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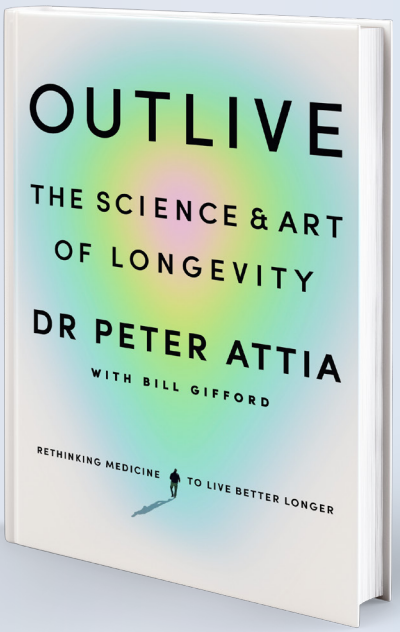

Outlive

The Science and Art of Longevity

By Peter Attia, MD

Peter Attia, MD is the founder of Early Medical. He received his medical degree from the Stanford University School of Medicine and trained at the Johns Hopkins Hospital in general surgery. He also trained at the NIH as a surgical oncology fellow at the National Cancer Institute, where his research focused on immune-based therapies for melanoma. He serves on the editorial board for the journal Aging. He is the host of The Drive, one of the most popular podcasts covering the topics of health, medicine, and longevity.

Rethinking Medicine to Live Better Longer

Peter Attia, MD, in his book, ***Outlive: The Science and Art of Longevity,*** has as his goal, to improve both the lifespan and the healthspan of his readers. This is the same goal that he has with his patients in his practice. Lifespan refers to how long a person lives, whereas healthspan refers to how many years that person can spend disease-free. Attia sees too many people who spend their last years miserable and in pain and in poor physical health. He wants to use his expertise and the data people can obtain about their health to improve both lifespan and healthspan. He believes that current medicine, which he calls Medicine 2.0, is primarily concerned with helping people once they are sick, in short, when the damage has already been done.

An example of this, he points out, is how most people are not treated for diabetes until their A1C level reaches a certain number. Before that, people are left to continue on how they are living. He prefers a Medicine 3.0 approach that realizes that many chronic diseases begin many years before they reach a critical level and that a person's blood sugar level should be cause for concern well before they reach the diabetic threshold. This can stave off diabetes and give people greater chances of positive health for many decades.

The Four Horsemen

Attia discusses what he calls the four horsemen: the four diseases that most negatively affect people in old age. These are diabetes, cardiovascular disease, cancer, and neurodegenerative diseases such as Alzheimer's Disease. He explains that studies of centenarians, people who live over a hundred years, find that these people tend to develop chronic illness later, sometimes much later, than people who do not live as long. In general, centenarians are in relatively good health for many years, and when they do die, their suffering is more short-lived.

Attia discusses non-alcoholic fatty liver disease and nonalcoholic steatohepatitis. He says that one in four people worldwide suffer from one of these afflictions which is associated with both obesity and too much cholesterol. These diseases are reversible, but they can cause significant damage when they go undetected because of the scarring the associated inflammation causes. Part of the reason why these liver conditions are of concern is because they are steps on the way to type 2 diabetes, and diabe-

tes often leads to the other three horsemen diseases.

Attia separates obesity and diseases of metabolism. They are correlated as many people with metabolic issues are also obese and metallic disease can increase obesity, but there are also considerable numbers of people of normal weight who also suffer metabolic dysfunction and may not even know it. In the 1980s there was a study done on Syndrome X which is now called metabolic syndrome. This syndrome has five characteristics: high blood pressure, high triglycerides, low HDL cholesterol, central fat distribution, and elevated fasting blood sugar. Insulin resistance is the central factor in all of this, Attia explains. Because of this, Attia sees obesity as a symptom of these problems rather than being the problem itself.

Attia explains metabolism as the process by which food is broken down and sent to its proper destination. Hormones are what ultimately decide what happens to the food, and insulin is key among these hormones. Storage of extra energy is safely managed in subcutaneous fat, but eventually those cells fill up and if a person reaches the extent of their storage in these fat cells, the fat is released as triglycerides in the bloodstream, stored in a person's liver, and stored as fat around crucial organs. This fat is quite harmful. Historically, people benefited when they could store fat because they had difficulty obtaining food and were better off if they had fat stores. Society changed more quickly than genes could, however, and as such, what was once helpful is now causing disease in our overabundant society. Another problem affecting humanity is that fructose is plentiful in modern society, and people's bodies were not made to be able to process fructose at the pace in which the modern Westerner now consumes it.

Attia then goes on to discuss cardiovascular disease. Of the four horsemen, this one kills the most people, but he does not believe that this needs to be the case as he believes that if interventions are employed early enough, then people should be able to eliminate the mortality associated with cardiovascular disease. What Attia is not primarily concerned with is the cholesterol in people's diets. Much cholesterol in a person's circulation, he explains, is created in a person's own cells. He maintains that while coronary events often appear to come on suddenly that this is not the case. The problems start years and even decades earlier.

Attia dislikes what he considers the over simplistic idea of good cholesterol and bad cholesterol. He believes that in order to make progress, science needs to get a better understanding of HDL cholesterol, and science needs to develop tests to better detect cardiovascular risks. Attia believes that in people whose relatives had heart disease at a young age, they need to get a test to find out Lp(a) levels because some people have abnormally large concentrations of this particle, and this puts them at greater risk for cardiovascular disease. Attia believes that if numerous factors are taken into consideration, atherosclerotic disease would not "even be in the top ten causes of death." He does not believe that for many patients, these changes can be made without the use of drugs as diet alone will not reduce levels of crucial particles to a safe level.

Cancer, Attia says, still kills "at almost exactly the same rate as it did fifty years ago." Unfortunately, cancer often is not detected until it is too late to fully cure. Once cancer has metastasized, treatments tend not to be all that effective over numerous years. Attia has a three part strategy for beating cancer. First, is to help people avoid cancer. Second is to use better treatments that play off of cancer's weaknesses, and third is early detection. Part of the difficulty of treating cancer is that cancers vary so widely. The only real similarities common among cancers is that they can spread to different parts of the body and they do not stop growing when they should. He sees two attributes of cancer that can be used against the cancer. These are that they consume large amounts of glucose and that they are able to evade the immune system.

In addition, Attia sees a link between metabolic disorder and cancer, and he believes that this is because of inflammation and growth factors like insulin. Inflammation can create an environment that is conducive to cancer, and insulin can accelerate its growth. Because of this, Attia believes metabolic therapies can help fight cancer. Certain diets can also make chemotherapy more effective. He also believes that immunotherapy is key; these are therapies that help the immune system fight off disease. Part of this is developing methods that can help the immune system recognize and defeat cancer. Early detection also must be a factor in decreasing cancer deaths because the more the cancer grows, the harder it is to kill it off. Some doctors are hesitant to do too much screening because of the cost, both in money and in emotional toil that such tests and possible false positives can entail.

The final horseman is neurodegenerative disease. This is an area where Attia says that speaking about prevention is taboo as scientists find it hard to predict who will succumb to one of these diseases. Once a disease like Alzheimers is detected, there is no known way to reverse it. There is a genetic component to Alzheimers and certain genes have been implicated. Because some people know they are at a high risk of developing the disease due to their genes, they can focus on prevention. One thing people can do is to increase their cognitive reserve by engaging in activities like learning new languages and learning to play musical instruments.

People who develop Alzheimers who have significant cognitive reserves may decline less rapidly. He explains the theory of one scientist that states the Alzheimers may be a "vascular disorder of the brain" caused by decreased blood flow to the brain. Others claim that Alzheimers may stem from glucose problems and that insulin resistance may play a key role. Attai says, "All this suggests that metabolic and vascular causes of dementia may be somewhat overlapping, just as patients with insulin resistance are also prone to vascular disease." Attia believes that diet and exercise can help prevent Alzheimers, and people should aim to "diversify the brain's fuel source from only glucose to glucose and ketones." Exercise is the biggest deterrent he believes. Finally, adequate sleep is crucial in limiting the prevalence of Alzheimers.

Determining Tactics

In the third part of his book, Attia discusses some tactics to help stave off the four horsemen. He sees five different areas in which to employ tactics:

. . . exercise is the "most powerful longevity drug."

- Exercise
- Nutritional Biochemistry
- Sleep
- Emotional Health
- Exogenous Molecules

Attia believes exercise is the "most powerful longevity drug." Exercise can help reverse decline, maintain health, and keep a person from facing what could be life shortening injuries later in life. He says, "study after study has found that regular exercisers live as much as a decade longer than sedentary people." People need to focus on numerous areas in their exercise. One is their VO2 max which is "the single most powerful marker for longevity," and it represents how much a person can utilize oxygen. Ideally, people would work on improving their VO2 max with one or two workouts a week that target this. People also need to focus on both muscle mass and strength. He points to studies that showed that exercise interventions were just as good or better than certain drugs at "reducing mortality from coronary heart disease, prediabetes or diabetes, and stroke."

Attier points to the notion that people's abilities will decrease as they age, so if they want to be able to run a mile twenty years from now, they need to be able to do far more than that now. He pays particular attention to Zone 2 exercise which is exercise that allows people to hold conversations while still taxing them. This type of exercise can improve mitochondria and make a significant difference in health. The body can use fat and glucose much better with healthy mitochondria. For someone starting out, two thirty minutes of zone 2 exercise a week can be helpful, but the ideal is three hours per week at zone 2. Attia discusses the importance of strength training and also explains how quickly strength can be lost. Because it can be lost so quickly, stability is important because falls and injuries can lead people to stop their training which can lead to a rapid decline particularly in the elderly.

When it comes to nutrition, Attia believes there is a lot that science does not know. He refers to nutrition as nutritional biochemistry because he believes this change in terms makes people feel less dogmatic about the issue. He sees three main methods people use to lose weight: calorie restriction, dietary restriction, and time restriction. The second refers to limiting or eliminating food groups, and the third refers to limiting the hours of the day in which a person allows themself to eat. All three, he says, are basically a means of calorie restriction just by different methods.

He believes it is important to limit calories in order to lose weight, but this can lead to other problems. He believes that the quality of a person's diet is important and that people need to eat less of the Standard American Diet. He describes the four macronutrients of diet: "alcohol, carbohydrates, protein, and fat." Tools like continuous glucose monitoring can help people understand how particular foods affect their particular bodies as some people are more or less susceptible to the effects of foods than others are. Fats are another group that affect different people in different ways.

Sleep is crucial for maintaining health. Many of Attia's patients' problems are mitigated with better sleep. One reason is that poor sleep is harmful to a person's metabolism. Sleeping too much can be a problem as well as it can indicate that a person is getting poor quality sleep. Low sleep can also affect hunger hormones in people. Additionally, chronic sleep deprivation is commonly seen as an actual cause of Alzheimer's disease. Quality sleep can help with cognition and help clear away the clutter in people's brains. Sleep is especially important for disease prevention in a person's forties and sixties.

Quality of Life

In his final section, Attia details his own struggles with mental health issues. He entered institutions twice to address these issues which threatened to destroy his life and his relationships. Through this, he learned that merely living longer will not help a person if they do not focus on their emotional health in a way that allows them to fully appreciate life.

Throughout his work, Attia attempts to help his patients improve both their lifespan and healthspan. With his patients, he is able to use quality testing to improve their chances of health in many areas. In this book, he explains the different genes that affect health as well as the interventions people can take to improve their health. Some of this can be accomplished on one's own and some require tests ordered by doctors and other practitioners. With this book, he empowers his reader to take control of the factors that can affect their longevity so they can live as long and as well as possible.