular degeneration: a self-controlled case-series analysis," discusses the hazards of Lucentis injections. Since 2014 just 5 other researchers have cited this paper. The medical industry and ophthalmology is clearly in denial regarding the risks of this very dangerous drug.

VEGF is Vascular Endothelial Growth Factor. It's not as complicated as it sounds. When your vessels start to plug up, your brain recognizes the drop in blood flow and signals your body to make new vessels. This process is often a life-saver. If you have angina, praise God for VEGF because you didn't die of a heart attack. Instead, your body quickly formed new vessels – like one of those temporary bridges – that saved your life. ^{24, 25}

Lucentis and Avastin and the other eye injectables STOP VEGF – so you body cannot form new vessels that keep you from dying. That's why these injectables INCREASE your likelihood of dying. Injecting Lucentis into your eye results in Lucentis being in your heart too.

Sure, your doctor may “stent” you to improve blood flow because these temporary vessels are not as good as the original ones (just like one of those temporary bridges). But the stent does NOT address the cause of your good vessel going bad. The solution to fixing bad vessels is covered throughout this book. Finding an addressing the root cause of vascular disease (and it's not cholesterol – as discussed so many times) is fundamental to your healthy longevity.

These drugs hardly provide any eyesight benefit while causing too much risk of death and vascular disease. Even the New York Times has fallen for the industries deceptive ways of measuring eyesight in these studies. Ophthalmology and the drug industry use the concept of “letters.” What does “letters” mean in the context of visual acuity? We all know 20/20, 20/50, etc. So why are they using letter? Here is an article from the New York Times on the “benefits” of eye injections (that kill you) for your vision. ²⁶

^{sss} No definitive increase in heart attack was noted. Please understand the vast difference between and industry-sponsored study and one funded and conducted by researchers without an agenda for financial gain. Contrary to data, criminals like Arseniy Hashkin, Paul Hahn, and Frank Sloan publish articles claiming no increased risk. When you dig into these people, you find Hahn is at NJRetina doing injections. Do you see the conflict?

“After one year, those randomly chosen to be treated with Eylea had an average improvement of 13.3 letters on an eye chart, compared with 11.2 for Lucentis and 9.7 for Avastin.”

“For about half the patients, those with vision of 20/40 or better at the start of the study, **all the drugs provided an average gain in vision of about 8 letters.** But for the other half, with 20/50 or worse eyesight to start, the average improvement was 18.9 letters for Eylea compared with 14.2 for Lucentis and 11.8 for Avastin.”

“Among these patients with worse vision, 67 percent in the Eylea group had an improvement of at least 15 letters, or three lines on an eye chart, a level experts say is clearly meaningful. Only 50 percent of those treated with Lucentis and 41 percent treated with Avastin gained that much vision.”

Here is your translation:

- Doctors say 15 letters is 3 lines on an eye chart – and this type of gain is meaningful
- The eye injectables provide about 8 letters – which is NOT meaningful – and they kill you faster.

Worse news, these killer drugs don't provide long-term benefits, even if you get your injection monthly. An article from the Association of Research in Vision and Ophthalmology titled, “Anti-VEGF therapy did not maintain visual acuity gains in AMD patients at 5 years,” explains the rather poor results obtained from these bad drugs.²⁷ Here is the summary of the study from Dr. Daniel F. Martin:

Patients with neovascular age-related macular degeneration who were treated with anti-VEGF therapy did not maintain visual gains at 5 years, according to the Comparison of Age-Related Macular Degeneration Treatment Trials results. Mean change in visual acuity was a loss of three letters from baseline and a loss of 11 letters over 2 years. This decrease in vision was accompanied by expansion of the size of the total neovascular complex comprising neovascularization, scarring and atrophy and by persistence of fluid on OCT.”

Case Studies:

Case Study 1: I am an 81 yr Indian woman, very healthy and fit for my age, took four consecutive injections of Lucentis in my right eye for ARMD. That my vision only steeply fell is another thing, but last month I was diagnosed with stage 0 Marginally Triple Negative Breast Cancer and the oncologist confirmed that the tumor was born around the time I was under Lucentis treatment.

Case Study 2: 4 days following my first injection of Lucentis I became unwell with sciatic type pain on my right side and general feeling of unwell. 1 week before my 2 injection I enquired if this was an adverse reaction but was told nothing documented. Pain continued and I started walking with a limp, my GP prescribed pain relief and blood tests. Tests showed out of range liver/kidney function. Again before 3 injection when I limped into clinic did I voice my concerns. I had to visit my A/E dept in the early hrs when pain had become unbearable and days later had an MRI of which I am awaiting results. I have struggled to work up until 2 wks ago when the pain became unbearable and have needed to walk with a stick. My employer has now called me in for my sickness and I would like to know if anyone else has had similar symptoms.

Case Study 3:

On Oct, 24, 2016

15,591 people reported to have side effects when taking Lucentis.

Among them, **3,131** people (20.08%) have Death

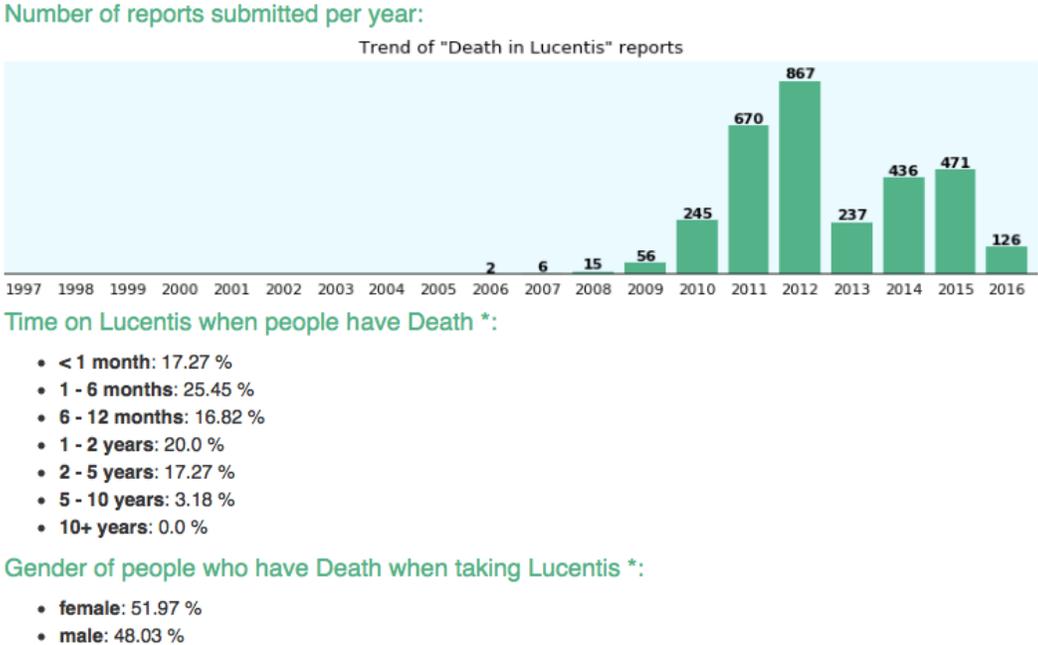


Figure 8.1. Side effects and death rates caused by Lucentis.

Source: <http://www.ehealthme.com/ds/lucentis/death/> (October 29, 2016).

A Proper Solution:

Macular disease and all the other diseases now treated by Lucentis and Avastin are systemic diseases – not “eye only” diseases. Stop using these deadly drugs and find a doctor who will evaluate you systemically. Then you can get proper treatment at the root cause. Most of this book focuses on recommendation for how to properly diagnose, prevent, and treat these diseases, including macular degeneration.

Alzheimer’s Symptoms Managing Drugs

Namenda (27) and Aricept. Drs. Trempe and Lewis’ book on Alzheimer’s disease titled, “The End of Alzheimer’s? A Differential Diagnosis Toward a Cure,” covers this topic. Those interested in neurodegenerative diseases are encouraged to read that book. There are no recommendations for the use of either Namenda or Aricept in that book. These drugs treat symptoms and have no impact on the course of the disease.

Death and Disability Caused by Medicine

You may have thought cancer or heart disease takes the lives of more Americans than any other illness or event. But conventional medicine is actually the leading cause of death today! Iatrogenesis is the medical term for inadvertent and preventable induction of disease or complications by the medical treatment or procedures of a physician or surgeon. A good resource on this topic is a book

by Gary Null et. al. titled, “Death by Medicine,” along with the many research papers of the same title. , ,

Dr. Null shares our confusion about the current system – which, of course, is traced back to money. Life Extension Foundation, upon reviewing Dr. Null’s work state:

Something is wrong when regulatory agencies pretend that vitamins are dangerous, yet ignore scientifically established and published facts showing that government-sanctioned medicine is the real danger. Until now, Life Extension could cite only isolated statistics to make its case about the dangers of conventional medicine. No one had ever analyzed and combined ALL of the published literature dealing with injuries and deaths caused by government-protected medicine. That has now changed.

A group of researchers meticulously reviewed the statistical evidence and their findings are absolutely shocking. These researchers have authored a paper titled “Death by Medicine” that presents compelling evidence that today’s medical system frequently causes more harm than good. This fully referenced report shows the number of people having in-hospital, adverse reactions to prescribed drugs to be 2.2 million per year. The number of unnecessary antibiotics prescribed annually for viral infections is 20 million per year. The number of unnecessary medical and surgical procedures performed annually is 7.5 million per year. The number of people exposed to unnecessary hospitalization annually is 8.9 million per year.

The most stunning statistic, however, is that the total number of deaths caused by conventional medicine is an astounding 783,936 per year. It is now evident that the American medical system is the leading cause of death and injury in the US. (By contrast, the number of deaths attributable to heart disease in 2001 was 699,697, while the number of deaths attributable to cancer was 553,251.)

Adverse Reaction to Drugs

Deaths due to reaction to doctor-prescribed drugs are amongst the single leading cause of death, killing over 100,000 each year. Most of these deaths are preventable because they are being prescribed based on an incorrect or misguided diagnosis. Hopefully you have figured that out from the content provided in this book. Moreover, regardless of the correctness of the diagnosis, we have methods to determine the potential for these drugs to cause harm in one individual as opposed to another through pharmacogenomics testing.

Pharmacogenomics (PG) is the study of variability in pharmacokinetics and pharmacodynamics in relation to human genomic variation. PG has its roots in biochemical genetics and the works of Archibald Garrot (1857–1936) who suggested the chemical individuality of humans as a basis for certain inborn errors of metabolism. Through an understanding of the pharmacogenomics profile of an individual, a drug and its dosage can be tailored to the individual patient need when genetic factors are taken into account. PG adds a personalized – rather than a one-size-fits-all approach to the medical therapeutics – and it can SAVE LIVES. The relationship between dosage requirement and genetic variation in drug metabolizing enzymes or in drug transporters is well documented.

In their 2011 paper titled, Pharmacogenetics, Pharmacogenomics, and Individualized Medicine, Ma and Lu articulate the progress and problems associated with understanding individualized susceptibility to drug reactions.

“Individual variability in drug efficacy and drug safety is a major challenge in current clinical practice, drug development, and drug regulation. For more than 5 decades, studies of pharmacogenetics have provided ample examples of causal relations between genotypes and drug response to account for phenotypic variations of clinical importance in drug therapy.

In a large patient population, a medication that is proven efficacious in many patients often fails to work in some other patients. Furthermore, when it does work, it may cause serious side effects, even death, in a small number of patients. Although large individual variability in drug efficacy and safety has been known to exist since the beginning of human medicine, understanding the origin of individual variation in drug response has proven difficult. On the other hand, the demand to overcome such variation has received more attention now than ever before. It is well documented that large variability of drug efficacy and adverse drug reactions in patients is a major determinant of the clinical use, regulation, and withdrawal-from-market of clinical drugs and a bottleneck in the development of new therapeutic agents.”

As indicated above, pharmacogenomics has been around for 5 decades. Is your doctor testing you BEFORE you get your script? Please potentially save your life by giving your doctor a copy of this 2001 review article titled, “Potential Role of Pharmacogenomics in Reducing Adverse Drug Reactions - A Systematic Review.” This article was published in the Journal of the American Medical Association – no less. , Here are some highlights from that “old” article.

“Several highly publicized reports and policy initiatives have urged greater efforts to reduce the rate of adverse events in medical care. Pharmaceutical agents are one of the most commonly identified causes of adverse events, resulting in significant patient morbidity, mortality, and excess medical care costs. , A widely cited meta-analysis estimated that more than 2 million hospitalized patients have severe adverse drug reactions (ADRs) annually in the United States even when drugs are appropriately prescribed and administered, and that ADRs ranked between the fourth and sixth leading cause of death in the United States in 1994. However, there have not been any updated, systematic reviews published since that time.

A primary benefit of pharmacogenomics that has been repeatedly cited in prominent articles is the potential to reduce ADRs. Some ADRs caused by genetic variation—previously considered non-preventable—may now be preventable. Adverse drug reactions could be reduced by modifying drug selection or dosing in patients with poor ability to metabolize a drug because of genetic variation in their drug metabolizing enzymes or by developing drugs a priori that will avoid metabolic pathways with adverse genetic variability

Fast forward 14 years, to 2015 and we find out that this test is NOT being widely used and adverse drug reactions continue to be a leading cause of death in America.

“There is a critical need for additional training on pharmacogenomics among doctors and also to incorporate it into medical school curriculum. Emphasis should be placed on how to accurately interpret and critically evaluate the use, and safety of pharmacogenetic testing.”

TRANSLATION: If you are not testing, your guessing.

POTENTIAL RESULT: If you take a pharmaceutical drug you may have an adverse reaction or die even if your neighbor or wife experienced NO side effects.

SOLUTION: Don’t take the drug in the first place or get off the drug by getting healthy.

Conclusion

We just reviewed the hazards and benefits of many of the major drugs available to you today. Which one(s) are you taking? Is the risk worth the benefit? ^{†††} What health price are you paying (health opportunity cost) by not being diagnosed and treated at the root-cause?

Maybe you should reconsider all the drugs you are taking. And find a doctor whose philosophy about health doesn't start with the prescription pad.

“With few exceptions, if the drugs used could be sunk to the bottom of the sea, it would be all the better for mankind - and all the worse for the fishes.”

- Dr. Oliver Wendell Holmes.

^{†††} Dr. Trempe often tells me that, after informing patient of the risks of the drugs they are on, they often express a belief that THEY will be the one who benefits, and not be harmed. This is myopic thinking that is in denial of the statistical facts. As Mark Twain said, “It's easier to fool people than to convince them they have been fooled.”

Chapter 9 References

Chapter 9 Prevention



“America's health care system is in crisis precisely because we systematically neglect wellness and prevention.”

- Tom Harkin (U.S. Senator, IA)

Why is the illustration above appropriate? Most chronic diseases will be eliminated, one person at a time, through developing good habits in our youth and not by treating the elderly with severe disease. Did your grandmother force you to take cod liver oil? If you are now elderly and free from dementia or other chronic diseases, say a prayer of thanks to her.

People with chronic disease have a serious health problem that is not hopeless. This concept is contrary to the establishment that says there are no way to slow or reverse many such diseases such as Alzheimer's. This book illustrates that science and medicine does have a solid understanding of the mechanism of chronic diseases. With this knowledge, a differential diagnosis and targeted treatments can attack disease at its root. Even under these circumstances, reversal is challenging, especially for late-stage conditions.

What is the real solution to disease management? Prevention!

Prevention really starts with knowledge – and this does not mean hype and fads from Madison Ave. and the sound bites you are getting from the TV and magazines. Gaining real knowledge is your first step to health and longevity. A dirty little secret buried within the medical literature – that polite society refuses to discuss - is college graduates enjoy about 15 more years of good health compared to those who only achieve a high school diploma or less. It is not the extra learning that makes the difference however. It is how learning is applied to ones life. This is the difference between “association” and “causation.”

The places to start learning about and investigating prevention strategies are the written works of Paul Clayton and by taking a history lesson on Claude Bernard. Clayton and Bernard offer real and practical solutions to chronic disease prevention.

Prevention strategies are best designed on the foundation of knowledge about what causes inflammatory disease. Can you base your strategy on reducing cholesterol that is known not to change overall mortality? Complex chronic disease is never triggered, prevented, and cured by targeting a single factor. Our physiology is too complex. But when we understand that disease is rooted in inflammation and infection we can now see that it is manageable.

In the case of the most devastating of chronic conditions, Alzheimer's disease, if onset is pushed back by a mere five years, the number of afflicted will be reduced by about half. Those are good odds. Wouldn't you like to know that you could reduce your risk by half? And there are ways to hold AD at bay, as opposed to what we hear in the news about this disease. What is the approach to preventing, or at least pushing Alzheimer's and other chronic diseases way into our future? The answer is to understand and address the true causes of the disease and enhance the health of your immune system. Both of these approaches will reduce inflammation, infection, and chronic diseases in general.

Genesis of Health and Disease

Today we are bombarded with the newest and best products to make us healthy.

- What do we do?
- Who do we believe?
- What do we take?
- How do we behave?

Quarterbacks, knowledge is power. What we present in this chapter will hopefully enable you to see through the snake oil, false promises, financial agendas, and skewed statistics that interfere with good health choices. Creating health is actually pretty simple and easy when you get back to basics. But you must know what is opposing good health in society today.

My people are destroyed from lack of knowledge

- Hosea. 4:6

Genesis of Health - Food

First, let's gain an understanding of the food we eat. Start looking at food as containing three components:

1. Calories. Sure we need energy from our food to run our engine.
2. Nutrients. We need to obtain essential nutrients from our food. An essential nutrient is a nutrient that the body cannot synthesize on its own -- or not to an adequate amount -- and must be provided by the diet.
3. Cofactors. These are substances (nutrients) that support the synergistic systems in our bodies. An example is a prebiotic that is a nutrient for our gut bacteria.

Much is said today about GMOs and commercial farming, organically produced foods, farm raised versus wild caught, and so on. This section hopefully illuminates these issues. We will NOT be discussing dietary choices. The work of Weston A. Price has shown that varied indigenous diets

from all over the world have created good health. Therefore, our recommendations are based on the quality of a food as opposed to the type of food. You can make any wacky choice you want....

Let's take a journey back to the very beginning of how food comes to be. It starts a very long time ago with the formation of the earth, the availability of water, and some tiny organisms.

Soil develops through a series of changes starting with weather of mineral formations – also known as rock. Microbes feed on the rock and break the material down into smaller, and sometime soluble, components. Lichens are a collection of microorganisms that synthesize over 800 substances, many of them not found elsewhere in nature. Here is a reason to like Lichens:

“Lichens are very important components of subarctic and arctic ecosystems due to their role in weathering of rock and minerals and their contribution of nitrogen and other nutrients to the soil. Lichens are often the very first life forms to colonize freshly exposed rock surfaces high in the mountains, and they immediately begin the very slow process of weathering minerals from the barren rock and incorporating them into their bodies. When the lichens subsequently decompose, these nutrients become available to other forms of plant life, literally breaking down rock into its component minerals that are then available for nutrition.”¹

Thus wind, rain, lichens, other organisms and natural forces, including sunlight all participate in the creation of soil.

Dr. David Montgomery, Professor of Geomorphology at the University of Washington informs us that there is a symbiosis between plants and the soil.² Microbial life living in the root zone and how those microbes are exchanging nutrients with the plants. The plants use the sun to create fuels through photosynthesis and it puts some of what it produces back into the soil to feed the microbes – which, of course, break down the soils to make it bioavailable to the plant.

Humans, like plants, have a similar symbiosis with microbes – in our guts.

This most fascinating and mysterious act of nature is running into a problem in modern society. Population is exploding as is our need for food. Modern society does NOT have the patience for this beautiful soil and nutrient creating process to occur. As usual, man has interceded with all types of technology. The website nutritionsecurity.org has documented the consequences of 120 years of agricultural expansion on human health.

Please read the article, “Human Health, the Nutritional Quality of Harvested Food and Sustainable Farming Systems.”³ This article realistically explains the crisis the people of our planet are in due to the loss of soil and soil nutrients. Here is an excerpt from the introduction to that article.

“In the United States and throughout the world much of the world's inventory of arable topsoil has been lost due to erosion, overuse of inorganic nitrogen fertilizers, and other farming practices that leave the soil depleted. The depletion of soil nutrients and soil microorganisms contributes to soil erosion and the loss of arable topsoil. The Earth is losing arable topsoil at a rate of 75 to 100 GT. per year. If soil loss continues at present rates, it is estimated that there is only another 48 years of topsoil left.”

“In the United States soil is eroding at a rate that is ten times faster than the rate at which it is being replenished. The rate of soil erosion is much faster in other parts of the world such as Africa, India and China where erosion rates are 30 to 40 times faster than the rate of replenishment. In areas of Africa the combination of soil depletion and soil erosion has led to the prediction of plummeting crop yields.”

“Food grown in nutrient deficient soil lacks the nutrients needed to keep people healthy. Studies reveal that the nutritional values in food have declined significantly over the past 70

years. The declines in the nutritional values in food have been attributed to mineral depletion of the soil, loss of soil microorganisms along with changes in plant varieties.”

“Without adequate nutrition from food, we become susceptible to disease. Simply stated ... a lack of nutrients leads to malnutrition ... malnutrition leads to disease. Wellness stems from eating nutrient rich, flavorful food. A critical need exists to provide assurance of the nutritional values in the food we eat.”

Figure 9.1 below was assembled by Dr. August Dunning. What Dr. Dunning shows is that mineral loss in soil is occurring at an alarming rate. Further, the more advanced mechanized farming processes, along with pesticides, roundup use and GMO processes accelerates the loss.

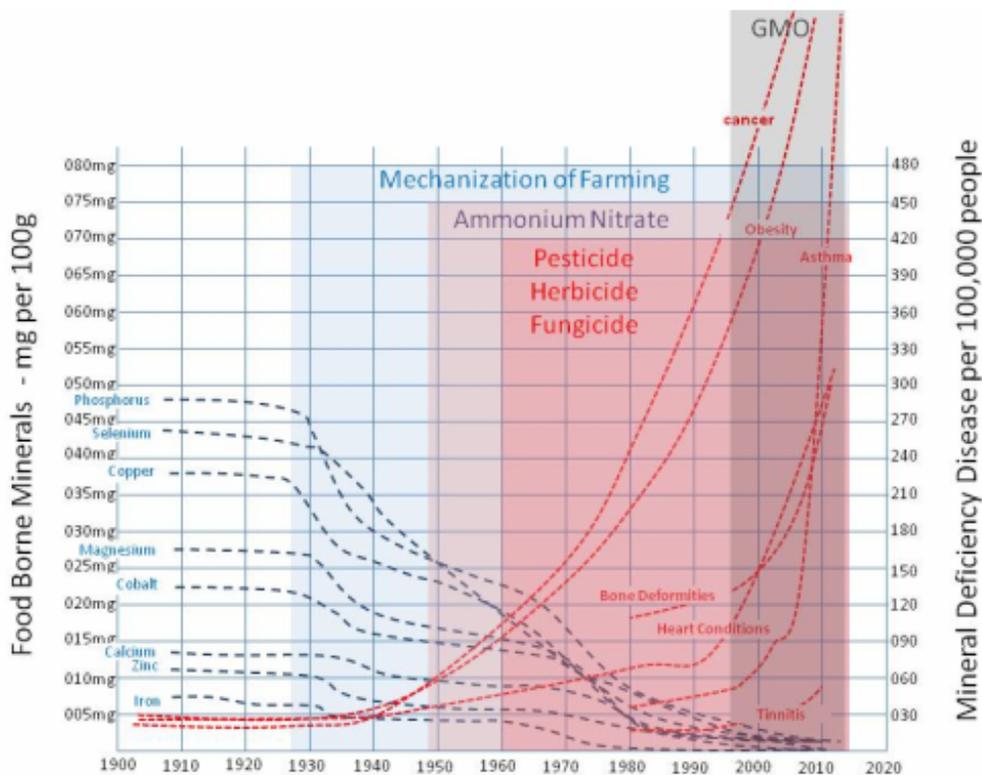


Figure 9.1. Reduction of soil minerals and increases in chronic diseases.

Four factors are contributing to the lack of nutrients reaching our foods that are produced by modern large-scale farming practices.

1. The land is being over-farmed. The soil is partially replenished by fertilizers. However, these fertilizer only deliver a few nutrients, not all the essential nutrients we need for good health. The microbes in the soil do not have enough time to break down the soil to replenish these nutrients.
2. The microbes, critical to replenishing the soil, are being killed by the addition of chemicals to the soil.
3. GMO crops are designed to grown in nutrient deficient soils. Yes, science is clever – a weak plant can still look robust. But, if the GMO seed allows the plant to grow large in magnesium

deficient soil, the plant is still magnesium deficient, and so are we when we consume the plant.

- Plants need minerals to produce essential nutrients like vitamins. Without sufficient minerals, plants produce insufficient vitamins. Thus, we become vitamin deficient.

Sea Solids as a Fertilizer

Number 4 above creates quite a conundrum. If the plant were just mineral deficient, then we could supplement with minerals and that would solve the problem. However, the problem is much more insidious because we rely on plants to produce nutrients beyond just providing minerals. However, we are mineral deficient too. A good source for minerals is an unrefined sea salt. The ocean is the repository for all the minerals that have left our soil. Figure 9.2 shows the drainage area of the Mississippi River. It's quite clear that the minerals from the Rockies to the Appalachian Mountains have all funneled into the Gulf of Mexico then into the oceans.



Figure 9.2. Mississippi River drainage basis.

Maynard Murray, MD was the author of the book, “Sea Energy Agriculture,” and a most amazing issued patent from 1963.^{4,5} In this patent, he demonstrates how the quality of the soil impacts the vitamin and mineral content of plants growing in that soil. He further demonstrates that animals that eat the healthy plants also have high micronutrient contents in their tissue and are generally healthier.

“There are instances of where the plant, even though seemingly healthy, is deficient in elements and gives risk to disease in animals.”
 - Dr. Maynard Murray

Excerpts from Dr. Murray’s patent titled, “Process of applying sea solids as fertilizer.” Don’t be turned off by the dry title, his work is fascinating.

“This invention relates to the process of applying sea solids as a fertilizer. By sea solids we mean the inorganic salts that are dissolved in the water.”

“From the foregoing, it appears quite clear that deficiencies in elements or unbalanced amounts of elements (in the soil) are reflected in food plants. Animals, we know, are dependent upon such plants for life, and man is dependent upon both. Thus it can be concluded step by step along the cycle of life that the diet may have a pronounced effect upon health and disease in man.”

“We know that elements – like energy, can neither be created nor destroyed. They can only be moved from one place to another. When one thinks fundamentally of the problem of erosion, however, he wonders where the elements eventually go after they leave the soil. If one has stood on the banks of the Mississippi River and watched the turbidity of the water, it becomes apparent that much of the solid is being dissolved or suspended and washed into the ocean.”

“It was decided by the author to obtain the elements from sea water in the proportion that they occur there. The most soluble salts found in the land should be found in the most abundant supply in the sea. Sodium chloride (table salt) is found in a much greater concentration in the sea than are the various barium salts, for example. It is known that sodium chlorate, in great concentrations, is toxic to plants. Therefore it was deemed advisable to start with very low concentrations of sea water to test their effect on plants. It was found, after considerable experimentation, that sea solids comprising 3 1/2% of sea water could be applied to the soil in fairly great concentrations, without detriment to the plants.”

“First, animals were fed a diet of four parts of corn; two parts of oats, and one part of soy beans, all grown on land treated with sea solids.”

“The rats fed on the control, or untreated corn, oats, and soy beans, developed eye inflammation in 12 to 14 days. The rats fed on the experimental (sea salt produced) feed did not show eye changes.”

“Three hundred chickens were obtained from a local hatchery when one day old. They were divided into two groups of 150 each. All were fed the commercial concentrate, plus four parts of corn and two parts of oats. The animals fed on the experimental (sea salt raised) corn and oats matured approximately one month in advance of the control. The experimental (sea salt chickens) started to lay eggs three to four weeks earlier, and the eggs weighed two to three ounces more per dozen. Dressed experimental roosters at six months of age weighed 1 1/2 pounds more than the control, and there was less food consumed per pound by weight gain in the experimental chickens. There was a decided difference in the skeletal structures of the experimental and control chickens, as shown by X-ray.”

Indigenous Natural Foods and Health

Weston A. Price, the Cleveland dentist referenced in the previous chapter studied the oral health, including jaw bone structure of indigenous peoples from all over the world. When Dr. Price analyzed the foods used by isolated primitive peoples he found that they provided at least four times the calcium and other minerals, and at least TEN times the fat-soluble vitamins from animal foods such as butter, fish eggs, shellfish and organ meats. The results of these high micronutrient dense foods was superior jaw bone formation and strong, cavity resistant teeth. This translates to a strong skeletal structure just as was observed by Dr. Murray in his chickens fed plants from sea salt enhanced soils.

Figure 9.3 shows, “The ‘primitive’ Seminole girl (left) has a wide, handsome face with plenty of room for the dental arches. The ‘modernized’⁶ Seminole girl (right) born to parents who had

abandoned their traditional diets, has a narrowed face, crowded teeth, and a reduced immunity to disease.”



Figure 9.3. Comparison of oral cavities as impacted by nutrition. Photos Copyright © Price-Pottenger Nutrition Foundation®

Proper vitamin and mineral intake, even during pregnancy, has a profound impact on the health and development of our bones and our teeth.

Returning to Dr. Murray’s patent, he continues:

“During the growing stage (for oats), just before the oats headed, there was a marked difference in color. The experimental lot was darker green, which was noticeable to the eye and is also readily distinguishable in colored photographs. The farmer who harvested this crop observed that the experimental plot had many more rabbits, suggesting a taste difference. The ash weight showed a 1.1% increase in the experimental (implying more minerals). The second generation oats showed excellent germination and production, although no further applications of sea solids were put on the soil. Second generation oats were essentially “rust” free.”

“The experimental plot of corn yielded about 13 bushels more per acre than the control, and the experimental showed an increase of 1.7% in ash weight.”

“The increase in ash weight (mineral content in the plant) of the experimental garden vegetables over the control was as follows: Sweet potatoes 8.3%; onions 4.4%; tomatoes 18.7%.”

“Diseases in plants. There was a marked difference between the treated and control plants in “curl leaf” of peach trees, the treated tree being much freer of the disease. In blight of tomatoes, the treated plants showed a marked difference in resistance to the disease. The most phenomenal difference in plant diseases noted was in corn smut, which showed 384% more smut in the control plot than in the experimental.”

“It is known that there are many acres of soil unfit for the growth of garden peas. This is said to be due to an infection of the root of the plants caused by *Aphanomyces* and *Fusaria*, the former being very specific for the pea plant, and the latter having the ability to attach to their

hosts. In greenhouse experiments, I was able to grow the pea plant to maturity in soil infected with these two organisms, with the addition of sea solids, using two different varieties of peas. The control plants died at or before the blooming stage.”

“Center rot in turnips is said to be due to a staphylococcus infection. In 100 plants on treated and control soil, there was an incidence of center rot in 20 of the control, and none in the experimental turnips.”

“It was also decided to test the effect of sea solids on the pH of the soil. The ordinary garden beet was used as an indicator plant. In acid soil, this plant is supposed to germinate and put forth two leaves which seemingly are healthy. The second pair of leaves, however, usually die and the plant will not grow to maturity if the soil is too acid. I obtained soil from La Porte County in Indiana with a pH of 4; After the addition of my sea solids, I found that the pH decreased slightly, but later returned to its original value. I planted beets and radishes in this soil treated with sea solids and was able to grow them to maturity. I feel that so-called sour soil is deficient, and most probably not deficient in calcium alone; that the pH itself is not the determining factor as to whether or not the ordinary varieties of plants found in this climate will grow. Radishes were grown in treated soil with a pH of 4. Beets, a sour soil indicator plant, grew beyond the third and fourth leaf.”

“Observations.—A number of observations made during these experiments have been recorded for their possible significance. Sheep ignored field of untreated hay to get to a ten foot square patch of treated hay, indicating a taste difference. Also, experimental stalks of corn were marked with tape, and mixed with control corn. Cattle and sheep would nuzzle through the corn to pick out the experimental stalks, again indicating a taste difference. The farmer who harvested the oats noticed that the experimental oats attracted more rabbits and grasshoppers. A taste difference was also noted in garden vegetables. Onions and radishes were sweeter than the control vegetables. There was also a difference in the taste of lettuce, green beans and carrots. In apples and grapes, vitamin A and vitamin C were found in greater quantity in the experimental crop. The experimental grapes were higher in sugar content.”

“Summary.—The list of elements found to be important in the normal development and health of plants and animals has increased steadily over the years. The problem has been made even more complex by the discovery that the availability of an element to the plant may be dependent upon the presence or absence of other elements in the soil. The experiments of this report are based on three hypotheses. They are:

- (1) That all of the elements may be important in plant and animal physiology.
- (2) That the elements should be added to the soil in the exact proportion and balance as they are found in sea water, including the sodium chloride. This is based on the assumption that the solubility of an element determines its rate of leaching from the soil, and the amount of it found in sea water.
- (3) That most animals need to have the inorganic elements hooked up by plants for proper utilization.”

What does Dr. Murray tell us? Our plants need good nutrition, including micronutrients. Without these nutrients, our food supply is inadequate for human health. Mechanized farming does NOT replenish the soils adequately. Your option is to grow your own food or buy locally from an organic farmer. Very few of us currently have the ability to fertilize our soil with sea salt....but there may be an alternative for your home garden.

“The doctor of the future will give no medication, but will interest his patients in the

care of the human frame, diet and in the cause and prevention of disease.”

- Thomas Alva Edison

Wood Ash

What do George Bissell, Edwin L. Drake, John D. Rockefeller, and Thomas Edison have in common? Some historians blame these men for starting the cascade of degenerative diseases that we of modern society suffer. Allow me to explain. Before coal for heat and power, before kerosene for heat and light; before oil for heat and power, and before electricity for heat and light, people used wood. There are two health consequences attributable to these historic discoveries and their development.

1. The high density energy of these fuels enable the industrial revolution and, along with it, industrialized farming.
2. Prior to the industrial revolution and convenient fuels, people used wood and coal for heating and cooking. Often the ash was spread in their garden where they produced their own organic food. ^{uuu}

Wood ash provides many of the trace elements that plants need to thrive. Wood ash is an excellent source of lime and potassium for your garden that is missing in sea solids. Just like for sea solids, wood ash fertilizer is best used either lightly scattered or by first being composted along with the rest of your compost. This is because wood ash will produce lye and salts if it gets wet. In small quantities, the lye and salt will not cause problems, but in larger amounts, the lye and salt may burn your plants. Composting fireplace ashes allows the lye and salt to be leached away.

Not all wood ash fertilizers are the same. If the fireplace ashes in your compost are made primarily from hardwoods, like oak and maple, the nutrients and minerals that in your wood ash are much higher compared to those from softwoods, like pine or firs.

Garden wood ash is also useful for pest control. The salt in the wood ash will kill bothersome pests like snails, slugs and some kinds of soft bodied invertebrates. To use wood ash for pest control, simply sprinkle it around the base of plants that are being attacked by soft bodied pests. If the ash gets wet, you will need to refresh the wood ashes as the water will leach away the salt that makes wood ashes an effective pest control. Another use for ashes in the garden is to change the pH of the soil. Wood ashes will raise the pH and lower the acid in soil. Because of this, you should also be careful not to use wood ashes as fertilizer on acid loving plants like azaleas, gardenias and blueberries.

Case Study: Mid Victorians of England – 1870

In Chapter 1 we briefly mention that, around 1870, in England, the very poor were actually very healthy. Dr. Paul Clayton investigated some of the healthy and long-lived populations of the past 200 years. His conclusions are: “Analysis of the mid-Victorian period in the U.K (1870s). reveals that life expectancy at age 5 was as good or better than exists today, and the incidence of degenerative disease was 10% of ours.” ⁷

^{uuu} For further reading on the use of coal ash as a soil fertilizer read, “Cimitile, Matthew. "Is coal ash in soil a good idea." Scientific American (2009).” For further reading on the use of coal ash as a soil fertilizer read, “Gill, Kabal S., Sukhdev S. Malhi, and Newton Z. Lupwayi. "Wood Ash Improved Soil Properties and Crop Yield for Nine Years and Saved Fertilizer." Journal of Agricultural Science 7.12 (2015): 72.”

The mid-Victorians had many factors against their longevity and, apparently many factors in favor of their longevity too. Table 9.1 looks at what worked in favor and against their good health and longevity. As you go through the list, thank about what YOU have against and in favor of YOUR health and how you can make changes to increase your healthy longevity beyond the average of modern society and the mid-Victorians.

Against Good Health	In Favor of Good Health
Poor Sanitation	Physical Labor (exercise)
Dirty Air (coal and wood heat)	Organic Gardens
Poverty	Diet (organ meats, low sugar)
Epidemics (infection)	Outdoors (sun exposure ^{vvv})
Lack of Acute Care	Community and Family Socialization

Table 9.1 Factors of health for the mid-Victorians (1870 England)

Our ancestors had a lot working against their good health. Poor sanitation and the lack of reliable sources of clean water led to widespread disease that are avoided today. Despite the adversities these people were quite healthy and much more resistant to disease compared to modern people. Many factors contributed to their good health and the main ones are highlighted above, not the least of which was the use of their wood ash to fertilize their organic foods.

We are brainwashed into believing that 150 years ago, people died, on average, at age 40 or thereabouts. To some degree that is true, but these statistics do not consider the exorbitant infant mortality of the past. Biblically, humans have a life expectancy – under full obedience to God – of 120 years.

And the LORD said, My spirit shall not always strive with man, for that he also is flesh: yet his days shall be an hundred and twenty years.

– Genesis 6:3

Moses lived 120 years.

Bob Barney wrote a bit of a diatribe in his article “The Lie About Life Expectancy.”⁸ It’s again all about the money. Big pharma uses life expectancy statistics to make the claim their drugs are extending our lives. Here is Mr. Barney’s article with some edits (removing the negativity when possible).

“One of the things that I try to do with The Plain Truth is educate our readers in the tenants of propaganda. We are surrounded by “lies, damn lies and statistics,” as Mark Twain once said.”

“So today’s topic is life expectancy. How often have we read or heard an “expert say, “Of course people didn’t live long ... the average life expectancy was 40 years?” It’s a lie. Go to a cemetery and look at the grave stones and you might be a bit surprised. Look at a list of our Presidents:”

- Geo Washington – 67 (He had bad teeth – See Chapter 7)
- John Adams - 90
- Thomas Jefferson - 83
- James Madison - 85
- James Monroe - 73

^{vvv} Yes, England has a dreary maritime climate, but people generally spent more time outside compared to us.

- John Quincy Adams - 80
- Andrew Jackson – 78

Note, even though Presidents enjoyed social prominence, they still had relatively poor sanitation, dirty sources of energy and generally a much tougher life compared to any modern person.

“Are you a little shocked? When experts use "average life expectancy" numbers, they are so low because they include the number of babies who die at or just after birth (infant mortality) and the number of children who die very early in their lives (before 5). Infant and early childhood mortality was much higher one hundred years ago. Also, because of modern trauma care, accident victims live today when even 25 years ago, those patients would die! The only miracle in medicine really isn't modern drugs, but rather modern trauma care! We see this in the Iraqi war. The deaths were 5X's lower than Vietnam.”

In summary, by averaging in a much higher infant and early childhood mortality rate, along with those who died in childbirth (much lower today) and war and accidents, we end up with a much lower 'average life expectancy.'

The mid-Victorian formula for good health was simple – just like it could be today. Here is an excerpt from Dr. Clayton's article.

“Their levels of physical activity and hence calorific intakes were approximately twice ours. They had relatively little access to alcohol and tobacco; and due to their correspondingly high intake of fruits, whole grains, oily fish and vegetables, they consumed levels of micro- and phytonutrients at approximately ten times the levels considered normal today. This paper relates the nutritional status of the mid-Victorians to their freedom from degenerative disease; and extrapolates recommendations for the cost-effective improvement of public health today.”

Please read the full paper by Clayton titled, “How the Mid-Victorians Worked, Ate and Died.” Another section of the paper on the consumption of meat by the poor of olde England is reproduced here.

“Consumption of meat was considered a mark of a good diet and its complete absence was rare: consuming only limited amounts was a poverty diet.⁹ Joints (cuts) of meat were, for the poor, likely to be an occasional treat. Yet only those with the least secure incomes and most limited housing, and so without either the cooking facilities or the funds, would be unlikely to have a weekly Sunday joint; even they might achieve that three or four times a year, cooked in a local cookhouse or bakery oven. Otherwise, meat on the bone (shin or cheek), stewed or fried, was the most economical form of meat, generally eked out with offal meats including brains, heart, sweetbreads, liver, kidneys and 'pluck', (the lungs and intestines of sheep). Pork was the most commonly consumed meat. All meats were from free-range animals.

Are you eating just muscle meat? Maybe you should consider diversifying your meat choices. Chicken soup is historically considered the most healing of all foods. Before Campbell's bastardized this health gift, it was made a home from the WHOLE CHICKEN, gut, bones, and all. This bone and gut broth soup provided us with many of the micronutrients we are missing in our diets today. And it represents an easy and tasty way to augment our diet without choking down a chunk of liver.

Jeanne Calment, born a year before Alexander Graham Bell patented his telephone and 14 years before Alexandre Gustave Eiffel built his tower, died in 1997 in a nursing home in Arles, France. At 122, she was the oldest person whose age had been verified by official documents. Note, she was born during the mid-Victorian era of good health. She got a favorable start to her long and healthy life which surely included all the foods mentioned in Dr. Clayton's paper and more.....

The French Paradox

The French are particularly long-lived and disease-free despite behaviors that U.S. health officials and pundits say are contrary to good health. So what do these “experts” do? They exclude THE ENTIRE COUNTRY OF FRANCE FROM HEALTH STATISTICS. Doesn’t that make sense!

In apparent contradiction to the widely held belief that the high consumption of saturated fats is a risk factor for CHD, the French enjoy very low heart disease. The paradox is that if the thesis linking saturated fats to CHD is valid, the French ought to have a higher rate of CHD than comparable countries where the per capita consumption of such fats is lower. The French eat four times as much butter, 60 percent more cheese and nearly three times as much pork compared to Americans.

A research paper titled, “The French paradox: lessons for other countries,” describes well the definition of this paradox: ¹⁰

“The French paradox is the observation of low coronary heart disease (CHD) death rates despite high intake of dietary cholesterol and saturated fat. The French paradox concept was formulated by French epidemiologists³ in the 1980s. France is actually a country with low CHD incidence and mortality.”

Key, but largely inaccurate points about why the French enjoy good vascular health, summarized in the article are:

- A high intake of dietary cholesterol and saturated fat **but** low CHD death rates define the French paradox.

Author Comment: The word “but” indicates that the two are mutually exclusive. However, the truth is that cholesterol is protective, particular of our brains. In addition, fat is an anti-inflammatory food. The Ketogenic diet is finally (re)proving the value of fat and fat-soluble vitamins. Answer this simple question. How did Laura Ingalls Wilder and family survive “The Long Winter?” ¹¹ The answer rests in a shared potato with a little butter. The butter was the key. It was produced the Spring before from cows who eat the early sprouts full of omega-3 fatty acids and vitamin D. It was preserved with unrefined salt. This combination sustained life through the worse winter in American recorded history.

- **Classical risk factors** do not embrace the totality of CHD risk, particularly in France and in other southern European countries.

Author Comment: This should read, “Risk factors with an agenda in the U.S. and the rest of the world are wrong. The French define proper nutrition which creates good health. We (those who created “classical risk factors”) were dead wrong when we created this risk factors.

- **Complex behavior** concerning wine drinking and attitudes to food could lower CHD incidence

Author Comment: This is our favorite. It illustrate that complete ignorance, even but researchers who have committed their life to understanding the French paradox. This paradox is not about one thing – the benefits of healthy fat intake. Health is complex and multifactorial. We (our bodies) are a symphony, not a flutophone. We discuss all the factors important to health and longevity in France later in this section.

- The French paradox suggest that the promotion of primary prevention, based on an optimal diet rich in fruit and vegetables, regular physical exercise, and life without smoking, is worthwhile.

Author Comment: In fact the French paradox does NOT suggest this. These are all important, but the French paradox tells us that healthy fats are vital to our health.

- The French paradox is an incentive for more research in countries with low CHD incidence and probably more protective CHD risk factors.

Author Comment: This is “boilerplate” language of ALL researchers. You see, a research never takes action, they just do research. So they all must end their research paper with a call for more research. This is simply a justification for their existence and a prayer for more funding to support their life.

No resource on the internet correctly address the reason for the French paradox. A recent documentary on nutrition by a famous nutrition personality indicated that the entire crux of the low heart disease rates in France is due to wine drinking and eating slowly. Ouch!

The real reasons for the French paradox – that is, good heart health, longevity, and general good health throughout their entire lives are:

- Higher percentage of small farms that are organic with healthy soils.
- Small, local Charcuterie, Boucherie, Patisserie – small food shops with freshly prepared whole foods.
 - Meats prepared and properly preserved, not processed.
 - Quality aged foods, like cheeses and fermented foods.
 - High yeast content breads, not the GMO-containing cardboard we eat in America.
- Low (now banned) GMO use
- Higher percentage of cured, not processed foods
- High fat intake
- Consumption of Pate and other organ meats DAILY.
- Wine with food
- Respect for the eating process
- Weekly community center gatherings to obtain their provisions.



Figure 9.4. Healthy food contributing to the French Paradox.

Health is not really that complicated. Americans used to be healthy too because we were once more like the French are today. The French paradox may be fading as efficiencies lead to the demise of the local farmer, grocer, and weekly community gatherings where townspeople come to get their supplies – like it used to be.

Be aware of people with agendas who present biased evidence. They infiltrate our airwaves with well-crafted but insidiously inaccurate message. One notable – who appears to have it together – is Greger. He is an example of many who stand for something and promotes it regardless of the facts. He will go to any length necessary to promote his vegetarian agenda. He isn't a bad man. However, he has gained quite a bit of fame promoting this idea. Why stop? No question, American meat production is contrary to our good health. But Dr. Greger needs to delve into history and open his mind. He might even consider reading the Bible.

Remember: There are lies, damn lies, and then there are statistics.

Nuts and Seeds

Dr. Clayton speaks about high micronutrient foods being important to health. Dr. Price discusses how natural indigenous diets contribute to health all over the globe. On common denominator to all these finding is the nutritional value found in nuts and seeds.

Carrie Dennett espouses the value of nuts and seeds in an article in "Today's Dietitian." ¹² Ms. Dennett states:

"Nuts and seeds have been part of the human diet since Paleolithic times. A few nuts, such as almonds and walnuts, and seeds, namely flax and chia, get most of the glory, but the fact is each nut and seed brings something beneficial to the table. While exact nutrient compositions vary, nuts and seeds are rich sources of heart-healthy fats, fiber, plant protein, essential vitamins and minerals, and other bioactive compounds, including an array of phytochemicals that appear to have antioxidant and anti-inflammatory properties."

"A wealth of data from prospective observational studies and clinical trials suggest that tree nut consumption reduces the risk of several chronic diseases, including cardiovascular disease (CVD), type 2 diabetes, and some forms of cancer. Moreover, there may be benefits for cognitive health. Adding support to these findings is research suggesting that incorporating tree nuts in the diet lowers the risk of conditions that contribute to disease,

such as hypertension, high cholesterol, insulin resistance, abdominal obesity, endothelial dysfunction, oxidative stress, and inflammation.”¹³

“Various components of nuts, such as heart-healthy monounsaturated and polyunsaturated fats, plant-based protein, fiber, vitamins, minerals, and phytochemicals may work together to offer protection against oxidation, inflammation, cancer, and CVD.”¹⁴

“Recent findings from the PREDIMED trial suggest that a Mediterranean diet that includes one serving of nuts per day protects against heart attack, stroke, or death from other cardiovascular causes in people at high risk due to type 2 diabetes or metabolic syndrome.¹⁵ PREDIMED data also suggest that eating more than three servings of nuts per week reduces risk of death from all causes, especially if also following a Mediterranean diet. Subjects who frequently consumed both total nuts and walnuts had a lower rate of death from cancer.”¹⁶

“Data from the Nurses' Health Study and the Health Professionals Follow-up Study also suggest a reduction in total mortality with regular nut consumption. The greatest protection appeared to be from deaths due to cancer, heart disease, and respiratory disease.¹⁷ In a 15-year prospective study of almost 3,000 subjects published last year, total nut consumption was associated with a decreased risk of overall and vascular-disease mortality, particularly in women.¹⁸ A study published last year found similar results among Americans of African and European descent who were in a low socioeconomic bracket, as well as Chinese individuals living in China. This study was notable because most research to date has been among individuals of European descent, especially those of high socioeconomic status.”¹⁹

“Recent meta-analyses have supported a connection between nut consumption and reduced risk of hypertension and heart disease but not type 2 diabetes.^{20, 21, 22} Results from a recent meta-analysis of 354,933 subjects also suggest a dose-dependent protection against overall mortality, including death from CVD and cancer, with the greatest benefit among subjects eating one serving per day.”²³

Interestingly, research always use a reductionist view of health. That is, they change one parameter and measure one disease – generally. Let’s face it, if a behavior influences mortality (aka longevity) it impacts ALL DISEASES.

Remember what Dr. Claude Bernard taught us 160 years ago.

“There is one science of life.”

Food Forensics – Hidden Toxins in Our Food

If you don’t know of the Health Ranger – Mike Adams – its time. Mike has dedicated his life to exploring and analyzing both the good and the bad of much of what we consume. Particularly he has analyzed the quality of our food and our supplements. We suggest you consult his website when making decisions about these topics.

His landmark book is titled “Food Forensics.” On one of his websites, www.foodforensics.com, he generously offered a chapter of his book, as a download for free. Highlights this “must read” book are included here.

To pursue scientific research into food forensics, I oversaw the construction of a food forensics laboratory in central Texas. The lab’s central feature was an inductively coupled plasma mass spectrometry instrument, called ICP-MS for short. It has the unique ability to detect metals and elements including nickel, lead, mercury, or magnesium at very low concentrations— in almost any sample you might want tested. I call it “Star Trek technology”

because it seems to function almost as if by magic. But it isn't magic. It's just "sufficiently advanced technology," as Arthur C. Clarke once explained.

In the months after its installation and calibration by expert chemists and instrumentation engineers, the ICP-MS instrument began to lift the veil on what was really present in all sorts of foods: junk foods, fast foods, super foods, herbal supplements, vitamins, and more.

That's when things began to get weird.

When the instrument identified very high levels of lead and cadmium in popular vegan protein products, I contacted the manufacturers of these products to suggest they pursue a voluntary recall of their products. A recall wasn't an option, I was informed, and I was urged to be careful about releasing anything publicly that would "impact sales revenues" of these companies.

When I discovered that popular ginkgo herbs grown in China contained a whopping 5 parts per million (ppm) of toxic lead—an element proven to cause cancer and brain damage—I was told that the lead contamination was "naturally occurring" and therefore didn't matter. Yet when I tested ginkgo herbs grown on U.S. soil, they tested remarkably clean, showing near-zero levels of heavy metals. It turns out that when ginkgo is grown in contaminated soils, it accumulates heavy metals in the herb. (This should not be surprising to anyone.)

When I found very high levels of tungsten (greater than 10,000 parts per billion, or ppb) in super foods imported from China and Southeast Asia, I was told that tungsten was of no concern because "the U.S. Food and Drug Administration (FDA) has no limits on tungsten," and that therefore everyone should ignore the presence of this heavy metal in popular super food products.

When I discovered an astonishing 11 ppm of lead in mangosteen super food powder imported from Thailand, I went public with the finding and warned people not to eat mangosteen powder unless it had been tested. In response, I was blacklisted from several importers and not allowed to purchase their raw materials any more. (My company purchases raw materials to manufacture certified organic foods and super foods in Texas, and we meticulously test each material before purchasing it in volume for manufacturing.)

Over and over again, as I began to find alarming levels of lead, aluminum, tungsten, mercury, arsenic, and other toxic elements in everyday foods, super foods, pet treats, and even certified organic foods, the response I got from manufacturers of these products was, "Don't tell anyone!"

Before disclosing some of my results, it's important to understand the thresholds at which heavy metals begin to affect human health.

Mercury: According to the World Health Organization (WHO), mercury, even in small amounts, may cause serious health problems, earning it a spot on the top ten list of the most dangerous chemicals to humans. The EPA's maximum containment level goals for drinking water for mercury is 2 ppb.

Tungsten: Cases of acute poisoning by this heavy metal can be caused by just 5 mg/L, or approximately 5 ppm. Exposure to high levels of tungsten has been linked to an increase in strokes.

Lead: While there is no safe blood lead level in children, the U.S. Centers for Disease Control and Prevention (CDC) recommends the threshold at which a child is deemed to have lead poisoning is 5 micrograms per deciliter of blood, or 50 ppb.

Arsenic: Long-term exposure to this heavy metal through drinking water and food may cause neurotoxicity, cancer, developmental effects, cardiovascular disease, and diabetes, according to the WHO. The EPA has set the arsenic standard for drinking water at .010 ppb.

Cadmium: Ingested in high doses, this heavy metal may cause nausea, vomiting, diarrhea, abdominal cramping, and severe gastroenteritis, according to the Agency for Toxic Substances and Disease Registry (ATSDR). The reference dose for dietary exposure to cadmium is 0.001 mg/kg/d.

In just the first few months of ICP-MS research on samples of foods, vitamins, and consumer products, I discovered:

- More than 500 ppb mercury in cat treats and fish-based dog treats
- More than 10 ppm tungsten in rice protein products
- More than 5 ppm lead in ginkgo herb products
- More than 11 ppm lead in mangosteen powder
- More than 400 ppb lead in cacao powders
- More than 500 ppb lead and more than 2,000 ppb cadmium in rice proteins
- More than 6 ppm arsenic and more than 1 ppm lead in some spirulina products
- More than 500 ppb mercury in dog treats
- More than 200 ppb lead in brand-name mascara products

Mike makes it quite clear that any variety of food, supplement, or product may be toxic. The entire book is worth a read. Just think about the toxicity in your Big Mac.

What you don't know can hurt or even kill you.

Food as Medicine – Conclusions

- Grow your own. If you have limited space, grow sprouts and herbs.
- Buy organic locally. Visit your farmer to review the process.
- Raise chickens and buy your meat from a local organic farmer. Eat all types of meat and make broth from the remains.
- Remember the teachings of Paul Clayton and Weston A. Price. A natural diet leads to good health.
- Consume marine food sources, a point clearly made by both Clayton and Price. Marine foods particularly support brain health.
- Make Nuts, seeds, and vegetables our staple and supplement with meats.

Genesis of Health: Water

Love Canal
Flint Michigan
Milford, New Hampshire
Woburn, Massachusetts
Haverford, Pennsylvania
St. Maries, Idaho
Walpole, Massachusetts

Whittier, California
 Newport Delaware
 Bloomington, Indiana
 Hereford Township, Pennsylvania
 Camden, New Jersey
 Wellpinit, Washington
 Torrance, California
 Liberty, Texas
 Waukegan, Illinois
 Leadville, Colorado
 Tacoma, Washington
 St. Louis, Michigan
 Edgewood, Maryland
 Fitchburg, Massachusetts
 Helena, Montana
 Marina, California
 Rockford, Illinois
 Joplin, Missouri
 Smelterville, Idaho
 Galena, Kansas
 Idaho Springs, Colorado
 Odenton, Maryland
 Keene, New Hampshire
 Our Public Water Supply (70%, that is)

Do live near one of these locations? Does the water your drink course through one of these locations on the way to your body? These are some of the most contaminated sites in American. They are important to our health because 80% of all the water used in the United States comes from surface water sources. Water from groundwater (deeper aquifers) accounts for the remaining 20%.

Both our surface-waters and our groundwater are contaminated. The list above are locations near you that are major sources of water contamination.

Please ponder all the water facts & stats brought to you by the Texas Department of Environmental Quality: ²⁴

WATER FACTS & STATS

- Water is part of a deeply interconnected system. What we pour on the ground ends up in our water, and what we spew into the sky ends up in our water.
- One drop of oil can make up to 25 liters of water unfit for drinking.
- One gram of 2, 4-D (a common household herbicide) can pollute 10 million liters of water.
- One gram of PCBs can make up to 1 billion liters of water unsuitable for aquatic life.
- One gram of lead can pollute 20,000 liters, and make it unfit for drinking.
- One gallon of gasoline can contaminate approximately 750, 000 gallons of water.
- There is the same amount of water on Earth as there was when the Earth was formed.

- The water from your faucet could contain molecules that dinosaurs drank.
- Nearly 97% of the world's water is salty or otherwise undrinkable. Another 2% is locked in ice caps and glaciers. That leaves just 1% for all of humanity's needs – all its agricultural, residential, manufacturing, community, and personal needs.
- The Great Lakes contain 18% of the world's fresh water.
- Water regulates the Earth's temperature. It also regulates the temperature of the human body, carries nutrients and oxygen to cells, cushion joints, protects organs and tissues, and removes wastes.
- The first water pipes in the United States were made from charred bored logs.
- The first municipal water filtration works was opened in Paisley, Scotland, in 1832.
- In 1908, chlorine was used for the first time as a primary disinfectant of drinking water in the United States.
- In the United States, federal regulations of drinking water quality began in 1914.
- Water is the only substance that naturally exists in three states (solid, liquid, gas) on earth.
- Water expands by 9% when it freezes. Frozen water (ice) is lighter than water, which is why ice floats in water. Without this unique property of water, God's earth would not exist as it does today.
- A person can live up to one month without food, but only about one week without water.
- 66% of the human body is water. 75% of the human brain is water.
- A living tree is 75% water.
- The average total home water use for each person in the U.S. is about 50 gallons a day.
- The average cost for water supplied to a home in the U.S. is about \$2.00 for 1,000 gallons, which equals about 5 gallons for a penny. In the United States, the average person pays 25 cents for their water each day.
- It costs over \$3.5 billion dollars to operate the American water systems each year.
- Globally, 69% of withdrawn water is for agriculture, 23% is for industrial purposes, and 8% is for domestic purposes.
- A five minute shower uses 100 liters of water, but a five minute shower with a reduced flow showerhead uses less than half of this.
- One dishwasher cycle uses about 40 liters of water, and hand washing the dishes uses about 35 liters of water.
- Leaving the tap running while you wash your hands uses about 8 liters of water.
- Leaving the tap running while you brush your teeth uses about 10 liters of water.
- One load of laundry uses about 225 liters of water. A front loading washing machine uses 40 to 60 percent less than a top loading washing machine.
- A leaky tap or faucet that drips once per second can waste 10,000 liters of water in one year (100 gallons a day).
- Typically 4-6 gallons of water are used for every toilet flush.

- A leaky toilet can waste up to 260 liters of water each day.
- 13% of municipal piped water is lost in pipeline leaks. And water is known to travel “uphill.” That means ground contaminants can enter that same leaky pipe.
- On average, 50-70% of household water is used outdoors for watering lawns and gardens.
- Outdoor watering uses 35 liters of water each minute.
- A lawn sprinkler that sprays 19 liters per minute will, in one hour, use more water than ten flushes of the toilet, two five minute showers, two dishwasher loads, and one load of laundry.
- It takes 215,000 liters of water to produce one ton of steel.
- To manufacture an average domestic automobile, including tires, 147,972 liters are used.
- Every day, more than 1.1 million liters of water are used to produce American newsprint.
- To produce one kilogram of paper, approximately 300 liters of water are required.
- Consumption of bottled water is increasing 12% each year.
- Each year, over 89 billion liters of bottled water are sold.
- Nitrogen and phosphorus are natural minerals, but 80% of nitrates, and 75% of phosphates that are found in lakes and rivers are added by humans.
- Good sewage plants can only remove about half of the nitrogen and 30% of the phosphorus from domestic sewage. This means that between 90,718,474 and 226,796,185 kilograms of phosphates enter American waterways each year.
- Eutrophication is a natural process that a lake undergoes over thousands or millions of years. During eutrophication, nutrients are added and the oxygen levels in the lake change and the ability of the lake to support organisms and ecosystems increases; during this process it is common to see an increase in the number of plants that grow in and around the lake. Due to eutrophication, Lake Erie has aged 15,000 years between 1950 and 1975, meaning that a process that would naturally take 15,000 years took only 25 years, because of the phosphorus and nitrogen that was added by humans.
- American water is polluted by more than 907 million tons of sediment each year. Farming accounts for the largest amounts of sediment pollution, but construction sites and strip mined areas (where there is bare earth) can lose up to 15,691 tons of sediment per square kilometer per year (which is 15 times higher than the normal cropland erosion rate).
- Half of the world’s wetlands have been lost since 1900.
- The United States loses more than 1,821 square kilometers of wetlands each year.
- The latest assessment of American surface waters found that, of those assessed, 39% of river and stream miles, 45% of lake, pond and reservoir areas, and 51% of estuary areas were impaired.
- In 2000, 74% of Americans were served by wastewater treatment plants.
- 60% of infant mortality is linked to infectious and parasitic diseases, most of which are water related.
- There are about 60,000 community water suppliers in America.

- Public water suppliers must meet or exceed Environmental Protection Agency Standards. Many public water suppliers consistently supply water that is much better than the minimum standards. If a drinking water supplier violates any federal standard, the utility by law must tell the customer. But that did NOT happen in Flint, Michigan.
- You can help prevent pollution of drinking water sources by carefully disposing of the chemical products you use in your home.
- Thirsty Food: It takes 5.4 gallons of water to produce one head of broccoli, 4.9 gallons of water to produce one walnut, 3.5 gallons of water to produce one head of lettuce, 3.3 gallons of water to produce one tomato, and 1.1 gallons of water to produce on almond.

If this wasn't enough good news for you, consider watching a 13 minute video from the Dr. Oz show titled, "Dr. Oz on Tap Water Contamination."²⁵ The video discusses adverse health impacts of contaminated water.

<https://youtu.be/5T7yIbZRFmU>

Perhaps the most concerning of all water issues is the state of the aquifers supporting our farm belt. An excerpt from the National Geographic Magazine article titled, "What Happens to the U.S. Midwest When the Water's Gone?" is most sobering.²⁶

"Wilson, who is 47 with a lean, athletic build, is the water-data manager for the Kansas Geological Survey and part of a team that travels to western Kansas every winter to document how rapidly this aquifer is disappearing. The water beneath our feet has been accumulating in porous rock for about 15,000 years, before the end of the last ice age. For the past 60 years, the Ogallala has been pumped out faster than raindrops and snowmelt can seep back into the ground to replenish it, thanks largely to irrigation machinery like the one sleeping nearby. As a result, in parts of western Kansas, the aquifer has declined by more than 60 percent during that period. In some parts, it is already exhausted. The decline is steady now, dry years or wet. In 2015 rain was exceptionally heavy—50 to 100 percent above normal. Even so, water levels in the wells dropped again. Wilson's field report will put the best face on it, noting it was the slowest decline in five years."

If you want you children and grandchildren to enjoy America as we know it, conserve water.

The remainder of this section on water and disease prevention focuses on one item from the list at the beginning of this section. Specifically, the line item:

Our Public Water Supply (70% of it, that is)

You see, this is the drinking water, and water for lawns, garden, and irrigation, that is deliberately contaminated by the Federal and Local Government. This act has the greatest impact on our health today.

Do you experience any of these symptoms:

Constipation
Unexplained weight gain
Hoarseness
Elevated cholesterol
Stiffness / swelling of joints
Slower heart rate
Impaired memory
Cold sensitivity

Dry skin
 Puffy face
 Muscle weakness
 Muscle aches and pains
 Heavy / irregular periods
 Depressed mood
 Fatigue

If you answer “yes” to any of these, then the water you drink that has been purposefully adulterated by your government may be the root cause. The actual condition responsible for these symptoms is Hypothyroidism.

The thyroid secretes several hormones, collectively called thyroid hormones. The main hormone is thyroxine, also called T4, but there are others, including T3 and even lesser known T1 and T2. Hormones are chemical messengers that travel throughout our body coordinating complex processes like growth, metabolism (body temperature), and fertility. They can influence the function of the immune system, and even alter behavior. Before birth, they guide all development, especially that of the brain. Hormones are fairly important, so say the least.

We MUST HAVE healthy hormones to be healthy.

What are the “mysterious” numbers mean after the “T” designating the various “T”hyroid hormones? Those numbers refer to the number of Iodide ^{www} atoms that make up the hormone. Thus the T4 hormone include 4 iodide molecules, T3 has 3 iodides, etc. The presence of iodide as part of the hormone is essential to their proper function.

Fluoride, the chemical deliberately added to 70% of our municipal water supply, is an aggressive chemical. The acid form of fluoride, hydrofluoric acid, is the only substance on earth known to dissolve glass. Fluoride is in the same chemical family as iodide. Because fluoride is so aggressive, it is often able to replace (displace) iodide – for example – in the T4, 3, 2,1 hormones. When fluoride displaces iodide, the hormone loses function – and we become sick.

Fluoride from our drinking water can change our thyroid hormones making us sick with hypothyroidism.

But we need fluoride in our water to keep our teeth strong – don't' we?

If you have implicit trust in our Government, please throw this book away, we will never convince you that you have been duped, again by financial greed. Fortunately there are governments and researchers no so corrupt as our own, and they present the truth against a massive marketing campaign that does just the opposite.

Figure 9.5 below paints an interesting picture. Simply put, there is ABSOLUTELY NO DIFFERENCE in tooth decay, missing or filled teeth in children who have a fluoridated water supply and those who do not. And, this result has no country bias. In Japan, Iceland, Italy, and the United States, the same result is obtained – No Difference!

^{www} For you chemistry buffs, Iodine is the element represented as I₂ since it exists in nature as a diatomic gas. Iodide is the form of Iodine that is combined with other atoms in the formation of molecules. It's structure is I⁻. For example, Potassium Iodide has the formula KI.

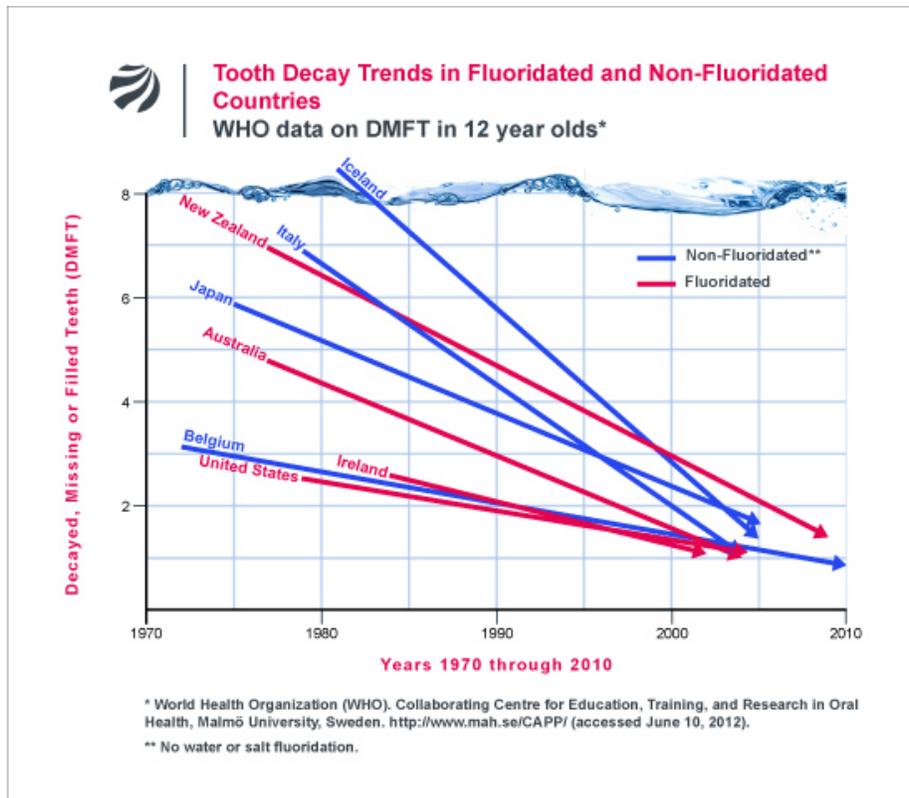


Figure 9.5. Tooth decay trends in fluoridated and non-fluoridated countries.

Is fluoride really so bad? In the United States, it is challenging to find good research on the adverse health effects of fluoridation and fluoride. And, because of the paucity of data, the U.S. pundits who collect money for their statements, say that the studies out there are insufficient. However, once you know something it's difficult to "un-know" it.

The following research study published in 2015 is a "must read." It is titled, "Are fluoride levels in drinking water associated with hypothyroidism prevalence in England? A large observational study of GP practice data and fluoride levels in drinking water."²⁷ Here are the highlights:

- This study is the first population level study of the association between fluoride levels in water and hypothyroidism. (why did this take so long considering the debate about fluoridation is 70 years old?)
- We found a positive association between fluoride levels and hypothyroidism. High hypothyroidism prevalence was found to be at least 30% more likely in practices located in areas with fluoride levels in excess of 0.3 mg/L.
- This population study supports earlier hypotheses that fluoride is associated with hypothyroidism. In the UK, water is fluoridated at 1 ppm (1 mg/L). Note that this is 3 times higher than the level required to cause hypothyroidism.

The Brits who published this paper provided an interpretation.

"In many areas of the world, hypothyroidism is a major health concern and in addition to other factors—such as iodine deficiency— fluoride exposure should be considered as a contributing factor. The findings of the study raise particular concerns about the validity of community fluoridation as a safe public health measure."

Is anybody listening? NO. We know that because only 14 papers have cited this article. That means the greater research and governmental communities are trying to quiet this report.

Here are some of the titles of research articles that cited the British paper:

- “Community water fluoridation predicts increase in age-adjusted incidence and prevalence of diabetes in 22 states from 2005 and 2010.”²⁸
- “Prenatal Fluoride and Autism.”²⁹
- “Hypothyroidism is more prevalent in areas with fluoridated drinking water.”³⁰
- “Health Effects of Direct or Indirect Fluoride Ingestion.”³¹
- “Communicating risk for issues that involve ‘uncertainty bias’: what can the Israeli case of water fluoridation teach us?”³²

Dr. Paul Connett is a fully tenured Professor of Chemistry at St. Lawrence University in New York. He discusses the implication of fluoride on infant brain development in his YouTube video, <https://youtu.be/jSBZ2BTx-YQ>. The transcript of that video is reproduced here:

“The issue that really concerns me is the impact of fluoride on the brain. When the baby is born the blood-brain barrier is not fully formed. In my view this is not the time to expose the baby to two hundred times the level of fluoride than in mothers milk, which is what happens if you make a baby formula with fluoridated tap water. We now have over 150 animal studies in which fluoride is shown to damages the brain. We have three fecal brain studies from aborted fetuses in China where doctors compared aborted fetuses from high fluoride areas and low fluoride areas and they see damage to the brain. We have behavioral studies and we have 24 IQ studies which now show an association between fairly modest exposure to fluoride and lowered IQ. Most of those are from China, two from Iran, one from Mexico, and one from India.”

“When I say modest exposures one study from China, which is particular interest to me because I've visited the villages in China where this study was done, they looked at a village with less than .7 parts-per-million of fluoride in the well water and another village between 2.5 and 4.5 ppm fluoride. The villages, by all other measures we exactly the same. The drop in intelligence was 5 to 10 IQ points across the whole age range. For kids you see a shift in the whole IQ and the threshold at which this occurs based upon extrapolation from all the data is 1.9 parts-per-million.”

“I've argued and will continue to argue that the level of intentionally added fluoride in the U.S. water supply does NOT have an adequate margin of safety to protect the whole population of children in the United States or any other fluoridated country from loss of intelligence as measured by IQ. after all this study was done with three hundred kids.”

“Generally, for something toxic, we use a margin of safety of a factor of 10. However, the current fluoride levels of about 1 part-per-million does NOT provide an adequate margin of safety. Some people argue that you need more than a margin of 10 if it's a factor affecting children because they are more sensitive. By applying the safety factor of 10, one glass of water imbibed by a child is enough to go over the safe limit for fluoride when it comes to impacting brain health and IQ. This is a crazy stupid risk.”

“You can't do this and have healthy children. But because the public health authority promoted this in the United States for over 50 years sixty years, it was the US Public Health

Service but now it's focused in the center of Disease Control - they're the big promoters of fluoridation they have wax lyrical about this for years and years and years they've told everybody it's safe and effective and they just don't have what it takes to say we were wrong and they're now dangers there and they could throw in the fact that is unnecessary because if you want fluoride (which you do not need) use fluoridated toothpaste."

Why would the American Pediatric Association continue to support water fluoridation? Do they not believe the research. Do they really believe fluoride supports healthy teeth. And, do they believe healthy teeth are more important than a healthy brain? Who is financially supporting organizations like the American Pediatric Association?

Here is a quote from William H. Reed, MD who obtained his medical degree and post graduate training from Tulane University, Stanford University and University of California, San Diego. It is taken from an article titled, "Notes from the Editor Emeritus." ³³

"Another drug, fluoride, reveals the intransigence of the FDA and EPA in revising their risk-to-benefit ratios on an ongoing basis. Fluoridation of community water supplies and its benefits to teeth is a 70-year-old scientific "fact," you know, from the era of DDT, scientific reassurances of cigarette safety, leaded gasoline, and the use of X-rays for acne and for measuring how new shoes fit. I think most of us are in positions from our training to have experienced how funding and egos of people in positions of authority can make "medical truths," including public health policies, difficult to change. Two studies are the more recent of many studies that raise concern about fluoride's safety." ^{34,35}

"Not surprisingly, these studies from quality institutions and appearing in quality journals are derided by industry's usual panel of "credentialed experts." If we were like Continental Europe, which in general doesn't fluoridate its water, or Israel, who has responded to the increased concerns about fluoride's safety by planning on removing it from their water next year, the U.S. regulatory agencies would also acknowledge at least some of the concerns that have been raised in the last 70 years. Regrettably, such is not the case. Visit fluorideactionnetwork.org or momsagainstfluoridation.org or the National Research Council's 2006 report on fluoride and form your own opinion about the talking heads of the trade groups such as the ADA or the dentists of the Oral Health Division of the CDC." ³⁶

Now the American Pediatric Society position is more understandable – but wrong.

Genesis of Oral Disease

Earlier in this chapter we presented the work of Weston A. Price. He showed that people eating a healthy indigenous diet had strong, cavity and disease resistant teeth and gums. They also had well-formed jaw bones and other facial structure. Those people didn't need fluoride and neither do you. Here is a solution to good dental health that also considers the key factors that lead to oral health decay.

1. **Sugars:** These create an acidic environment that slowly leaches minerals from teeth. After all, teeth, at least the hard outer layers, are composed of calcium, phosphorus, and other minerals. So too are rocks. Rocks "decay" by the action of bacteria and acids. A solution to overcoming the forces of sugars, other than reducing your intake of sugars, is to rinse or brush regularly with water or baking soda to remove acidity. Consider adding minerals to your water or baking soda because the minerals in the water will be absorbed into your teeth – just like fluoride is absorbed. But the minerals we discussed earlier in this chapter, from sea salt for example, are essential, whereas fluoride is toxic.

2. Minerals: As discussed in 1 above and earlier in this chapter, adopt a diet high in minerals. They will support the health of your teeth.
3. Bacteria: Periodontal bacteria (bad bacteria) is constantly fighting the good bacteria in your oral cavity. Saliva is actually an antibiotic against bad oral bacteria. These bacteria specifically eat the bone of dental roots and the teeth themselves. That's why they are there. They have come for dinner! We recently learned that the bad oral bacterial reside in biofilms that are made of lipids (fats). Consider a barnacle at the sea shore. The little creature live within that hard crusty structure. Harmful oral bacteria live in a similar "colony." Crest toothpaste with fluoride was invented over 50 years ago, long before an understanding of biofilms. Do you think this toothpaste was designed to destroy the biofilms that protect the bacteria? Not likely. Coconut oil is a fat that can slowly break down the periodontal biofilms. That's why oil pulling or brushing with coconut oil is effective against tooth decay and periodontal diseases.

Action for Quarterbacks regarding the water your drink or otherwise use.

- Determine the quality of your water supply. If it has toxins or fluoride, obtain a filter to remove them.
- Consider bottled water as option 2. However, these products will often be mineral deficient or contain contamination from plastics and storage. (Recall that Perrier had a recall because of benzene contamination. Benzene is a Class 1 carcinogen). You can add a little sea salt to your water or food to compensate for the lack of minerals in your water.
- Take action in your community to get the fluoride out of your water. Many communities across American have been successful at stopping the fluoridation. Go to http://www.nofluoride.com/stop_fluoride.htm for help.

Salt, Iodine Deficiency, and Bromates

Iodine (and iodide):

Iodine is a relatively rare element in nature. It is found in abundance in the ocean but its presence in soil is almost universally low.

Iodine is essential to life and especially crucial for brain development in children, making deficiency the NUMBER ONE preventable cause of mental retardation. In a 2001 editorial, a Belgian researcher wrote on the impact of iodine deficiency on thyroid function in pregnant women and neonates and on the neuro-intellectual development of infants and children.³⁷ The title of this paper is:

Iodine deficiency as a cause of brain damage.

Excerpts from this paper follow here:

"Children born in iodine deficient areas are at risk of neurological disorders and mental retardation because of the combined effects of maternal, fetal, and neonatal hypothyroxinaemia.³⁸ The reasons are that iodine is required for the synthesis of thyroid hormones and that thyroid hormones, in turn, act by regulating the metabolic pattern of most cells of the organism. They also play a determining part in the process of early growth and development of most organs, especially of the brain,^{39,40,41} which occurs in humans during fetal and early postnatal life. Consequently, iodine deficiency, if severe enough to affect thyroid hormone synthesis during this critical period, will result in hypothyroidism and brain damage. The clinical consequence will be mental retardation."

“The recommended dietary allowance of iodine is 50 µg/day from 0 to 6 months, 90 µg/day from 6 months to 6 years, 120 µg/day from 7 to 10 years, 150 µg/day during adolescence and adulthood, and 200–300 µg/day during pregnancy and lactation. ⁴² When these physiological requirements are not met in a given population, a series of functional and developmental abnormalities occur, including thyroid function abnormalities and, when iodine deficiency is severe, endemic goiter and cretinism, endemic mental retardation, decreased fertility rate, increased perinatal death and infant mortality. These complications, which constitute a hindrance to the development of the affected populations are grouped under the general heading of iodine deficiency disorders. ⁴³

The Japanese enjoy particular good health and longevity when compared to all other nations. Marine food intake is considered the main contributing factor and this include iodine. Iodine intake has been reported as reaching levels many times the 150 microgram recommendations by the RDA. Although some reports have placed it even higher – up to 12.5 mg/day. The reasonable evidence suggest the actual high-end intake is 1000-3000 micrograms (1-3 milligrams) per day. That’s between 6 and 20 times the USDA standard, and although there are isolated cases of iodine excess, most Japanese people don’t seem to suffer any ill effects from their iodine-rich diet.

We do NOT recommend supplementing much beyond that USDA RDA. Maximum supplementation is about 500 micrograms/day, for a short period of time, followed by tapering to between 150 and 250 micrograms/day. If you want to obtain the iodine intake of the Japanese, replicate the method of eating that garners that high level – lots of sea vegetables and sea foods – in other words, the natural way – complete with all the cofactors that support the biochemistry of iodine.

Bromide (and bromine and bromates - consider these terms synonymous):

Like fluoride (and fluorine) bromides in the same chemical family as iodide (and iodine). Bromide is even more similar to iodide compared to fluoride. One source of bromide is through potassium bromate that is used as a bread additive. Here is an article from “The Iodine Project.” ⁴⁴

WASHINGTON - The Center for Science in the Public Interest today petitioned the Food and Drug Administration (FDA) to prohibit the use of potassium bromate, which is used to strengthen bread dough. CSPI charged that the FDA has known for years that bromate causes cancers in laboratory animals, but has failed to ban it.

Bromate was first found to cause tumors in rats in 1982. Subsequent studies on rats and mice confirmed that it causes tumors of the kidney, thyroid, and other organs. Instead of banning bromate, since 1991 the FDA — with only partial success — has urged bakers to voluntarily stop using it.

“The FDA should fulfill its responsibility to protect the public’s health,” said Michael F. Jacobson, Ph.D., executive director of CSPI. “Instead of meeting privately with industry, the FDA should ban bromate immediately.”

“In 1992-93 and again in 1998-99, the FDA tested several dozen baked goods and found that many contained bromate at levels considered unsafe by the agency,” said Darren Mitchell, a CSPI attorney. “One sample tested recently had almost 1,000 times the detection limit. The FDA’s inaction needlessly exposes consumers to this harmful additive.”

This article is from 2007 and bromates are still in our breads and food. Although hard to prove from labeling fast food breads (buns, etc.) most likely contain bromates. Perform a search to find those

food with and without bromates. One bread company, Pepperidge Farm, removed bromates long ago.^{xxx}

Bromide expresses toxicity by replacing iodide. When this happens, our thyroid hormones do not function as they are suppose to and we may experience symptoms of hypothyroidism. Also, bromine is a cancer causing agent. Proper iodine intake alters the competition between bromide and iodide, causing secretion of bromide. The presence of bromide in our environmental and food supply may be contributing to iodine deficiency, not in our body in total, but usable iodine. Thus, in a world with bromide, we are all better off getting iodine into our bodies at the upper limit of recommended values.

Salt

Salt is a generic term for the ionic coupling of a metal and a non-metal. A metal, in the context of life and health is often called a mineral. Sodium chloride is such a common substance that we call this sodium (metal) and chloride (non-metal) salt just plain "salt."

Our modern society has a salt intake problem, but it is not the intake of sodium chloride salt (table salt). More correctly, we have a salt balance problem. Just like adults, children and teens in the U.S. consume a great deal of sodium -- about 1,000 mg above the recommended maximum daily intake on average, according to CDC "Vital Signs" report.⁴⁵

Results from the 2009-2010 edition of the National Health and Nutrition Examination Survey, which included 2,266 children 6- to 18-years-old, indicated a mean daily intake of 3,279 mg of sodium, whereas the recommended maximum in the Healthy People 2020 initiative is 2,300 mg/day, according to the report. Sodium consumption is especially high in teens -- participants of high school age have a mean intake of 3,672 mg/day. These numbers do NOT include salt added at the dinner table or in home-cooked means.

The report confirms many other studies that indicate much of the sodium came in the form of commercially prepared foods -- pizza, fast foods, soups, and snacks. Between-meal snacking accounted for 16% of overall intake, and school cafeteria foods contributed 26% of daily sodium intake on the days that children ate them.

A poor diet in childhood lays a foundation for sickness and disease later in life according to Mary Edmonds Cogswell, DrPH, RN, of the CDC's Division for Heart Disease and Stroke Prevention in Atlanta. Although sodium is an extremely essential nutrient, too much salt, in the form of sodium chloride, like excess in anything else, creates risk. The main health issue in both children and adults is high blood pressure and the many disease that stem from that affliction, particularly heart disease and stroke, the leading causes of preventable death. These diseases cause 800,000 unnecessary American deaths each year at an extra medical cost of \$315 billion.

Do the Feds have it right this time? Is a major health risk the intake of salt?

Our bodies have evolved to require many naturally occurring salts. Sodium, potassium, calcium, and magnesium are the major salts (metal ions or minerals to be precise). These salts are required at relatively high levels compared to other salts such as zinc, selenium, copper, manganese, chromium, molybdenum, and others. Yet the primary salt food additive we all consume contains just sodium -- a highly refined product.

^{xxx} Most American high production breads are of low nutritional value and many use GMO supplies in their manufacture. We call these grocery store breads "cardboard breads." Avoid gluten (wheat products) if you can. If you eat bread, make your own with organic ingredient at home, with a bread maker. You will have the added benefit of a delightful "bakery" fragrance in your home!

The New England Journal of Medicine is widely considered the most credible and prestigious of all medical journals. It is published by Harvard Medical School and Massachusetts General Hospital. A paper from the Journal titled, “Sodium and Potassium in the Pathogenesis of Hypertension,” explains that deficiency of potassium, not an excess of sodium, is central to diseases attributed to salt. From the Journal:

“Hypertension affects approximately 25% of the adult population worldwide, and its prevalence is predicted to increase by 60% by 2025, when a total of 1.56 billion people may be affected.⁴⁶ It is the major risk factor for cardiovascular disease and is responsible for most deaths worldwide.⁴⁷ Primary hypertension, also known as essential or idiopathic hypertension, accounts for as many as 95% of all cases of hypertension.⁴⁸

Primary hypertension results from the interplay of internal derangements (loss of internal balance, primarily in the kidney) and the external environment. Sodium, the main extracellular cation (salt found outside the cells), has long been considered the pivotal environmental factor in the disorder. Numerous studies show an adverse effect of a surfeit (excess) of sodium on arterial pressure.^{49 50 51 52} By contrast, potassium, the main intracellular cation (salt found inside cells), has usually been viewed as a minor factor in the pathogenesis of hypertension. However, abundant evidence indicates that a potassium deficiency has a critical role in hypertension and its cardiovascular sequelae (diseases caused by hypertension).^{53 54 55}

In this review, we examine how the interdependency of sodium and potassium influences blood pressure. Recent evidence as well as classic studies point to the interaction of sodium and potassium, as compared with an isolated surfeit of sodium or deficit of potassium, as the dominant environmental factor in the pathogenesis of primary hypertension and its associated cardiovascular risk. Our review concludes with recent recommendations from the Institute of Medicine concerning the dietary intake of sodium and potassium.

A modified diet that approaches the high potassium: sodium ratio of the diets of human ancestors is a critical strategy for the primary prevention and treatment of hypertension. Weight loss with diets rich in fruits and vegetables has been attributed both to the low caloric density and to the high potassium content of these diets, which tend to increase the metabolic rate.⁵⁶

In its 2002 advisory, the coordinating committee of the National High Blood Pressure Education Program identified both a reduction in dietary sodium and potassium supplementation as proven approaches for preventing and treating hypertension.⁵⁷ The Institute of Medicine recommends an intake of sodium of 65 mmol per day (approximately 3.8 g of sodium chloride per day) for adults 50 years of age or younger, 55 mmol per day (approximately 3.2 g of sodium chloride per day) for adults 51 to 70 years of age, and 50 mmol per day (approximately 2.9 g of sodium chloride per day) for those 71 years of age or older. The institute also advises adults to consume at least 120 mmol of potassium per day (approximately 4.7 g of potassium per day, which is about twice the current U.S. average).⁵⁵ These targets would require modifications for special groups, including competitive athletes, persons working in hot environments, patients with chronic kidney disease or diabetes, and persons taking medications that affect potassium balance. Adoption of the institute’s recommendations would increase the dietary potassium:sodium ratio by a factor of 10, from approximately 0.2 to approximately 2.0, which is much closer to our ancestral standard.

The concern that sodium restriction might increase cardiovascular risk by activating the sympathetic and renin–angiotensin system and by adversely affecting blood lipids and insulin sensitivity appears to be groundless for the recommended sodium intake.⁵⁵ Forms of

potassium that do not contain chloride, such as those found naturally in fruits, vegetables, and other foods, offer larger cellular entry in exchange for sodium and greater antihypertensive effects.⁵⁸

Following these recommendations would require a comprehensive, culture-sensitive campaign targeting both the general public and health care professionals. Food processing drastically changes the cationic content of natural foods, increasing sodium and decreasing potassium. Only approximately 12% of dietary sodium chloride originates naturally in foods, whereas approximately 80% is the result of food processing, the remainder being discretionary (added during cooking or at the table).⁵⁹ Apart from educating the public, an agreement by the food industry to limit the deviation of the cationic content of processed foods from their natural counterparts is essential.”

Note, the RDA for Sodium is 3.4 grams/day while that for potassium is 4.7 grams/day. Who is getting more potassium compared to sodium? Almost no one. You can ignore the recommendation of 2.3 g/day of sodium when your intake of potassium is adequate. And, salt is critical to health.

Chris Dresser, M.S., Leach is a globally recognized leader in the fields of ancestral health, Paleo nutrition, and functional and integrative medicine. His article, “Shaking up the Salt Myth: The Dangers of Salt Restriction,” corroborates our assertion that excess salt is not the problem. He comes at this issue from the other side, that is, the consequences of restricting salt instead of raising potassium to balance the sodium salt. Dresser writes:

“While salt-induced hypertension is typically blamed as a cause of heart disease, **a low salt intake is associated with higher mortality from cardiovascular events.** A 2011 study in the Journal of the American Medical Association demonstrates a low-salt zone where stroke, heart attack and death are more likely.⁶⁰ Compared with moderate sodium excretion (a measure of salt intake⁶¹), there was an association between low sodium excretion and cardiovascular (CVD) death and hospitalization for coronary heart failure. These findings demonstrate the lowest risk of death for sodium excretion between 4 and 5.99 grams per day.”

Note this range is double of the new suggested salt intake level of 2.1g/day and triple the 1.5g/day recommendation by the Feds.

“Another 2011 study confirmed this observation; not only was lower sodium excretion associated with higher CVD mortality, but baseline sodium excretion did not predict the incidence of hypertension, and any associations between systolic pressure and sodium excretion did not translate into less morbidity or improved survival.”⁶²

“In addition, low sodium intake is associated with poor outcomes in Type 2 diabetes. A 2011 study showed people with Type 2 diabetes are more likely to die prematurely on a low-salt diet, due to higher all-cause and cardiovascular mortality.⁶³ Additionally, a 2010 Harvard study linked low-salt diets to an immediate onset of insulin resistance, a precursor to Type 2 Diabetes. (7) These studies call into question the appropriateness of guidelines advocating salt restriction for patients with Type 2 diabetes.”⁶⁴

“Salt restriction may be especially dangerous for the elderly. Elderly people with hyponatremia have more falls and broken hips and a decrease in cognitive abilities.^{65,66} Hyponatremia is a common finding in the elderly, with an especially high prevalence in those with acute illness. This is another population at risk for serious health consequences due to universal sodium restriction.”

Quarterback: Do NOT limit salt intake. Instead purchase potassium chloride and mix it with your table salt – but use sea salt instead of table salt for the trace essential minerals. You can make the mixture about 50/50. And, don't forget your iodine supplement.

Traditional Prevention Measures

In what remains in this chapter we do not focus on prevention strategies published by the major thought leaders including the disease associations, WebMD, and the Mayo Clinic. Please browse through those sites as they speak to general measures such as exercising more, curbing smoking, and managing stress.

Prevention Through Internal Balance

We are created perfectly and so is our earth that is provided to support our healthy life. But Man, in our infinite presumed wisdom has mucked things up. Thus we are no longer in harmony with nature. If you can do everything recommended so far, from birth until death, you WILL be healthy. If you cannot, then you must take measures to compensate for the follies of our world. Roughly translated, you will need to augment your health with nutritional supplements.

We believe that the right approach is to abide by an anti-inflammation strategy. What is an anti-inflammation strategy? Anti-inflammation is a strategy to build immune health so when it acts on our behalf, it does so decisively, and then quickly settles back down to normal levels. An anti-inflammation is a strategy to create an internal balance that then suppresses the growth of otherwise opportunistic pathogens or quickly rids the body of toxins.

Anti-inflammation is **not** a strategy to suppress inflammation (with NSAIDs and other immune system depressants). This might be appropriate to quell short-term inflammation that causes pain but, it is contraindicated for the management of chronic inflammation.

Be careful not to confuse the terms antioxidant and anti-inflammation. They are not the same. In fact, they may be diametrical in opposition. Our immune system primarily uses an oxidative process, with white blood cells as our first line of defense. It detects and kills invaders with peroxide—a highly oxidizing substance. Oxidative stress is frequently cited as a cause of Alzheimer's and other inflammatory diseases, but this is likely from downstream effects of the inflammatory process and is not primary. David Sinclair from Harvard Medical School was a founder of Sirtris Pharmaceuticals, the science of which was based on the super antioxidant resveratrol. After the sale of Sirtris, Sinclair stated during an NPR interview, "Antioxidants have shown disappointing results in the area of anti-aging medicine."

Antioxidants may work against your immune system because it uses oxidation to kill bacteria, fungi, and viruses.

Researchers in the "know" are not proponents of supplements; rather, they endorse whole foods. This is the right approach to building a healthy immune system and avoiding chronic disease. No single diet type provides the balance upon which our physiology is based. The concept of a "diet" infers a restriction of some type. The mid-Victorians (from Paul Clayton's studies) did not "diet" per se; they struggled to take in sufficient calories to compensate for their toils and labors. Fortunately for them, their foods were natural and unprocessed. That is the key. The best diets, from an anti-inflammation perspective, appear to be the Atkins, Paleo, Ketogenic, and Mediterranean. These nutritional concepts focus on healthy fats and fiber while steering clear of processed foods and excessive carbohydrate consumption. See Appendix 2 for the "RealHealth" food pyramid for food choice guidance.

Past experience does tell us what to avoid, or at least control, in our quest for proper internal balance. Using Alzheimer's disease as a model, "*High carbohydrate diets and Alzheimer's disease*," a scientific article produced by the University of Colorado, does well to explain the current surge in Alzheimer's and other inflammatory diseases.⁶⁷ **“Evolutionarily discordant high carbohydrate diets are proposed to be the primary cause of AD by two general mechanisms. (1) Disturbances in lipid metabolism within the central nervous system inhibit the function of membrane proteins such as glucose transporters and the amyloid precursor protein. (2) Prolonged excessive insulin/IGF signaling accelerates cellular damage in cerebral neurons. These two factors ultimately lead to the clinical and pathological course of AD. This hypothesis also suggests several preventative and treatment strategies. A change in diet emphasizing decreasing dietary carbohydrates and increasing essential fatty acids (EFA) may effectively prevent AD.”**

This study poses a conundrum. Specifically, if carbohydrates are limited, what is the replacement source of calories? Madison Avenue has brainwashed the U.S. and the world into believing that high fat intake equals obesity. Yet our store shelves are filled with low fat (high carbohydrate) alternatives that are making us fat. The answer to the carbohydrate/fat conundrum is to increase the intake of healthy fats as they maintain a longer feeling satiation and quell inflammation. The book "*Eat Fat Lose Fat*" by Dr. Mary Enig and Sally Fallon explains how to reduce carbohydrates, increase healthy fat intake, and improve overall health.⁶⁸ A simple strategy to employ that helps avoid carbohydrate overload is to 1. Cook and eat at home, and 2. Grocery shop along the outside aisle of the store but avoid the deli counter. By skipping the inner aisles, your cart will contain significantly fewer carbohydrates and processed foods.

Many people do supplement in an attempt to be healthy, and this is important for both the active and the sedentary because even those with sedentary bodies have metabolically active and hungry brains. Some vitamins, nutrients, and supplements may be harmful in excess and should be purchased and taken based on knowledge, not just based on the latest headline in *Self*, by that "Oz" headline machine, or *Men's Health*. Calcium, which will be discussed in great detail later in this chapter, is a mineral that is the poster child for a well-intended message that has gone terribly wrong. There are extensive research compilations on the association between calcium supplementation and atherosclerosis and the "calcium hypothesis of dementia." Therefore, don't assume that if it is good for one specific thing that it is healthy for you long-term or is essential, as a supplement, for your good health. The Harvard School of Public Health teaches, "The dose makes the poison." Both oxygen and water are toxic at either extremes of dose. This is the lesson we all MUST remember when popping any type of pill.

Magnesium

Do you know that wheat has three times as many genes as a human? How is this relevant to chronic disease you might ask? Wheat has many more genes compared to us because it does not have the capacity to move to find proper nutrition to grow. It must have, within its gene pool, adequate diversity to accommodate life and growth regardless of the quality of soil upon which its seeds fall. Crafty humans are aware of this and are able to modify the genes of wheat and other plants so they can grow in nutrient deficient soil. **It is less expensive to produce seeds that can grow in magnesium deficient soils than it is to fertilize fields with magnesium.** The consumer thus loses a source of valuable nutrients. This is one significant concern regarding GMO seeds, crops, and our good health.

Magnesium is a special, necessary, yet all-too-often overlooked mineral. Sixty percent of the body's magnesium is found in bone yet our focus is on calcium intake only. The majority of magnesium in muscle is found in the mitochondria where it plays a key role in metabolism and is believed to be involved in the permeability of the outer membrane, to insulin for example.⁶⁹

Dietary intake of magnesium has gone down dramatically over the past 100 years. It is estimated that 68 to 80 percent of Americans are magnesium deficient.^{70,71,72} In places where water is harder, levels of magnesium are higher, and the incidence of coronary artery disease is lower. Magnesium deficiency contributes to early and sudden mortality by cardiovascular diseases. Almost 8 million deaths from sudden cardiac failure occurred in the U.S. between 1940 and 1994 that were, in part, attributed to magnesium deficiency.^{73,74,75,76}

Evaluation of your homeostasis for magnesium is not straight forward, as serum levels (in the blood) are a poor indicator of magnesium status. Most of the magnesium in our bodies resides inside of cells contrary to calcium that resides outside of cell membranes. Heart muscle levels of magnesium are almost 20 times higher than serum levels. The best test is ionic magnesium measurement or elemental X-ray analysis. However, none of these methods are definitive.^{77,78} Many factors regulate magnesium absorption, including vitamin D and K2 levels.⁷⁹ As calcium levels go down, magnesium absorption increases. High intakes of calcium, protein, vitamin D, and alcohol all increase magnesium requirements. Without adequate magnesium, bones will be dense, but may have poor integrity. Northern European countries, where the calcium to magnesium ratio is 4:1, which is low, have the highest rates of osteoporosis.⁸⁰

In lieu of tests, the best way to insure adequate magnesium is simply through supplementation or, preferably, through dietary modifications. Magnesium has a very favorable safety profile. Over abundance of magnesium leads to a loose stool and then to diarrhea. If you experience these symptoms, simply lower your intake. If you are constipated, take a magnesium supplement, not some chemical (and this comes from a chemist). The best dietary sources of magnesium are nuts, and fruits.^{yyy} These include soy flour, buckwheat flour, tofu, figs, cashews, avocado, millet, and brewer's yeast. All green plants contain magnesium, as this metal is at the center of the chlorophyll molecule.

Magnesium has an effect of relaxing smooth muscle and is therefore useful in conditions such as hypertension, dysmenorrhea, constipation, asthma, angina, stroke, heart attack, and Alzheimer's disease. It decreases coagulation and acts as a calcium channel blocker, helping the heart to pump more effectively and regulating blood pressure.^{81,82,83} Magnesium is involved in the function of more than 300 enzymes, as well as in regulating muscle contractility and nerve impulses. Virtually all body systems also rely on magnesium for at least some of their metabolic functions.^{84,85,86} Do you find it interesting that drug companies invest billions of dollars in drugs that are involved in the action of a couple of enzymes yet we take their drugs while being magnesium deficient? This is quite a paradox.

Magnesium deficiency is insidious because it can mimic many other disorders. These include fatigue, poor nail growth, irritability, weakness, dysmenorrhea, muscle spasms or tightness, cardiomyopathy, anorexia, sugar cravings, hypertension, and anxiety.^{87,88,89,90,91} Does magnesium deficiency mimic these diseases or is the deficiency the disease? Deficiency can result from kidney disease and intake of diuretics, and it can cause depletion of potassium and affect muscles and bones. Magnesium deficiency can be caused by poor absorption or high metabolic use, as is likely the case for hyperthyroidism, kwashiorkor, diabetes mellitus, alcoholism, pancreatitis, parathyroid disorders, high dietary phytic acid, and diarrhea.^{92,93,94,95}

The clinical use of magnesium can be applied to a variety of conditions. These include constipation, muscle cramping, torticollis, acute angina following a myocardial infarct or stroke, asthma, kidney stone prevention (especially when given with vitamin B6), and dysmenorrhea. Other candidates for magnesium supplementation are GI spasms or cramping, eclampsia, heart disease (especially

^{yyy} Whole grains have magnesium too but many of us have a food sensitivity to grains.

cardiomyopathy),^{96,97} diabetes mellitus, nocturnal muscle cramps, mitral valve prolapse, toxemia of pregnancy, fibromyalgia, migraine headaches, lead toxicity, general fatigue, anxiety, and irritability. Isn't it interesting to see the interconnectedness of many of these diseases as shown simply and elegantly through magnesium deficiency?

General dosing of daily magnesium should be approximately 450 mg, considering all sources. However, for GI cramping, asthma, constipation, and heart disease, it is recommended to take magnesium to improve bowel tolerance (until the bowel movements become "loose").⁹⁸ Never opt for the cheap supplements at Wal-Mart or CVS. Very often those minerals are provided as the "oxide." Magnesium oxide is the least soluble form of the magnesium vitamins and is less bioavailable.

Magnesium and Inflammation

In two large observation studies (the Women's Health Initiative⁹⁹ and Nurses Health Study¹⁰⁰) greater magnesium (Mg) intake was associated with lower levels of inflammation as measured by CRP, IL-6, and TNF- α receptor, a measure of TNF- α activity. Data from the Multi-Ethnic Study of Atherosclerosis (MESA) failed to find significant differences in IL-6 or CRP levels between individuals with the highest and lowest magnesium intakes (probably because they used magnesium oxide in the study), but did find a significant association between greater dietary magnesium and the lower levels of the inflammation-associated proteins homocysteine and fibrinogen.¹⁰¹ **Magnesium was rated as the most anti-inflammatory dietary factor in the Dietary Inflammatory Index, which rated 42 common dietary constituents on their ability to reduce CRP levels based on human and animal experimental data.** This did not include foods that are often mistaken as supplements. For example, fish oil has a more profound impact on lowering CRP compared to magnesium.

Magnesium is ONE of the most inflammation-lowering dietary factors yet most Americans are deficient.

"Memory functions decline with age, and severely deteriorate during Alzheimer's disease. Several studies suggest that dietary/environmental factors can reduce the prevalence of AD in humans. Magnesium is essential for maintaining normal body and brain functions." This is according to Chinese researchers as presented at a Shanghai conference in 2012.¹⁰² Magnesium deficiency is common in the elderly and is an important factor to consider in the prevention and management of dementias including Alzheimer's.

Take your magnesium—it is such a simple health enhancement measure—and discard your calcium.

Calcium

The medical literature is full of research on the calcium/cardiovascular disease connection noted by a PubMed search that yields 285 articles, just between 2010 and 2013, using the keywords "calcium" and "cardiovascular" in a title-only search. The first one that comes up paints a vivid picture. The title is, "*Effect of calcium supplements on risk of myocardial infarction and cardiovascular events: meta-analysis.*"¹⁰³ This team from New Zealand and the U.S. conclude:

"Calcium supplements (without co-administered vitamin D) are associated with an increased risk of myocardial infarction (heart attack). As calcium supplements are widely used these modest increases in risk of cardiovascular disease might translate into a large burden of

disease in the population. **A reassessment of the role of calcium supplements in the management of osteoporosis is warranted.**"

A reassessment of the role of calcium supplement indeed! The National Osteoporosis Foundation, on their website states, under "Debunking the Myths,"

"Myth #9: Taking extra calcium supplements can help prevent osteoporosis."

"Taking more calcium than you need does not provide any extra benefits. Estimate the amount of calcium you get from foods on a typical day to determine whether a supplement is right for you."

You probably get enough calcium in your foods to prevent osteoporosis therefore supplementation is not worth the risk. What you **do not** have at sufficient levels are vitamin D, K2, and magnesium. There are no appreciable side effects from taking these essential components compared to calcium.

"Evidence from limited data suggests that vitamin D supplements at moderate to high doses may reduce CVD risk, whereas calcium supplements seem to have minimal to doubtful cardiovascular effects. Further research is needed to elucidate the role of these supplements in CVD prevention." This is the conclusion by another set of researchers.¹⁰⁴ Although the researchers did not find any negative contribution from calcium (or did they, but the vitamin D was protective?), they showed the importance of vitamin D. Based on current data, treating 1,000 people with calcium supplements for five years would prevent only 26 fractures but would cause an additional 14 heart attacks. Both these numbers would most likely decrease if the 1,000 people had sufficient vitamin D, K2, and magnesium in their systems.

The New York Academy of Sciences assembled a book titled, *The Calcium Hypothesis of Dementia*, in early 1990s based on a summit on the topic. A classic paper included in the books is titled, "*The calcium rationale in aging and Alzheimer's disease.*"¹⁰⁵ The full original article is available in electronic form on the Internet. Some key points from this article are reproduced here:

- Calcium is required for the function of all cells in the body, including neurons.
- Calcium is intimately involved in a variety of 'plastic' changes in the brain.
- Calcium thus is likely to have key roles in the cellular processes underlying aging-related changes in the brain, including normal age-associated memory impairments as well as more severe dementias, including Alzheimer's disease.
- The pivotal role of calcium in so many neuronal processes dictates the need for precise regulation of its intracellular levels. **Any dysregulation, however subtle, could lead to dramatic changes in normal neuronal function.**
- The calcium hypothesis, which posits that in the aging brain, transient or sustained increases in the average concentration of intracellular free calcium contribute to impaired function, eventually leading to cell death.
- The hypothesis suggests that the final common pathway that may contribute to cognitive deterioration of aging vertebrates, including persons with Alzheimer's disease or other aging-related dementias, is increased free calcium within neurons. The functional impairment that characterizes a patient at a particular time in the aging-related disease process may be relieved by reducing excessive calcium influx."

There are plenty of updates to this important research. The key term is "dysregulation" of calcium. Whatever the scientific jargon, please consider taking the advice already provided, and do not upset your calcium balance with supplements.

Excess calcium from supplements increases heart disease, Alzheimer's and mortality – especially in women.

Vitamin D

“The Miracle Vitamin,” by Paula Dranov, states, “new evidence shows that getting enough D may be the most important thing you can do for your health.”¹⁰⁶ This is a true statement, and the preferred way to get vitamin D is through sun exposure and by taking cod liver oil. Cod liver oil contains the key fat-soluble vitamins A and D. Most importantly, this natural source contains all the variations (isomers) of the vitamins.

The health benefits of vitamin D are prominently highlighted in the New York Well Blog. Key recent headlines concerning vitamin D include:

Low Vitamin D Levels Linked to Disease in Two Big Studies.¹⁰⁷

What Do You Lack? Probably Vitamin D.¹⁰⁸

Low Vitamin D Tied to Premature Death.¹⁰⁹

Vitamin D May Lower Cholesterol.¹¹⁰

Low Vitamin D Tied to a Pregnancy Risk.¹¹¹

Low Vitamin D Tied to Aging Problems.¹¹²

Clearly, insufficient vitamin D impacts our health from birth to death.

But it turns out that the term “vitamin” is a misnomer for vitamin D. It is really a hormone. The word “vitamin” means something our body needs that it can't make, so must be obtained from food. “D hormone” (vitamin D) is instead an essential substance that we make on our skin from sun exposure. It is a hormone like thyroid, estrogen, or testosterone. Using the proper word “hormone” reminds us that it affects multiple parts of the body and that it is essential to every cell in the body.

From what molecule does vitamin D come when light hits our skin? Cholesterol.¹¹³ Yes, that same “evil” substance that the drug companies claim causes so much harm. Maybe we are learning that cholesterol is not so evil and even important for our protection against chronic disease and early death.

Vitamin D, the fat-soluble hormone is naturally present in very few foods, added to others, and available as a dietary supplement. It is also produced when ultraviolet rays from sunlight strike the cholesterol in the skin and trigger vitamin D synthesis. Vitamin D obtained from sun exposure, food, and supplements is biologically inert and must undergo a chemical reaction (hydroxylation) in the body for activation. One reaction occurs in the liver and converts vitamin D to 25-hydroxy vitamin D, also known as 25 vitamin D, vitamin D3, or simply vitamin D. Under normal conditions, another reaction occurs primarily in the kidney to form the physiologically active 1,25-dihydroxyvitamin D, also known as calcitriol.

Importantly, activation of 25-hydroxy vitamin D to the 1,25-dihydroxyvitamin D occurs in inflamed tissue. Here, the activated form of vitamin D is working in concert with our immune system to deal with the inflammation. This “activation” process is often the cause for the failure of ingested vitamin D supplements to raise the serum vitamin D levels in patients. In this capacity, a measurement of blood vitamin D levels, for those under supplementation, may reveal a disease process in progress. Those patients with low vitamin D levels, but who appear to have adequate intakes of the substance should be tested for the activated (1,25-dihydroxy) form of vitamin D.

The activated form of vitamin D may positively impact Alzheimer's disease. A Canadian group carried out long-term treatment of mice with activated 1,25-dihydroxy vitamin D reduced beta-amyloid plaque formation, importantly of both the soluble and insoluble type. Of particular importance, the amyloid reduction occurred in the hippocampus region of the brain. This led to improvement in conditioned fear memory. The data suggest that the vitamin D receptor and treatment with vitamin D or its activated form is important therapeutically for the prevention and treatment of Alzheimer's disease.¹¹⁴

Vitamin D promotes calcium absorption in the gut and maintains adequate (and balanced) serum calcium and phosphate concentrations to enable normal mineralization of bone and to prevent low calcium concentrations. It is also needed for bone growth and bone remodeling by osteoblasts and osteoclasts. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. Vitamin D sufficiency prevents rickets in children and osteomalacia in adults. Vitamin D also helps protect older adults from osteoporosis.

Vitamin D has other roles in the body, including modulation of cell growth, neuromuscular and immune function, and reduction of inflammation. Many genes encoding proteins that regulate cell proliferation, differentiation, and apoptosis are modulated in part by vitamin D. Many cells have vitamin D receptors, and some convert the diol to the triol of vitamin D. Serum concentration of the diol of vitamin D is the best indicator of vitamin D status. It reflects vitamin D produced by sunlight and that obtained from food and supplements and has a fairly long circulating half-life of 15 days. Vitamin D functions as a biomarker of exposure, but it is not clear to what extent vitamin D levels also serve as a biomarker of effect. Serum vitamin D levels do not indicate the amount of vitamin D stored in body tissues. Vitamin D, although not synthesized by sunlight in the winter in the northern hemisphere, is available to the body by storage in fat throughout the year, assuming adequate exposure to sunlight during summer months.

There is considerable discussion about the serum concentrations of vitamin D associated with deficiency (e.g., rickets and other degenerative diseases), a scientific consensus process has not developed adequacy for bone health and optimal overall health. Based on its review of data of vitamin D needs, a committee of the Institute of Medicine concluded that persons are at risk of vitamin D deficiency at serum vitamin D concentrations <30 nmol/L. Some are potentially at risk for inadequacy at levels ranging from 30–50 nmol/L. Practically all people are sufficient at levels ≥50 nmol/L; the committee stated that 50 nmol/L is the serum vitamin D level that covers the needs of 97.5% of the population. Serum concentrations >150 nmol/L are associated with potential adverse effects. These adverse affects, however, are relatively mild. There has never been an incident of serum concentration >125nmol/L from sun exposure alone. It is nearly impossible to achieve a level of 150 nmol/L through supplementation.

According to research from the U.K. and Canada, "Vitamin D was initially thought to play a restricted role in calcium homeostasis, but the pleiotropic (multi-factorial) actions of vitamin D in biology and their clinical significance are only now becoming apparent."¹¹⁵ In their publication, the **researchers found 2,776 binding sites for the vitamin D receptor along the length of the genome**. These were unusually concentrated near a number of genes associated with susceptibility to autoimmune conditions such as MS, Crohn's disease, systemic lupus erythematosus (or 'lupus'), rheumatoid arthritis, and to cancers such as chronic lymphocytic leukemia and colorectal cancer. They also showed that **vitamin D had a significant effect on the activity of 229 genes**. "Vitamin D status is potentially one of the most powerful selective pressures on the genome in relatively recent times." As with magnesium, the action of vitamin D is the envy of the drug companies.

Vitamin D has natural antibiotic properties by improving immune system health.

Vitamin D appears to exert anti-inflammatory activity by the suppression of pro-inflammatory prostaglandins and inhibition of the inflammatory mediator NF- κ B. ¹¹⁶ Although intervention studies of its anti-inflammatory activity in humans are lacking, **several observational studies suggest vitamin D deficiency may promote inflammation.** Vitamin D deficiencies are more common among patients with inflammatory diseases (including rheumatoid arthritis, inflammatory bowel disease, systemic lupus erythematosus, Alzheimer's disease, and diabetes) than in healthy individuals. ^{117,118,119,120,121,122,123,124} They also occur more frequently in populations that are prone to low-level inflammation, such as obese individuals and the elderly. Vitamin D levels can drop following surgery (a condition associated with acute inflammation), with a concomitant rise in CRP. Low vitamin D status was associated with elevated CRP in a study of 548 heart failure patients and with increases in IL-6 and NF- κ B in a group of 46 middle-aged men with endothelial dysfunction. ¹²⁵

One little vitamin (hormone) yet so much power to promote good health, and you can obtain it naturally, at no cost, through some prudent exposure to the sun. Supplement at will, but avoid the cheap brands. Who knows where they came from. Chapter 6 provides a simple guide to ideal vitamin D levels and how much supplementation is required to achieve those levels, in lieu of sun exposure.

Vitamin E

The jury has cast a unanimous verdict against antioxidants in diseases of inflammation. Our own clinical experience, particularly with advanced macular degeneration, has been negative. That is, patients report an increase in symptoms, especially bleeding in the wet form of AMD, when on vitamin E supplementation. However, popular wisdom is that gobbling up free radicals is critical to maintaining health. Proceed with caution. A Cambridge-based biotech company sold a resveratrol concept (a powerful antioxidant that you no doubt have seen make its way onto drug store shelves recently) to GSK pharma for \$728,000,000 on the premise that mice fed their antioxidant compound(s) lived twice as long. GSK abandoned the project after they couldn't reproduce the results. We have yet to learn from Ponce de Leon. Antioxidants are not turning out to be the fountain of youth.

What is your call to action? Be careful about supplementing with vitamin E until further notice. Also, not all supplements are created equally. There are several forms (isomers) of the basic compound of vitamin E. Any supplementation should include that blend of isomers in their naturally occurring ratios. In a 2008 study, the authors said, "the combination of [alpha-tocopherol] and [gamma-tocopherol] supplementation appears to be superior to either supplementation alone on biomarkers of oxidative stress and inflammation and needs to be tested in prospective clinical trials." ¹²⁶

Zinc

Zinc supplementation is associated with decreases in inflammation in populations that are prone to zinc deficiency, such as children and the elderly. Low level inflammation and circulating pro-inflammatory factors (CRP, TNF- α , IL-6, and IL-8) were reduced in elderly subjects by moderate zinc supplementation in several studies. Like zinc, selenium deficiencies are common in chronic inflammatory states associated with disease, where selenium supplementation has been associated with reductions in inflammation and better patient outcomes.

Mass General researchers reviewed zinc through an article titled, "*Zinc takes the center stage: its paradoxical role in Alzheimer's disease.*" ¹²⁷ They indicated, "Zinc in human nutrition is undoubtedly essential," and "... the protective effect of zinc against beta-amyloid cytotoxicity, coupled with anecdotal results from a few zinc supplementation studies warrant further research."

The Age-Related Eye Disease Study (AREDS) set out to investigate if vitamins and/or minerals could slow the progression of age-related macular degeneration. A conclusion from one of the many AREDS-generated research articles reads, "The AREDS trial results suggest that antioxidants and zinc, either alone or in combination, were modestly effective for category 3 and 4 patients with AMD. The trials leaves unanswered the question of supplementation for category 1 and 2 patients as well as the long-term safety of the agents. Due to the morbidity of the visual loss associated with AMD and the lack of treatments, it may be reasonable to use supplementation in the selected high-risk group."¹²⁸ These results do not marginalize the value of zinc but suggest that the high doses used in the study do not significantly alter the impact that the proper physiological levels of zinc already exert.

What should you do regarding zinc? Identify foods high in zinc that are found on the outer isle of your grocer's shelves including: liver, certain mushrooms, asparagus, chard, scallops, lamb, beef, maple syrup, shrimp, green peas, yogurt, oats, pumpkin seeds, sesame seeds, turkey, miso, and spelt. Consider taking zinc supplementation up to daily recommendations by the USDA. Excess zinc is reported to cause copper deficiency and bone marrow depression. The maximum to take from a supplement is about 11 milligrams/day of total zinc. Never take high doses of any supplement, as this is not natural to our history, with few exceptions. Vitamin D is a notable exception where we store the vitamin in our adipose tissue for consumption in the winter as few foods provide it naturally.

Vitamin K2

Vitamin K is a fat-soluble vitamin. The "K" is derived from the German word "koagulation." Coagulation refers to the process of blood clot formation. Vitamin K is essential for the functioning of several proteins involved in blood clotting. There are two naturally occurring forms of vitamin K. Vitamin K₁ also known as phylloquinone, is synthesized by plants and is the predominant form in the diet. Vitamin K₂ comes from animal sources, fermented foods, and synthesis by intestinal bacteria.

A relative deficiency of vitamin K is common in aging men and women. The concentration of vitamin K is lower in the circulating blood of APOE4 carriers, the gene that, to some degree, predisposes a person to macular disease and Alzheimer's disease. Evidence is accumulating that vitamin K has important functions in the brain. It is now proposed that vitamin K deficiency contributes to the process of dementias and that its supplementation may have a beneficial effect in preventing or treating the disease. Vitamin K may also reduce neuronal damage associated with cardiovascular disease.

Calcium build-up in the arteries is a heart disease risk factors, as discussed above. For this reason, anything that can reduce this accumulation of calcium may help prevent heart disease. This is where vitamin K2 helps, by preventing calcium from being deposited in the arteries.¹²⁹ In the Rotterdam study, those who had the highest intake of Vitamin K2 were 52% less likely to develop calcification of the arteries, and had a 57% lower risk of dying from heart disease, over a 7-10 year period.¹³⁰

A Dutch study of 16,057 women found that participants with the highest intake of vitamin K2 had a much lower risk of heart disease. For every 10 micrograms of K2 they consumed per day, the risk of heart disease was reduced by 9%.¹³¹

Fish Oil in Cardiovascular Diseases

Eat plenty of fish, especially cold-water fish. Supplement with fish oil or, preferably, cod liver oil. Do not make any excuses or be influenced by media. Fish oil is not a vitamin, mineral, or other supplement; it is simply a food that is deficient in the diet of many of those with chronic diseases.

Along with vitamin D, fish oil has a panoply of benefits to health. Fish oil is the best source of the omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) that can only be synthesized to a limited extent in humans. These fatty acids are essential constituent of the membranes of neurons. Thus fish oil supplementation, or consuming fish, is critical.

Omega-3 fatty acids have been well studied for their prevention of cardiovascular disease and mortality in tens of thousands of patients. The anti-inflammatory effects of omega-3s contribute to this activity. They have also proven successful at improving patient outcomes in scores of studies of inflammatory diseases, particularly asthma, inflammatory bowel disease, cardiovascular diseases, Alzheimer's disease, and rheumatoid arthritis. Emerging studies show fish oil conferring a wealth of benefits in guarding against depression, cancer, osteoporosis, and other crippling diseases of aging.

Fish oil lowers triglycerides. Dangerously high levels of triglycerides have become more common as Americans develop metabolic syndrome, cardiovascular disease, and other nutrition-related illnesses. Elevated triglycerides greatly increase risk for heart disease. The right dose of omega-3s can significantly reduce triglyceride levels and help correct other cardiac risk factors that accompany metabolic syndrome.^{132,87,133} In fact, omega-3 fatty acids derived from fish oils are now available in the form of a prescription drug called Omacor, which has been approved specifically for the treatment of elevated triglycerides.¹³⁴ Do not get in the habit of succumbing to the prescription pad. Instead, eat plenty of fish and take fish oil or cod liver oil in large amounts to compensate for a sub-optimal diet.

Silent inflammation triggers a chain of events leading to heart disease and other illnesses. Omega-3 fatty acids suppress multiple steps in this inflammatory process, inhibiting the production of inflammatory cytokines and prostaglandins probably through a variety of mechanisms that includes immune system augmentation that then controls infection. Furthermore, omega-3 fats boost production of anti-inflammatory compounds. These anti-inflammatory/infection effects may have important implications for fighting heart disease and numerous other disease processes associated with excessive inflammation.^{135,136,137,138,139,140,141} People who consume a greater amount of omega-3 fatty acids demonstrate lower levels of C-reactive protein, a cardiovascular risk factor, suggesting that omega-3 supplementation might help prevent cardiovascular disease by, for example, reducing infectious burden, thus lowering inflammation.¹⁴²

Omega-3 supplementation actually changed the composition of unstable atherosclerotic plaque, making it less likely to rupture and thus less dangerous. Subjects who had severe carotid plaque and were scheduled to have it surgically removed received either fish oil or sunflower oil prior to surgery. When the plaque was removed at surgery and examined, researchers found that those who took fish oil had less plaque inflammation as well as more stable plaque. By contrast, those who took sunflower oil had more unstable, rupture-prone plaque.¹⁴³

Fish oil rich in omega-3 fatty acids contributes to healthy vascular function by increasing the production of an important blood vessel-dilating substance in the endothelial cells.^{144,145} It helps reduce certain proteins that promote abnormal blood clotting and inhibit platelet aggregation, two effects that reduce the likelihood of clot formation on active, ruptured coronary plaque that could result in a heart attack.¹⁴⁶ One of the most dramatic benefits of fish oil is its ability to prevent sudden death, particularly sudden cardiac death. Scientists believe that omega-3 fatty acids from cold-water fish may help prevent these sudden deaths by reducing potentially fatal abnormal heart rhythms, or arrhythmias.

Australian and Chinese scientists studied the results of 11 trials and uncovered a significant reduction in plasma homocysteine in association with greater intake of omega-3 polyunsaturated fatty acids.¹⁴⁷ Treatment periods ranged from 6 to 48 weeks, and doses varied between 0.2 and 6 grams per day. The analysis confirmed a reduction in plasma homocysteine levels in association

with omega-3 fatty acid supplementation, with an average decrease of 1.59 micromoles per liter experienced by those who supplemented compared to those who received a placebo. “Our systematic review provides, to our knowledge, the most comprehensive assessment to date of the effects of omega-3 polyunsaturated fatty acids on plasma homocysteine,” the authors announced.

Fish Oils in Alzheimer’s and Dementia

Since vascular diseases are tied to Alzheimer’s and other dementias, there should be no surprise that fish oils are helpful for Alzheimer’s sufferers and also play a key role in prevention. The literature on this topic is rich and extends back into the 90s. The Japanese took the early lead through publications and patents. One such patent from 1994 is titled, “*Brain function ameliorant composition, learning capacity enhancer, mnemonic agent, dementia preventive, dementia curative, or functional food with brain function ameliorant effect.*”¹⁴⁸ Here is a part of the abstract from that patent:

“The invention aims at ameliorating brain functions to thereby effect learning capacity enhancement, memory enhancement, and prevention and cure of senile dementia, and to provide a functional food having a brain function ameliorant effect. The invention composition comprises at least one member selected from among n-3 unsaturated fatty acids, i.e., docosahexaenoic acid, eicosapentaenoic acid...”

Two articles that bracket 16 years of research from 1997 to 2013 are examined here. The earlier one is titled, “*Polyunsaturated Fatty Acids, Antioxidants, and Cognitive Function in Very Old Men,*” (it sounds more like a new sitcom).¹⁴⁹ This team from the Netherlands says, “This study raises the possibility that high linoleic acid intake is positively associated with cognitive impairment and high fish consumption inversely associated with cognitive impairment.” The 2013 article was likely chosen from the most conservative group, the Alzheimer’s Drug Discovery Foundation.¹⁵⁰ Polyunsaturated fatty acids (fish oil) are not really drug candidates; they are foods, although there are a couple on the market. The title of their article includes the key word “prevention.” They state, “Of particular relevance, epidemiology indicates a higher risk of cognitive decline in people in the lower quartile of n-3 LC-PUFA intake or blood levels.”

Higher blood levels of eicosapentaenoic acid (EPA) are associated with a lower risk of dementia and depression in elderly persons in a French study.¹⁵¹ EPA is an omega-3 polyunsaturated fatty acid found in certain fish that may decrease the risk of dementia and Alzheimer’s disease. The study included 1,214 French persons aged 65 or older who were examined for dementia and blood levels of fatty acids over four years. Depression was also assessed because it has been related to both low EPA and dementia. By four years, 65 patients had developed dementia. A higher level of EPA was associated with a lower likelihood of dementia, even after accounting for depression and other patient characteristics. An association between depression and dementia was also confirmed. The authors concluded, “**Because depression and dementia share common vascular risk factors, the vascular properties of EPA could contribute to decrease depression and dementia risk simultaneously.**”

Researchers at the Rush Institute of Healthy Aging conducted a study to see if consuming fish and different omega-3 fatty acids protect against Alzheimer’s.¹⁵² Over 800 participants unaffected by Alzheimer’s disease (between the ages of 65 and 94) were monitored from 1993 to 2000 and then followed-up for a four year period to see if they developed Alzheimer’s. Researchers discovered patients who ate fish once or more per week or increased the amount of omega-3 fatty acids in their diet had a **60% lower risk of developing Alzheimer’s disease.**

PUFA 3, PUFA 6, and PUFA 6/3 Ratio

Omega-3 fats are also known as PUFA 3 (polyunsaturated fatty acids). The key clinical omega-3 fats are EPA and DHA, which are found largely in cold-water fish. The PUFA 6/3 ratio is also important as PUFA 6 tends to promote pro-inflammatory molecules while PUFA 3 does just the opposite. High ratios (more PUFA 6) (>5) are associated with chronic silent inflammation. The following is a very concise abstract that discusses the history of our diets with respect to PUFAs in general and provides information on diseases impacted by an “imbalance” of PUFAs. The paper was written by Artemis P. Simopoulos from The Center for Genetics, Nutrition and Health, Washington, DC, and is titled, “*The Importance of the Omega-6/Omega-3 Fatty Acid Ratio in Cardiovascular Disease and Other Chronic Diseases.*”¹⁵³

“Several sources of information suggest that human beings evolved on a diet with a ratio of omega-6 to omega-3 essential fatty acids (EFA) of ~1 whereas in Western diets the ratio is 15/1–16.7/1. Western diets are deficient in omega-3 fatty acids, and have excessive amounts of omega-6 fatty acids compared with the diet on which human beings evolved and their genetic patterns were established. Excessive amounts of omega-6 polyunsaturated fatty acids (PUFA) and a very high omega-6/omega-3 ratio, as is found in today’s **Western diets, promote the pathogenesis of many diseases, including cardiovascular disease, cancer, and inflammatory and autoimmune diseases, whereas increased levels of omega-3 PUFA (a lower omega-6/omega-3 ratio), exert suppressive effects.**

In the secondary prevention of cardiovascular disease, a ratio of 4/1 was associated with a 70% decrease in total mortality. A ratio of 2.5/1 reduced rectal cell proliferation in patients with colorectal cancer, whereas a ratio of 4/1 with the same amount of omega-3 PUFA had no effect. The lower omega-6/omega-3 ratio in women with breast cancer was associated with decreased risk. A ratio of 2–3/1 suppressed inflammation in patients with rheumatoid arthritis, and **a ratio of 5/1 had a beneficial effect on patients with asthma, whereas a ratio of 10/1 had adverse consequences.**”

These studies indicate that the optimal ratio may vary with the disease under consideration. This is consistent with the fact that chronic diseases are multigenic and multifactorial. Therefore, it is quite possible that the therapeutic dose of omega-3 fatty acids will depend on the degree of severity of disease resulting from the genetic predisposition. A lower ratio of omega-6/omega-3 fatty acids is more desirable in reducing the risk of many of the chronic diseases of high prevalence in Western societies, as well as in the developing countries. Thankfully, the solution to your good health is simple—eat more fish and supplement with fish oils. And you can improve your chances of good health by decreasing your intake of the inflammation-creating omega-6 (PUFA-6) fats. The books by Barry Sears on the “Zone” diet provide what you need to know about avoidance of omega-6s.^{154,155}

Excess PUFA 6 interferes with the health benefits of PUFA 3, in part because they compete for the same rate-limiting enzymes. A high proportion of 6/3 fat in the diet shifts the physiological state in the tissues toward many diseases that involve blood clotting, inflammation, and vessel constriction. Chronic excessive production of n-6 eicosanoids derived from PUFA 6 is associated with heart attacks, thrombotic stroke, arrhythmia, arthritis, osteoporosis, inflammation, mood disorders, obesity, and cancer. Medications used to treat and manage these conditions work by blocking the effects of the PUFA 6 known as arachidonic acid. Many steps in formation and action of n-6 hormones from n-6 arachidonic acid proceed more vigorously than the corresponding competitive steps in formation and action of n-3 hormones from n-3 compounds.

Both your total intake of fish oils and your omega-6/omega-3 ratio is important to your longevity and health.

The PUFA 6:3 ratio plays a role in dementia and Alzheimer's, too. A 2013 German review article delved into the science behind the PUFA ratio and dementia.¹⁵⁶ The abstract is reproduced here:

"It has been suggested that the intake of certain fatty acids may influence the risk of dementia. However, current reviews have focused only on the therapeutic effects of omega-3 fatty acids, mostly as supplements. To date, the evidence for the relevance of the omega-6/omega-3 ratio has been neglected. Therefore, we searched the databases ALOIS, Medline, Biosis, Embase, Cochrane Central Register of Controlled Trials, and The Cochrane Database of Systematic Reviews for 'essential fatty acids' and 'dementia' and aimed to conduct a comprehensive review across study types."

"All studies that reported on the association between the n-6/n-3 ratio and dementia or cognitive decline were selected. In the 13 animal studies we examined, the dietary n-6/n-3 ratio was shown to affect brain composition, Alzheimer's disease pathology, and behavior. Our review of the 14 studies in humans that fulfilled the selection criteria (7 prospective studies, 3 cross-sectional studies, 1 controlled trial, 3 case-control studies) provided evidence, albeit limited, supporting an association between the n-6/n-3 ratio, cognitive decline, and incidence of dementia. **This review supports growing evidence of a positive association between the dietary n-6/n-3 ratio and the risk of Alzheimer's disease.**"

There are a variety of other supplements and food intake modifications that can impact your likelihood of developing chronic diseases like Alzheimer's. Google David Wheldon of England to see his list of recommendations for multiple sclerosis, as MS and AD are both neurodegenerative processes, and there is logical overlap.

Prevention – In Your Control

Chronic disease is preventable. Claude Bernard, Alois Alzheimer's, and other doctors and scientists of history who documented the dearth of chronic disease even 100 years ago present that proof. Paul Clayton, a modern man, indicates that chronic degenerative diseases were 10% of what we experience today, during the mid-Victorian era (1870). What is this pall that has overcome our people and inflicted us with rampant and expanding poor health? I think we all know the answers.

The comforts, convenience, and economics of modern society have superseded our good sense. Everything we do on a day-by-day and minute-by-minute basis perpetuates poor health. It starts with a bowl of sugar-laden cereal with fat-free milk, after a restless night's sleep. Next we jump into an automobile and struggle through a commute to get to a climate-controlled office. We rush through lunch prepared of more processed foods that our bodies rapidly convert to sugars and fats. Now back to our climate-controlled bubble. We are rewarded at the end of the workday with a ride in our well-deserved luxury car that doesn't even require a finger to open the trunk. We settle into a nice Stouffer's dinner, because our spouse worked to afford his or her car, too. Finally, some free quality time with the boob tube, some carbonated beverage, coffee, dessert, a cigar, and a nightcap. Off we go for another restless night's sleep.

Surprise...

You know what to do (sort of—except you were led to low fat is good—it's just the opposite, especially for your brain). But you don't do it anyway because the circle of life doesn't provide the luxury of time to truly care for yourself.

In the spirit of keeping it simple, focus on increasing your intake of vitamin D, K2, fish oils (Cod Liver Oil is best), magnesium, and zinc (just a little) while avoiding calcium and omega-6s. A key issue is dose. Most of the time, when researchers find that these supplements are ineffectual, the reason is likely a low dosing level. The PUFA 6/3 ratio helps us understand this conundrum. If your

PUFA ratio is >15/1 (plenty of Americans have a 40/1 ratio or higher), then supplementing with 500 mg/day of PUFA 3 is like giving someone who is dying of thirst a shot glass of water. The amount is insufficient, and the impact on chronic health will not be measurable. USRDAs are established to be very conservative numbers and are not appropriate guidelines for people who are significantly out of balance.

Look upon foods differently compared to supplements. Fish oil (and cod liver oil (CLO)) is food, not a supplement. Our families takes 15 grams of cod liver oil daily! Come on, it's not that bad. It is not the same thing your grandmother gave you. Here is how we take cod liver oil. We take a shot glass and fill it half full (half empty if you prefer) with CLO. Drink some orange juice, then shoot the CLO to the back of your throat and quickly swallow. Next, drink some more orange juice. You won't know what hit you, in a good way. Do this in the evening just prior to bed, as this will reduce or eliminate any upset caused by the CLO. Also, if you are new to this, start with one-eighth of a shot glass and work your way up.

Focus on preventative measures and you will live a long, healthy, and happy life.

“The doctor of the future will give no medicine, but will instruct his patient in the care of the human frame, in diet and in the cause and prevention of disease.”

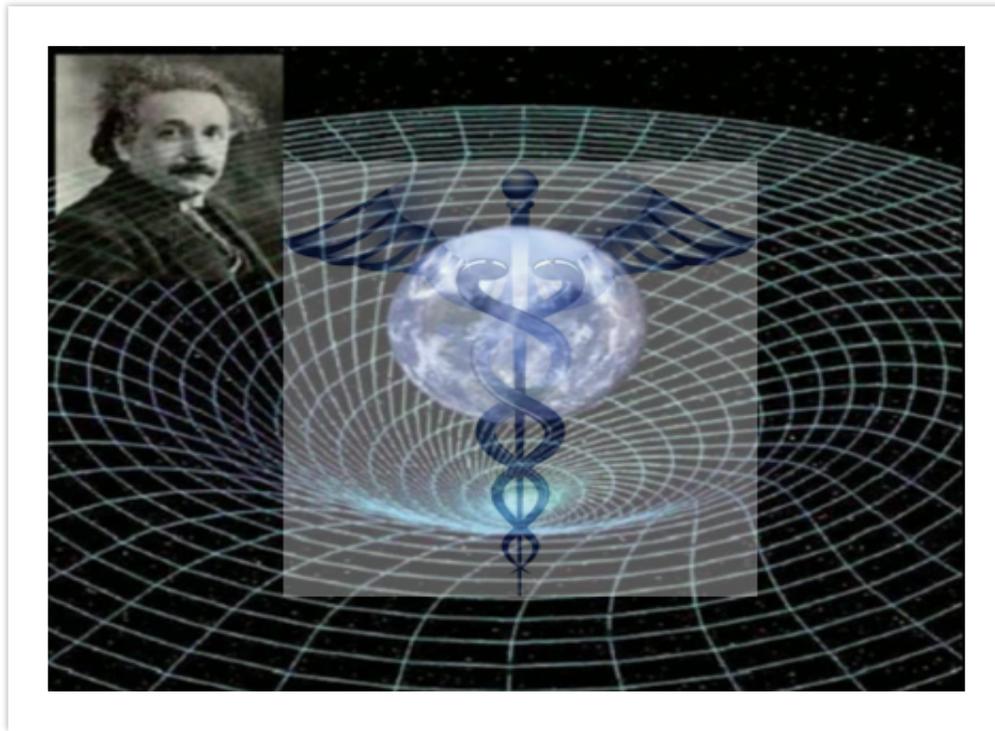
– Thomas Alva Edison.

Take your cod liver oil.

Here's to your health!

Chapter 9 References

Chapter 10



Unified Disease Theory

Albert Einstein made contributions to our understanding of Physics and nature that he was uniquely able to enumerate. The work he left unfinished, and likely will never be solved, is the “Unified Field Theory.” If Einstein was a doctor or medical researcher you can be sure he would have discovered and defined the “Unified Disease Theory” for chronic diseases of aging.

Einstein made another contribution to our basic understanding of how to solve (or not solve) puzzles. He famously stated, “Insanity is doing the same thing over and over again and expecting different results.” In a harsh reality, modern medicine keeps doing the same thing and we suffer from an epidemic chronic diseases. What medicine repeatedly does is treat symptoms, not causes of disease. They lower cholesterol, give pain relievers, blast tumors, offer mood-altering drugs, lower blood pressure, and quell stomach acid. Do any of the medications you are taking attack the fundamental cause of your illness? You know better.

To give modern medicine its due, root causes of chronic diseases are more complex compared to slapping a blood pressure cuff on a patient. Clearly the causes of chronic diseases have evaded the greatest medical minds of the past century – or have they? Many of our diseases can be explained by a combination of theories presented over 150 years ago by medical giants Louis Pasteur and Claude Bernard. And many researchers are championing new studies based on these classic thought leaders. Indeed, Dr. Alzheimer, for whom the disease is named, had a hypothesis about microorganisms and their linkage to the senile plaques of Alzheimer’s disease. This is an important extension of the “Germ Theory” postulated by Pasteur and others back in the mid 1800s.¹

Illness-Wellness Continuum

Dr. John Travis first articulated this concept in 1972. Simply put, Dr. Travis believed that the standard approach to medicine, which assumes a person is well when there are no signs or symptoms of disease, was insufficient. This led to his development of the Continuum. Our Chronic Disease Temperature™ is designed to measure where someone is on this continuum, especially if they are symptom-free.

According to “The Wellspring:”²

“Most of us think of wellness in terms of illness; we assume that the absence of illness indicates wellness. There are actually many degrees of wellness, just as there are many degrees of illness. The Illness-Wellness Continuum illustrates the relationship of the treatment paradigm to the wellness paradigm, Figure 10.1.”

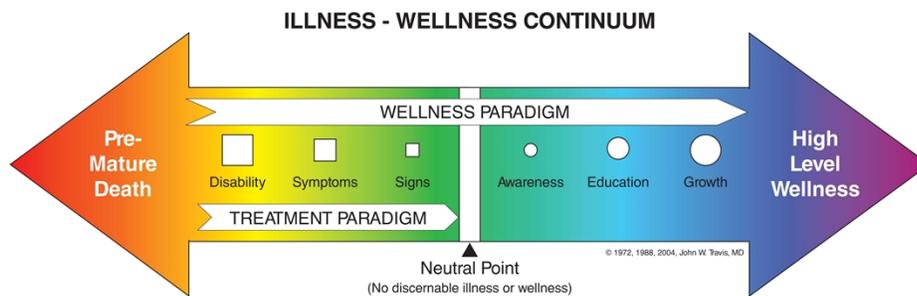


Figure 10.1. Illness – Wellness continuum.

Moving from the center to the left shows a progressively worsening state of health. Moving to the right of center indicates increasing levels of health and wellbeing. The treatment paradigm (drugs, herbs, surgery, psychotherapy, acupuncture, and so on) can bring you up to the neutral point, where the symptoms of disease have been alleviated. The wellness paradigm, which can be utilized at any point on the continuum, helps you move toward higher levels of wellness. The wellness paradigm directs you beyond neutral and encourages you to move as far to the right as possible. It is not meant to replace the treatment paradigm on the left side of the continuum, but to work in harmony with it. If you are ill, then treatment is important, but don't stop at the neutral point. Use the wellness paradigm to move toward high-level wellness.”

Dr. Travis explains this health continuum particularly well. It even does well to explain why people doing everything “right” to make themselves well, remain ill. It fits particularly well into the combined findings of Claude Bernard and Louis Pasteur.

Claude Bernard and the Continuum: Dr. Bernard coined the term “milieu interieur” that translated to homeostasis or simply internal balance. Most of us live on a simple illness – wellness continuum and our position on the continuum is determined by our internal balance. If our health is not optimal or if we suffer from an illness – we can make health-creating changes that created internal balance to slide to a level of higher wellness. As an example, some type 2 diabetics can reduce sugar and other glycemic foods, increase healthy fats, and reduce inflammation – thereby effectively reversing their diabetes.

Louis Pasteur and the Continuum: Some of us “step off” this simple continuum. We can make healthy changes, reestablish internal balance, yet cannot seem to make gains in our health. In this case there is something that must be treated to return us to the continuum. Pasteur was an author

of the Germ Theory. Germs are a type of toxicity that prevents us from getting healthy despite efforts to regain balance. Toxicity, in general, includes:

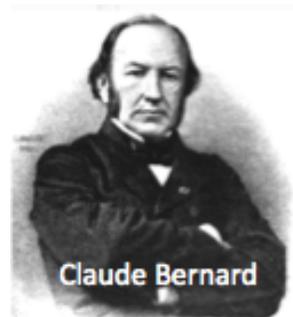
- Toxic substances in our bodies like Mercury, Lead, and Glyphosate.
- Infection, particularly “occult” (hard to find and treat) bugs from all classes: bacteria, viruses, fungi, and parasites. A classic example is the infection from a tick bite. Babesia and Borrelia burgdorferi are the prime suspects of infection caused by tick bites. These bugs can hide in your body for years before causing disease, and they are very difficult to eradicate.
- Toxic behavior: You may have made substantial changes but still feel lousy. In this case, the “insults” making you unwell have not been properly identified thus they persist. This type of toxicity

Claude Bernard: Milieu Intérieur (Internal Balance)

We could learn so much from our forebears if we would only listen. Did you listen to your parent’s advice? Do your children listen to your advice? The answer is likely “no,” until you or they achieved a higher level of “enlightenment.” Modern medicine is no different. In some respects, like a teenager, medicine seems to chide, “How can scientists from the 19th century know more than us? After all, we continue to progress in the breadth and depth of our knowledge. And we have sophisticated tools that our ancestors could not even imagine.” Yet Claude Bernard of 19th century France provides us with lessons on homeostasis (our internal balance) for which we clearly lack appreciation or understanding. Again, the proof is rampant chronic diseases that did not exist during his time.

Claude Bernard’s idea of the “milieu interieur” is a fundamental unifying concept. It is the idea that higher animals (humans included) possess complex and elegant homeostatic mechanisms to maintain a stable internal environment for the health of cells. As he famously said, “The fixity of the internal environment is the condition for free life.”³

Another important quote of Bernard’s “The living body, though it has need of the surrounding environment, is nevertheless relatively independent of it. This independence which the organism has of its external environment, derives from the fact that in the living being, the tissues are in fact withdrawn from direct external influences and are protected by a veritable internal environment which is constituted, in particular, by the fluids circulating in the body.”



The implication of Bernard’s postulate is that the body is able to adjust to changing conditions, both internal and external, and sustain good health. Let’s take external temperature as an example. When it’s either very hot or very cold, our bodies adjust to maintain proper internal temperature regulation, within reason. When we are exposed to infection, our healthy “milieu interieur” mounts an attack on the invader while all other processes in our body perform business-as-usual.

Our internal balance is not absolute or imperturbable. We have the power to upset our own balance. Some of the signs of imbalance are subtle and evasive while others are obvious. Obesity is an example of our metabolic physiology losing homeostasis. Alzheimer’s disease is an example of our neurological physiology losing balance. Bernard described the magnificence of the stability of our systems. We are now defining how easy it is to tear down its integrity.

Dr. Bernard is the great grandfather of experimental medicine – better put – scientific medicine. He established the general idea that our body and our health is governed by a few very important regulatory processes. These regulatory processes maintain internal balance that defines good health. Disturbing that balance creates disease.

“Experimental” (scientific) medicine is NOT what your doctor does when he prescribes a drug and then prescribes another drug when the first one doesn’t work. Your doctor is trying to relieve your individual distress, whether or not he understands why his treatment works. The medical scientist doctor, on the other hand, is not trying to relieve the distress of an individual patient; he is trying to add to the world’s knowledge of how the body functions in health and disease - so as to be able to relieve the cause(s) and cure the patient.

Bernard never practiced medicine “by prescription,” and his discoveries did not include miracle drugs or lifesaving surgical techniques. He changed the world of medicine in a different way - by showing that medical knowledge is like other kinds of scientific knowledge, and can be won by systematic experiment - both through defeat and triumph.

Dr. Bernard is credited with saying, “However good a theory may be, it is never as good as the truth or as actual fact. I do not believe there is a single theory in physiology, or even in physics and chemistry, that is actually an absolute true. Everything is merely relative. It is therefore an excellent thing to have destroyed a theory. It is a step forward, and we must not quake when a fact destroys a theory, even our own - we must investigate. There is a discovery underneath, a revolution, as they say; for science is revolutionary, and does not advance by successive additions, as people believe it does.”

He is saying we learn as much from failure as success - thus the path to knowledge isn’t a neat upward projection. In today’s context, the FDA does not require drug companies to report all their results. What results do they leave out? Failures. Thus we cannot learn from our mistakes in medicine. To compound this, research articles almost never talk about failures. We are arguably missing more than half of the information we could learn from because of the suppression of failures.

Bernard was clearly an oracle. He warned physicians of his time against the intellectual hazards of practicing medicine by the cookbook method - that is, prescribing drugs without knowing why they affect the course of a given disease.

“Experimentation (science),” he said, “is undeniably harder in medicine than in any other science; but for that reason, it is never so necessary, and indeed so indispensable. The more complex the science, the more essential is it, in fact, to establish a good experimental (scientific) standard, so as to be able to secure comparable facts, free from sources of error. Nothing, I believe, is today so important to the progress of medicine.” By the way, placing all our trust in experimentation to be performed by “for profit” drug companies is like having the fox guard the chicken coop.

Bernard eschewed statistics. He stated, “A statistical approach would encourage intellectual laziness and allow researchers to slack off in their efforts to find exact causes in medicine. We must study causes of death with great care and try to discover in them the cause of mortal accidents, so as to master the cause and avoid the accidents. Thus, if we accurately know the cause of recovery and the cause of death, we shall always have a recovery in a given case. We cannot, indeed, admit that cases with different endings were identical at every point. In the patient who succumbed, the cause of death was evidently something that was not found in the patient who recovered; this is something we must determine and then we can act on the phenomena or recognize and foresee them accurately.”

Identical experiments must have identical results. If the results are not identical, then the conditions were not identical. Bernard understood that because of the great complexity of living organisms, it is extremely difficult to produce “identical conditions” in biology and medicine, or even to find out exactly what conditions affect the result of a given experiment. Difficult but not impossible - the search must not be abandoned.

Louis Pasteur: Germ Theory of Disease



Another giant, who remains highly respected, but largely ignored, is Louis Pasteur. Pasteur, like Bernard, hailed from France and was at the pinnacle of his fame during the mid-to-late 1800s. His laboratory, at one time, commanded 10% of the research budget of France. Pasteur is credited with developing the “Germ Theory” of disease. His name is certainly attached to this theory, but less significant names in history really developed the postulate. Regardless, there is much we can learn from the Germ Theory, in the modern context of chronic diseases of aging.

Germ theory states that many diseases are caused by the presence and actions of specific microorganisms within the body. The theory was developed and gained gradual acceptance in Europe and the United States from the mid-1800s. It eventually superseded existing miasma (bad air from rotting organisms) and contagion (one disease could change into another or might manifest itself differently in different people) theories of disease and in so doing, radically changed the practice of medicine. It remains a guiding theory that underlies aspects of contemporary medicine. However, antibiotic phobia is condemning this theory to the backwaters of medicine. (Yet 21 million Americans take the statin antibiotic for life!)

Awareness of the physical existence of germs preceded the theory by more than two centuries. Discoveries made by several historical figures pointed the way to germ theory. On constructing his first simple microscope in 1677, Antoni van Leeuwenhoek was surprised to see tiny organisms, which he called ‘animalcules,’ in the droplets of water he was examining. He made no connection with disease, and although later scientists observed germs in the blood of people suffering from disease, they suggested that the germs were an effect of the disease, rather than the cause. This fit with the then popular theory of spontaneous generation. In the case of chronic disease, this is a prevailing belief of which all of us need to be acutely (or chronically) aware.

The observations and actions of Ignaz Semmelweis (antiseptic procedures), Joseph Lister (antiseptic surgery), and John Snow (medial hygiene) would retrospectively be acknowledged as contributing to the acceptance of germ theory. But it was the laboratory research of Louis Pasteur in the 1860s and then Robert Koch in the following decades that provided the scientific proof for germ theory. Their work opened the door to research into the identification of disease-causing germs and potential life-saving treatments.

Today we suffer from a myriad of diseases that may (surely) have a “germ” cause, but medicine often chooses to address symptoms rather than explore germs as a possible cause. A classic modern example is a story about a bug that causes stomach ulcers. It is an initially sad tale that has a happy ending, a Nobel Prize in Medicine.

Dr. Warren, a pathologist from Australia, made a revolutionary discovery during a routine diagnosis of diseased tissue.^{4,5,6,7,8} He made extra effort in his diagnosis due to his nascent curiosity. **Through his advanced diagnosis, he eventually was able to prove a cause/effect relationship that has profoundly impacted treatments of stomach ulcers.** Warren, along with his colleague, Dr. Marshall, hypothesized that a specific bacteria known today as H-Pylori caused stomach ulcers he was studying. At that time (and inexplicably still by some medical professionals today) the belief was that these ulcers were caused mainly by stress and other causes of excess stomach acid.

Marshall and Warren's suggestion that ulcers may be caused by bacteria was initially viewed by some researchers as absurd and outrageous. Martin Blaser of the Division of Infectious Diseases at the Vanderbilt University School of Medicine thought a 1983 talk by Marshall was "**the most**

preposterous thing I'd ever heard; I thought, 'This guy is a madman.'" In fact, these two Australians, Warren and Marshall, were not even invited to present their data at gastroenterology society meetings for many years. Blaser has since become one of the leading researchers on *Helicobacter pylori*, having changed his belief 180 degrees in the face of overwhelming evidence.⁷⁸

Dr. Paul Ewald, a Professor of Biology at the University of Louisville states, "The textbooks say in 1900 most people died of infectious diseases, and today most people don't die of infectious disease; they die of cancer and heart disease and Alzheimer's and all these things. Well, in ten years I think the textbooks will need to be rewritten to say, 'Throughout history most people have died of infectious disease, and most people continue to die of infectious disease.' It appears that many diseases we didn't think were infectious may be caused by infectious agents after all."

Dr. Ewald's words allow us to connect both Drs. Bernard and Pasteur. You see, Barnard stated, "The experimenter who doesn't know what he/she is looking for won't understand it when he/she finds it." The "it" are occult, opportunistic, often intracellular (inside the cells) pathogens. This topic was discussed in detail in Chapter 3.

Consider this simple example. When we die, there is no longer a significant interaction with the environment. Blood and lymph stops circulating and air stops filling our lungs. The Mortician quickly fills us with a preservative so we don't decay for a couple of days. What causes the decay are germs. They were there all along, in a classic battle of good and evil. Think back to the wellness – illness continuum. When we pass our immune system passes too. When we are alive, our health is really just a measure of our immune system's capability to keep us on the winning side of the war against those germs.

Some believe that Pasteur, on his deathbed, sated "Bernard was right; the Terrain (balance) is everything, the Germ is nothing." Now we know they are both critical to health and illness.

Clinicians Find the Answers

Another medical giant, Dr. Alois Alzheimer's, who characterized the first patient with the disease named after him stated, "Medical treatments must be driven by findings in the clinic that are then tested and verified in the laboratory and not the other way around." If you see what happens in the bowels of a drug laboratory, it looks, and is too far removed from a patient. Researchers test tens of thousands of compounds in "test tube" assays looking for an effect that can be translated into a drug. Dr. Alzheimer's is correct in saying this is the wrong approach.

Dr. Trempe provides a perfect example of how clinicians can advance health and medicine. This is an excerpt from "The End of Alzheimer's – A Differential Diagnosis Toward a Cure."⁹

"I did not begin my career in medicine with the goal of helping people with Alzheimer's. However I have been blessed with the opportunity to learn about disease from something far greater than a test tube in some laboratory. I learned from my patients. They dictated my career path. I am an Ophthalmologist and am also very curious. I also believe in the Hippocratic Oath and am true to its pledge, to do no harm and to help the body health itself."

"In the 1980s I gave up a lucrative practice of treating eye diseases as diseases isolated to the eye only. Back then, surgery and laser treatment was the way to go. I soon realized that my patients with eye diseases were always sick in many ways. I'm a doctor so how could I ignore this fact? Can treating the eye with a laser or surgery "cure" the reason why my patients had the eye problems

⁷⁸ In 2005, Warren and Marshall were awarded the Nobel Prize in Medicine for their discovery and the work they did to prove their thesis.

and were otherwise ill? Of course not. And, by reading the medical literature it was becoming clear at that time, that the eye disease was the symptom of a broader condition of poor general health.”

“My practice changed 30 years ago to be one where I used the eye and eye diseases as a biomarker for broader systemic (whole body) disease. The eye is quite unique for detecting disease. Using simple ophthalmic tools, eye doctors are able to perform disease “biopsy” simply by looking into the eye. Our tools magnify the tissue in the eye and some more advanced tools are able to map tissue very precisely. We are able to “see” disease happening at its earliest stages.”

“I know your cardiologist would benefit greatly in their diagnosis by opening up your chest and peering in at the tissue. Clearly you would not approve of that just for the purpose of diagnosis. However, optometrists and ophthalmologist can do the same thing, but non-invasively. The eye contains both blood vessels and nervous system tissue. We can “open” a window into your health by simply having you, our patients, open your eyes. We all have one circulatory system and one nervous system. What is happening in your eyes is, for the most part, the same thing that is happening in your heart and your brain. This is a much underappreciated and under utilized part of medicine.”

“When I started diagnosing and treating eye patients for systemic (whole body)diseases, back in the 1980s, their eyes did indeed get better. In fact they got much better and stayed much better compared to people who were treated as if their eyes existed in isolation from the rest of the body. Most importantly, many patients with serious disease beyond the eye reported back to me that these other conditions improved upon with whole body treatments. One of those conditions that improved was Alzheimer’s disease.”

“I also learned from my patients what does not work. I never use my patients as a laboratory but medicine, as a science, is constantly evolving and new ideas are the norm. One such ideas was the value of antioxidants. Major National Institutes of Health studies promoted the use of antioxidants. However, when I suggested patient take, for example, vitamin E, they reported back to me that their eye got worse. Sure enough, when I examined these patients, they did show more bleeding, swelling, and scarring. When I removed them from the vitamin, their eye problem resolved. We can learn so much from patients.”

“Dr. Alzheimer for whom Alzheimer’s disease is named taught us that medical development should start with patients in the clinic, followed by laboratory research to understand why. Today we have it backwards as drug companies start in the test tube and hope their results will extrapolate into humans. Few, if any, major advances in medicine have occurred using this method.”

30 years later and we listen to the former cheerleader, now a drug rep but we are not listening to medical pioneers.

Unified Theory of Disease

Our immune system is designed to keep us healthy and protect us from disease. To understand immunity is to understand disease. We need not look much further than our mouths, nose, and skin when trying to understand the mechanisms of health and disease. This is our primary interaction with our world. The health of our immune system stems from this interaction. The next place to look is at mom and dad. No we are not talking about your genetics. In fact, the major concern is what mom and dad took into their mouths, nose, and skin leading up to, during, and after (breastfeeding) a pregnancy.

“The time to start preventing Alzheimer’s is with the unborn child.”

- Dr. Clement L. Trempe, 41 years on staff of Harvard Medical School

Parents: Take Care of Yourself to Give Your Offspring a Chance

“The ability of mother to provide nutrients and oxygen for her baby is a critical factor for fetal health and its survival.” This is from an article titled, “Maternal nutrition during pregnancy and health of the offspring.”¹⁰ “Failure in supplying the adequate amount of nutrients to meet fetal demand can lead to fetal malnutrition. The fetus responds and adapts to under nutrition (which means adequate calories but insufficient vital nutrients) but by doing so it permanently alters the structure and function of the body. Maternal over nutrition (again, calories, not vital nutrients) also has long-lasting and detrimental effects on the health of the offspring.”

“There is growing evidence that maternal nutrition can induce epigenetic modifications of the fetal genome. Only relatively recently has evidence from epidemiological and animal studies emerged suggesting that fetal responses to the intrauterine environment may underlie the prevalence of many chronic diseases of adulthood including Type 2 (non-insulin-dependent) diabetes. It is now of crucial importance to gain the understanding of the molecular mechanisms underlying the relationship between fetal alterations to the intra-uterine environment and their long-term effects on the health of an individual.”

“Recent findings suggest that coronary heart disease and stroke, and the associated conditions, hypertension and non-insulin dependent diabetes, originate through impaired growth and development during fetal life and infancy. These diseases may be consequences of 'programming', whereby a stimulus or insult at a critical, sensitive period of early life results in long-term changes in physiology or metabolism. Animal studies provide many examples of programming, which occurs because the systems and organs of the body mature during periods of rapid growth in fetal life and infancy. There are critical windows of time during which maturation must be achieved; and failure of maturation is largely irrecoverable.”¹¹

Think about the height your child achieves. The ultimate height a child reaches has less to do with genetics and more to do with nutrition and disease starting at conception and ending in adolescence. This is not something that can be “fixed” once the adolescent hit teenage years.

People all too often do not respond to facts or do not understand the consequences of their behavior on their children. Consider results of a study titled, “The Effects of Healthy Diet in Pregnancy.” Before education on the necessity of fruits and vegetables, 1.9% of participants met fruit and vegetable guidelines. After an education program, a paltry 5.6% complied.

This is not a solution to ignorance or obstinacy. However, most of us are just victims of Madison Ave., and ad campaigns designed to create corporate profits. We suggest that you follow our consumption pyramid (Appendix 2) and augment the consumption pyramid with the recommendations included in our “Prevention” chapter. Fish oil supplements or increasing fish consumption beyond that inferred by the pyramid is advisable during and after pregnancy for both mother and newborn. In addition, strive to be infection-free. If you are planning to become pregnant test for infection, including subclinical chronic disease-causing species. Treat as required prior to becoming pregnant. And, if antibiotics are needed, participate in a gut flora rehabilitation program.

Infection caused by gum disease is very common and easily treatable but has severe consequences to the growing fetus. Growing evidence suggests that poor oral hygiene during pregnancy can adversely affect the health of newborns. Bad oral health may induce miscarriage and premature birth as well as inhibiting the growth and development of the unborn child. Clearly, there are many causes for problems that can arise during pregnancy and oral infection belongs on that list. Yet, the adverse effects of this issue are SO PREVENTABLE.

A landmark study of 400 pregnant women with periodontal disease showed that just 1.8 percent of women who were treated for the disease during pregnancy gave birth early, compared with 10.1 percent who were not treated. Infections are thought to account for between 30 and 50 percent of all premature deliveries. Visiting your dentist more frequently during pregnancy is certainly an ounce of prevention that may provide 180 pounds of healthy cure.

An article titled, "How Mitochondrial Disease Is Passed Down From Mother To Child: Predicting Severity," delves into genetic factors that predispose the child based on the parents. However, the authors did not consider environmental factors that impact the genome. Here is the summary to this paper:

"Scientists have shown for the first time how a particular family of diseases are passed down from mother to child and how this can lead to the severity of the disease differing widely. The research offers new hope of being able to predict a child's risk of developing a mitochondrial disease which can cause muscle weakness, diabetes, strokes, heart failure and epilepsy." ¹²

A shocking fact is that pathogens infecting the mother can impact her genome (genetic makeup) and that of the fetus. A landmark paper explains how pathogens may alter the genetics of the host (us), resulting in epigenetic dysregulation and subsequent cellular dysfunctions that may manifest in or contribute to the development of pathological changes (e.g. initiation and progression of malignant neoplasms (cancer) and immunodeficiency).

"Bacteria infecting mammals may cause diseases in a similar manner, by causing hypermethylation of key cellular promoters at CpG dinucleotides (promoter silencing, e.g. by *Campylobacter rectus* **in the placenta** or by *Helicobacter pylori* in gastric mucosa). I suggest that in addition to viruses and bacteria, other microparasites (protozoa) as well as macroparasites (helminths, arthropods, fungi) may induce pathological changes by epigenetic reprogramming of host cells they are interacting with. Elucidation of the epigenetic consequences of microbe-host interactions (the emerging new field of patho-epigenetics) may have important therapeutic implications because epigenetic processes can be reverted and elimination of microbes inducing patho-epigenetic changes may prevent disease development."

The preceding is part of an abstract for a paper titled, "MICROBE-INDUCED EPIGENETIC ALTERATIONS IN HOST CELLS: THE COMING ERA OF PATHO-EPIGENETICS OF MICROBIAL INFECTIONS." ¹³

"Mothers May Pass Lyme Disease to Children in the Womb," according to an article in Scientific American. ¹⁴ Here is an enlightening excerpt.

"Ruth Kriz, a Washington, D.C.-based nurse practitioner who specializes in a painful bladder syndrome, interstitial cystitis, which can be caused by tick-borne infections, including Lyme, says that she, too, has seen cases of Lyme that have been passed mother-to-child. She also is not surprised that studies have been inconclusive. Kriz noted that when a woman is first infected with Lyme, her immune system may mount a robust response that protects the fetus if she becomes pregnant. But over time, as the disease takes its toll, her immune system weakens."

"I've seen women who were infected long before they were pregnant and I've checked their children – the first-born is in good shape, but the third-born is badly infected," Kriz said. "I've seen it in several families."

The transmission of disease from mother to child even has a name, "Vertically transmitted infection." Wikipedia defines this term as:

“A vertically transmitted infection (or mother-to-child transmission) is an infection caused by bacteria, viruses, or in rare cases, parasites transmitted directly from the mother to an embryo, fetus, or baby during pregnancy or childbirth. It can occur when the mother gets an infection as an intercurrent disease in pregnancy (a disease not directly caused by the pregnancy – thus preexisting). Nutritional deficiencies may exacerbate the risks of perinatal infection.”

The types of infections fall into what we call the usual suspects. Chickenpox and shingles, Hepatitis, C[14] (D), E, Enteroviruses, AIDS (HIV infection), Parvovirus B19 (produces Hydrops foetalis secondary to aplastic anemia), Toxoplasmosis, Other (Group B Streptococcus, Listeria, Candida, Lyme disease), Rubella Cytomegalovirus, Herpes simplex, Everything else sexually transmitted (gonorrhea, Chlamydia infection, Ureaplasma urealyticum, human papillomavirus), Syphilis.

Vertically transmitted infection may be the cause of many diseases our society, particularly our youth suffer. Any “unexplained” disease like type 1 diabetes, ADHD, Autism and PANDAS, to name a few, may be derived from the mother (and father).

This is not a new concept yet few in the medical profession are doing anything about this. That’s way, for example, **our premature birth rate is at 12% of all births**. The U.S. ranks around 75th in the world for premature births (a bad number). We are tied with Somalia and Vietnam.

Premature Births: The U.S. is tied with Somalia and Vietnam at ~78th among global nations.

This is shockingly unacceptable – and it’s all tied to inflammation and infection.

In 1995, researchers from Sweden showed that type 1 diabetes was markedly more prevalent in 15 years olds, or younger, who were born to mothers who had enterovirus during pregnancy.¹⁵

Where does the incompetence and corruption in our modern medical system end? These are known but largely ignored risk factors for devastating diseases.

Mother’s Gut = Babies Gut = Babies Health

Right after birth, trillions of microbes rush into a baby’s gut and start to grow. Most of these critters come from the mom’s kin, birth canal, and gut. There is rapidly increasing evidence for human-microbe interaction at virtually all levels of complexity, ranging from direct cell-to-cell communication to extensive systemic signaling, and involving various organs and organ systems, including the central nervous system. As such, the discovery that microbial composition is associated with alterations in behavior and cognition has significantly contributed to establishing the microbiota-gut-brain axis as an extension of the well-accepted gut-brain axis concept.

In a paper titled, “Microbial genes, brain & behavior – epigenetic regulation of the gut-brain axis,” the authors propose a hypothesis for many diseases that are turning up in our young.¹⁶

1. **Gut microbes can alter human behavior**
2. **Gut bugs help translate gene messages into actions.**
3. **Gut bacteria should be viewed as an epigenetic entity (that is, it’s makeup regulates the expression of your genes – positively or negatively)**

The makeup of your gut bugs (microbiota) may play a key role in regulating how your genes are expressed – that is,

how your body works.

Rather UNIFYING – isn't it!

The consequences of this microbiota passed to the infant has devastating long-term consequences. A 2016 research paper states, “Gut microbiota bacterial depletions and altered metabolic activity at 3 months are implicated in childhood atopy and asthma. We hypothesized that compositionally distinct human neonatal gut microbiota (NGM) exist, and are differentially related to relative risk (RR) of childhood atopy and asthma.”¹⁷

The Wall Street Journal performed a nice translation of this heady article.¹⁸ Some key points from the article are excerpted below.

“Researchers have found a connection between the hundreds of microbe species in a baby’s gut and allergy risk. Variations in just four kinds of bacteria—Bifidobacteria, Lactobacillus, Faecalibacterium, and Akkermansi—heightened the risk of allergies and asthma. They tracked 298 children from birth through early childhood and documented the relationship between the fledgling Microbiome and chronic ailments.”

“Infants with the lowest levels of critical gut bacteria at the age of one month—who were mostly boys—were more likely to be allergy-prone by their second birthday. They were more likely to show signs of asthma by the time they reached the age of 4 years, the researchers said.”

“Researchers think gut bacteria could be tuning or mistuning the immune system. “What we think is going on is that the immune system is not being tweaked in the right way,” said study co-author Dr. Christine Johnson at the Henry Ford Health System. “We think of allergy and asthma as the canary in the coal mine—one of the first indications that someone’s immune system is not as optimal as it should be.”

“Dogs tracking in and out of the home also can boost the diversity of the bacteria in that newborn Microbiome and lower the risk of allergies, Dr. Lynch and her colleagues reported in a 2014 study in the Proceedings of the National Academy of Sciences. (Even the practice of cleaning a baby’s pacifier by sucking on it promotes an exchange of bacteria and lowers the baby’s risk of developing allergies, researchers at Sweden’s University of Gothenburg reported in a 2013 study published in the journal Pediatrics.)”

Hygiene Hypothesis

I wrote an article in 2014 titled, “Can you be too clean? The children of the clean, well-do-do, are experiencing an epidemic of autoimmune diseases.”

You can never be too rich or too wise, but you certainly can be too clean. It turns out that some among us understand this concept because they haven’t been jaded by marketing blitzes. Who might they be? Babies! Babies and toddlers instinctually pick things up to explore and they put many of those “things” in their mouths. This evolutionary response is not devised to kill them by choking because we evolved to outside, on clean dirt. The soil is nature’s stomach, mimicking our own, “digesting” most of which it comes in contact, dead plants, rocks, and organisms, while producing a fertile growing environment and cleaning water. The new “big thing” in medicine is a healthy Microbiome (bacteria) in our gut. It turns out that our gut Microbiome gets a healthy start from the Microbiome (including the bacteria) of the earth.

Is there science to back up this claim? Much more than you might think, actually. For example, a group from Johns Hopkins Children's Center have recently reconfirmed what became known, in 1989, as the "hygiene hypothesis." Infants and toddlers who are exposed to a dirty environment, allergens and bacteria, by year one are more effectively protected against future allergies and asthma. The now-classic example of the "dirty" environment comes from the farm. Children growing up on farms have lower allergy and asthma rates compared to city dwellers, attributed to their regular exposure to microorganisms present in farm soil.

We wonder if it is safe to expose our youngest to dirt and other natural yuck. Yes, our youngest have more protective immune systems, in some ways, compared to adults. Specifically, they have a higher number of white blood cells than us and are better able to respond to new infections. What is lacking is a strong adaptive immune system – and that develops slowly, over time, upon exposures to pathogens.

So what is all this dirty exposure doing for our kids? The immune system's primary role is to distinguish deadly species from beneficial, and those simply innocent. To work effectively, our immune system needs to be "primed" by exposure to a diverse range of organisms at an early age. In this way it learns to distinguish between good, bad, and harmless. If not exposed to a wide array of species, it may mistakenly see a harmless pollen grain as something dangerous and trigger an allergic reaction. We also know that bacteria and fungi compete. Fungi are often associated with allergies, and it could be that high diversity of bacteria keeps the fungi in check.

Year one appears to be an important inflection point in developing immunity. It is also passed from mother to the breast-feeding infant. Healthful bacteria and other immune indicators have been reported to be lower in overweight mothers and higher in farming mothers, who inhabit a microbial enriched environment.

One of the most practical recent examples of "priming" our kids immunity came from a study of peanut allergies. The findings were that feeding young children food containing peanuts beginning in infancy, rather than avoiding such foods, markedly reduced peanut allergies when evaluating these children at age 5.¹⁹ Indeed some in the peanut-feeding group still has the allergy later in life, but the study did not consider the environment of the baby, that is, the hygiene hypothesis was not part of this study.

It turns out maybe you can be too rich! The rate of type-1 diabetes, an autoimmune disease, among the children of Pakistanis who migrated to the United Kingdom is the same as the rate among kids whose parents were born there and about 10 times higher than the incidence in Pakistan. Similar environmental effects have been seen elsewhere for other allergies and autoimmune diseases. Socioeconomic factors appear to play a role. Autoimmune diseases and allergies are less common among those of low socioeconomic status. In Germany, asthma rates are higher among residents of West Germany, which is more developed than the former East Germany.²⁰

A region of Russia on the border with Finland is called Karelia. Compared to their direct Finnish neighbors, they appear to be approximately 50 years behind in terms of societal development, mainly for economic reasons. These people have much higher rates of diseases modern society has eradicated but 10-times lower rates of autoimmune disease including celiac.²¹

A message of hope and a roadmap is provided by the author of the must-read, "The Microbiome Solution," Dr. Robynne Chutkan. She provides us a roadmap for compensating for our past "too clean," (mothers and babies alike) through her "Live Dirty – Eat Clean" lifestyle guide. The process starts with "Rewilding." If this a far-flung idea? Hardly. We see this all the time when mankind first interferes with nature and then works to rebalance it. When we remove or abolish a species, other species, sometimes beneficial and often times unexpectedly detrimental, flourish. But when we

reintroduce the species (if possible) the original balance is frequently reestablished due to natural predatory behaviors. The same thing happens in our digestive tract. When we do not develop proper a proper microbial biome, other often deleterious species may proliferate either in the gut or elsewhere in response to affected immunity. Dr. Chutkan demonstrates daily in her practice that rebalancing the Microbiome often restores balance and good health whatever the cause.

Today she is an expert at rebalancing her patients. But she too went through the school of hard knocks. Her own daughter was born the classical medical way, drugs, C-section, and antibiotics given to her baby, without her knowledge, “just in case.” And, after her birth she did what most of us in modern society do, kept her very clean and protected. As a consequence Dr. Chutkan says, “My daughter had more visits to the doctor before she was in preschool than I’ve had in my entire life.” And she does not wonder why.

I asked Dr. Chutkan if there were many doctors in her profession who treated patients as she did. She answered the question without really answering it simply by stating, “In my profession doctors are paid about 10 times more for a procedure compared to an office visit, and a proper office visit takes twice as long.”

David Suzuki, the world famous ecologist infers that getting dirty in your yard may not have the impact it once had. He states, “when comparing allergies of adolescents living in houses surrounded by bio diverse natural areas to those living in landscapes of lawns and concrete, we find people surrounded by a greater diversity of life were themselves covered with a wider range of different kinds of microbes than those in less diverse surroundings. They were also less likely to exhibit allergies.”²² The practical interpretation is that you need to bring your children out to the farm to get dirty to have most impact. Dr. Suzuki’s solution? “We need to support conservation of natural areas and the diverse forms of life they contain, plant a variety of species in our yards, avoid antibacterial cleaning products and go outside in nature and get dirty — especially kids. Our lives and immune systems will be richer for it.”

Healthful habits to prevent and avoid allergies and autoimmune disorders is life-long pursuit. Mom, you must be assessed for infection and eradicate them prior to becoming pregnant. Also, please pass immunity to the fetus and newborn through breast milk. So mom, boost your immune system with raw, natural, fermented, probiotic diet and get a good helping of the outdoors. Strive for a natural birth and do not let the “Meds” bully the baby from you. Hold your newborn immediately and as much as is practical. Skin-to-skin contact is the babies first exposure to our outside environment. Carefully, but deliberately, introduce all sorts of natural foods to your newborn and growing toddler, especially during the first year. Transition your baby onto the natural foods you ate during (and hopefully before) your pregnancy. Avoid antibiotics as they substantially upset gut flora, thus immunity. Make your doctor prove the necessity of these and other drugs and don’t accept “just in case” medications. Lastly, expose your child to the natural world right away, including other children (yes they are natural), animals, and especially clean earth.⁷⁹

Of course, what is good for the Gosling is also good for the Goose and Gander. We discussed the topic of prevention, which is the foundation for avoiding the mechanisms of disease, in Chapter 9.

Inflammation and the Unified Theory of Disease

To recap:

- Something(s) happens to our bodies to upset our milieu interieur, our internal homeostasis, our internal balance. This makes us vulnerable to disease.

⁷⁹ Consider reading “Eat Dirt,” by Josh Axe

- Now vulnerable, exogenous (external to our bodies) or endogenous (internal to our bodies) toxins and pathogens (bacteria, fungi, virus) proliferate opportunistically and cause disease.

Where does inflammation fit into this picture? Everywhere! Bodies that are, or appear free from disease, but are out of balance, have higher baseline levels of inflammation.

Inflammation is the bridge to the unified theory of disease. Our immune system and white blood cells in particular, are the bridge to the causes of inflammation, thus the causes of disease. Now may be a good time to reread Chapter 5. Here is our summary on white blood cells from that chapter.

“White cells (leukocytes). There are different types of white cells which are called neutrophils (polymorphs), lymphocytes, eosinophils, monocytes, and basophils. They are part of the immune system. **Their main role is to defend the body against infection.** Neutrophils engulf bacteria and destroy them with special chemicals. Eosinophils consume foreign substances, particularly substances related to infection with a parasite. Monocytes respond to inflammation signals and move quickly (approx. 8–12 hours) to sites of infection in the tissues and divide/differentiate into macrophages and dendritic cells to elicit an immune response including the consumption of foreign particles in the body. Basophils help to intensify inflammation. Inflammation makes blood vessels leaky. This helps specialized white blood cells get to where they are needed. Lymphocytes have a variety of different functions. They attack viruses and other pathogens (germs). They also make antibodies which help to destroy pathogens.”

Toxins fit nicely into this concept. They create imbalance, enhance vulnerability, which leads to more infection as is seen by a rise in inflammation.

Looks like our white blood cells understand the unified theory of disease.

The largely unanswered question is, why do some people get dementia, other cardiovascular disease, and others cancer? This is a tricky question that will require more study. However, each of us have what is referred to as a phenotype. This is a combination of our physiology, genetics, and, most importantly our lifetime of exposures to the external environment. Your phenotype is unique to you.

Despite differences in phenotype, we do tend to get the same chronic diseases; heart disease, diabetes, and Alzheimer’s as examples. Recent research illustrates that certain pathogens are found in specific tissue, generally. For example, H-pylori is a bug usually found in the stomach and it leads to a variety of gastric disorders including ulcers and stomach cancers. Chlamydia pneumoniae is often found in the lining of blood vessels, thus this bug causes heart disease. And it is highly implicated in Alzheimer’s. HIV is a virus that suppresses the immune system and it creates a great and rapid imbalance in our internal environment. Pathogens like the TB bug then are able to cause disease, of the lungs or brain, for example, and lead to the death of the AIDS patient.

Currently there is a scare about Ebola. This is a viral disease with no cure. A man from Liberia came to the United States and was treated in a Dallas hospital but died shortly thereafter. Staff were exposed to this scourge yet no one else died. A nurse, highly exposed to the virus and with initial symptoms recovered quickly. She had a strong, disease fighting, immune systems that prevented the disease from taking hold.

Figure 10.2 helps explain the unified disease theory while shedding light on why we have vulnerable populations – those being our very young and our very old.

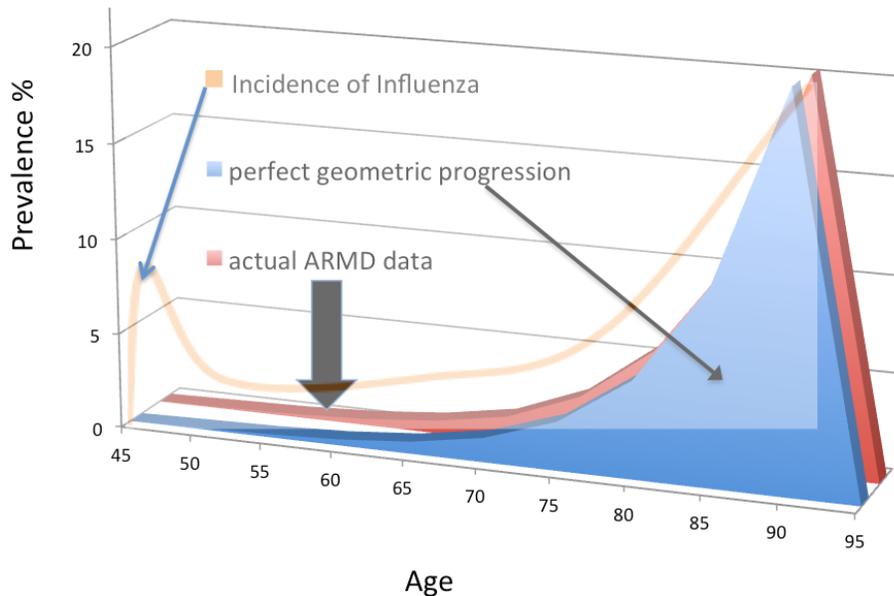


Figure 10.2. Incidence of influenza virus, as determined by hospitalization, by age and prevalence of age related macular degeneration (ARMD) by age as compared to a perfect geometric progression.

This chart shows hospitalization associated with the influenza virus. What it really describes is the state of our immune system health (our homeostasis). When we are very young, 0-4 years old, our immune system is immature but developing and adapting. After age 65, our immune system is in rapid decline. It follows a geometric progression (asymptotic curve). Our immune system decay (immunosenescence) obeys Gaussian statistics. Einstein would understand and appreciate the simplicity of this. This behavior is a fundamental property of nature.

Corroborating the influenza data at the “older” end of the chart is the incidence rate of age related macular degeneration. The incidence goes up as a perfect geometric progression. The curve in the front of Figure 10.1 is a perfect mathematical geometric progression and the curve in the back is the incidence of macular disease. They are identical!

If you do not buy into the theory that diseases of aging conform to Gaussian statistics, cogitate over this chart. Here we have plotted the prevalence of age-related macular degeneration and a simple, perfect geometric progression (1, 2, 4, 8, 16 and so on). The two plots are identical. Immunosenescence, the decay in our immune system, is geometric. Our immune system decays geometrically with age and diseases of aging go up geometrically with age.

The decay in our immune system follows a perfect geometric progression.
 (as illustrated through incidences of macular degeneration)

When we reach the tail end of a geometric progression, pain results. Here are some examples.

- Running a 100 meter dash. Its easy to run in 20 seconds but nearly impossible to run it in 10 seconds.

- Driving your Chevy to 150 mph. I cruises well at 100 mph, but press the accelerator and you will quickly learn what a geometric progression feels like. Since it's a Chevy, it's likely to blow a gasket.
- Diving to 20 feet. Most of us can make it to 15 feet, but then statistic catches up to us. We gasp for breath and get water instead.

We are soon facing the consequences of another geometric progression, Figure 10.3.

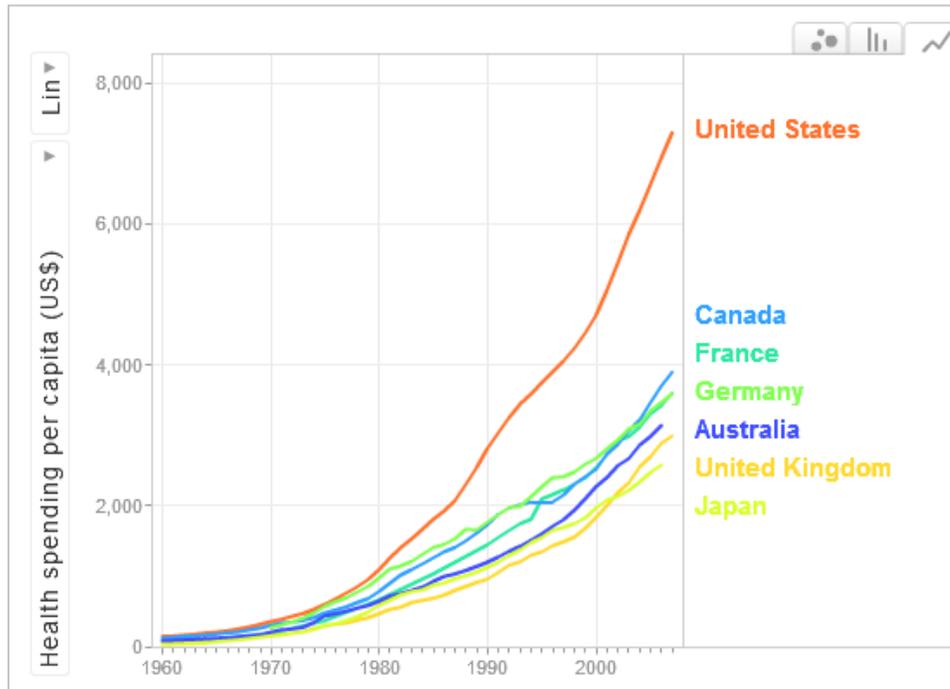


Figure 10.3. Healthcare spending in the U.S. France, Germany, United Kingdom, and Japan from 1960 to 2010.

Yes, our healthcare costs are increasing geometrically (somewhat at least). And with any geometric progression, enormous pain is about to strike our society.

What you and me – all of us – want to be, is an outlier. Malcolm Gladwell wrote a book with that title. One common denominator of outliers, according to Gladwell, is committing 10,000 hours. When you commit 10,000 hours to something, like Steve Jobs and the vision for the personal computer, you become fluent, and expert. You can be an outlier but like all outliers, it will take 10,000 hours worth of effort to learn about, understand and maintain your internal balance. Are you willing to put in the time and effort?

The time to start is now, if you are young, not when you are on the “upswing” of the geometric curve. But it's never too late. Older people replace the cells in their bodies at the same rate as the young. Supply those stems cells with the internal balance necessary for optimal health.

What Can You Do to Help the Cause of Health?

Every business requires customers to thrive. The standard-of-care healthcare industry is no longer earning your business. First, take your own health, particularly the prevention of disease, into your own hands. We give you a guideline on how to do that in Appendix 2. Second, go to a functional, integrative, or natural doctor. These doctors will work prevention with you and will present many

treatment as a first-resort that will often solve your problem if you listen to and comply with their advice. Synthetic drugs should be your last resort.

Doctors who take cash payments are best positioned to keep or make you well because:

- They are less likely to prescribe the modern drugs that are manifestation of a business, not a health decision.
- Since they are not looking at their computer screen as much, they are more likely to look at, and listen to you.
- The insurance/payer system restricts what those regular doctors can do. What if your “cure” lies OUTSIDE of the payer system’s narrow set of protocols?
- Functional, Integrative, and Natural doctors take a whole body, health continuum view of your health. Whereas your standard doctor shuttles you off to a myriad of specialist and no one coordinates your care. Remember the story about Steve Jobs earlier in this book? He couldn’t get coordinated care from one place – Stanford!

Consider this simple case study – a plea from dentists to the medical establishment to at least be considered as part of the team.

Authors of “Integrating oral and General Health Care”²³ put forth a sensible, but ignored program that calls for a starting point to reestablishing the concept of “grand rounds.” This concept, first popularized at Johns Hopkins and perfected by Charles Mayo and the Mayo Clinic (but since abandoned due to financial reasons) brings medical experts together to the patient, to determine cause, effect, and treatment. Medical specialization has moved very far in the wrong direction from this concept.

Donoff, writing in the New England Journal of Medicine, makes many valuable, actionable points of which we all must be advocates. Here are some highlights.

“Integrating oral health into medical coverage and care reduces costs, especially for patients with chronic diseases such as diabetes or cardiovascular disease. We believe that it’s time to mobilize once again to improve oral health in the United States, this time in a more fundamental way - by ending medicine’s artificial and harmful separation between the mouth and the rest of the body.” Of course this is true for all specialties.”

“Still, 15 years of research, reports, and recommendations addressing the dental-medical divide have resulted in little serious action to address our country’s oral health deficiencies.”

“Disparities in coverage of and access to dental care services result in the imposition of a high-cost burden on hospital emergency departments.” We believe that a national effort is needed to integrate oral health care and medical care, particularly at the primary care level, where dentists and physicians could collaborate in managing the chronic diseases of their common patients.”

“Meaningful integration and coordination cannot happen when care and services are not paid for.” (note how the payer system often doesn’t pay for the most basic medical preventative necessities).

“The second priority is to integrate general medical and dental care in both practice and workforce education. The separation between oral health and systemic health does not serve the needs of patients, who would benefit from efficient communication between their oral health care and primary care providers, including through the use of integrated electronic health records. If truly integrated health homes for patients are to be achieved, dental training programs and practices should interact more effectively – in terms of curriculum,

quality improvement, and health information systems – with medical training progress and practices, especially those in primary care, as well as with other health professions.”

“Needed policy changes can be implemented if we educate the public to see oral health disparities and lack of access as health issues as well as economic ones, develop new policy solutions and strategies, and build the necessary political will.”

“Of course, the ultimate goal is care, not insurance, but we know that incorporating coverage of oral health into health insurance reduces costs and improves health.”

We responded to this article with the following letter to the editor of the New England Journal of Medicine.

“The recent perspective on “integrating Oral and General Health Care” turns out to be a fitting tribute to the centennial anniversary of a publication by Charles Mayo titled, “Mouth Infection as a Source of Systemic Disease.”²⁴ Frank Billings is the physician who launched the modern discussion about oral and whole body disease starting with his landmark publication that showed causation between chronic focal infection, Arthritis and Nephritis.²⁵ His understudy, Dr. Edward C. Rosenow educated Mayo on Billings’ work and ultimately, under the leadership of Mayo, over 300 research papers were published on the subject of Focal Infection.

The abstract from Mayo’s 1914 paper has profound ramifications for health today. Mayo stated, “It has taken a long time for the general public to appreciate the full role of infection in the production of death, while even in the medical profession, more has come from the study of infections in the prevention of disease than in increasing the means of cure of disease, great as have been the results of treatment. Since all animal life depends on some other form of cell life, vegetable or animal, it seems but the part of all life to carry on this process of germinative development and maturity. It is only the resistance of healthy cells that prevents the inroads of the myriads of ever-present bacteria and animal parasites which are striving to get a foothold that they may in turn carry on their life work. Disease, then, is an inflammatory process from infection and the efforts at repair.”

Today, in both society, and in medicine, we are reticent to accept that we suffer from a cascade of disease associated with chronic inflammation that is caused by infection which invade cells that have lost resistance. Most of the major chronic inflammatory diseases are rising to epidemic proportions with few indications showing decline despite well over \$3 trillion being spent on healthcare in the U.S. annually. Clearly either these diseases are very complex or we are over-complicating cause/effect.

Over the past 30 years, Dr. Trempe has observed a strong anecdotal relationship between patient’s disease burden and their oral health. In his practice he sees an atypically high percentage of elderly patients with a myriad of chronic co-morbidities including Alzheimer’s, macular degeneration, glaucoma, diabetes, and cardiovascular diseases. When he treats or advises patients on proper treatment, including those associated with the finding of Mayo and Billings, and they follow the recommendations, many, if not all of these comorbidities stabilize, improve, and often resolve. This matches the finding of Charles Mayo – the founder of the Mayo Clinic and Dr. Weston A. Price.

It appears, as Donoff et. al. point out, the integration of medicine, including dental health (grand rounds) is desperately being avoided in our profession. Dr. Trempe conducted a casual survey of about 100 patients over a 3 month period to determine how whole body health is considered by the local medical community in Boston – predominantly Harvard Medical School clinicians. Once simple question was asked of each patient, “Did your PCP, internist, or other doctor ask you about your oral hygiene and health?” Of the 100 or so questioned, only 1 responded in the affirmative.

Our dental colleagues should not feel disparaged. Ophthalmology is similarly isolated from the central practice of medicine despite numerous studies and articles showing the connection between eye and whole body health. A 2006 publication titled, *“A Sick Eye in a Sick Body? Systemic findings in patients with primary open-angle glaucoma,”*²⁶ addresses well the connection. The Age-Related Eye Disease Study conducted by the National Institutes of Health through publication #13²⁷ shows a significant increase in both morbidity and mortality in those with chronic eye conditions such as cataract and macular degeneration.

There are many other major studies that reach the same conclusion. Even though Joan Miller²⁸ at Harvard Medical School and Frederick Ferris²⁹ at the National Eye Institute corroborated the results publically, patients and doctors outside of ophthalmology go uninformed about the future risk of disease and early death of patients diagnosed with these eye conditions. To make matters worse, ophthalmologists, including those mentioned above, seldom if ever inform the patients of their risk or refer them to doctors who specialize in the systemic diseases associated with the eye pathologies.

As is true for oral hygiene, proper patterns of ocular care must start with our youth. Our children go underdiagnosed for eye conditions and the consequences impact the individual and society. According to the AOA,³⁰ vision disorders are a common pediatric health problem in the United States. It is estimated that nearly 25% of school-age children have vision problems. Despite the economic, social, and health care advances which have occurred in our society, many preschool and school-age children are not receiving adequate professional eye and vision care.

Only about one third of all children have had an eye examination or vision screening prior to entering school. Also, a recent study found that 11.5% of teenagers have undetected or untreated vision problems. The early detection and treatment of eye and vision problems for children needs to be a major public health goal. This is made increasingly important by the enhanced understanding of critical periods in human visual development. The earlier a vision problem is diagnosed and treated, the less the potential negative impact it may have on the child's development.

To further the point of Donoff we believe that a national effort is needed to integrate oral AND ocular health care and medical care where dentists, ocular professionals and primary care physicians collaborate in managing chronic diseases in their patients. It is our firm belief that some of the negative health implications of oral disease first manifest in eye pathologies that can be used as a diagnostic call-to-action for PCP that will lead to significant disease prevention. A first, and possibly more simple step would be for dentists, optometrists and ophthalmologist to take a leading role in integrating care by beginning oral/ocular training and care cross-pollination.”

You can protect your own health and ensure yourself a long and healthy life. However, if you take our advice, some things will be challenging for you. Obtaining certain tests to measure your health for example. A very recent case comes to mind. This gentleman has chronic rheumatoid arthritis and walks around like a stone. I gave him a list of tests to determine true root causes for his disease that he brought to his doctor (who takes insurance). The doctor told him that he didn't have cause to order the tests because he didn't have a “systemic illness.” I guess if you have Rheumatoid arthritis, you are considered healthy today!. And, the doctor said, some of these tests cost \$300 each. My price, by the way, for the 15 tests recommend is \$250 – but the doctor couldn't be bother to help this patient outside of the limitations of insurance. So the gentleman continues to suffer and decay from his disease.

Our current medical delivery system is failing to prevent, slow, or reverse chronic diseases and the reasons are well articulated. Clayton Christensen is the author of, “The Innovators Dilemma,” and

“Will Disruptive Innovations Cure Healthcare?” He and his coauthors start this article, published in the Harvard Business Review: ³¹

“Health care may be the most entrenched, change-averse industry in the United States. The innovations that will eventually turn it around are ready, in some cases – but they can’t find backers.”

Christensen goes on to say,

Make no mistake: the U.S. health care industry is in crisis. Prestigious reaching hospitals lose millions of dollars every year. Health care delivery is convoluted, expensive, and often deeply dissatisfying to consumers. Managed care, which evolved to address some of these problems, seems increasingly to contribute to them – and some of the best managed-care agencies are on the brink of insolvency. We believe that a whole host of disruptive innovations, small and large, could end the crisis – but only if the entrenched powers get out of the way and let market forces play out if the natural process of disruption is allowed to proceed, we’ll be able to build a new system that’s characterized by lower costs, higher quality, and greater convenience than could ever be achieved under the old system.”

A lesson from 1500 AD explains why we are stuck with a dreadful system:

“The reason there will be no change is because the people who stand to lose from change have all the power; and the people who stand to gain from change have none of the power.”

- Niccolò Machiavelli ~1500 AD

Thus, we have a healthcare system that is unwilling and unable to adapt to changes in society that are causing so much chronic disease. An we individually and as a society are suffering and many ways.

Since we a quoting famous people...

“To change something, build a new model that makes the old model obsolete.”

- Buckminster Fuller

The new model is there, how do we get you to use it?

Final Thought from a Chemist

Did you take chemistry in high school? How about basic chemistry in college or the dreaded “P” chem.? Physical chemistry in particular provides us with many useful ways to describe and understand the world around us. Medicine and human physiology is very much part of that world. Real-world concepts that chemistry teaches us are thermodynamics and kinetics.

Thermodynamics is a measure of the energy required for something to happen, while kinetics is a measure of the rate at which something does happen. Take the burning of gasoline for example. When it burns, it does so violently, releasing plenty of energy in the form of heat and light. This reaction is always ready to go because the products (water and carbon dioxide) are more stable compared to the reactants (gasoline and oxygen). However, the gasoline and oxygen could stay combined indefinitely without reacting. Why? There is an “activation barrier” to overcome.

The overarching measure that determines if a reaction is even possible is the Gibbs Free Energy (ΔG). If ΔG is negative, the reaction has enough energy to go; if the kinetics is right, the activation energy can be overcome, Figure 10.4.

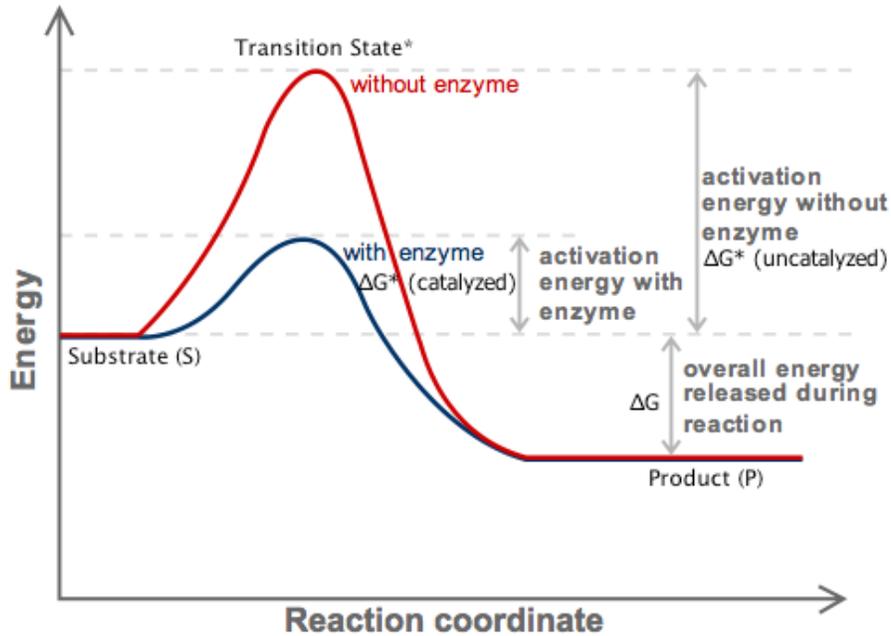


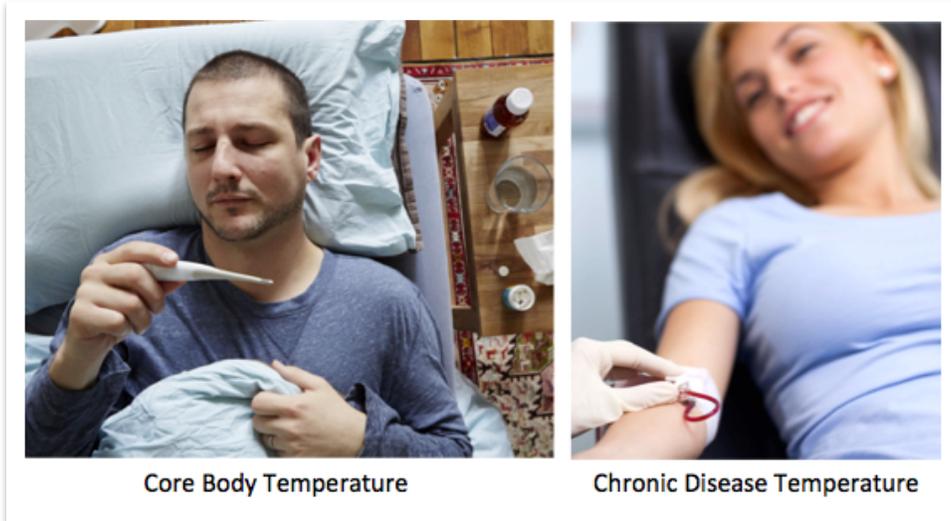
Figure 10.4. “Scary” diagram that reminds many of us about P-Chem.

We actually become much more stable by returning to our base elements compared to the marvelous and intricate structures God created that allows us to be alive. Our goal to maintain our health is a simple one, to raise the activation barrier bar as high as possible to slow the reactions that send us to a more stable state - death, then return us to Earth as ashes and dust. All aspects of bodily homeostasis, immune health, and emotional well-being contribute to raising the bar.

Stay Well.

Chapter 10 References

Appendix 1:



Calculate Your Chronic Disease Temperature

Who hasn't taken their own or their child's temperature? Is it useful? Your core body temperature – that taken with a thermometer - is useful for determining the degree of acute (immediate) illness. A solution, if the temperature is elevated, is rest and patience, as your immune system will adapt to and eliminate the virus. Antibiotics are often used to combat a bacterial infection.

Most of the diseases we face, particular as we get older, are chronic in nature. Has anyone ever measured your chronic disease temperature? A thermometer does not work for chronic disease. However, your immune system is still at work on your behalf so markers of inflammation are present in your body.

Throughout this book we have made reference to a myriad of diseases of inflammation and biomarkers found in your blood, eyes, and urine that show the presence of these types of diseases. An emerging area of study in chronic disease is the evaluation of multiple, rather than a single marker. Inflammation can sprout up in a host of different tissues and stimulate biomarkers in each.

In Chapter 2 we referred to C-reactive protein as a measure of your chronic disease temperature. This one marker alone is not adequate to measure chronic disease because elevation of C-reactive protein, is mainly attributable to inflammation of vessels. This does not paint an overall chronic disease picture.

We have created a new and much more accurate way to assess your chronic disease risk – and how much chronic disease you have in your body even if you feel well. It is your chronic disease temperature™ and is based on several biomarkers strongly connected with chronic disease and inflammation.

Just like your core temperature, your chronic disease temperature™ is “normal” at 98.6. At that temperature, you are either not sick from a chronic condition or your future risk of a chronic disease is low. How our chronic disease temperature™ works is best illustrated by example.

Appendix 1: Calculate Your Chronic Disease Temperature

Example 1: Very Chronically Ill

Marker	Standard Value	Your Value	Risk Factor
Baseline		98.6	98.6
White blood cell count	3,500 – 11,100	19,500	1.00
HbA1C	<6.5 %	9 %	0.80
C-reactive protein	0 – 3 mg/L	11.2 mg/L	0.90
Homocysteine	<14.5 micromol/L	18.6 micromol/L	0.65
Vitamin D	> 30 ng/mL	7 ng/mL	0.60
PUFA 6/3 ratio	None established	32	0.60
Cholesterol	<200	340	0.20
ESR SED Rate	<30 mm/hr	15 mm/hr	0.40
Nuclear cataract surgery	None established	Cataract surgery	0.60
Total			104.35

This person is very chronically ill and their chronic disease temperature of 104.35 reflect how ill they truly are.

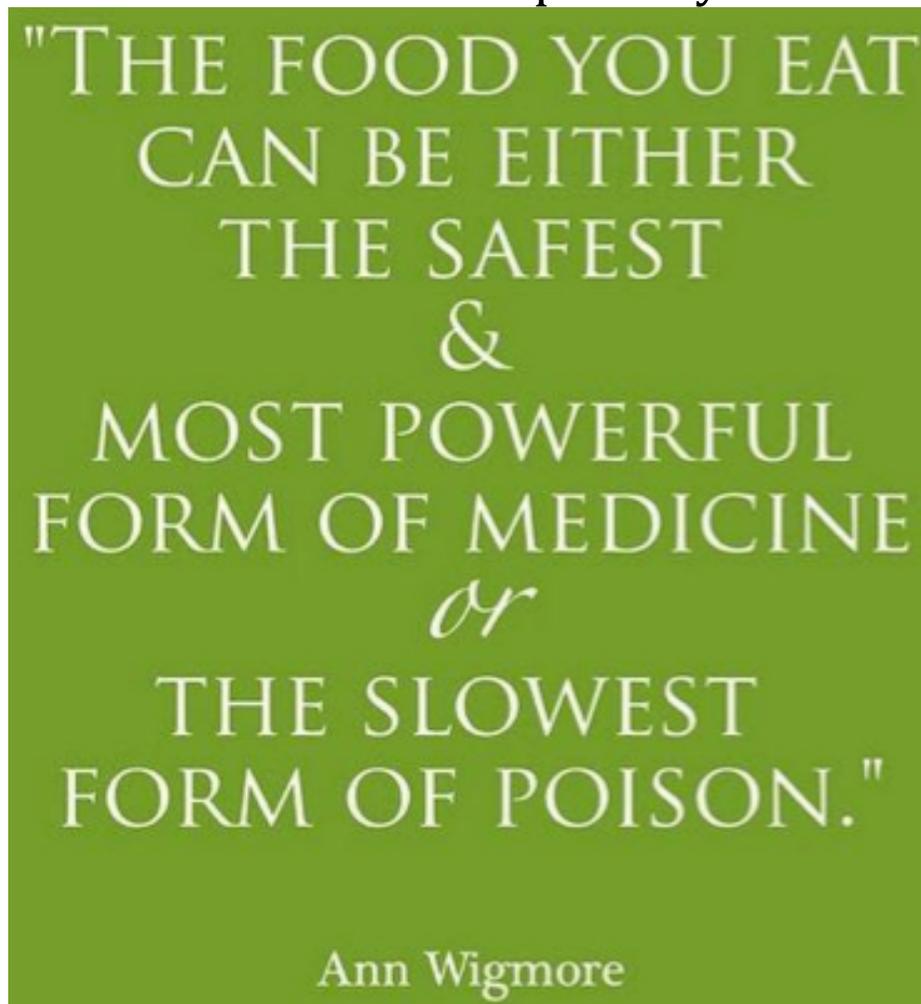
Example 2: Apparently Well

Marker	Standard Value	Your Value	Risk Factor
Baseline		98.6	98.6
White blood cell count	3,500 – 11,100	9,400	0.25
HbA1C	<6.5 %	6.2 %	0.20
C-reactive protein	0 – 3 mg/L	2.2 mg/L	0.20
Homocysteine	<14.5 micromol/L	12.2 micromol/L	0.20
Vitamin D	> 30 ng/mL	35	0.10
PUFA 6/3 ratio	None established	8	0.15
Cholesterol	<200	210	0.00
ESR SED Rate	<30 mm/hr	8 mm/hr	0.10
Nuclear cataract surgery	None established	No surgery	0.00
Total			99.80

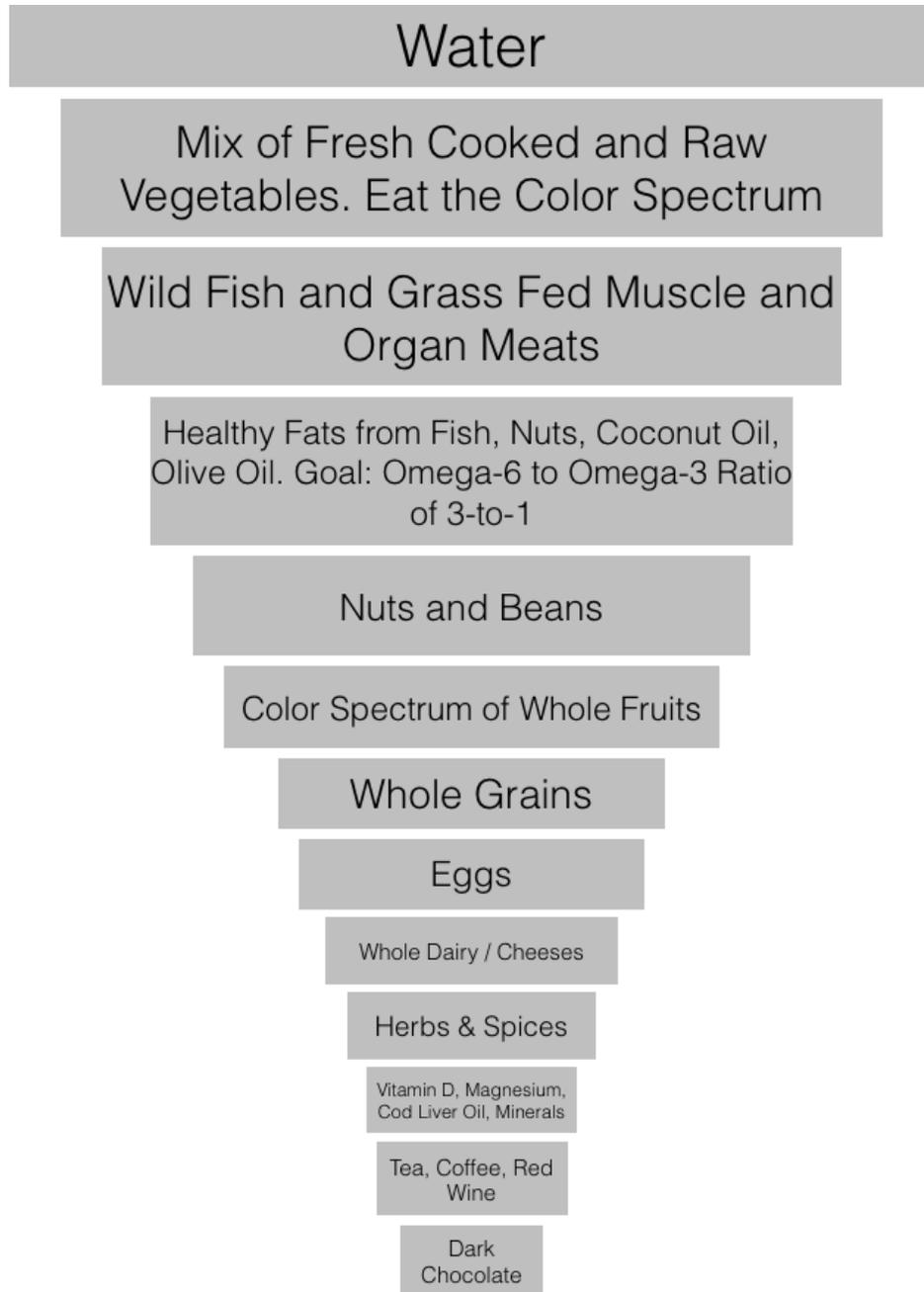
This person feels well but they have an elevated chronic disease temperature. Thus, they have some type of underlying chronic disease brewing. This person can no longer be considered “well.” We call this person “apparently well” because their blood tests indicate they have a systemic illness that has yet to be defined. Could this blood profile and this chronic disease temperature be the profile for Jimmy Lee, Tim Russert, or David Goldberg – all who died suddenly, unexpectedly, and without explanation?

This “apparently well” person has an elevated chronic disease temperature™. In the standard-of-care, he or she is considered perfectly healthy. However, new science – the basis of the chronic disease temperature calculation - clearly demonstrates that someone with even slightly elevated markers of inflammation is not well and is at risk for both chronic disease and early death.

Appendix 2: RealHealth Consumption Pyramid

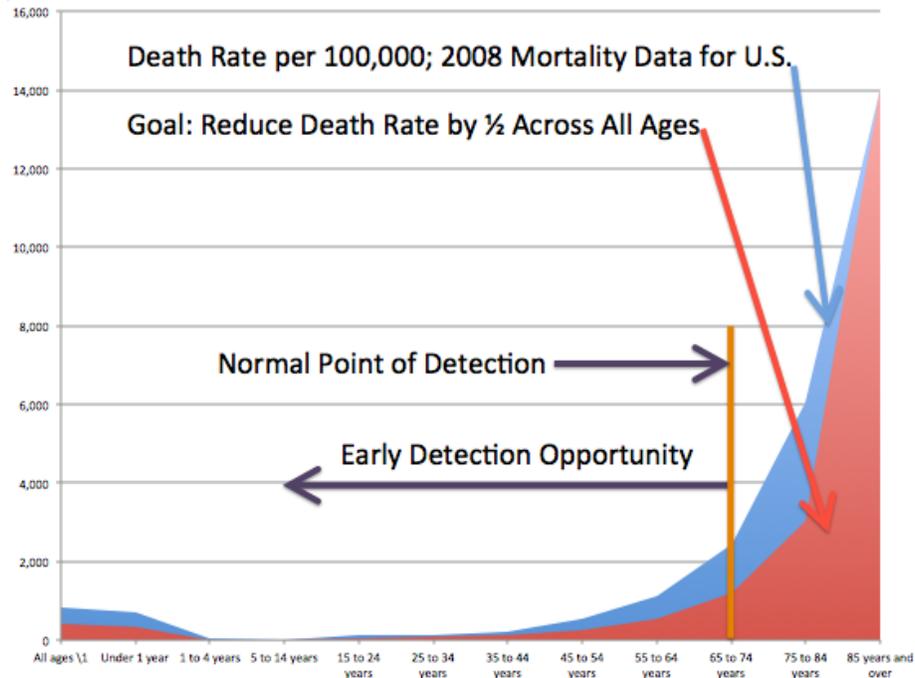


The consumption chart below show the foods in the manner in which you should consume them, from the most (top) to the least.



Appendix 3: Why Early Detection?

The graphic below shows the impact of reducing your possibility of death, at any time during your

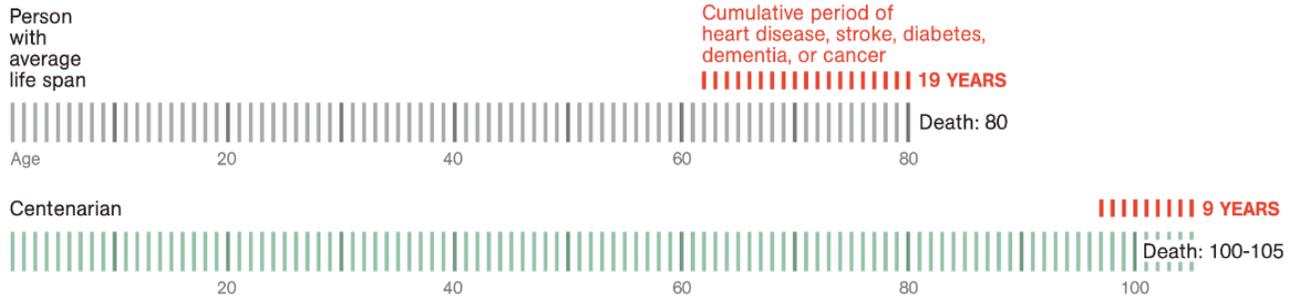


life, by one half. In some ways fighting the mortality curve does not buy us that much. Or does it?

Mortality (death) is not our only consideration. Morbidity (disease) impacts quality of life. The graphic below shows that if you care for your health and live for 100 years, your number of years of poor health is significantly fewer compared to someone who has a life expectancy of 80 years.

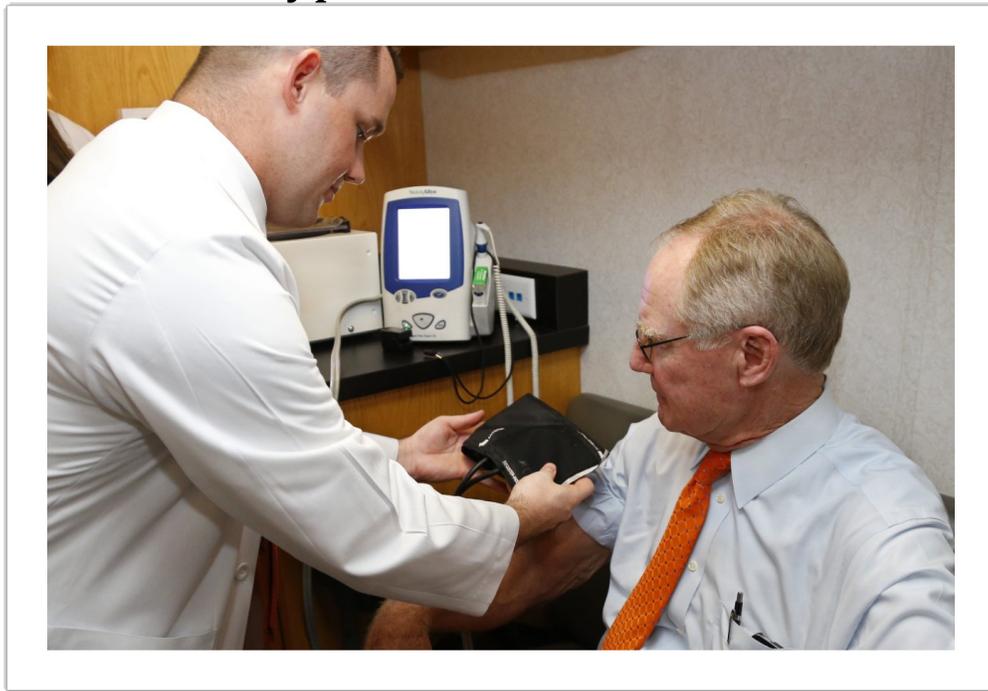
Getting to 100 candles

Centenarians reach that milestone because they're healthier, by virtue of genetics, common sense, or luck. In people with an average life span, diseases of old age strike earlier and last longer.



Your net gain in quality years of life, by taking good care of yourself and living until 100, is a whopping **30 years**. This is the profound benefit of determining if you have chronic disease before symptoms arise by Quarterbacking Your Own Health.

Appendix 4: Hypertension Protocol



In this appendix, we compare and contrast a high blood pressure used by your regular doctor with that used by our team.

Standard-of-Care Hypertension Protocol:

1. Measure blood pressure
2. If any elevation in blood pressure and no indication of kidney disease – prescribe a blood pressure drug.

Hypertension / High Blood Pressure Protocol – RealHealth Clinics

Hypertension is a symptom of one or many physiological imbalances or diseases. Hypertension itself is not a root-cause or disease. However, the manifestation of hypertension may harm some tissue while its response is necessary to help other tissue. That is, our physiology does not up-regulate blood pressure capriciously. Essentially all actions within are bodies have a purpose – that being to thrive and survive. This concept is unilaterally ignored upon most diagnoses of hypertension. The clinical goal is always to lower the condition into “normal” ranges usually without a thorough investigation of causes, comorbidities, and consequences.

Current and Past Research Studies and Recommendations

Over the past decades, the definition of “normal” blood pressure has varied, thus so has those eligible or recommended to take a blood pressure lowering drug. Blood pressure interventional studies are numerous. Here we present information on several studies and consensus recommendations, including a 2015 study published in the New England Journal of Medicine that has been interpreted as calling for intensive control of blood pressure on all people with “elevated” >120 systolic blood pressure.

1. **Medical Research Council (MRC) study:** ¹ The main aim of the trail was to determine whether drug treatment of mild hypertension in men and women aged 35-64 years reduced the rates of stroke, death due to hypertension, and coronary events. 17,354 patients were recruited and split into two equal groups. The trails lasted over five years which means that there were over 85,000 patient years of observation. The results, on an absolute basis is presented in the table below:

Outcome	Blood Pressure Lowering Drugs	Placebo
Fatal strokes	18	27
Fatal coronary events	106	97
Stroke + MI (heart attack) deaths	124	124
Deaths (total)	248	253

For this group of patients, with mild hypertension, the difference in the rate of death due to stroke and heart attacks was zero. In statistics, the smaller the difference, the more people need to be treated. In this study, 85,000 patient years illustrates the very low to non-existent risk in this population. Also, there was a slight difference in overall deaths that were not attributed to the causes most frequently associated with the benefits of blood pressure lowering.

The values of 248 and 253 help us further understand the magnitude of the risk of death in this population in the untreated versus the treated populations. The difference is 5 deaths. Using relative statistics, that are most frequently used to justify medical treatments:

$$(5/253)*100 = 2\%.$$

For fatal strokes, the relative statistics yields a relative “protective” value of

$$(9/27)*100 = 33\%.$$

This is very significant. However, relative risks are quite meaningless. The actual risk to a patient is based on the entire population thus: $(5/85,000)*100 = 0.006\%$ and $(9/85,000)*100 = 0.01\%$. This absolute number is (like the chance of winning a lottery) – reflecting the very low risk of dying from slightly elevated blood pressure. Medical professionals must use judgment based on absolute statistics to determine if the side effects of this therapy is worth the 0.006% benefit? The answer to this question requires an understanding of the risks – which includes but also goes beyond the drug warning labels.

Many 35-64 years olds with marginally elevated blood pressure are being treated for the symptom of hypertension. What is not being evaluated is the long-term impact of this treatment on their health, especially as it relates to the brain. A subject that will be addressed later in this document.

2. UCLA and Kaiser Permanente Study: ² Be very aware that the conclusions drawn in the study are based on people (patients) who are treated for elevated blood pressure. Upon treatment their blood pressure “normalized” to values lower compared to those with elevated blood pressure but without treatment. Here are the results from the study:

Patients who achieved (through treatment) blood-pressure levels in the range of 130-139 systolic and 60-79 diastolic had the lowest risks for death and kidney failure. Those whose blood pressure remained higher, or between 140 and 149 systolic, were 44% more likely than the low-risk group to die or develop kidney failure. But when blood pressure dropped into the 120-129 systolic range, patients were 12% more likely to die or suffer kidney failure than the low-risk group. And when blood pressure levels fell to 110-119 systolic, patients were at an 81% increased risk.

Note: If a person naturally has a blood pressure of <120, or achieves that reading through healthy lifestyle modifications, they are quite healthy and the risks above are not applicable. Harm only occurs when blood pressure is artificially lowered using drugs. However, if a person with high blood pressure is treated with drugs to achieve this so-called “normal” level, and underlying disease is not considered – for example renal disease - their likelihood of disease worsening and death increases dramatically. This reinforces the concept that elevated blood pressure is a symptom of an underlying disease that is not treated with blood pressure lowering drugs.

The study researchers conclude, “Both higher and lower treated BP compared with 130 to 139 mm Hg systolic and 60 to 79 mm Hg diastolic ranges had worsened outcomes. Our study adds to the growing uncertainty about BP treatment targets.”

The uncertainty of the targets reflects that lowering BP is not the target. Underlying conditions must be determined and addressed. If done so properly, BP will achieve physiological balance.

3. The SPRINT Research Group: ³⁴ A headline from the NY Times “WELL” blog started with the statement, “New data from a major study called Sprint, released Monday, has shaken some of the basic assumptions about the treatment of high blood pressure. The trial found that lowering systolic blood pressure from currently recommended levels of 140 to 150 to below 120 could prevent heart attacks and strokes and potentially save many lives.” ⁵

Based on this, and many other headlines, people and doctors believe that lowering marginally high blood pressure “saves lives” generally. However, the study report included an appendix that described the inclusion and exclusion criteria. The people tested in the study do not reflect normal relatively healthy people with modest blood pressure elevation. Rather, this study was for, and applicable only to, a very limited group of rather sick individuals. Any extrapolation to those with relatively good health and slightly elevated blood pressure is a mistake. The conclusion published in the journal article stated,

“Among patients at high risk for cardiovascular events but without diabetes, targeting a systolic blood pressure of less than 120 mm Hg, as compared with less than 140 mm Hg, resulted in lower rates of fatal and nonfatal major cardiovascular events and death from any cause, although significantly higher rates of some adverse events were observed in the intensive-treatment group.”

Here is an interpretation of these findings:

- People at high risk for cardiovascular event statistically have endothelial dysfunction, a manifestation of which is weakening of the vessel walls. Lowering the pressure on these walls will certainly reduce the likelihood of damage from blood pressure.
- Lowering the blood pressure caused significantly higher rates of adverse events because a sick body has a myriad of reasons for increased energy demands, some of which are supplied by increased blood pressure. Lowering blood pressure is antagonistic to healing.

The New York Times article gave three valuable suggestions based on this study – that many other headlines/articles didn’t appreciate.

1. “First, the results should not be considered a mandate for people to run out and get treated so their blood pressures are below 120.”
2. “Second, the potential benefits of lowering blood pressure must be weighed against harms.”
3. “Third, we need more information about the balance of risks and benefits for each person so that the choice can be personalized.”

The reality is, while lowering BP may have benefits in some aspects of health, it has detrimental effects in others – which is typical of symptom-based treatment. Conducting further investigation and treating at the root cause seldom is accompanied by negative consequences.

4. Eighth Joint National Committee Report: A report from a national committee to evaluate guidelines for the management of high blood pressure published their finding in 2014. ⁶ Their assessment concluded:

“There is strong evidence to support treating hypertensive persons aged **60 years or older to a BP goal of less than 150/90 mm Hg** and hypertensive persons 30 through 59 years of age to a diastolic goal of less than 90 mm Hg; however, there is insufficient evidence in hypertensive persons younger than 60 years for a systolic goal, or in those younger than 30 years for a diastolic goal, so the panel recommends a BP of less than 140/90 mm Hg for those groups based on expert opinion.”

Here are a couple of recommendations from the study that may be followed along with a route cause/treatment program:

Recommendation 1: In the general population aged ≥ 60 years, initiate pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥ 150 mm Hg or diastolic blood pressure (DBP) ≥ 90 mm Hg and treat to a goal SBP < 150 mm Hg and goal DBP < 90 mm Hg. (Strong Recommendation – Grade A)

Recommendation 2: In the general population < 60 years, initiate pharmacologic treatment to lower BP at DBP ≥ 90 mm Hg and treat to a goal DBP < 90 mm Hg. (For ages 30-59 years, Strong Recommendation – Grade A).

There are 9 recommendations in all, many of which include drugs to “manage” hypertension.

Causes versus Surrogate Endpoint

In about 10% of cases of hypertension, an actual cause is found. For all others, the diagnosis is “essential hypertension,” meaning elevated blood pressure of unknown cause. When a cause is found, almost without exception, the blood pressure can be brought down by treating that underlying condition with or without drugs – but preferably without drugs. Treatment is not for hypertension but for the underlying disease of which hypertension is a manifestation.

In clinical trials, a surrogate endpoint (or marker) is a measure of effect of a specific treatment that may correlate with a real clinical endpoint but does not necessarily have a guaranteed relationship. The following is excerpted from, “Review: Evaluating and Regulating Biomarker Use.” ⁷

“Blood pressure is often looked to as an exemplar surrogate endpoint for cardiovascular mortality and morbidity due to the levels and types of evidence that support its use. More than 75 antihypertensive agents in more than 9 therapeutic classes demonstrate the wide availability of agents to treat hypertension. ⁸ Although new antihypertensive drugs are approved on the basis of blood pressure reductions, blood pressure’s history as a surrogate endpoint is unusual in that many drugs used to treat hypertension (thiazides, methyldopa, reserpine, hydralazine, guanethidine) were approved prior to the FDA’s effectiveness requirement or the availability of clinical trial data supporting the impact of blood pressure control on cardiovascular outcomes. ⁹ The status of blood pressure as a surrogate endpoint for cardiovascular disease endpoints was debated for decades. ¹⁰ Even as one of the most well-established surrogate endpoints, an effect on blood pressure may not fully capture the benefit—or risk—of an intervention.” Impact on blood pressure may or may not capture an intervention’s entire risk-benefit balance. Different classes of agents, or even agents within a specific class, may have multiple effects, one of which is lowering blood pressure (NHLBI Working Group, 2005 ¹¹).

The abstract of an article by Williams states: ¹² “The pharmacologic treatment of hypertension has been extensively studied by clinical trials. These studies have provided definitive evidence of a

treatment benefit, and the weight and consistency of the clinical evidence has led to uniformity in many aspects of treatment recommendations worldwide. However, controversies remain in particular, whether specific classes of drug therapy offer benefits for cardiovascular disease prevention beyond the expected benefits of blood pressure lowering per se.

Updated large-scale epidemiologic studies and the meta-analysis of clinical trial data have better informed this debate and emphasized that the main driver of clinical benefit from blood pressure-lowering therapy is the magnitude of blood pressure reduction and perhaps the speed at which it is achieved. However, clinical trials are of short duration, and there are more marked drug-specific differences in intermediate cardiovascular structure, functional, and metabolic end points. The challenge is to interpret their significance with regard to longer term outcomes. Finally, although blood pressure lowering is undoubtedly beneficial, the concepts of single risk factor intervention and arbitrary blood pressure thresholds and treatment goals are being challenged by the recognition that the real target is **cardiovascular disease risk.**"

In an analysis of 147 randomized trials, investigators found that all classes of blood pressure-lowering drugs have similar effects in reducing coronary heart disease events and strokes for a given level of blood pressure reduction, and this is dependent upon the level of comorbid diseases associated with the elevation in blood pressure. There is an exception of an extra protective effect of beta blockers administered shortly after myocardial infarction and minor protective effect of calcium channel blockers in stroke, all of which are compared to other blood pressure lowering therapies, and not to interventions targeting the root cause of the BP elevation.¹³

ALLHAT (Antihypertensive and Lipid Lowering Treatment to Prevent Heart Attack Trial) compared the efficacy of four different drug classes (a calcium channel blocker, an ACE inhibitor, an alpha adrenergic blocker, and a diuretic) for initial therapy of hypertension. Study results demonstrated that three classes of drugs (calcium channel blocker, ACE inhibitor, and diuretic) could not be distinguished for the primary endpoint, coronary heart disease (CHD) mortality and non-fatal myocardial infarction, but the lower cost diuretics were superior in regard to secondary outcomes and should be the preferred first step therapy (ALLHAT Officers and Coordinators, 2002¹⁴). The alpha adrenergic blocker arm of the trial was dropped because of the significantly higher incidence of combined cardiovascular events in the alpha adrenergic blocker arm compared to the diuretic, including a two-fold relative risk of congestive heart failure compared to the diuretic (ALLHAT Officers and Coordinators, 2000¹⁵).

In the next section we present data that shows that those with mild hypertension have lower mortality when not treated when compared to the best class of drugs, diuretics.

The Blood Pressure Linear Model

Most people believe, and most doctors subscribe and prescribe to, the linear model for blood pressure. That being someone's risk of adverse health or dying, particularly of heart attack and stroke, increases linearly with blood pressure. This concept was first introduced upon studying the data from the Framingham Heart Study, the longest ever population study that started in 1948 and continues. However, in 2000 statisticians reviewed the Framingham data and published a paper titled, "There is a non-linear relationship between mortality and blood pressure."¹⁶ They state,

"Shockingly, we have found that the Framingham data in no way supported the current paradigm to which they gave birth. In fact, these data actually statistically rejected the linear model." And, "no randomized trial has ever demonstrated any reduction of the risk of either overall or cardiovascular death by reducing systolic blood pressure from our thresholds to below 140 mmHg...It is widely believed that randomized studies have proved that lowering blood pressure is beneficial. Actually, that is not true."

Interesting, since blood pressure lowering is now a surrogate endpoint of clinical trials and so widely accepted that few subsequent studies, based on “ethical” reasons, have been conducted to either prove or refute this concept. Consequently the only new studies are done comparing one type of drug versus another or combination.

One study, due to its size, had data on people who were and were not treated with anti-hypertensive but did have hypertension. This study was able to occur and pass ethical requirements because it was an observational study – thus patients were not forced to go without blood pressure medication (which is now considered malpractice). The study looked at 93,676 older women. The paper describing the results is titled, “Association Between Cardiovascular Outcomes and Antihypertensive Drug Treatment in Older Women.”

Here are some of the important findings:

- Monotherapy with diuretics was equal or superior to other monotherapy in preventing CVD complications of high blood pressure.
- When diuretic monotherapy was compared to those receiving no medical intervention, risk of heart disease, stroke and overall cardiovascular death was lower for those receiving no medication.
- For those receiving no medication, their initial BP was higher than for those who received treatment, the average of which was 149 mmHg.

In those women with high blood pressure who were NOT taking any medication, the result were as presented in the table below:

Condition	No Treatment Outcome compared to Diuretics
Heart disease	13 % lower
Stroke	5% lower
Overall CV death	8% lower

These results are independent of the side effects associated with the pharmaceutical treatments for elevated blood pressure which are substantial compared to the “no treatment” group.

Our recommendation is to use drug-based hypertension medicine only as a last resort and as a temporary measure for those consistently reporting to have highly elevated blood pressure, with a threshold number of >200/>100.

Quality of life changes for people on hypertension medication

There is controversy in these studies. However, a paper by an independent set of researchers found the following, expressed in table form: ¹⁷

Table 1. The results of the overall assessments of the attending physicians, the patients and their relatives (number of patients = 75).

	Improved			Worse			No change		
	Physician's assessment	Patient's assessment	Relative's assessment	Physician's assessment	Patient's assessment	Relative's assessment	Physician's assessment	Patient's assessment	Relative's assessment
Male	34	10	1	0	4	33	0	20	0
Female	41	26	0	0	3	41	0	12	0
Total	75	36	1	0	7	74	0	32	0

Doctors perceive that patients feel better as did the patients. However close relatives reveal that patients on these drugs actually feel substantially worse on the pharmaceutical drug regime.

Inflammation and elevated blood pressure ¹⁸

The main underlying problem in both heart disease and stroke is that the arteries become narrowed by atherosclerotic plaques. Vascular disease is one cause of hypertension per the following:

- Heart disease and stroke are conditions of narrowed and thickened arteries;
- Narrowed and thickened arteries reduce blood flow to various critical organs – particularly the brain;
- Reduced blood flow triggers the kidneys to raise the blood pressure. The brain executes that trigger;
- The blood pressure goes up creating a diagnosis of “essential hypertension” if these sequence of causes are not considered;
- Inflammation is usually at the root of this vascular process and is easily detected and measured in blood and urine.
- Inflammation is a physiological response to some type of insult(s). It is this insult or insults that is the target of therapy.

A PubMed search of terms “blood pressure” and “inflammation” yields 1,250,000 research articles while a search of “hypertension” and “inflammation” yields 1,480,000 research papers.

Any intervention for blood pressure must first consider, measure for, determine causes of, inflammation and then treat the causes. Inflammation is not the only cause of elevated blood pressure, but causes related to inflammation are arguably the ones that lead to increased morbidity and mortality – compared to a simple potassium/ sodium imbalance.

Blood Pressure and the Brain

The brain is metabolically one of the most active of all organs in the body. This consumption of O₂, transported by the blood, provides the energy required for its intense physicochemical activity. Cerebral O₂ consumption in normal, conscious, young men is approximately 3.5 ml/100 g brain/min and the rate is similar in young women. The rate of O₂ consumption by an entire brain of average weight (1,400 g) is then about 49 ml O₂/min. An average man weighs 70 kg and consumes about 250 ml O₂/min in the basal state. Therefore, the brain, which represents only about 2% of total body weight, accounts for 20% of the resting total body O₂ consumption. In children, the brain takes up an even larger fraction, as much as 50% in the middle of the first decade of life.¹⁹

The brain normally has no respite from this enormous energy demand. Cerebral O₂ consumption continues unabated day and night. Even during sleep there is only a relatively small decrease in cerebral metabolic rate; indeed, it may even be increased in rapid eye movement (REM) sleep.

O₂ is utilized in the brain is mainly for the oxidation of carbohydrate. Not all of the O₂ consumption of the brain is used for energy metabolism, however. The brain contains a variety of oxidases and hydroxylases that function in the synthesis and metabolism of a number of neurotransmitters. Brain enzymes are oxygenases, which utilize molecular O₂. All of these enzymes are present in brain, and the reactions catalyzed by them use O₂.

Not only does the brain utilize O₂ at a very rapid rate, but it is absolutely dependent on uninterrupted oxidative metabolism for maintenance of its functional and structural integrity. There is a “Pasteur” effect in brain tissue (fermentation), but even at its maximal rate anaerobic glycolysis is unable to provide sufficient energy. Since the O₂ stored in brain is extremely small compared with its rate of utilization, the brain requires continuous replenishment of its O₂ by the circulation. If cerebral blood flow is interrupted completely, consciousness is lost within less than 10 sec, or the amount of time required to consume the O₂ contained within the brain and its blood content.

Loss of consciousness as a result of anoxemia, caused by anoxia or asphyxia, takes only a little longer because of the additional O₂ present in the lungs and the still-circulating blood. The average critical level of O₂ tension in brain tissues, below which consciousness and the normal EEG pattern are invariably lost, lies between 15 and 20 mm Hg. This seems to be so whether the tissue anoxia is achieved by lowering the cerebral blood flow or the arterial oxygen content. Cessation of cerebral blood flow is followed within a few minutes by irreversible pathological changes within the brain, readily demonstrated by microscopic anatomical techniques. In medical crises, such as cardiac arrest, damage to the brain occurs earliest and is most decisive in determining the degree of recovery.

Cerebral blood flow must be able to maintain the voracious appetite of the brain for O₂. Blood flow/oxygen availability must be maintained within relatively narrow limits, for the brain cannot tolerate any major drop in its perfusion. There are, fortunately, numerous reflexes and other physiological mechanisms to sustain adequate levels of arterial blood pressure at the head level, such as the baroreceptor reflexes, and to maintain cerebral blood flow, even when arterial pressure falls in times of stress for example, autoregulation. There are also mechanisms to adjust cerebral blood flow to changes in cerebral metabolic demand.

Regulation of cerebral blood flow is achieved mainly by control of the tone or the degree of constriction, or dilation, of the cerebral vessels. This in turn is controlled mainly by local chemical factors, such as PaCO₂ (partial pressure of carbon dioxide dissolved in the blood), PaO₂ (partial pressure of oxygen dissolved in the blood), pH and others still unrecognized. High PaCO₂, low PaO₂ and low pH, which are products of metabolic activity, tend to dilate the blood vessels and increase cerebral blood flow; changes in the opposite direction constrict the vessels and decrease blood flow.²⁰ Cerebral blood flow is regulated through such mechanisms to maintain homeostasis of these chemical factors in the local tissue. In this regard, the brain is the primary body regulator for a number of physiological factors including blood pressure.

The area of the brain responsible for regulating blood pressure is the medulla oblongata. This is part of the brain stem and lies below the mid-brain and the pons. Evolutionarily speaking, it is the oldest area of the brain, sharing its basic structure with more primitive forms of life, such as reptiles. It is directly connected to the spinal cord and thus acts as the transit point of all information going to and from the brain. Given that, its function is the regulation of the most basic aspects of life, breathing, heart rate, and blood pressure.

The medulla oblongata regulates blood pressure in the body through the use of the baroreceptors by detecting changes in pressure throughout the circulatory system and then translating those changes into electro-chemical signals sent to the medulla.

Insulin Resistance

Insulin resistance (IR) confers risk for diabetes mellitus and is associated with a reduced capacity of the arterial baroreflex to regulate blood pressure. Importantly, several brain regions that comprise the central autonomic network, which controls the baroreflex, are also sensitive to the neuromodulatory effects of insulin. However, it is unknown whether peripheral insulin resistance relates to activity within central autonomic network regions, which may in turn relate to reduced baroreflex regulation. Individuals with greater insulin resistance exhibited reduced baroreflex sensitivity. Moreover, the relationship between insulin resistance and baroreflex sensitivity is statistically mediated by cerebral blood flow in central autonomic regions, including the insula and cingulate cortex. Activity within the central autonomic network appears to link insulin resistance to reduced baroreflex sensitivity.

Insulin resistance is an energy regulation dyshomeostasis. In chronic inflammatory diseases like diabetes, vascular diseases, and Alzheimer's, balanced energy-rich fuel allocation to storage and areas of need, normally aligned with circadian rhythms, is largely disturbed due to the vast fuel consumption of an activated immune system. During the periods of energy shortage, caused by insulin resistance and its antecedents, the usual increased blood pressure does contribute to increased blood perfusion to the brain and this phenomenon overlaps with starvation, infection (infection, at a minimum, increases cellular energy demands), disease, and to the fetus during pregnancy.

Elevated blood pressure is an easily measured sign and symptom of a systemic energy crisis in the body, that usually starts in the brain. The brain drives blood pressure up to compensate for a lack of nourishment in this highly metabolic tissue. If not properly diagnosed and treated, further chronic complications may result in a myriad of common affliction associated with the brain, the vascular system, and metabolic disorders.²¹

Abundant clinical and epidemiologic evidences demonstrate a close linkage between brain energy requirements, insulin resistance, and hypertension.²² The coexistence of insulin resistance and hypertension results in a substantial increase in the risk of developing cardiovascular disease and type II diabetes. Underlying mechanisms are complex and may usually involve low grade chronic inflammation, oxidative stress, and low-grade chronic infection, particularly of the intracellular type.

A Simple Case for Vascular Disease, Not Elevated Blood Pressure - as the Cause of Stroke.

Athletes, especially the endurance-type, experience long periods of highly elevated blood pressure, both systolic and diastolic. Studies on weight lifters show that blood pressure during contraction exercise reach 480/350. Highly elevated blood pressures does not just occur in high weight/resistance training. Pressures are extreme even when exercise is performed with a relatively small muscle mass – such as in running or other vigorous activities.²³

Athletes who prolong blood pressure elevation sometimes develop “physiological” ventricular hypertrophy, which is the thickening of the ventricular walls (lower chambers) in the heart. Healthy cardiac hypertrophy (physiologic hypertrophy or "athlete's heart") is the normal response to exercise or pregnancy,²⁴ which results in an increase in the heart's muscle mass and pumping ability. Trained athletes have hearts that have left ventricular mass up to 60% greater than untrained subjects. Rowers, cyclists, and cross-country skiers tend to have the largest hearts, with an average left ventricular wall thickness of 1.3 centimeters, compared to 1.1 centimeters in average adults.

In unhealthy people uncontrolled and prolonged elevation of BP can also lead to a variety of changes in the myocardial structure and coronary vasculature of the heart including the development of “pathological” ventricular hypertrophy. These changes are not solely related to elevation of blood pressure but are due to the combination of the blood pressure and underlying cardiovascular disease.

In athletes, the causes of heart changes are known – elevated blood pressure caused by exertion. Whereas, the changes in the heart and vasculature in “essential hypertension,” the diagnosis for 90% of hypertension, are of “unknown cause,” and not often or properly investigated. The pathological cases have higher incidences of cardiovascular and chronic disease morbidity and mortality compared to the normal population – and these rates are even higher compared to athletes. In both the athlete (physiological hypertension) and the non-athlete (pathological hypertension), there are physiological changes to the vascular system. However, even though

elevated blood pressure is a common denominator, the similarities stop there. This simple example illustrates that elevated blood pressure is not the disease, rather – the disease is to be found at the root cause of fundamental physiological changes – not at the surrogate endpoint of elevated blood pressure.

How Blood Pressure is Regulated Beyond the Brain

Blood pressure in the circulatory system is controlled three ways: 1) The force and rate at which blood leaves the heart, although healthy athletes and non-athletes have the same baseline BP (cardiac output); 2) the diameter and flexibility of the blood vessels through which blood flows which may be impacted by systemic inflammatory disease among other reasons (peripheral resistance); and 3) the total volume of blood in the circulatory system. All three work in concert to maintain a steady long-term pressure, while allowing for short-term increases to address whole body needs.

Increasing the rate at which the heart beats, and the force at which blood leaves the heart results in a greater flow of blood and an increase in pressure; thus allowing the short-term increase in circulation.

Peripheral resistance describes the increase in blood pressure caused by blood vessels themselves. The more resistance to blood flow, the greater the amount of blood pressure needed to overcome this resistance. Arteries actively modulate their resistance by constriction, which decreases the diameter of the vessel (vasoconstriction) and increases blood pressure, or dilation (vasodilation), which lowers resistance and blood pressure. Vasoconstriction and vasodilation are also short-term mechanisms to regulate blood pressure, and are under the control of the brain and several hormones. Disease, and to a lesser extent, aging causes arteries to lose their elasticity. The characteristics of the blood itself is seldom considered. Erythrocyte sedimentation rate, a measure of inflammation, may also contribute to elevated blood pressure as the blood corpuscles lose charge and ability to stay elevated in plasma as the sedimentation rate goes up.

The last mechanism for blood pressure regulation is through blood volume. Blood is a suspension of cells in an aqueous medium; its volume can therefore be modified by altering its water and salt content. Changing the amount of water and or salt in the blood changes volume and osmotic forces, both of which may alter the pressure blood exerts. Reducing water content lowers blood pressure.

Much of blood pressure control is performed by the kidneys, by way of the brain. By controlling the balance of water and salt, the kidneys influence blood volume, lending long-term blood pressure control. The kidneys also produce hormones, with signaling often emanating from the brain, that act remotely to increase blood pressure through vasoconstriction of arteries. Kidney function can become impaired with disease and age impacting blood pressure regulation.

Central to the kidney's control of blood pressure is the renin-angiotensin-aldosterone system, a hormone system that work together to control blood pressure. Renin is an enzyme produced in the kidneys in response to low blood volume, depletion of sodium chloride, and stress. The production of renin leads, in turn, to the production of angiotensin II, a hormone that increases blood pressure. Angiotensin II increases blood pressure in the following ways:

- causing the kidneys to retain sodium and water, which increases blood volume
- causing the vasoconstriction of small blood vessels, which increases arterial blood pressure
- inhibiting bradykinin (i.e., a hormone that relaxes blood vessels)
- stimulating the production of additional hypertensive (blood pressure raising) hormones in the adrenal and pituitary glands

- indirectly acting on the central nervous system to increase thirst and the craving for salt, both of which are necessary for increasing blood volume.

Accuracy of Reading: ^{25 26}

Blood pressure is constantly changing minute by minute in response to mental/emotion, physical, and energy conditions and demands. Simple changes can cause blood pressure to fluctuate between 5 and 40 mmHg which, if occurring during a measurement/doctors visit – will lead to a prescription. Here is a list of 10 factors that can temporarily cause measureable deviations in blood pressure measurements.

1. **Blood Pressure Cuff is too Small:** It is extremely important to make sure the proper size blood pressure cuff is used on a patient's/subject's upper arm when taking a measurement. In fact, most blood pressure measurement errors occur by not taking the time to determine if the patient's arm circumference falls within the range indicators on the cuff. Studies have shown that using too small of a blood pressure cuff can cause a patient's systolic blood pressure measurement to increase 10 to 40 mmHg.
2. **Blood Pressure Cuff Used Over Clothing:** When taking a blood pressure measurement, the cuff should always be placed directly on skin. Studies have shown that clothing can impact a systolic blood pressure from 10 to 50 mmHg.
3. **Not Resting 3-5 minutes:** To obtain an accurate blood pressure measurement, it is important that the subject relax and rest quietly in a comfortable chair for 3 to 5 minutes before a reading is taken. Any activities such as exercise or eating can affect your systolic blood pressure measurement 10 to 20 mmHg.
4. **Arm/Back/Feet Unsupported:** When having blood pressure measured, the subject should always be seated in a comfortable chair, legs uncrossed, with their back and arm supported. If their back is not supported, the diastolic blood pressure measurement may be increased by 6 mmHg. Crossing of legs has shown to raise your systolic blood pressure by 2 to 8 mmHg. The positioning of the upper arm below your heart level will also result in higher measurements, whereas positioning the upper arm above the heart level will give lower measurements. These differences can increase/decrease the systolic blood pressure 2mmHg for every inch above/below heart level.
5. **Emotional State:** Stress or anxiety can cause large increases in blood pressure. Blood pressure should not be taken while thoughts about something that causes tension or stress, otherwise the blood pressure levels could significantly increase. Often, just being in a doctors office is sufficiently stressful for a BP reading to be elevated above a normal baseline.
6. **Talking:** Talking to the nurse/doctor while having blood pressure taken may elevate systolic blood pressure measurement by 10 to 15mmHg.
7. **Smoking:** Tobacco products (cigarettes, cigars, smokeless tobacco) all contain nicotine which will temporarily increase blood pressure. Rule of thumb is to refrain from smoking at least 30 minutes before having a blood pressure measurement taken.
8. **Alcohol/Caffeine:** Alcohol and caffeine (sodas, coffee, tea, etc.) consumption causes blood pressure levels to spike. Refrain from any food or beverage at least 30 minutes before having a blood pressure measurement taken.
9. **Temperature:** Blood pressure tends to increase when a subject is cold. If the doctor's office room temperature is "chilly," be aware that blood pressure readings may be higher than expected.

10. Full bladder: Blood pressure is lower with an empty bladder and increases slightly upon filling. Studies have shown that systolic blood pressure measurements could increase 10 to 15mmHg with a full, compared to empty, bladder.

Finally, never take a single measurement. Take at least two measurements, although three measurement are always required to obtain a statistically significant standard deviation value. Measurements should not be simply taken consecutively. Instead perform a measurement at the beginning and end of an office visit, or otherwise stagger the readings by at least 20 minutes. Average all readings to obtain the “actual” BP measurement.

The following is the American Heart Association guidelines for in-clinic blood pressure measurement. A severe deficiency of their recommendation is the lack of a requirement for multiple measurements.

American Heart Association Guidelines for In-Clinic Blood Pressure Measurement

RECOMMENDATION	COMMENTS
Patient should be seated comfortably, with back supported, legs uncrossed, and upper arm bared.	Diastolic pressure is higher in the seated position, whereas systolic pressure is higher in the supine position. An unsupported back may increase diastolic pressure; crossing the legs may increase systolic pressure.
Patient's arm should be supported at heart level.	If the upper arm is below the level of the right atrium, the readings will be too high; if the upper arm is above heart level, the readings will be too low. If the arm is unsupported and held up by the patient, pressure will be higher.
Cuff bladder should encircle 80 percent or more of the patient's arm circumference.	An undersized cuff increases errors in measurement.
Mercury column should be deflated at 2 to3 mm per second.	Deflation rates greater than 2 mm per second can cause the systolic pressure to appear lower and the diastolic pressure to appear higher.
The first and last audible sounds should be recorded as systolic and diastolic pressure, respectively. Measurements should be given to the nearest 2 mm Hg.	
Neither the patient nor the person taking the measurement should talk during the procedure.	Talking during the procedure may cause deviations in the measurement.

Information from Pickering TG, Hall JE, Appel LJ, Falkner BE, Graves J, Hill MN, et al.; Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research. Recommendations for blood pressure measurement in humans and experimental animals. Part 1: blood pressure measurement in humans. Hypertension 2005;45:142–61.

Known Root Causes of Hypertension:

The following causes must be eliminated prior to a diagnosis of “essential hypertension.” However, essential hypertension is not a final diagnosis and must be evaluated at a root-cause level as well.

Renal:

- Chronic kidney disease
- Renal vascular disease
- Renin-producing tumors

Endocrine:

- Primary aldosteronism (secretion of excess aldosterone, a hormone that increases salt retention)
- Hypo- or Hyperthyroidism
- Adrenocortical hyperfunction (oversecretion of adrenal hormones)
- Acromegaly (secretion of excessive growth hormone)

Neurogenic:

- Acute stress-related hypertension
- Spinal cord damage/Quadriplegia

Vascular:

- Rigidity or narrowing of the aorta

Hypertension induced by drugs:

- Oral-contraceptives
- Steroid therapy
- Sympathomimetic drugs (decongestants, appetite suppressants)
- Non-steroidal anti-inflammatory drugs (NSAIDs) and COX-2 inhibitors
- Immunosuppressants
- Erythropoietin
- Amphetamines

Miscellaneous:

- Obstructive sleep apnea
- Nutrient deficiency
- Pregnancy-induced hypertension

Clinical Goals:

The clinical goal is a value of 120/80 +/- 20/10. Increased levels are acceptable with age according to the following schedule: 60 – 69: +5/3; 70 – 79: +10/5; 80+: +20/10, although the goal is always 120/80, regardless of age. Higher values may be deemed clinically acceptable if all non-pharmaceutical interventions have been applied and the blood pressure persists being elevated. The upper value of acceptable is 160/90. Drugs are strictly a last-resort if a cause or causes cannot be identified and if alternative methods of therapy have proven ineffective. A judgment as to the degree of cardiovascular disease / endothelial dysfunction will ultimately determine the final goal on an individualized basis. Those with a high disease quotient should have lower BP endpoints but not below 130/80.

Clinical Approach and Rationale:

The development and progression of high blood pressure is complex and multifactorial. Thus, effective management is rarely achieved through a single intervention. Instead, optimal management often requires a broad-based approach including regular self-monitoring, lifestyle modification, nutritional components, and root-cause analysis/management/treatment. Not using a drug to lower blood pressure may be considered malpractice, depending upon the circumstances. Thus we recommend a very low dose of a diuretic as an option, as this class of drug appears to create the fewest complications. However, this recommendation is secondary to a full analysis/management/treatment of actual causes.

The following diagnosis and treatment matrix may coincide with those for causes and treatment of secondary hypertension:

Please contact a RealHealth practitioner for the further details of the protocol.

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About the Authors

About the Authors



Dr. Lewis holds a Ph.D. in Chemistry from MIT. He served in various research capacities prior to starting a scientific consulting business in 1997. He is an entrepreneur and healthcare professional with expertise in toxic substances, drug development, biotechnology, health technology, and medical protocol development. In 2005, after the passing of his father from Alzheimer's disease, he has dedicated his time and career to finding a solution to this disease. After finding a unique and remarkable clinician, Dr. Trempe, with a profound understanding of Alzheimer's diagnosis and treatment, Dr. Lewis spent the past several years verifying the findings of Dr. Trempe using the vast medical and scientific literature available. His research over the past several years culminated in a book titled, *The end of Alzheimer's – A Differential Diagnosis Toward a Cure*, Alzheimer's screening, early diagnosis, diagnosis, and treatment centers, and this book.



Dr. Trempe received his MD degree from Ottawa Medical School, Canada. He furthered his studies at Harvard's Schepens Eye Research Institute (SERI) and Massachusetts Eye and Ear Infirmary, Boston. He has been on staff at Harvard Medical School teaching hospitals since the 1970s. He is the author of hundreds of medical scientific papers and two pending patents.

Dr. Trempe didn't set out to solve the Alzheimer's conundrum; he did set out to treat eye diseases in a different way, however. He, and many others recognize that a sick eye does not reside in a healthy body. A sick eye is, for the most part, in a sick body. Treat the causes of the sick body and the health of the eye will also improve. Dr. Trempe is one of very few Ophthalmologists who take this approach. Why? Because eye doctors treat eye diseases, cardiologists treat heart diseases, neurologist treat brain diseases, and so on. These specialties seldom collaborate. Each medical discipline has its own set of diagnostics and drugs for their special ailments.

When Dr. Trempe started diagnosing and treating his "eye" patients for systemic (whole body wide) diseases, back in the 1980s, their eyes did indeed get better. In fact they got much better and stayed much better compared to people who were treated as if their eyes existed in isolation from the rest of the body.

Most importantly, many patients with serious disease beyond the eye reported back to Dr. Trempe that these other conditions improved upon his "eye" (whole body) treatments. One of those conditions that improved was Alzheimer's disease.

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