

Healthier You

Healthier — You —

A Family Doctor's Guide to the
Fundamentals of Better Living

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ROAD



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This book is not intended as a substitute for the medical advice of physicians. The reader should regularly consult a physician in matters relating to his/her health and particularly with respect to any symptoms that may require diagnosis or medical attention.

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For my wife, Andrea, who has always challenged me to be better and do more than I ever thought possible, and who continues to support me in that process.

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INTRODUCTION

What Is Health?

LIVING A HEALTHIER life is the goal for many of us. Maybe you've had a health scare, watched a family member die from a preventable illness, are approaching a milestone birthday, or just want to feel better physically and mentally. But what does being "healthy" even mean? Without a clear idea of that, it's going to be very hard to know if and when you've successfully reached that goal.

Does being healthy mean looking like a Hollywood actor? A fitness model? A star athlete?

Does it mean feeling well every day, with more energy and less pain?

Or is the goal to live independently into your eighties?

We know health when we see it, but it can be hard to define. And the definition changes based on age and circumstance. When we look at a young athlete or model, we may think their physique is the epitome of health. But we often feel similarly

when we see an eighty-year-old walking and smiling with no apparent evidence of disease or degeneration.

Despite our different ideas about health, my guess is that most people have the same overall goals: we would like to reduce our risk of illness, maintain our independence, and continue feeling good for as long as possible. *We do not simply want to live longer; we want to live better for longer.* Using that as our goal, it may then be easier, and more meaningful, to achieve the health status of that active eighty-year-old than that of the ripped superstar athlete.

As a family physician, I've seen patients try numerous ways to achieve their health goals, including fad diets, supplements and vitamins, unique exercise routines, meal replacements, herbal remedies, hands-on therapies (such as chiropractic therapy or acupuncture), mental health techniques, and prescription medications. While their effort is to be applauded, I often wonder if it is being applied in the right ways.

Physics has a concept of an *effective theory*, which explains what we see in the world without getting so granular that we no longer see the forest for the trees. For example, in trying to describe the action of a baseball hit by a bat (with apologies to physicists everywhere), you could note the forces of the bat, gravity, wind, wind resistance—as well as the movement of the electrons around the atoms, and then drill down even more to examine the quantum forces inside the atom—with the result that the description becomes ridiculously complex. Really, all you need to adequately describe the motion of the ball is the force and direction of the bat on it and the effects of gravity; any more granular detail only confuses the picture. It's worth applying this idea of an effective theory to how we think about health.

We are continually learning more about how the body works and what influences our health on a cellular level. However, I'm not sure this additional information is providing us

with much more benefit on a practical level. The vast majority of our well-being still derives from those areas that we knew were important fifty to a hundred years ago. We should stop looking for the magic pill, supplement, activity, or device and instead consider an *effective theory of health* that can help focus our actions toward what's important: the ultimate goal of a long and healthy life.

Healthier You outlines the key areas in which to apply your hard work and energy. My intention is to break down a healthy lifestyle into actions that make an actual difference and to help you ignore all of the expensive, time-consuming, inconvenient, and sometime dangerous practices and products that don't. The focus is on improving your health by choosing from a list of behaviors that have been shown to be consistently effective. In doing so, everyone can find a number of specific ways to be healthier, as opposed to striving toward a vague definition of being healthy.

I summarize health into ten essential factors that will help guide your time and energy when trying to be well.

- Think
- Change
- Eat
- Move
- Sleep
- Enjoy
- Quit
- Vaccinate
- Screen
- Supplement?

Just imagine how your health could improve if you concentrated your efforts on making positive changes, even small ones, in these specific areas. Each chapter clarifies any confusing

messages around its topic and provides specific actions to assist you on your next steps toward wellness.

While a lot of the information presented here may sound like common sense, that is the point—you already know the basics of healthy living but you need to implement them into your hectic modern life.

This book will teach you to take a “big picture” approach to health, so you can concentrate on the major areas that make the largest impact on your overall health. This comprehensive outlook to wellness is one of the main reasons I decided to become a family physician and not a specialist. My job is to be the quarterback for my patients’ health and to help them navigate the complicated world of medicine. My patients receive lots of recommendations from specialists, health groups, disease-specific guidelines, celebrities, gurus, advertisements, and even other patients. It is up to me to discuss these recommendations with my patient and together decide upon the best course of action for that specific individual. I don’t focus on one organ or one system but rather on one patient.

Even though each patient is unique, it is useful and comforting to know that there are basic guidelines for health that apply to everyone. That is what this book is about. While there are numerous conditions I treat and manage that require medical intervention, the ten factors described here all play a significant role regardless of your underlying health status. My hope is that this book can help doctors and patients spend our time better, individually and together, and create better health outcomes overall.

How to Use This Book

This practical manual targets key areas of health that are worthy of your focus and effort. Each section provides advice, tips,

and strategies that you can implement immediately. Any references I mention are listed in the References section at the back of the book, and any useful resources and links are available at www.corefamilyheath.com/healthieryou.

You are welcome to read the chapters in any order you wish, depending on your interest and area of concern. I would recommend you work on specific areas individually rather than trying to make too many changes at once. There is a rationale to the chapter order, so let's begin with an overview of the chapters to help you decide where to start.

Chapter 1: Think

“Think” focuses on the need for critical thinking in order to navigate the multitude of health claims and contradictions we see in daily life. We look at the basic concept of healthy skepticism and the numerous errors in logic and rationality to which humans are susceptible, with the emphasis squarely on health and medical issues. By learning how to critically evaluate information, you will be better able to concentrate on behaviors that work—and not be distracted by irrelevant practices.

Chapter 2: Change

In “Change,” the challenge is how to actually *do* the behaviors that have been shown to improve health. Learning ways to live better is often the easy part—the actual lifestyle modification is the true challenge. Here I review simple, tried-and-true strategies for setting goals and successfully achieving your health objectives. I also outline the psychology of change and teach you how to find your motivation, plan your strategy, and increase your chances of success.

Chapter 3: Eat

“Eat” analyzes perhaps the most complicated and confusing aspect of a healthy life: diet. We are overwhelmed with advice,

suggestions, and philosophies that often contradict one another. Should we be vegetarian or go paleo? Choose a low-carb or no-carb eating plan? I present a more practical approach to eating, providing a framework that can be used in any cultural or specific diet, be it South Asian, Chinese, vegan, gluten-free, paleo, lactose-free, and so on. By focusing on the core tenets of a healthy diet, you can avoid the pitfalls and perils of the food and diet industries and simply eat well.

What about Weight Loss?

While evidence clearly shows that maintaining a healthy weight is extremely important in reducing health risks, I have not emphasized weight loss as a specific topic. You lose weight and prevent weight gain as a result of specific *actions*—primarily dietary choices and, to some extent, activity—which are discussed in detail. If weight loss is your goal, then this book will help you get there by showing you strategic and practical steps to achieve that objective. If you are significantly overweight, suffer from some of the potential medical consequences of being overweight (diabetes, cardiovascular disease, osteoarthritis, high blood pressure, back pain, or shortness of breath, for example), you may require more assistance. Consult your physician to discuss medically supervised diets, medication, or bariatric surgery. It is also worth remembering that being healthy is more than being slim—and that it is possible to improve your health dramatically without losing a pound.

Chapter 4: Move

“Move” focuses on activity and exercise. I explain the difference between the two as well as their numerous benefits. Spoiler alert: there is no one magic exercise, video, tool, or

piece of equipment that will get you “ripped.” I offer exercise advice and goal-setting strategies that are specific, practical, and designed to help all individuals become healthier—without, thankfully, having to develop a six-pack, do a triathlon, or bench-press your bodyweight. If you can increase your fitness level by any degree, you will improve your health significantly, so finding ways to do so is definitely worth the effort.

Chapter 5: Sleep

“Sleep” describes proper sleep hygiene along with specific behavioral strategies to help you deal with common sleep issues. Fatigue and lack of quality sleep are some of the most common reasons for visits to a physician. Sleeping pills and sleep aids are commonly prescribed and used by patients despite the lack of great evidence of their effectiveness, plus their strong side effects and risks. For many of you, sleeping better at night may be one of the most valuable ways to improve your health and your happiness. This chapter outlines concrete ways you can target this important, and often neglected, aspect of health.

Chapter 6: Enjoy

“Enjoy” focuses on mental health and how to increase the joy in your life. Happiness is not just the absence of depression; an increasing body of evidence proves that the feeling can be developed. This chapter outlines effective strategies to enjoy life and *be happier*. I discuss the concepts of purpose, gratitude, and flow, along with other practical techniques to increase your satisfaction and contentedness. Being happy is an important goal for all of us (more common than aspiring for money and fame), and it is reassuring to know that there are things you can do to improve your mental health, which in turn can pay huge dividends for your physical health.

Chapter 8: Quit

“Quit,” simply put, is about quitting smoking. If you don’t smoke, keep it that way. If you currently smoke, putting the effort into quitting will be the best thing you can do for your health. People often spend incredible amounts of time, effort, and money on other aspects of wellness without targeting this one issue that has the most immediate and negative impact on their health. In this chapter, I provide smokers with practical tips and motivation to help them quit and provide nonsmokers with the tools and understanding to encourage friends and loved ones to free themselves from tobacco addiction.

Chapter 8: Vaccinate

No single health intervention has been more effective from a truly preventive aspect than vaccinations (excluding hand-washing and the development of a sewer system). However, we are seeing a vocal minority speak against them, which is causing a higher risk of potentially lethal illnesses making a comeback. When there is confusion and an illusion of danger, it is understandable that some parents and individuals are hesitant. Unfortunately, this feeling of uncertainty commonly leads families to not vaccinate, which should concern us all. Simply put, vaccines are safe and they work. “Vaccinate” reviews the evidence and addresses the myths and concerns that people commonly express surrounding vaccinations. Hopefully, once you understand the science, the only hurdle will be updating your immunization status.

Chapter 9: Screen

“Screen” addresses another aspect of preventive health: detecting disease when it is more treatable. While some screening programs are effective in picking up conditions early and can make a difference in outcomes, only a few diseases are truly

amenable to this strategy. Unfortunately, we are just not able to effectively screen for every condition or cancer out there. Given the confusion around these limitations, I outline the criteria required to make screening a viable option and identify which programs are currently recommended. I also review the potential challenges and dangers of screening and over-testing in general.

Chapter 10: Supplement?

When people picture healthy living, they often imagine they have to supplement their life with numerous vitamins and concoctions. This final chapter, “Supplement?,” questions the role of a supplement—it should be *in addition to* the strategies for health outlined earlier. If the previous nine factors are not being employed to their fullest, then the potential benefit any supplemental product or treatment provides is minimal compared to the proven benefits of the other actions. Safety, cost, and plausibility should also be factored in when considering unproven therapies. In this chapter, I teach you how to decide if taking a supplement makes sense for you.

While I strongly believe in the techniques and evidence outlined here, I must emphasize that my way is not the only way; I do not believe there is one true path to achieving health. My hope is to outline the main categories in which to focus your efforts in order to improve your chances of having a long and healthy life. While the suggestions are specific, what they will look like in real life will depend on you, the reader. *This is your life and your health* and it is up to you to find your own route to wellness.

All you can do is control what you can and give yourself the best chance to be healthy. I know people like and want guarantees, but life is full of uncertainty; we need to accept that and

understand that we can only control so much. Thankfully, even though it seems like illness is commonplace, we are actually healthier than ever before. I strongly believe that reaching your eighties with minimal disability is a reasonable and attainable goal. That's my objective—but if it doesn't happen, I'll roll with it, knowing that I've done what I can and am still enjoying my life fully. After all, the aim is to live a long and *enjoyable* life, not to suffer and restrict ourselves so that life just seems long!

My hope is that after reading this book you will be motivated and energized to find areas of your life that you can improve, and you find joy and contentment in the life you are currently living.

Disclaimer

While this book does provide advice on your health, it is not meant to replace the guidance of your own physician. Hopefully this resource can augment and supplement the care you are currently receiving. At no point do I advise stopping any medications, so do not consider doing that without first talking to your doctor. If you have any health problems or symptoms that cause you concern, please contact your physician for assessment.

One final note around language—I use the term “doctor,” “physician,” and “primary care provider” to refer to the person responsible for the care of a patient. This is for ease of use; I certainly respect the role that other providers may play in providing this care, including nurses, nurse practitioners, and physician assistants. I respect and value all members of the health-care team in their roles to provide high-quality primary care.

1

Think

“Knowing a great deal is not the same as being smart; intelligence is not information alone but also judgment, the manner in which information is collected and used.”

Carl Sagan

AFTER I GRADUATED from medical school, completed my residency, and began my family medicine practice, I considered myself a well-educated person who was versed in critical thinking. I had done well in school, felt I was up-to-date on health matters, and was ready to deal with the various issues that would be presented to me as a primary care practitioner.

Then I met my wife, Andrea, and we had our first child . . .

We began our life together just outside of Vancouver, BC, where there is a thriving and accepted culture of alternative therapies. Vancouver is kind of like California in how it has embraced “complementary” interventions. It is neither uncommon nor surprising for people to look for health-care alternatives when they are an accepted option in society. My wife was open to and interested in some of these modalities.

Her mother had recently passed away from leukemia, and we had experienced a couple of miscarriages before we had our first of two boys. Andrea then became a new mother with all the worries and anxieties that entails. She is also a healthy and active woman who desires to stay that way.

Add to these factors the honest yet really unsatisfactory answers you receive when asking many challenging health questions to medical doctors and it's easy to see why people are looking for alternative therapies.

“Why did my mother get leukemia?”

“We don't know. Bad things just happen sometimes.”

“Why am I having miscarriages?”

“We don't know. Older eggs, most likely. It's common and doesn't mean you won't be successful. Keep trying.”

“How can I stay healthy for the long term now that I am a parent?”

“Just keep doing what you're doing.”

I had my misgivings about Andrea's interest in these therapies, but I love my wife and felt there was no harm in the occasional appointments she attended or comments she might make about diet or certain modalities, like acupuncture, Chinese medicine, or craniosacral therapy. I was even open to hearing about these options, as they were commonly brought up by my patients. After all, it is incredibly easy for alternative medicine to creep into daily life with the rise of so many pseudoscientific practices.

I thought I was a progressive physician: nonjudgmental and open to anything that could be of benefit. Then, in the course of my practice, some specific experiences really made me question this philosophy, take a hard look at my thought processes, and question how safe some of these practices were. I saw patients who:

- delayed appropriate medical care for serious illnesses while they were being treated by alternative practitioners;
- received treatment for newborns and infants for nonexistent trauma related to the natural process of childbirth;
- received poor and dangerous medical advice regarding medications, vaccinations, or specific conditions while they were being treated by alternative health practitioners for other issues;
- missed their last Christmas with their family as they were receiving ineffective alternative treatment for an unfortunately devastating and universally terminal illness; and
- suffered lifelong developmental damage due to an illness that is preventable with vaccination.

These experiences really shook me, frustrated me, and forced me to analyze my entire outlook. They also made me realize I had to do better when handling my patients' concerns about the value of various products and activities. In some ways, these discussions are about more than a specific alternative treatment modality or supplement; we are addressing and challenging someone's *worldview*. Some believe that these complementary treatments offer a valid alternative to what "Western" medicine can provide, or, perhaps understandably, look elsewhere when medicine has little to offer or appears to have failed them.

But just because science and medicine lack all the answers, it doesn't mean that alternatives are automatically valid. As the saying goes, just because airline travel isn't perfect, it doesn't mean we should start using magic carpets. The same is true for medicine. It all comes down to the old joke: *What do you call complementary or alternative medical therapies that work? Medicine.* Doctors are equal opportunity providers:

if a treatment is proven to work, we are more than happy to recommend it.

I am incredibly grateful that my wife is an open, honest, and intelligent woman who was interested in having this conversation and was willing to hear my points of view. After careful analysis and honest discussion, Andrea was able to see the rationale behind my concerns about these therapies. Without her, I likely wouldn't have been forced to analyze my own weaknesses in critical thinking. And without her, I wouldn't have so carefully researched how to be better at evaluating information and how to present that perspective to someone with a different viewpoint.

What Is Critical Thinking and Why Is It Important?

When I first started looking at the subject of critical thinking, I was amazed at how often our weaknesses in this area are routinely taken advantage of, particularly in the world of advertising. Every commercial is trying to sell you something based on some sort of association with a celebrity, a song, a joke, a model, or a movie, the logic of which quickly breaks down with basic analysis. Yet it must work, as companies continue to spend huge amounts of money on these campaigns.

Critical thinking is simply the process of analyzing a topic objectively prior to forming a judgment on that issue, opposed to simply going by your instincts or your “gut.” In order to do this, you need to be aware of what may be influencing those feelings, including common *biases*—preconceived ideas that aren't based on sound reason—and *errors in logic* that all humans make when thinking about a subject. But because

it takes effort, our thinking is easily manipulated by media, advertisers, and even our friends and colleagues.

Our education systems tend to inadequately prepare us to handle and evaluate the sheer onslaught of information to which we are continually exposed. We are taught facts but rarely asked to question them or their sources. Every day we are exposed to claim after claim about health. How do we know what to believe? What makes someone an “expert”? When do we believe an “expert” opinion and when do we dig deeper? How deep do we need to go? I mean, who has the time to research every paper referenced in a magazine article or question every claim made in a thirty-second commercial?

Thankfully, by being aware of the common tricks and methods used, you can ignore the irrelevant information and focus on the important stuff. That is why I believe critical thinking is the first step toward a healthy lifestyle. It allows you to concentrate your efforts on the areas that make the difference for your health and thoughtfully disregard those areas that can take you off course.

While critical thinking is a huge topic in and of itself, my goal here is simply to introduce a basic strategy so you can analyze any health claim. This chapter is not meant to tell you *what* to think but rather to outline a process for *how* to think. After that, you can make your own conclusions. Critical thinking may force you to challenge some of your deeply held beliefs, which can be uncomfortable, but the final decision is always up to you. This chapter teaches you how to be more conscious of how your mind works; be aware of the ways you can be fooled, confused, and tricked; and feel confident in assessing any health assertion—even those in this book.

So when someone tells you about the next great health product, diet, medication, or superfood, how do you determine if those claims are valid?

Step 1: Focus on the Claim Itself

When looking at any health claim, it is important to first be very clear on *what the actual claim is*. Oftentimes, there is only a vague promise of it being “good for you.” It is essential that we clarify what that promise is: Will it prolong your life? Will it reduce your risk of hospitalization or serious illness? Will it make you feel better? Will you have less pain? Only when you know the specifics of the claim can you effectively evaluate it.

Once you are clear on what is specifically being offered, it is essential to keep the focus on the idea or product itself and not on the individual offering it. While controversial issues can cause an emotional response (just look at the comments section of a story on vaccines or politics), the best way to maintain civility is to emphasize the concept, which is always fair game for debate, and not the individual endorsing it.

A genius can hold an absolutely absurd position and a fool can say something profound, so using the source of a claim as a reason to believe or disbelieve something is not logically sound. For example, any advertisement featuring a well-toned celebrity is using that person’s identity/appearance/fitness/movie character as a basis for recommending the product or treatment. Just because someone plays a superhero in a movie does not make their recommendation to use a product or treatment valid. And though most physicians are pretty skeptical of anything Dr. Oz recommends, that does not mean that there is nothing of value in any of the actions or products he promotes. Bottom line: the attributes of the person making the claim have nothing to do with the validity of the claim itself. There needs to be scientific basis and support for an idea, and the opinion of any individual isn’t enough.

Most importantly, for the purposes of civility in discussion, it is crucial to avoid *attacking* a person making the claim rather

than talking about the assertion itself. While personal attacks can feel temporarily satisfying from a sense of superiority, they are not appropriate, intellectually sound, or kind. The key is to offset our inherent tendency to concentrate on who makes a claim and instead focus on the statement itself.

Step 2: Determine the Pre-test Probability

Today, everything seems to have evidence behind it. “Studies show” different vitamins, procedures, or health devices to be effective. Before analyzing each study in detail, it is important to think about one specific aspect of the claim itself: What is the likelihood that the claim is true even before looking at the results or data? How does our knowledge of the world currently, and the existing body of science, influence the probability that this statement is true? This process of thinking can be considered as the *pre-test probability* for the intervention.

For example, one of the simpler health interventions is homeopathy. This is the belief that “like cures like”—a substance that could harm a human in normal doses can be helpful in tiny doses. In actuality, the dose is diluted to such an incredible extent that there is sometimes *literally nothing* in the homeopathic product other than water. The resulting justification is that the *water holds the memory of the substance* and thus is still effective—which makes you wonder how water-treatment plants can effectively allow us to reuse our waste water. This surprising concept is behind all those homeopathic items at the drugstore.

So in this case, the pre-test probability that a vial of plain water is able to cure or treat anything is essentially zero—given what we know about science, water, health, and how the body works. When the occasional study suggests a homeopathic

item is effective, it is much more likely due to chance or error rather than the effect of the product. It would take an incredible number of high-quality studies to change the established understanding on this type of therapy.

If someone tells me I would benefit from eating more fruits and vegetables, which would seem pretty reasonable to me given what we already know about health and nutrition, I would accept that quite easily. But if they said I need to significantly increase my intake of whale fat to achieve optimal health, I would be pretty skeptical from the start. In an even simpler nonmedical example, I would easily believe someone who said they saw a squirrel in their backyard, but it would take a heck of a lot of evidence to believe them if they said they saw Bigfoot.

“Studies” are not enough anymore; they need to be high quality, reputable, repeatable, and consistent with our current body of knowledge. Science-based health advice should be our standard beyond simple “evidence.” Keeping the pre-test probability in mind, especially when considering the basic building blocks of health, will allow you to discard many frivolous health claims right from the start and focus on what actually works.

Step 3: Check for Biases

As stated earlier, a cognitive bias is any idea or opinion that is preconceived or not based on sound reason. These biases can strongly influence how you see and analyze data even before you start looking at the information; by definition, you are not even aware of them. Your best defense is to bring these biases to the surface and make conscious choices to rationally evaluate them. It can be uncomfortable and unsettling, but that’s a sign that you are challenging one of your built-in biases.

One of our more common tendencies is to seek out and remember things that support what we already think, while avoiding information that is contrary to what we believe. Imagine you strongly believe that vaccines are dangerous. You are presented with two articles: one by a fellow vaccine skeptic who outlines further reasons to support this viewpoint, and the other by a medical doctor who clearly states the reasons why vaccines are safe and why your viewpoint is wrong. Which article would you be more likely to read?

Repeated studies show that you would be much more likely to read the article that agrees with what you already think. We see this consistently in the way we read articles pertaining to health, the environment, and politics. This bias is exacerbated online where algorithms are used to provide you with more articles similar to the ones that you have already read, so you will be exposed to more and more support for what you already think—even if it is wrong. This happens to such an extent that two neighbors with opposing views on politics or the environment can have very little overlap in the news and articles they read.

It is therefore up to you to occasionally seek out the contrary point of view—challenging psychologically, but critical intellectually. To be clear, seeking the alternative viewpoint does not mean that you have to weigh all information equally. The opinion of an expert on immunization who has studied extensively and works exclusively in the field of vaccinations should be valued much more than the opinion of a blogger. You need to review other points of view, but you also need to be able to weigh the value of that information.

Another form of bias was uniquely demonstrated by a mathematician during World War II. Abraham Wald was a Hungarian-born Jewish statistician who fled Europe and helped the US military. When providing advice on where to best place the limited armor available on military planes to

increase the chance of them surviving a battle, he looked at the locations of bullet holes on returning planes. He realized that you should actually put more armor where you see less damage, as the planes that were hit in those areas were less likely to have made it back, whereas the locations with more hits were more survivable. Clearly, you can't make your decision based on only the planes that returned—you also have to consider that ones that did not come back.

A simple health example is when people mention their friend or relative who smoked all their life and had no major health issues, using this as justification that the risk is lower than we think. Obviously, they are disregarding all the other people who smoked all their lives who developed lung problems and did not make it past seventy.

A conflict of interest—where an individual receives personal benefit or gain from promoting a particular product or viewpoint—is also important to consider when creating context for assessing any health claim. While this may not be a true cognitive bias, it is something to keep in mind when considering the point of view of someone promoting a particular idea.

I understand the skepticism people might have about me, a medical doctor writing a book and promoting a particular viewpoint on health. I also understand the concerns around the medical relationship with pharmaceutical companies and the idea that we are all “pill pushers.” However, I do not get directly paid by anyone to write a prescription and in Canada the rules have thankfully changed to prevent any undue gifts given to doctors by drug companies. I don't believe they are even allowed to give out pens anymore. (I'm not sure on that, as I made the choice a number of years ago to stop seeing pharmaceutical representatives in my office.)

In contrast to the immense pushback (often rightly so) against doctors' prescribing practices, I am amazed that

people are not disturbed by the direct conflict of interest seen in offices where vitamins and other health products are overtly sold. If you see a health professional who sells supplements directly to their clients as part of their business, what is the likelihood that you won't be recommended to buy something?

Being aware of potential conflicts is certainly an important aspect of assessing any health claim to provide *context*, but it should be secondary to the actual concept being considered. Just because the person selling the product believes in it does not mean that the idea is wrong—but you should be aware that the relationship can create an unconscious bias.

Above all, critical thinking needs to be objective and rational—and not personal. Think of the pre-test probability, focus on the claim, and try to bring awareness to any potential biases at play. After that, you can look at the actual foundation behind the assertion.

Step 4: Assess the Basis of the Claim

Rather than getting into the details of analyzing studies (which is impractical for most people to do), I want to instead focus on highlighting the many common—and faulty—arguments for health claims. There are weak foundations behind many of our decisions about health. By making these errors in reasoning conscious, instead of subconscious, we can realize how and when our thinking goes awry. We can then learn how to make better decisions based on objective thinking. These logical fallacies are inherent in all of us, so it is up to us to overcome them and not be fooled as easily.

Anecdotes Do Not Equal Data

One of the most common marketing techniques when it comes to medical treatments and therapies is that of the testimonial, which is just an anecdote—a specific incident or story that is used as evidence. In the sales world, an individual describes how effective the treatment was for him or her, and you are then supposed to accept that as fact and proof for the claims at hand.

Leaving aside the likelihood that many said testimonials may well be false and are used to mislead the public, even true ones should be taken with caution, if at all. Anecdotes are the worst and weakest form of evidence: there is no way to confirm them, and there are no controls in place to ensure the treatment is the actual cause for the improvement.

For example, almost all fitness-related claims are full of anecdotes and before/after pictures; however, it is never exactly clear what else the testifiers have done to achieve their results—most commonly, a highly restricted diet on top of the workout plan or device.

Even medical professionals can be easily swayed by personal stories. I recall a colleague saying that one of the worst justifications for doing anything is “In my experience . . .” We are understandably influenced by our experiences and so we must be extra vigilant to not be tricked by ourselves. For example, I could prescribe a drug that has a known rare side effect but also offers significant proven benefits. If my patient was unlucky enough to experience that side effect, I need to understand that the side effect will not happen to every patient, and that it is prudent to continue to prescribe that medication, for the appropriate patient with appropriate counseling, if the circumstances warrant it. I can’t let my experience of witnessing the side effect make me afraid and then do the wrong thing for all future patients.

Likewise, if I have a patient who takes some supplement and swears that it helped her with her arthritis or diarrhea or whatever, I shouldn't start immediately recommending that product over traditional evidence-based treatments, without at least first reviewing the scientific evidence.

Anecdotes need not be discounted, but we must realize that they are a really weak form of evidence that, if anything, may prompt further research and study of the intervention.

One Thing Leads to Another

Another reason we often think that something we've tried is effective is because one thing happens *after* another. It does not mean that the latter was *caused* by the former.

This method of thought is the common basis for superstitions and magical thinking. For example, "My team won the baseball game when I wore this T-shirt, so I'm going to wear the same T-shirt for every game from now on (and not even wash it)!" This is an obvious case where clearly the T-shirt had nothing to do with the outcome of the game, but there are many cases where the circumstances are not as obvious.

Oftentimes, people will use multiple health interventions at the same time and assume that one in particular was the cause for improvement, despite many other potential reasons for it. For example, a person may feel the turmeric he took for the past month helped shrink his tumor but disregard the chemotherapy he received earlier, which may take some time to take effect.

There are also many conditions that improve on their own, and the intervention had nothing to do with it. In my practice as a family physician, many patients request antibiotics for viral illnesses because they are convinced that they always get better when they take an antibiotic for their bad colds. However, the natural course of a cold is to get better over time. The

patient would have improved with or without the antibiotics, which kill *bacteria* but do nothing to fight viruses. One had nothing to do with the other.

Regression to the Mean

Any health condition, particularly a chronic one, tends to have a fluctuating course where there are good days and bad. For example, if you have chronic back pain, there will be days when you feel fairly good and are able to do more, and there will be days when your pain is worse and you are more limited. On which days do you think you are more likely to seek treatment? On the bad days, of course.

When a patient takes a medication on their bad days, it is hard to know if the treatment is helping or if it is the natural course of their condition with its normal pattern of ups and downs. This difference is very challenging to detect individually, which is why carefully controlled studies are required to see if medications truly work.

This phenomenon is called regression to the mean, where things will settle into their regular, or average, state over time—whether it is the level of pain a patient experiences, the percentage of free throws a basketball player makes, or the percentage of times a flipped coin turns up heads. This factor is involved in our next topic of discussion.

Placebo Effect

Any drug, supplement, or treatment has the potential to cause a placebo effect—the real decrease of symptoms of a condition or disease but one that is not due to the intervention itself. Because of the profound nature of this response, any medical trial has to account for the placebo effect to prove that the medication is truly beneficial.

With alternative medicine, the placebo effect is the main mechanism by which people feel a positive effect. By definition,

if the treatment or product has been proven to work better than a placebo (a substance that is known to have no therapeutic benefit), it would no longer be called “alternative medicine,” it would simply be “medicine.”

Some of the manual (hands-on) therapies that have not been able to show clear benefit—despite multiple studies—can be seen as really good examples of how to optimize the placebo effect. Acupuncture therapy, for example, does not fit with what we know about how the body works but is rather based on the belief of the existence of meridians in the body and the use of needles to help increase or decrease the flow of chi (or energy) through these meridians.

Imagine you are the client who is seen by someone who you feel is a reputable practitioner, who really cares about you, and truly believes in what they’re doing. This person then spends some time discussing your health and life with you (and who doesn’t like thinking and talking about themselves and their priorities for a while during their hectic lives?). They then give you a clear, specific, and confident explanation for the cause of your symptoms (whether accurate or not) and explain how the treatment will address this underlying issue (again, whether accurate or not). Next, you are prepared and positioned—often in a warm room with a heating pad and soothing music. The needles are inserted, which is a physical, noticeable treatment you can clearly feel. Combine this experience with the fact that you have paid for this service and are thus motivated to have it work, and you have a terrific recipe for maximizing the placebo effect.

There are many great books on this topic and one I recommend is *Snake Oil Science* by R. Barker Bausell, which clearly outlines how the placebo effect, as well as the logical, psychological, and physiologic errors inherent in humanity, perpetuates the idea that many treatments are effective when, in reality, they are not.

The Ancient Fallacy

Another common rationale for justifying a particular treatment is that it has been around forever and was used by ancient cultures or civilizations. I'm sure you've all heard some version of the following:

"Acupuncture has been around for thousands of years, so it must be effective."

"I hear you have some kidney trouble. You should try this herbal product—it's been used in China forever."

"Ayurvedic massage has been used for millennia in India for rheumatological conditions—I'm sure it will help you too."

But I bet you haven't heard any of these:

"Are you still getting those headaches? You should see my guy—he will drill a hole in your head and take that pressure away. It was the treatment of choice for hundreds of years!"

"Clearly your infection needs to be treated by the age-old technique of bleeding. It's one of the oldest medical treatments known to man."

"One of the best ways to treat your increased family history of cancer is human sacrifice—it's been used forever!"

Clearly, I'm being over-the-top with these examples, but the fallacy is the same. Just because something is old does not mean it is good, safe, or effective. These treatments were developed and promoted in a world that predates science, cell theory, and germ theory before the concepts of bacteria, viruses, handwashing, or human anatomy were understood. The practitioners had no idea how or why a treatment would work, so they would create their own story to explain the mechanism of action.

Science can be, and has been, used to test these claims and some old herbal remedies or treatments have been found to have some mild benefit. However, just because some ancient methods have been shown to be somewhat effective and there is some explanation for effect, that does not mean that every ancient treatment is good. Those that have been shown to have merit are more a testament to the value of the scientific method than that of the ancient fallacy. So, the next time you hear someone promote a practice based on that of a wise and ancient culture, ask for their thoughts on bleeding and human sacrifice as well.

Appeal to Nature

Many people believe that simply because something is natural, it is inherently good. This argument often comes into play when discussing herbal remedies over pharmaceutical medications.

There are many herbal substances that have a physiological effect and have been used to create and develop medications (digoxin from the foxglove plant, antibiotics from molds, etc.). The idea that all things natural are safe, however, is a large leap from the idea that some substances may have benefit. Simple examples of natural things that aren't exactly safe include poison ivy, curare poison, arsenic, and poisonous mushrooms.

In considering the appeal to nature, we can acknowledge that there is value to eating whole foods and getting outside into nature, but also be aware that there is a danger in believing that if something is natural it is therefore safe and better than the alternative. In addition, as I often tell my patients, if a natural product has any *effect* at all, then it must also have the potential for *side effects* just as any drug does. The body doesn't know or care about the source of the medication.

Credibility of Studies

While I do not want to get too deep into the analysis of scientific studies, I do want to briefly comment on what to look for when you hear or read about a study. Often media and research institutes overplay the value of the results of their work in order to get attention for their work or university. Some things to watch out for include:

- *Basic science studies.* A petri dish in a laboratory is not the same thing as a human being. It is a large step from showing positive results in a basic science lab to showing similar effects in people. It is best to ignore those results and not make any health decisions based on dramatic headlines stemming from this type of study.
- *Animal studies.* Mice are not human beings, and very few studies on animals end up showing similar results in people or even get to the point of being studied in humans. Ignore any exciting headlines regarding cures for cancer if the study population was a group of rats or some other non-human animal.
- *The quality of studies.* Look for high-quality studies that have been randomized, have control groups to account for the placebo effect, are double-blind (participants and investigators don't know who is receiving the study drug/intervention), have lots of study subjects, and are published in high-quality journals. As stated previously, all manner of health interventions appear to have some sort of evidence behind them, so it is worth considering the quality of the human studies.

While that is probably more information than you need when considering evidence presented in the media, it is worthwhile to keep these factors in mind when thinking about all

the health claims you are exposed to. The bottom line is that if any dramatic discovery is clearly proven to markedly improve health, it will have to have gone through a significant process to get there—and you will be unlikely to miss it. Until then, you should be skeptical of the claims you hear, particularly in regards to the fundamental factors of a healthy life that are unlikely to change significantly.

Heuristics: What Prevents Us from Thinking Critically?

As demonstrated, we humans regularly make errors, have biases, and jump to conclusions, naturally leading to the question, “Why are we so bad at analyzing information?” The answer is that we actually aren’t; we are very good at making quick decisions on straightforward matters. The issues arise when we look at more complex ones.

A significant problem is that the logical fallacies mentioned above are actually effective in many situations—that is why they developed and persist. They are based on heuristics, which are any techniques, processes, or methods that are used to find solutions to problems. Some typical types of heuristics are trial and error, educated guesses, and rules of thumb. These are obviously better than the alternative of brute force, where one considers every potential solution equally, and random guesses, but they do not ensure the discovery of the right answer.

In many circumstances, however, those errors in logic actually serve a purpose. As a parent, I like to use my role as their father to convince my children (“Don’t argue with me! Just do what I say . . . I’m your father!”). As our children have started to understand and learn the importance of being able to defend and support any claims they make, this argument

unfortunately no longer works—I only have myself to blame. However, in some situations, such as where safety is involved (yelling “Stop!” when walking near traffic, for example), it may be best for our children to just trust their loving parents and do what we say.

Now that we aren’t helpless children, why do we continue to use these heuristics and not think for ourselves? Simply put: they are much quicker and easier than the alternative. In terms of health information, it would be exhausting to fully analyze every claim we hear—it is easier to use our tried-and-true heuristics and just trust them. So, often we pick an outlook that is supported by our experience or shared by someone we trust (“natural is better” or “Big Pharma can’t be trusted”) and rely on it in our decision-making. Again, perfectly understandable, but it does not result in us making reliably good assessments.

What heuristics do, however, is provide us with a framework to have some certainty in how we see the world. They give us security and comfort. Unfortunately, many of the issues we deal with (science, health, politics, and the environment) are complicated, and simply wishing something to be black or white does not make it so.

One heuristic or mental shortcut that I believe could be useful in regards to general health is to focus on the ten basic components of healthy living outlined in this book and downplay the rest until or unless there is a clear reason to do so. Given what we know about how the human body works, and the huge body of scientific research we have in these areas, any benefit claimed from a superfood or a terrific medication will likely be small compared to the huge value in focusing on an overall healthy diet, increasing physical activity, or sleeping better. But I hope you come to believe this not because I said so as a medical doctor, but because the suggestions make sense in their own right and resonate with you.

Science and medicine, in particular, do not tend to be intuitive. We can be easily fooled, with all of those simple heuristics, or educated guesses, quickly leading to wrong conclusions. That is why science and critical thinking are such powerful tools, as systems to minimize bias, test ideas, and get results that either support or oppose them. Science actively works to expose errors in our heuristics and creates theories that can be fine-tuned and truly relied upon.

I love how Carl Sagan describes science in the subtitle of his great book *The Demon-Haunted World*: “Science as a Candle in the Dark” which is a wonderful tribute to reason and a warning of what can happen if we allow ourselves to stop thinking critically—a return to darkness. We may have had an excuse in the prescientific world, but in the twenty-first century that excuse is no longer valid. We need to continue to move toward further understanding of our amazing universe and continue to illuminate our world.

Summary

Using your rational thoughts to evaluate and consider your many choices around wellness is an essential component to leading a healthy life. We humans are easily fooled—particularly when it comes to health. Understand how and why you tend to think the way you do and learn ways to combat your own errors in reasoning through critical thinking.

You can feel confident that you are doing this, and being rational in evaluating health claims, by using a consistent process:

1. Focus on the claim itself.
2. Determine the pre-test probability.

3. Check for biases.
4. Assess the basis of the claim.

Knowledge is power; by understanding these basic steps to analyze information and identify common errors in critical thinking, it may be hard to blindly accept advice again—and that's a good thing. Build your skills in critical thinking so that when you hear a health claim that you want to consider—including those in this book—you can use reason to assess it.